New Light on the Relation of Housing to Health*

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NO final word is going to be said today, or for a long time, on the precise effects of housing on health, any more than any final word can be said on other very broad problems, such, for instance, as the relative importance of heredity and environment. Even if we were able to establish precise limits to what we mean by housing and to what we mean by health—on which there can hardly be complete agreement—the interrelation of socio-economic facts with housing, on the one hand, and with health, on the other, would make impossible any clear-cut determination of the effects of housing *per se* on health.

Bad housing is a symptom of low economic status; poor health, to a degree, is another symptom. And, to make matters more confusing, any element of bad housing which we choose to employ as a basis for comparisons stands not by itself, but is an index of bad housing in general. Thus, when I show, as I shall, higher rates for pneumonia or tuberculosis in crowded than in uncrowded households, it is not going to be possible to say that the crowding itself has produced all the excess. Perhaps the excess is primarily due to some other element in bad housing; perhaps it is in part a reflection of inadequate food, or insufficient medical care, or other deficiencies due to lack of money; perhaps, indeed, in many instances illness has lowered the income of the family so that it is not possible to ascribe the excess to economic factors at all. However, there is a good deal that we can tell the public now about healthful housing.

Good housing is important. It is, I believe, the right of all persons. It would be their right whether or not their health were seriously affected. It is doubly their right since their health *is* seriously affected. For, just because we are not able to evaluate the precise influence of the various elements of bad housing on the occurrence of disease, we are not entitled to come to the negative position that there is no influence. In fact, if under a definition of housing, we choose to include crowding, proper sanitation, playground space, and home environment in general, and if at the same time we choose to include under health the maintenance of a state of physical, mental, and social efficiency, the causative relation becomes quite obvious.

Many examples could be cited to bring out this point, or reference made to such standards as the "Basic Principles of Healthful Housing" of the Committee on the Hygiene of Housing of this Association [1]—which in themselves constitute new light on the relation of housing to health. It is my purpose, however, not to list examples, but to present some statistical data, which, although suffering from the limi-

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tations just discussed, are still striking enough and new enough to be of interest to you. They are taken from data collected in the National Health Survey, a house-to-house canvass of illness and medical care in relation to economic and social factors, made by the U. S. Public Health Service in 1935–1936 in coöperation with the Work Projects Administration. Information was obtained from a responsible member of the household. The analysis covered 2½ million persons in 83 cities scattered over 18 states. In large cities a random sample of the population was obtained; in smaller cities the total population was covered. I shall not discuss the survey technics further, since they have been adequately described in reports already published. Also I shall not attempt even to summarize all of the Health Survey data collected on housing, which include the extent of poor housing in urban areas and its relation to economic status, color, and other factors.[2] For the present purpose it must suffice to show a few charts of outstanding findings bearing particularly on the relation of housing to health.

First, let us consider the association of the common communicable diseases of childhood with crowding. Crowding is expressed for this purpose as persons per habitable room, and was calculated separately for each household. The groups used are (a) households with one person or less per room, (b) households with more than one person and not more than one and one-half, and (c) households with more than one and one-half. The percentages of households falling into these three groups were, respectively, 75, 17, and 8. A more severe degree of crowding could have been selected, but the percentage of households in the group would have been less.

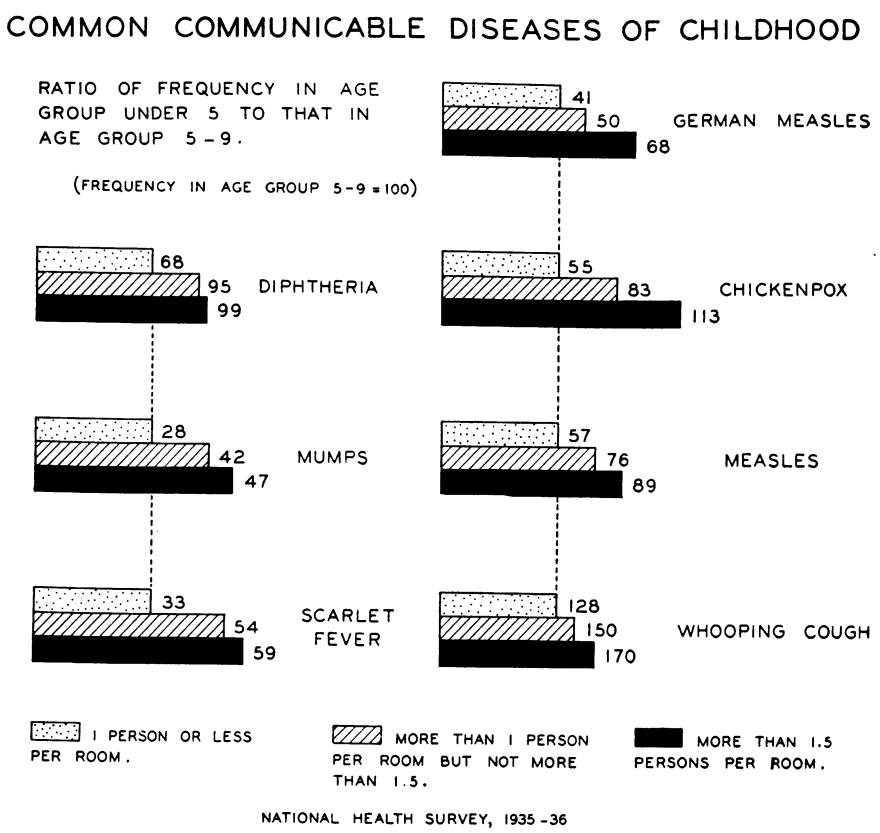
It may be stated that some of these diseases, particularly diphtheria and mumps, show very much higher rates in crowded households than in uncrowded ones; but to save time I have concentrated on perhaps the most striking fact with respect to this category of diseases, namely, the tendency for them to occur at an earlier age in such households.

Hence in the chart (Figure 1) are shown, not the actual rates, but the ratios of the rate in the age group under 5 to that in the age group 5 to 9. Where this ratio is relatively high, it indicates an earlier age incidence. Obviously the ratio will, apart from questions of crowding, tend to be much higher for some diseases than for others (whooping-cough as against mumps, for instance). The bars have therefore been placed on a relative basis, those for the group with one person or less per room being made equal (as shown by the dotted line).

What is seen in the chart is that the crowded households have a longer bar for each of the seven diseases, clearly demonstrating that the cases occur relatively earlier in the crowded households for every one of the diseases listed. The earlier occurrence of these communicable diseases in crowded households is of significance because of the higher rate of fatality at the early ages.

Comparisons of health survey illness rates against degree of crowding have been made for a number of diseases in addition to those shown in this chart, family income being included in the comparisons. To obtain sharply distinguished groups as to over-all housing conditions, we might contrast (a) the low income (relief) group with more than one and one-half persons per room, and (b) the all income group with one person or less per room. On this basis there is an excess for all causes of illnesses disabling for a week or more of nearly 75 per cent; for tuberculosis (under 65 years of age) of 350 per cent; for pneumonia, of 150 per cent; for rheumatism (adults) of more than 100 per cent; and for influenza of 35 per cent.[3] Clearly, in the light of my introductory comments, all of this excess

FIGURE 1



cannot be regarded as due to crowding. In the published reports the data are shown by income, with the necessary explanations; but I suspect we lean over backward when we attempt to make housing comparisons within the same income groups, since, at low income levels, homes which do not show crowding may still be substandard.

For one disease — tuberculosis — an attempt has been made to deal with the so-called "secondary" attack rate in relation to crowding, since the effect of bad housing might be expected to be reflected most clearly in the occurrence of "secondary" cases into households into which cases had already been introduced. Households in which a "primary" case of tuberculosis was reported as first noticed within 24 months of the day of the visit have been considered. All persons in these households, except those with the "primary" case, have been regarded as contacts, and only persons related to the head of the household are included.

The "secondary" attack rate (expressed in terms of the number of "secondary" cases per 1,000 years of observation) was 43 for the relief group with more than one and one-half persons per room; and 14 for the all income group with one person or less per room —an excess of 200 per cent. In Figure 2, these "secondary" attack rates are exhibited. The rates for the group with

one person or less per room have been assigned bars of the same length to facilitate the relative comparison. In the top section, we have attempted to eliminate the factor of income by adjustment to a standard income distribution. As indicated previously, in doing so we have probably leaned over backward. Hence, this is a conservative statement. For the total group under 65 years of age, the excess in the "secondary" attack rate in the crowded households (with the effect of income eliminated, as described) is not great—under 20 per cent. However, for children it is 80 per cent. You will observe that a series of bars is shown separately for the relief group. The excess is quite marked, both for all ages under 65 and for children.

Although I am attempting to cover a good deal of ground in a short discussion, I cannot help but pause to refer to the continuing significance of tuberculosis. Sometimes we lull ourselves with the thought that it has declined from first cause of death to sixth, without realizing that it remains today the most important disease cause of death among young adults, and a vast problem from the point of view of cost of treatment as well. In this connection the close association with housing which we have just illustrated is significant.

At this point let us leave the index of crowding and consider the incidence of digestive diseases in relation to the presence of sanitary facilities. The comparison, it is to be remarked, is still confined to urban areas. Substitution of sanitary facilities for crowding as a classifying item does not change the approach as much as one might think, since there is a marked association between the two; however, it did seem that, in the case of digestive diseases, a slightly more direct comparison was possible by the use of this index. Accordingly the households have been classified on the basis of whether they had an inside flush toilet for their exclusive use. Households with "com-

FIGURE 2

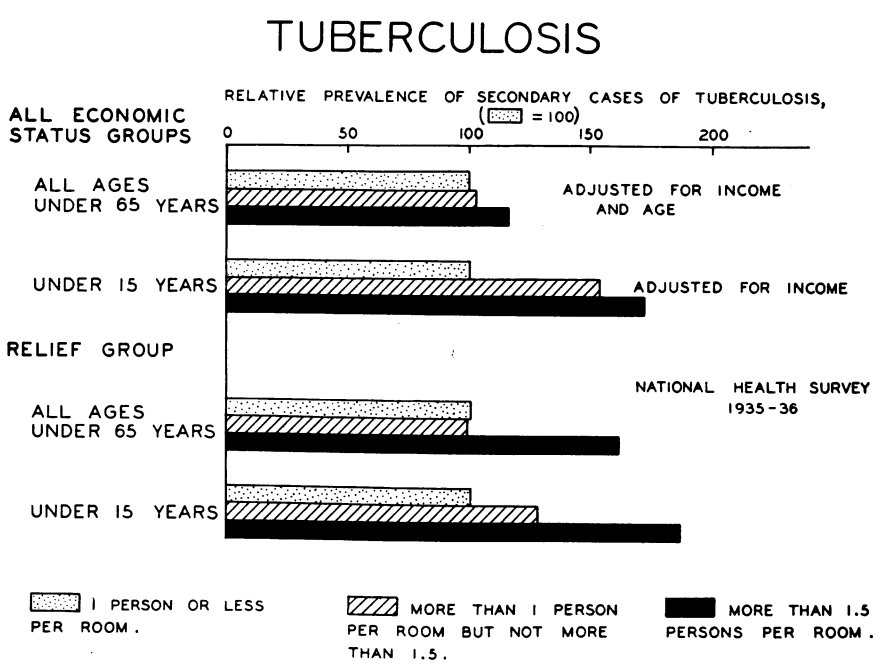
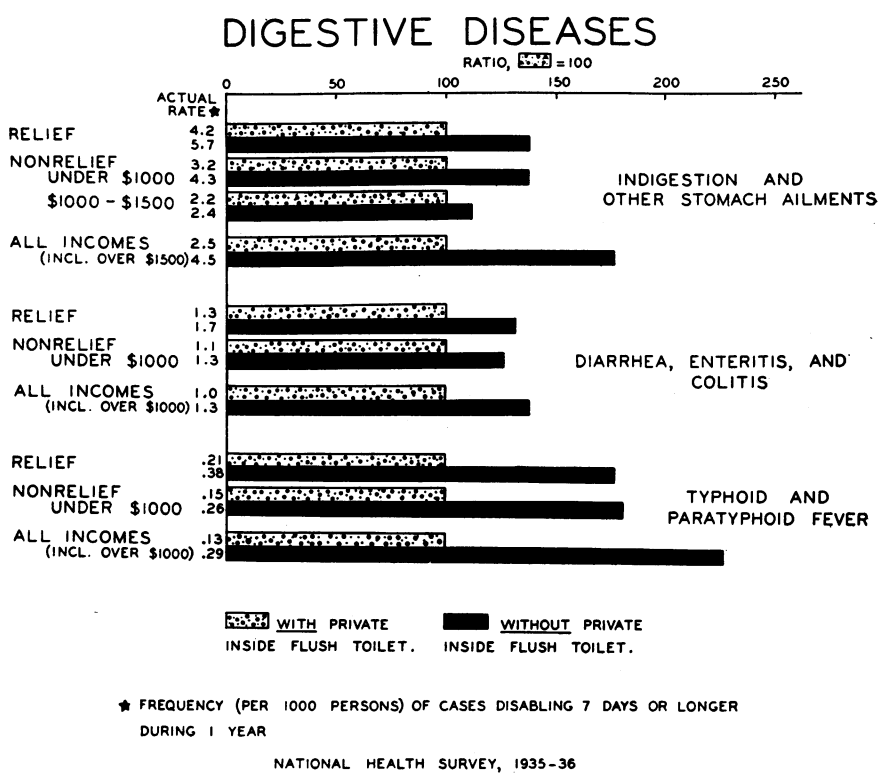


FIGURE 3



munal toilets" or without inside flush toilets at all formed the other group (see Figure 3).

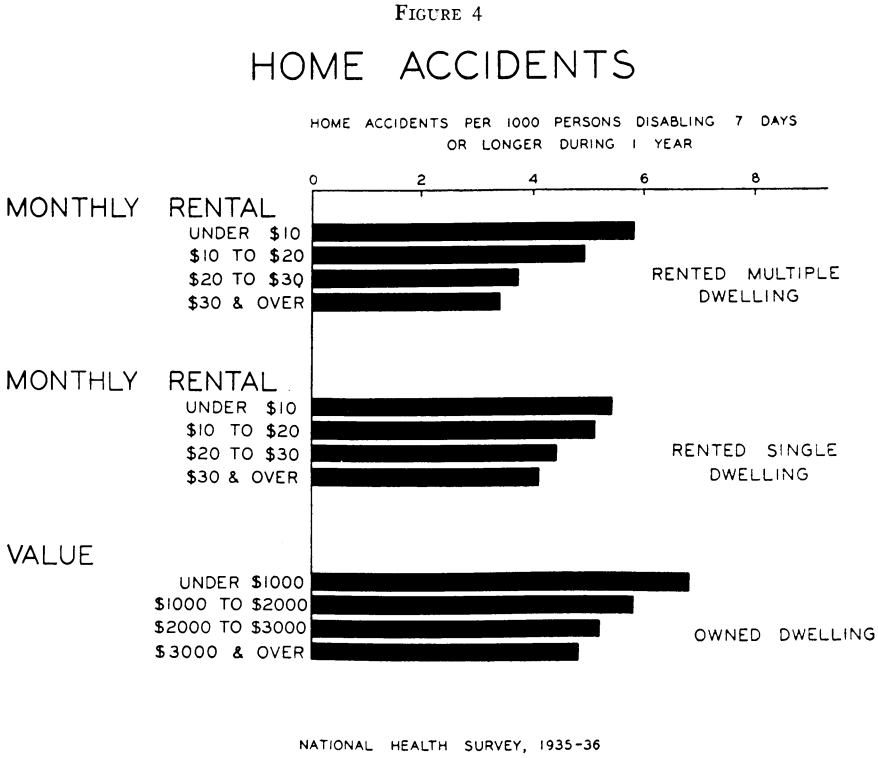
The diseases have been classed in three categories: indigestion and similar stomach ailments; diarrhea and enteritis; typhoid fever. The rates will be the annual frequency of cases disabling for a week or longer. It will be noted that the actual rates are given in the column of figures. As in previous charts, the relative excess in poor housing has been shown by the use of ratios—here the ratio of the rate in households without private inside flush toilets to that in households with such facilities.

The greatest excess appears for typhoid fever; but both of the other groups show a significant difference. It may be stated that a further group of diseases of the digestive system, not expected *a priori* to bear a relation to sanitary facilities, did not as a matter of fact show such a relation.

Although one is not able to say that all of the excess observed in this chart is due to the lack of private inside flush toilet *per se*, the data suggest that a large part of such excess may be.

Finally, as to home accidents. The illness record of the Health Survey included accidents which had caused disability for a week or more during the 12 months prior to the day of the visit, and the enumerator was required to determine for such accidents whether they occurred in the home. Some information on type of the accident (fall, burn, etc.) was also obtained. For the present discussion, I am confining attention to the frequency of such home accidents in relation to monthly rental

FIGURE 4



or (in the case of owner-occupied dwellings) estimated value. For the rented dwellings, distinction is made between multiple (i.e., apartments, flats, etc.) and single types (see Figure 4).

In each of the three groups, it is clear that as the rental or value of the house goes down, the rate of home accidents goes up. On the average it may be felt that the lower the rental or value, the more dilapidated the dwelling is likely to be, the darker the rooms, the greater the accident and fire hazard. The chart thus suggests that there is a greater accident hazard due to poor housing.

I recognize that these comparisons miss many fundamentals of the housing problem in its relation to health. We have no measures of the development of neuroses or inferiority complexes. The public health nurse will tell you of the difficulties of giving adequate care in substandard homes—equally true with respect to medical care in general, always a serious problem in low income families. Vast sociological questions untouched in the data I have presented impinge on health. The diminished opportunities of persons living in slums mean in part diminished opportunities for positive health. Furthermore, statistics are abstract and fail to depict clearly the tragic situation with respect to individual families. But perhaps enough has been said to point the way.

Despite the impossibility of assessing the precise effect of housing conditions *per se,* it seems to me that the National Health Survey data, as briefly summarized here, have established an important broad association between housing and health. Illness rates were found to be higher in congested households, especially for certain diagnoses; digestive diseases were substantially more frequent in households not having private

inside flush toilets; serious home accidents rose with drop in rental or value. What has been demonstrated most clearly is that this excess illness rate, in whatever degree it is to be ascribed to bad housing itself, occurs in the low-income, poorly housed populations who are least able to meet the burden of disease. For it is manifest that at the heart of the housing problem lies the economic problem. A large proportion of the population of this country are not receiving incomes adequate to insure a suitable standard of living. Housing is only one symptom of this maladjustment. It must be attacked as a symptom, but not without realizing that the underlying issue is that of securing a better distribution of income and greater security against the disastrous effects of depressions. Even in this critical period, the safeguarding and furthering of sound social values are important — perhaps more important than ever—both in the extension of health programs to the entire population and in the improvement of housing conditions.

REFERENCES

1. Basic Principles of Healthful Housing, 2nd ed., 1939, American Public Health Association, Committee on the Hygiene of Housing. 25 cents.

2. A previous article (Perrott, G. St. J., Tibbitts, C., and Britten, R. H. The National Health Survey: Scope and Method of the Nation-wide Canvass of Sickness in Relation to Its Social and Economic Setting, *Pub. Health Rep.*, 54:1663–1687, 1939) has already described the scope, method, and purpose of the National Health Survey, a project conducted by the U. S. Public Health Service during the winter of 1935–1936, in which some 2,500,000 persons in 700,000 households were covered by the house-to-house canvass method. (The National Health Survey also covered about 140,000 persons in 37,000 households in 23 rural areas.) The total urban surveyed population was so distributed as to give a sample which was, in general, representative of cities in the United States according to size and region. In large cities (100,000 population and over) the population to be canvassed was determined by a random selection of many small districts based on those used in the U. S. Census of 1930. In the smaller cities selected for study, the population was enumerated completely.

The Health Survey schedule is reproduced in the article just cited. The article also contains explanations of many of the terms employed in the present report, of which only the most pertinent will be repeated.

For data classified by city, *see* Adequacy of Urban Housing in the United States as Measured by Degree of Crowding and Type of Sanitary Facilities. National Health Survey, Preliminary Reports, Sickness and Medical Care Series, *Bull.* No. 5, Division of Public Health Methods, National Institute of Health, U. S. Public Health Service, Washington, 1938.

See also Britten, R. H., Brown, J. E., and Altman, I. Certain Characteristics of Urban Housing and Their Relation to Illness and Accidents: Summary of Findings of the National Health Survey. *Milbank Memorial Fund Quarterly,* 18:91–113 (Apr.), 1940. Reprinted in *Housing for Health,* June, 1941.

A detailed description of the characteristics of the health survey population with respect to crowding will be found in Britten, R. H., and Brown, J. E. Urban Housing and Crowding: Relation to Certain Population Characteristics as Indicated by National Health Survey Data. *Pub. Health Bull.* No. 261. U. S. Government Printing Office, 1941.

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3. Rates are adjusted to a standard age and size of household composition.