A New Method for Measuring the Quality of Urban Housing

A Technic of the Committee on the Hygiene of Housing *

THREE years ago the committee undertook to develop a method of measuring the quality of housing in urban slums. The direct stimulus for the committee's work in this field of appraisal was a number of requests from public health officials that we translate the substance of our "Basic Principles of Healthful Housing" into a yardstick of housing deficiencies, as a basis for enforcement work in problem areas. Although other survey procedures have been developed for city-wide application—such as the standard real property inventories and the 1940 Housing Census—more intensive methods are clearly needed for limited areas which are known to be generally substandard or of marginal quality.

The dramatic slums of any community are likely to be well known in a general way, but this is not enough. Effective programs of control (or postwar rehousing on the scale generally anticipated) will require closer definition and measurement of substandard housing than is possible with present appraisal methods. Such definition and measurement is needed both to delimit the problem areas, to evaluate their deficiencies, and to indicate whether a solution lies in the direction of law-enforcement, demolition and rehousing, or ultimate conversion from residence to other uses. The standard city-wide survey technics are not designed to provide this type of information.

Although relatively close measurement is needed, this does not mean a researcher's type of survey, turning out bushels of tabulations and acres of maps on every aspect of the problem that might conceivably be of interest to other research workers; rather it means an administrator's inventory, producing only the data needed for policy-making and concrete action—and these data in concise graphic form that will command the attention of already overburdened public officials.

The committee believes that appraisals of a type which will answer basic questions of housing policy can be made by the permanent inspection staffs of health departments and other city agencies concerned with housing. If so, the procurement and interpretation of essential housing data can become a regular function of city governments rather than a job to be done at those rare intervals when special research funds and personnel may be available.

American cities devote thousands of man-days every year to housing inspection service in their slums, but it is a rare community in which this effort provides usable answers to the questions on which a long-term housing program must be built. Such questions, for example, as: Just what is the size and nature of the extreme slum areas? How much worse is district A than dis-

* Adapted from a paper presented for the committee by Allan A. Twichell, Technical Secretary, at the Seventy-first Annual Meeting of the American Public Health Association, St. Louis, Mo., October 28, 1942.

trict B, and in what respects? How many dwellings should be designated unfit for habitation, and either demolished or rehabilitated? Aside from the condition of dwellings, are the problem areas, as neighborhoods, fit to live in?

An experienced city manager has recently pointed out some of the chief reasons why traditional methods of housing inspection fail to supply the needed answers.[1] He cited the common practice of inspecting only on complaints, the waste of effort through unnecessarily overlapping inspections, and the absence of an official minimum dwelling standard to which both enforcement and rehousing programs might be related. Other limitations can be added. Forms and records are seldom designed to be useful or understandable to others than the inspection agency. There is usually no central clearing-point for essential housing data. Often too little thought is given to summarizing inspection findings as a measure of the total problem in areas which are large enough to be significant for planning.

The Committee on the Hygiene of Housing has sought to overcome these limitations in its method of inspection and evaluation. This method has been developed and tested by a Subcommittee on Appraisal of Residential Areas, under the leadership of Rollo H. Britten of the U. S. Public Health Service.* The principal test surveys have been made in New Haven, Waterbury, and Stamford, Conn., in coöperation with public health, housing, and city planning agencies of these cities, and with both technical and financial help from the Connecticut Department of Health. The object of the following discussion is to describe the appraisal method thus developed, to illustrate the type of results it will produce, and to sketch its implications for local housing policy.

THE COMMITTEE'S APPRAISAL TECHNIC

The central purpose of the committee's method is to make it possible, by assigning a part of inspectorial energies to the systematic appraisal of known problem areas, to measure the quality of housing in a way which will serve the policy-making purposes of all local agencies concerned with housing. The principal features of the technic are as follows:

1. It reports and evaluates housing deficiencies which may adversely affect health, safety, or essential livability.

Factors covered for dwellings include water supply, sewage disposal, toilet and bathing facilities, condition of repair, safety of egress, adequacy of daylight, type and distribution of heating facilities, sanitary condition of the premises, completeness of landlord services in multiple dwellings, room sizes, overcrowding, rent, family size and composition, and family income. In presenting the results, distinction is made between relatively fixed physical conditions and the changeable factors of occupancy and maintenance, since remedial action must recognize these characteristics.

2. The neighborhood environment, largely ignored in previous survey methods, is recognized as an essential element in housing adequacy.

Neighborhood criteria include crowding of land by buildings, industrial and commercial uses intermixed with residence, hazards associated with streets and nearby railroads, adequacy of public utilities, and availability of essential community services: schools, transportation, parks and playgrounds.

3. The quality of housing is measured by a tested system of numerical scores.

Scores are expressed in terms of the dwelling conditions, neighborhood characteristics and these two combined. Instant comparisons of quality are thus made possible as between blocks or groups of blocks, individual dwell-

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ings, types of dwellings, or other wanted categories.

4. Clear, well designed forms are provided for data collection. Systematic procedures for analysis and graphic presentation of the significant findings are an integral part of the technic.

Items calling for subjective judgment by the inspector have been replaced by those of an objective, measurable type which will give consistent results from different enumerators. Sampling is used when this is appropriate to the purposes intended.

5. The method is suitable for execution by the regular personnel of city departments, after brief instruction.

The appraisal of dwelling conditions is particularly adapted for execution by the inspection and clerical staffs of local health or building departments. The survey of neighborhood characteristics can be made by the staff of an active city plan commission, or under the direction of a sanitary engineer or the technical director of a housing authority. Either the dwelling appraisal or that of the environment can be made alone, but the soundest results are obtained when both are made, for only the combined results give a true picture of the total housing problem.

The scoring system is the distinctive feature of the method, and lies at the heart of its effectiveness. The obvious value of a scoring system is that it *measures* total quality and expresses this measurement by a convenient index figure. There is almost no kind of analysis of housing data which is not tremendously facilitated by the use of scores. But the scoring system must be sound. Much of the committee's work during the period of development has gone into tests of the scoring method. This testing has convinced the committee and numerous outside critics that the present rating scales are accurate differentiators of housing quality.

The scores consist of penalty points assigned to conditions which fall below reasonable standards. These standards, largely derived from the "Basic Principles of Healthful Housing," have been checked with local officials as to their reasonableness for enforcement or other official purposes. Scoring is done from the completed schedules in the office rather than in the field, for it is believed that the enumerator should report conditions only, and should not complicate either his work or his attitudes by the assignment of ratings. While the standard rating scale is believed applicable in most particulars to any American city, it can easily be modified to fit local or regional conditions, since the rating forms have been developed separately from the enumeration schedules.

The recommended rating scale provides penalties for various deficiencies ranging from 1 to 30 points, depending on the seriousness of the conditions as a threat to health, safety, or essential livability. "Basic Deficiencies"—conditions any one of which may make a dwelling substandard for enforcement or rehousing purposes, such as totally inadequate fire-escapes or the absence of inside toilets—are counted separately as a kind of auxiliary score.

Under this scheme, dwellings and neighborhoods which are essentially up to standard will show penalty scores of 0 points. Extreme slum sections in the cities of our test surveys have incurred total dwelling penalties of 200 points or more per dwelling unit, with characteristic total scores for the neighborhood environment running around 125 penalty points per block or street frontage.[2]

A JOINT STUDY TO SHAPE OFFICIAL POLICY

The technic was originally intended for execution by local health departments. It soon became evident, however, that such a method could serve the needs of other bodies too, and that it would be most valuable when car-

ried out jointly by a group of local agencies. This coöperative approach is well illustrated in the most recent demonstration survey, now being concluded in the Southwest District of New Haven, Conn.

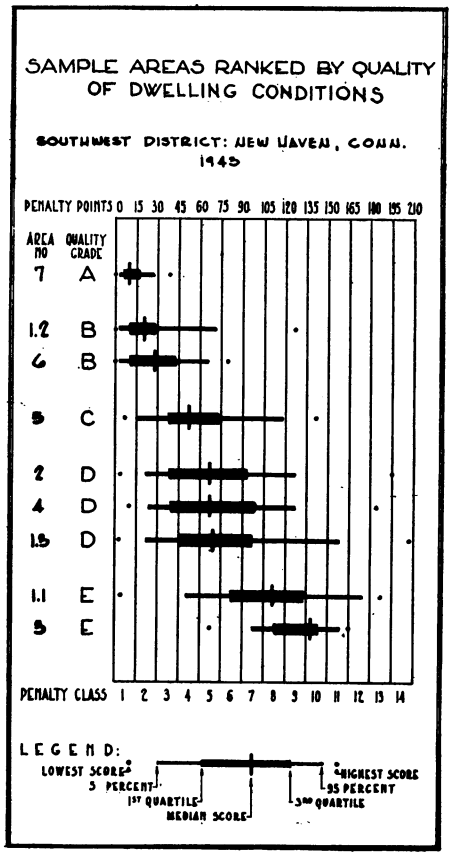
This district takes in about one-fifth of the city's developed area and houses 42,000 of its 160,000 persons. It includes extreme slums, areas of problematic quality, and fringes of clearly self-sustaining neighborhoods. The health, building, and fire departments recognize the district as one of excessive inspection and enforcement burdens. The housing authority desires to find sites there for post-war housing projects. The city plan commission has undertaken a replanning study of the district, and wishes also to delimit clearance areas for enlargement of a terminal market and warehouse district. And the social agencies are wondering whether the housing future of the district will warrant investment in certain additional community center facilities.

In this area of diversified problems a joint appraisal has been sponsored and conducted by the committee and five governmental agencies: the local Health Department, City Plan Commission, and Housing Authority; the State Health Department; and the U.S. Public Health Service. The purpose of the study is to lay the groundwork for a coördinated long-term program of housing enforcement, replanning and reconstruction for the district. Personnel or funds were supplied by each of the sponsors, and the work has been directed by the committee's staff. The interests of the several sponsors and their responsibilities have been set forth in a formal working agreement. It is thought by the partners in the undertaking that this "memorandum of understanding" may provide a pattern for a most fruitful type of joint attack on local housing problems.

After a preliminary screening study of the 1940 Housing Census data, seven sample areas totaling 35 blocks were selected for appraisal.* These groups of blocks were chosen to represent the range from thoroughgoing slums to neighborhoods clearly free from serious housing problems. Fifty per cent of the 2,500 dwelling units in these blocks were inspected, and 30 of the blocks were completely surveyed for environmental characteristics. The accompany figures give some highlights of the findings.

Figure 1 shows the quality of dwelling conditions (excluding environmental

FIGURE 1



* For purposes of analysis sample area 1 was later subdivided into three sub-areas (1.1, 1.2, 1.3), giving the nine areas of Figure 1.

characteristics) in the sample areas, and illustrates how the technic measures the range of over-all conditions from one area to another.

At the top of the figure is indicated the range of total penalty scores incurred by all dwelling units—from 0 to 208 points. This range is divided into penalty classes of 15 points each, as shown at the bottom of the chart. Units with total penalty scores of less than 15 points fall in penalty class 1; those with penalties of 140 points in class 10, and so on. The solid horizontal bar for each sample area represents the range of scores for 90 per cent of its dwelling units, and the scatter of 5 per cent of the cases at either end of the scale is shown by a terminal dot. The score of the median dwelling unit for each sample area is shown by a vertical bar; scores at the first and third quartiles are shown by breaks in width of the horizontal bar.

Thus, for example, the highest grade sample area (No. 7 at the top of the chart) shows a range of penalty scores from 0 to 38 points, but its median dwelling unit has a score of only 10 points. Fifty per cent of the units (from first to third quartile) show total penalties between 6 and 17 points; 90 per cent have scores between 2 and 28 points.

The chart reveals the relative quality of the sample areas at a glance. Two extremely poor areas show at the bottom of the figure; one quite good and two fairly good ones appear at the top, with four of distinctly worse quality between. These areas have been classified into five quality grades, from A to E (as given at the left of the chart), according to the penalty class and the number of basic deficiencies shown by the median dwelling unit for each area.

As a generalization for the present study, we may take the break between grades C and D as a rough dividing line between areas of more or less passable dwellings and those in which general corrective action by city departments will be needed. Over fifty per cent of the dwelling units in grade D areas are substandard in the sense that they show one or more basic deficiencies as defined by the local sponsors. In the less bad of the two grade E areas, 94 per cent of the units have one or more basic deficiencies and 31 per cent show four or more. Further analysis indicates that grade E areas are clearly beyond acceptable rehabilitation of their present housing on any economic basis, and that housing of grade D is full of problems for the agencies charged with enforcement or rehousing.

Some of these problems are indicated in Figure 2. This gives the distribution of salient housing deficiencies, for the sample areas grouped by quality grade. Thus, while Figure 1 *measures* the range of the problem, Figure 2 *describes* the problem in various parts of the range. Here selected environmental factors have been included with the dwelling characteristics.

Although room crowding is not the chief difficulty of this district, a considerable problem of overcrowding abatement is indicated by items 21 and 22 of Figure 2. Areas of grades D and E show from 42 to 69 per cent of their dwelling units with physical defects which usually cannot be remedied without expensive or impracticable structural changes (items 8, 9, and 13). Over one-third show extreme disrepair (item 18), serious daylight obstruction by adjacent structures (item 5), and inadequate room sizes (item 15), the latter two at least being usually curable only by demolition. Separate analysis of D and E grade areas, of course, shows considerably higher deficiency rates in the latter than the figures given here.

Environmental characteristics shed additional light on the difficulty of rehabilitating such low-grade areas to meet contemporary housing standards. Fifty-eight per cent of the street frontages in grades D and E have a very

FIGURE 2

Selected Deficiencies of Dwellings and Neighborhood Environment

Sample Areas Grouped by Quality Grade

Southwest District, New Haven, Conn.

Scoring Item Number	Deficiency	Qualifying Range of Score: Penalty Points [1]	Quality Grade of Sample Area: A and B Combined	C	D and E Combined
			Per cent of Dwelling Units Incurring Penalty Scores within the Qualifying Range (preceding column)		
FACILITIES	I. DWELLINGS				
2	Public Hall Daylight: Grossly Inadequate [2, 3]	5–10	0	0	10
5	Daylight Obstruction by Adjacent Structures: Serious [2]	5–15	18	28	44
8	Piped Water: Cold Only or None in Unit	7–15	4	20	42
9	Bathing Facilities: None, Shared, or No Hot Water	7–23	6	22	44
10	Toilet Facilities: Shared, Outside Unit, or Non-flush	10–40	2	1	9
12	Windowless Rooms: One or More	15–20	0	0	6
13	Installed Heating: None in at Least One-half of Rooms	10–18	7	60	64
15	Room Sizes: Area of One or More Rooms Substandard [2]	5–10	19	17	37
MAINTENANCE					
16	Yard Condition: Grossly Insanitary [2]	10–15	0	15	26
18	Structural Deterioration: Extreme [2]	20–30	3	15	37
OCCUPANCY					
21	Persons per Room: One and One-half or More	10–25	10	18	22
22	Area per Person: Substandard [2]	10–25	1	4	13
	II. NEIGHBORHOOD ENVIRONMENT		Per cent of Blocks or Street Frontages Incurring Penalty Scores within the Qualifying Range		
E 1	Land Coverage by Buildings: Excessive [2]	10–24	0	10	17
E 5	Land Use: 30 Per cent or More of Block Area in Industrial, Commercial or Mixed Residential Use	10–13	2	38	58
E 7	Specific Nuisances and Hazards from Non-residential Sources: High Incidence [2]	18–30	6	21	44
E 8	Moral Hazards: Considerable in the Area [2]	6–10	0	15	24
E 10	Hazards and Nuisances from Adjacent Streets: Considerable [2]	15–20	2	26	25
E 21	Public Playgrounds: Beyond Reasonable Distance [2]	8	4	44	69

1. For most of the deficiencies the range of possible scores begins with 1 or 2 penalty points. In order to show here only the really significant defects, those dwellings or street frontages with slight penalties for any item have been excluded.
2. Space limitations preclude an accurate statement here of the criteria on which this item is scored. As noted in the text, all deficiencies are reported in terms of objective characteristics, not in such loosely descriptive terms as are necessary here. Scoring is done from precise rating tables.
3. Applicable only to tenements with public halls.

high concentration of industrial or commercial uses (item E5), typical of downtown slum districts. This problem is emphasized by the almost equally high percentage showing severe degrees of specific nuisances (E7) such as noise, vibration, conflagration hazard, odor, and smoke associated with non-residential uses. Public playgrounds within normal walking distance (E22) are lacking for over two-thirds of the blocks in grades D and E. Crowding of the land by buildings (E1) is not so serious here as will be found in many slums,

but the prevalence of street hazards (E10) is the earmark of a district so cut up by traffic arteries as to be unsuitable for housing without replanning the traffic pattern.

Figures 3 and 4 give the characteristics of a typical dwelling in a grade E area. In Figure 4 is used the rating form prepared in the office for each dwelling unit, which shows the specific judgments for individual dwellings made possible by the technic, in addition to general evaluation of areas. The dwelling whose photograph and score are given here is the median case for Area 1.1, and is thus both better than half and worse than half of the others in this group of blocks. This dwelling unit is on the second floor rear of the building pictured. The three basic deficiencies of this unit and its structure are: lack of exterior or incombustible means of egress available to all dwelling units; disrepair of floors and plaster amounting to a definite safety hazard; and a family size which, in relation to both the number and substandard size of the rooms, causes excessive crowding. Additional defects include serious obstruction of daylight by neighboring structures, a bath tub rendered largely meaningless by lack of piped hot water, and stove heating for only two of the five rooms. It is clear that slum conditions are not restricted to the shared toilet, overcrowding, and the lack of repair which provided the grist for the hopper of old-line housing literature.

In these D and E grade areas, then, we have a sketch portrait of thoroughgoing slums, many of which should be cleared out as soon as possible, and which meanwhile call for correction orders and systematic reinspection. Even archaic law is clearly violated by many of the conditions brought to light. At least the eight blocks comprising the grade E areas of the present study are definite candidates for demolition, since they show considerably higher penalty scores and a wider spread of basic deficiencies than a block in another part of the city which was cleared and rebuilt by the local housing authority because of the impossibility of rehabilitating it.

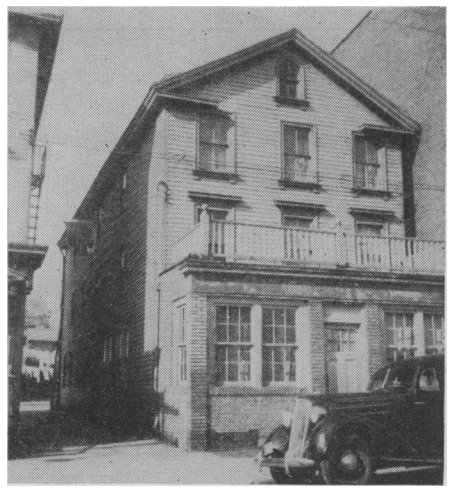


FIGURE 3—Typical Dwelling of a Grade E Area

But what is the extent of these slums in the Southwest District as a whole? What proportion of the families live, for instance, under the conditions implied by grades D and E? How large are the areas which appear ripe for slum clearance? Where is drastic housing enforcement indicated? Where are the mild problem areas in which blight can perhaps be stopped and rehabilitation encouraged? The accompanying map (Figure 5) makes it possible to begin answering questions of this type, and these answers can be refined as necessary by further analysis of the appraisal data.

This map classifies all blocks in the Southwest District by quality grade of dwelling conditions as discussed above, with grades D-E and A-B combined for the sake of simplicity. The blocks of the sample areas are shown in heavy outline. For these the quality grades are definitive findings of the coöperative survey. The remaining areas have been

FIGURE 4

Coöperative Housing Survey of Southwest District, New Haven
Dwelling Unit Rating Form and Summary of Field Schedule
Appraisal Technic of the Committee on the Hygiene of Housing, A.P.H.A.

Area *1.1* Address *XX York St.*
Block *3* Unit Serial Number *452*

I. DESCRIPTION

Struc. Type *6 Fam.* W. Bus. *No* No. Stories *3*
Occupancy *Tenant* White *X* Non-White .....
No. Rms. in Unit *5* Monthly Rent Class *$20–25*
No. Pers. in Hsehld. *7* Yrly. Income *$1500–2000*

II. PENALTY SCORES AND BASIC DEFICIENCIES

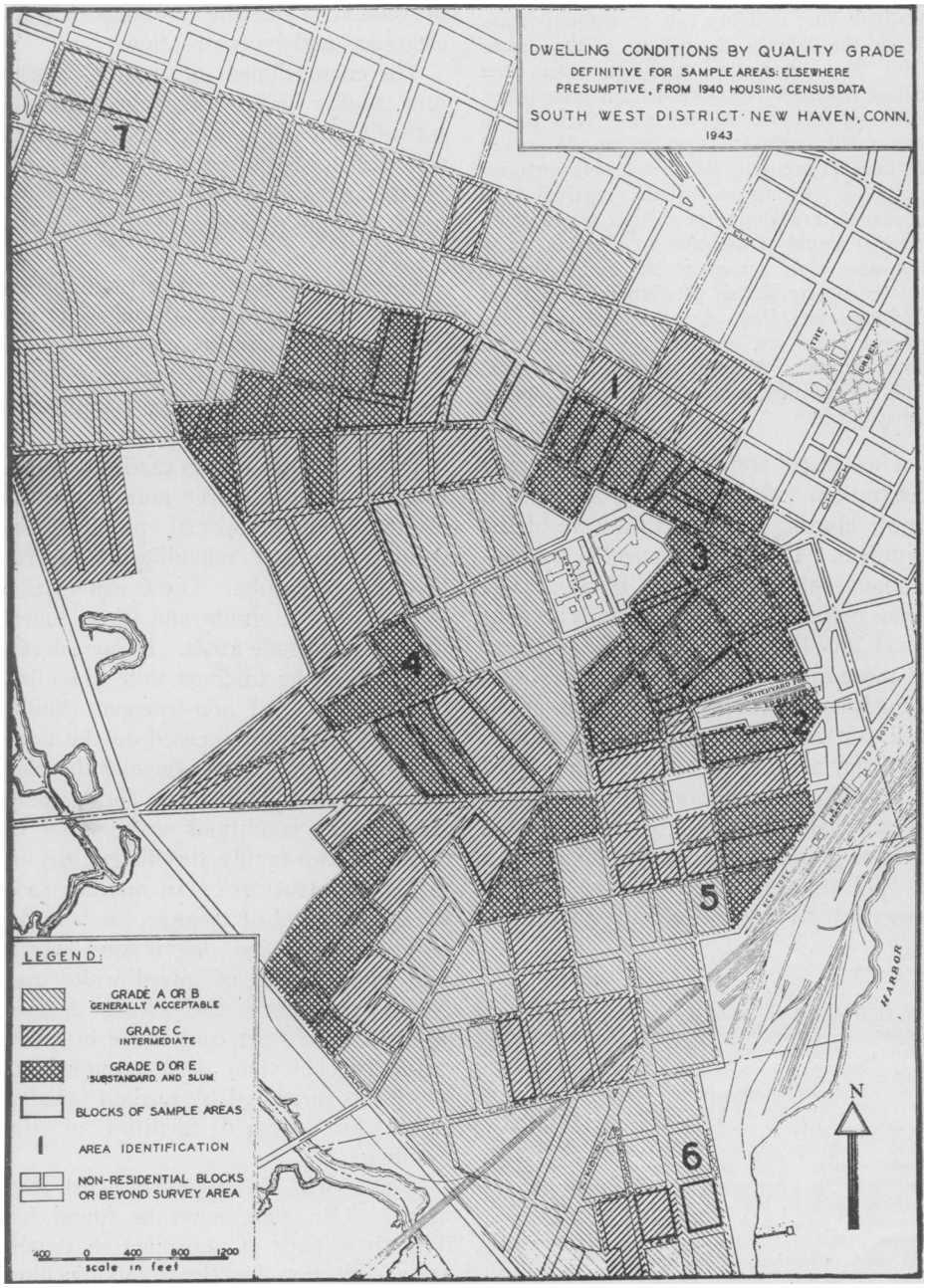
TYPE OF DEFICIENCY	PENALTY SCORE: POINTS			BASIC DEFIC.
	POSS. RANGE	THIS D. U.		
A. FACILITIES				
Structure				
1. Means of Egress	2–30	*14*		✓
2. Public Hall Daylight	2–10	--		
3. Building Frontage	2, 3	--		
4. Sewage Disposal	4–30	--		--
5. Daylight Obstruction	2–15	*8*		
Dwelling Unit				
6. Unit Location	3, 7	--		
7. Artificial Lighting	10, 15	--		--
8. Piped Water	7–15	*7*		--
9. Bathing Facilities	3–23	*10*		--
10. Toilet Facilities	4–40	--		--
11. Kitchen-Laundering Facilities	2–15	*3*		--
12. Windowless Rooms	15, 20	--		--
13. Installed Heating	2–18	*11*		--
14. Closets	2–10	*2*		
15. Room Sizes	2–10	*5*		
Subtotal a: Facilities			*60*	
B. MAINTENANCE				
Structure				
16. Sanitation of Premises	1–15	--		
17. Landlord Services	2–12	*5*		
18. Structural Deterioration	1–30	*10*		--
Dwelling Unit				
19. Toilet Condition	10	--		
20. Structural Deterioration	2–30	*20*		✓
Subtotal b: Maintenance			*35*	
C. OCCUPANCY: D.U.				
21. Room Crowding	2–25	*8*		✓
22. Area Crowding	2–25	*13*		--
23. Family Doubling	7, 10	--		
Subtotal c: Occupancy			*21*	
TOTAL			*116*	*3*

24. Other Defic. Reported by Occupant. Not Scored. [X]

provisionally classified by scoring the 1940 Housing Census data for these blocks, using a rating scheme based on that of the committee's technic.

Under this scheme, the Census data for blocks of the sample areas were first compared with the survey findings; penalty scores were then assigned for the three most diagnostic items of the Census to give a

FIGURE 5



basis for computing presumptive quality grades. When the scoring formula had been refined so as to produce substantial agreement between the grading obtained from the Census data and the grading of the complete appraisal method, classification by presumptive quality grades was extended to the remaining blocks of the district. The map gives the result of this process, slightly generalized for legibility at a reduced scale. While the validity of such use of the Census data must be further tested in other cities before it can be recommended for general use, it is clear that for this section of New Haven this rapid method of projecting the survey findings is accurate for broad policy-making purposes. Projection of the environmental appraisal throughout the district by an index method would be desirable to refine the map, but since close agreement has been found in this particular section between the quality of dwellings and that of the environment, the present map can be taken as a reasonable approximation of the combined appraisal. This would definitely not be true in many other places.*

One large and several smaller concentrations of presumptive D and E grade housing appear as the core of the problem. These are connected by continuous belts of C grade blocks. The areas mapped as grades D and E account for 3,200 dwelling units, or 25 per cent of those in the Southwest District. Obviously not all dwellings in this group will warrant clearance or even drastic remedial action, but on the other hand a considerable number of the blocks provisionally classified from the Census data as grade C (accounting for another 28 per cent of the dwellings) can be expected to show marked concentrations of grade D or E conditions when further analyzed. Therefore 3,000 families seems reasonable as a preliminary figure for the number of families in the district needing correction of their housing conditions by official action, whether this be mandatory improvement of existing dwellings or slum clearance and reconstruction.

The encroachment of grade C blocks into higher grade areas indicates a spreading of blight which local agencies will wish to check, both as a protection to the remaining unspoiled neighborhoods and as a safeguard to the city's tax base.

Local agencies are now planning to extend the appraisal throughout the city, with the purpose of delimiting all problem areas and of analyzing these areas as necessary with the committee's full appraisal technic.

When the appraisal is carried through successive stages in the normal process of the technic, special problems of enforcement and rehabilitation reveal themselves sharply. These will extend at least into C grade and often somewhat into B grade areas. In one survey area, when the findings were classified by tenement and non-tenement buildings, attention was focused on the need to extend legal controls beyond the old-line tenement law in force, for in some respects the conditions were worse in one- and two-family dwellings than in the larger structures. In another case the special need of Negroes for housing relief was clarified, for it was shown that in a district of mixed white and Negro occupancy the Negro houses were 35 to 150 per cent worse in every rental bracket than those occupied by whites, as measured by median penalty scores for physical facilities of the dwelling.

Does such an appraisal cost too much? Can man power be found for it in these days of personnel shortage? Data collection for the 1,280 dwelling

* This method of employing the Census findings to project a qualitative judgment throughout considerable areas has not yet been tested outside New Haven, but there it has shown very satisfactory results. It is hoped that further tests in other cities will justify the use of the committee's technic and the Census data in combination to obtain relatively rapid evaluations of an entire city as a guide to official policy. The importance of this possibility can hardly be overstressed, for the Census data are available block by block for all cities of over 50,000 population, and they offer, if translated into a screening measure of housing quality, an invaluable and most economical method for delimiting problem areas for further intensive study.

units in the Southwest District study was done with 4 man-months of inspectors' time. Office processing and primary analysis of the dwelling data required between 3 and 4 months' time of one clerk.*

This moderate amount of work is making it possible for the city authorities to arrive for the first time at a basic understanding of housing needs in a substantial portion of the city. It is worth remarking that had not the 4 man-months of field work been assigned to this productive purpose, they might well have been spent on relatively aimless investigation of nuisance complaints to the health department. A sanitary engineer in the group which viewed the first findings of this study exclaimed, "I would be glad to see my inspectors drop all work based on nuisance complaints for two years if necessary, to get this kind of rock-bottom information. On the basis of such material we can begin to plan for some kind of lasting remedy. We could go on for twenty years with ordinary inspection methods, and at the end of that time be exactly where we started." †

IMPLICATIONS FOR OFFICIAL HOUSING POLICY ‡

The committee believes that the use of such an appraisal technic on any considerable scale will have effects of the first importance for public policy in housing and city planning. We believe, furthermore, that public health departments have a striking opportunity to promote among other city agencies the idea of jointly measuring and interpreting the local housing problem, for purposes such as those discussed.**

Only by appraisals of some such type can neighborhoods be classified as to their fitness for continued housing use or their need for clearance and reconstruction. As another of our subcommittees has said, "We must begin to think of comprehensive housing programs in which systematic inspection and official designation of substandardness by areas will serve to guide the agencies of reconstruction into slum areas where improvement under the police power is hopeless, but which may offer prime opportunity for rehousing or other rehabilitation projects. In other words, the vigorous and imaginative exercise of regulative powers may supply for the first time a method of earmarking whole districts, helping to indicate both the relative urgency and the

* These figures exclude time of the committee staff, divided between supervision of other personnel and developmental work on the procedures. They exclude also time required for the environmental appraisal. No comparable figure can yet be given for this part of the technic, since it was carried out complete for the first time in the Southwest District, being conducted in part with experimental procedures. The experience of the study, however, has pointed the way to simplifications in the environmental appraisal which should result in comparable economy with this part of the technic.

† Throughout the development of the technic, the committee has stressed the need for simplicity in methods of gathering and analyzing the data, both in order to insure that routine personnel could be used (with a reasonable amount of skilled direction) and in order to minimize the amount of tabulation and analysis required to yield significant findings. The scoring system, for example, since it provides an index or summary expression of over-all housing quality, eliminates the need for certain refined tabulations and analyses ordinarily required with other technics. Scoring the schedules, which might be thought a cumbersome procedure, has been reduced to a rapid and purely mechanical office routine by designing the field schedules in relation to this scoring process. Finally, it may be pointed out that while very large-scale appraisals with this technic might well make use of machine punch-cards and electric card-sorting equipment for tabulations, we have designed our procedures around the simpler manual system of marginal punch-cards. This type of card is processed by a method of needle-sorting which can be quickly learned by any intelligent clerk; and there is almost no expense for equipment. In using these cards we have developed simple and extremely rapid methods of analysis by percentage scales. Use of these scales eliminates the need for manual counting of the sorted cards—which need has usually been regarded as the basic limitation of the marginal punch-card system.

‡ For a fuller discussion of the applications of the technic see section IV of *Public Health Reports, Reprint No. 2359*, previously cited.[2]

** A manual of the complete procedures for this appraisal technic is being prepared, in order to make the method available for general use. The committee welcomes inquiries from local agencies which might be interested in using the technic.

types of constructive programs needed for improvement or rebuilding."[3]

Specifically, this type of appraisal will help in directing enforcement toward the kinds of control most needed in a given area or for different types of housing. It can supply part of the basis for redrafting obsolete ordinances or statutes to meet the urgent housing problem of the community. It can be used during the war to disclose marginal dwelling structures with unused capacity and worthy of reconditioning to meet the emergency demand. Its findings should be of major value, when appropriately presented to the general public, in rallying popular support for needed housing appropriations or legislation.

Finally, and perhaps most important, surveys of this type, conducted routinely in problem areas by the regular personnel of collaborating city departments, will supply answers to many of the policy and technical questions involved in housing and rehabilitation schemes for the post-war period. If a large and well planned housing program is to be an actuality in our democratic peace, there is much groundwork to be laid at once.

REFERENCES

1. Cookingham, L. P. Consolidation of Inspectional Services. *Public Management*, Sept., 1942, pp. 264–67.

2. The committee's method is more fully described in An Appraisal Technique for Urban Problem Areas as a Basis for Housing Policy of Local Governments. *Public Health Reports*, February 27 and April 3, 1942. Available as *Reprint No. 2359* on request to the Committee on the Hygiene of Housing, 310 Cedar Street, New Haven, Conn.

3. Subcommittee on Housing Regulation, The Improvement of Local Housing Regulation Under the Law. *A.J.P.H.*, Nov., 1942.