RESIDENCE HISTORIES OF DECEASED PERSONS[1]

MONROE G. SIRKEN, WILLIAM HAENSZEL, AND JAMES W. PIFER[2]

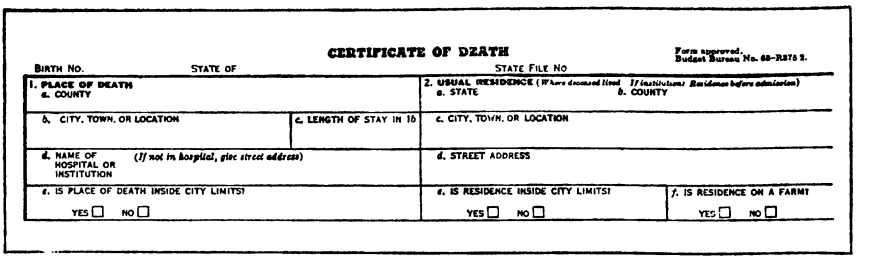
INTRODUCTION

INFORMATION pertaining to the distribution of deaths by minor political subdivisions of states has always assumed major significance in national mortality tabulations. Up to about twenty years ago, deaths were allocated on a *de facto* basis according to place of occurrence. This method of allocation became increasingly inadequate with the growing trend toward hospital care, and the increasing number of deaths occurring in hospitals. Consequently, in recent years deaths have been allocated, with a few exceptions, on a *de jure* basis according to the usual place of residence of the deceased person as reported on the death certificate.

A primary consideration in allocating deaths on a *de jure* basis was to achieve comparability with the residence allocation of the population in decennial censuses. When both deaths and the living population were assigned on a consistent basis, it became more meaningful to compute mortality rates for geographic divisions, states, and minor political subdivisions of states. Mortality tabulations based on the *de jure* method of allocating deaths to places of residence do not serve all uses being made of them equally well. In epidemiologic studies of infectious diseases, for example, the place where the disease was contracted is more relevant than the usual place of residence of the person at the time of death. Even if deaths caused by infectious diseases could be allocated on this basis, however, there would remain the difficult problem of ascertaining the popula-

[1] This paper was read in Providence, Rhode Island, on April 26, 1959 at the annual meeting of the Population Association of America.

[2] Dr. Sirken is Chief, and Mr. Pifer is statistician, Actuarial Analysis and Survey Methods Section, National Office of Vital Statistics. Mr. Haenszel is Associate Chief, Biometry Branch, National Cancer Institute.



CERTIFICATE OF DEATH

Form approved. Budget Bureau No. 68-R376 3.

BIRTH NO. STATE OF STATE FILE NO

1. PLACE OF DEATH a. COUNTY		2. USUAL RESIDENCE (Where deceased lived. If institution: Residence before admission) a. STATE b. COUNTY	
b. CITY, TOWN, OR LOCATION	c. LENGTH OF STAY IN 10	c. CITY, TOWN, OR LOCATION	
d. NAME OF HOSPITAL OR INSTITUTION (If not in hospital, give street address)		d. STREET ADDRESS	
e. IS PLACE OF DEATH INSIDE CITY LIMITS? YES ☐ NO ☐		e. IS RESIDENCE INSIDE CITY LIMITS? YES ☐ NO ☐	f. IS RESIDENCE ON A FARM? YES ☐ NO ☐

Fig. 1. Residence information reported on the 1956 revision of the standard certificate of death.

tion exposed to risk which would be needed in order to compute mortality rates.

In epidemiologic studies of diseases characterized by long latent periods preceding their clinical detection, information about the places where the deceased person resided for substantial periods during his lifetime is more relevant than information regarding his usual place of residence at time of death. In view of the highly mobile character of the United States population, there is a question whether residence tabulations based on *de jure* allocations of deceased persons according to the usual residence at death are adequate for epidemiologic studies of chronic diseases. One might ask the following questions about the usual place of residence at death: How permanent is it? How descriptive is it of the residence history of the deceased person? How do population groups compare in terms of the length of stay in the usual place of residence at death? This paper, based upon lifetime residence history reports of deceased persons, will provide tentative answers to these questions.

The standard certificate of death currently in use in the United States identifies the place in which the death occurred and the decedent's usual place of residence. (Figure 1.) Length of stay in the place of death is reported, but this information is not available for the usual place of residence. Consequently, complete lifetime residence histories would be available from death certificates only for decedents who had died in the same city, town, or rural place in which they had lived their entire lives.

Since residence histories are not reported on the death certificate, a pilot study, undertaken in the State of Pennsylvania, was used to (1) develop methods for the collection and analyses of residence data, and (2) obtain preliminary information for evaluating the limitations of the *de jure* basis of allocating deaths from the residence history viewpoint.

This survey, undertaken cooperatively by the Pennsylvania Department of Health and the United States Public Health Service, served primarily as a pilot study for a national epidemiologic investigation of lung cancer deaths. In addition to lifetime residence histories, information was collected concerning the smoking habits and occupation histories of deceased persons.

Survey Methods

Lifetime residence histories for a sample of about 1,700 deaths were collected by mail survey from family informants identified on death certificates. The deaths were selected with known probabilities from those registered in the vital statistics office of the Pennsylvania Department of Health during a three-month period, August through October, 1956. The sample consisted of all lung cancer deaths (about 600), and about ten per cent of the deaths attributed to other causes. Deaths at ages below 20 years, and about 10 per cent of the deaths at older ages which were attributed to such causes as accidents, poisonings, and homicides were eliminated from the sample.

Personal interviews were conducted in Standard Metropolitan Areas (SMA's) with family informants for a subsample of 400 decedents. The interviews were undertaken either as a followup with nonrespondents to the mail survey or as a quality check on the information reported in the mail survey. Since better quality residence history information was collected by personal interview than by mail query, the results presented in this report are based entirely upon the former.

The residence history data collected in this study identified the usual place of residence of the decedent at death and listed

Description of Deaths in Personal Interview Subsample	Sample Size	Per Cent
Deaths In Personal Interview Survey	482	100
Deaths Included In Tabulations	349	72
Deaths Not Included In Tabulations	133	28
Personal Interview Not Attempted Because Informant Lived Outside Standard Metropolitan Area	48	10
Personal Interview Not Completed	34	7
Personal Interview Completed, But Incomplete Lifetime Residence History Obtained	51	11

Table 1. Deceased persons excluded from tabulations: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

in chronological order each prior place of residence where the deceased person had lived continuously for a period of at least one year. For each place of residence the following questions were asked:

A. What was his place of residence?
   a. Name of city, town, village, or rural place
   b. Name of county
   c. Name of state
B. Did he live inside the limits of this city, town, or village?
C. Did he live on a farm?
D. Did he live in (place entered in Aa) since birth?
E. When did he move to (place entered in Aa)?

There are certain limitations in the coverage of deaths in this study which may affect the reported findings. The findings are based on the residence histories of deaths allocated to nonfarm places in SMA's, which comprised about 80 per cent of the deaths in Pennsylvania during 1956. For various reasons (Table 1), residence histories were not completed or were incomplete for about 28 per cent of the sample deaths in SMA's and these were excluded from the tabulations.

The completeness of reporting of lifetime residence information varied according to the place of residence of the deceased person. (Table 2.) The proportion of reports covering the entire life was somewhat larger for decedents who lived in Philadelphia and Pittsburgh than for those who lived in places of

Period of Lifetime Covered	Total	Population Size of the Usual Place of Residence			
		1 Million or More	50,000–1,000,000	2,500–50,000 In SMA's	Rural Nonfarm In SMA's
Sample Size	400	130	92	94	84
Total (Per Cent)	100	100	100	100	100
Entire Life (Per Cent)	87	92	83	85	86
Not Entire Life	13	8	17	15	14
Less Than 20 Years	4	5	4	5	1
20 to 40 Years	5	2	8	5	7
40 Years or More	4	1	5	5	6

Table 2. Completeness of reporting lifetime residence history by population size of the usual place of residence: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

smaller size. This apparent differential in the quality of residence history reports probably results from the fact that decedents who resided in Philadelphia and Pittsburgh were less migratory than were those residing in smaller places.

The results presented in this paper are based upon complete residence histories collected by personal interviews with family informants for 349 decedents who resided in SMA's. The residence history tabulations were appropriately weighted to adjust for differential sampling rates used in the selection of deaths from lung cancer and deaths attributed to other causes, and for differential subsampling rates used in the selection of cases for personal interviews.

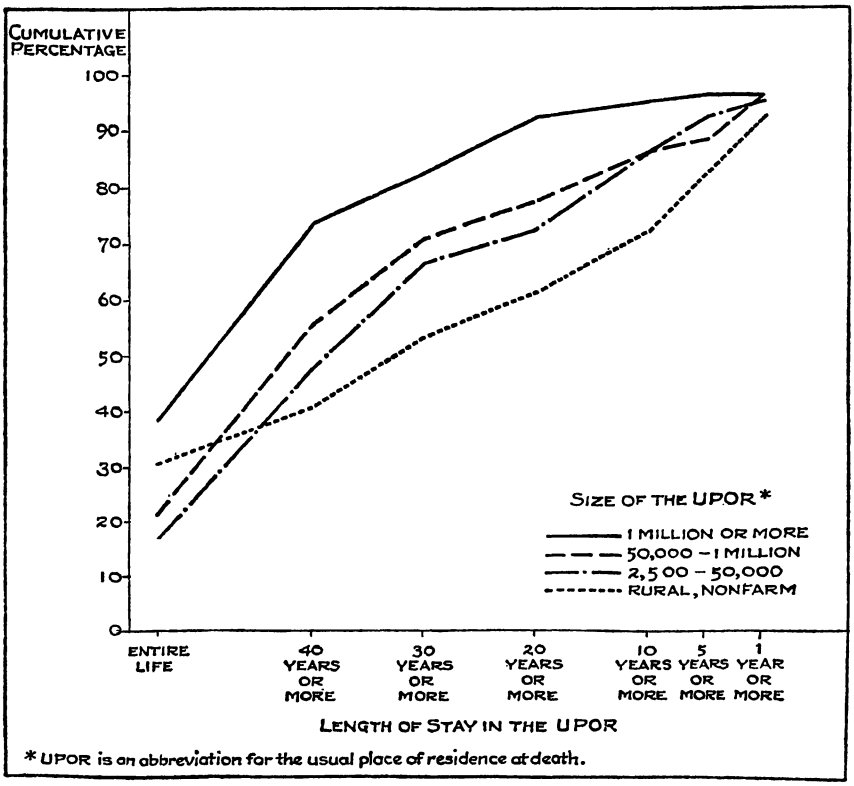
The validity of the reported residence histories was not evaluated because independent information from such criterion sources as birth or immigration records or census enumerations was not available. It seems likely that tabulations based upon the reported residence histories understate the migratory experience of deceased persons. Decedents excluded from the tabulations because the reported residence histories incompletely covered their lives invariably lived in at least two known places. Moreover, under-reporting of the number of residences due to memory bias is also a distinct possibility.

Findings

According to the lifetime residence history reports, 28 per cent of the decedents had lived their entire lives in the city, town, or rural place of their usual residence at death. The proportion who had lived in the usual place of residence at death, hereafter referred to as the UPOR, for a period of 40 years or longer was about 55 per cent. On the other hand, there was a substantial number of decedents who had resided in the UPOR for smaller periods of their lives. About 20 per cent had resided in the UPOR for periods of less than 20 years, and approximately 10 per cent had resided there for less than 5 years.

Almost two-fifths of the decedents whose UPOR was Philadelphia or Pittsburgh had lived their entire lives in these re-

Fig. 2. Cumulative percentage distribution of decedents by length of stay in, and size of the usual place of residence: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.



spective cities. By comparison, about one-fifth of the decedents living in urban places of less than one million population and about 30 per cent of those in rural nonfarm places in metropolitan areas had lived their entire lives in the UPOR.

There is an association between length of stay in the UPOR and population size of the UPOR. (Figure 2.) For decedents who did not live their entire lives in the UPOR, the length of stay in the UPOR appears to increase as the population size (based upon the 1950 Census) becomes larger. Virtually all decedents in Philadelphia and Pittsburgh had resided in their respective cities for at least 5 years. On the other hand, more than 15 per cent of those whose UPOR was in a rural nonfarm place had not lived in this place for 5 years. About 95 per cent of the decedents in the two largest cities, compared to about 60 per cent of those in rural nonfarm places, had lived in the UPOR for more than 20 years. Generally, the length of stay in an urban UPOR of less than 1 million population is about midway between that for resident deaths in rural nonfarm places and in the two largest metropolitan cities.

Length of stay in the UPOR varies both with the age and sex of the decedent. (Table 3.) The proportion of decedents who spent their entire lives in the UPOR is substantially smaller for older than for younger decedents, and this differential is more striking for females than for males. At ages below 65, there is no apparent sex differential in the length of

Table 3. Length of stay in the usual place of residence by age and sex of decedent: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

Length of Stay In the Usual Place of Residence	Total	Age and Sex of Decedent					
		20 to 65 Years of Age			65 Years and Older		
		Total	Male	Female	Total	Male	Female
Sample Size	349	162	108	54	187	102	85
Total (Per Cent)	100	100	100	100	100	100	100
Entire Life	28	46	45	45	19	24	11
Not Entire Life	72	54	55	55	81	76	89
20 Years or More	50	33	32	34	59	62	59
Less Than 20 Years	22	21	23	21	22	14	30

Number of Places of Residence	Total	Size of the Usual Place of Residence			
		1 Million or More	50,000–1,000,000	2,500–50,000	Rural, Nonfarm
Sample Size	349	120	76	80	73
Total (Per Cent)	100	100	100	100	100
UPOR Only	28	39	22	17	31
UPOR and One Other Place	28	40	30	22	13
UPOR and Two Other Places	24	12	30	33	28
UPOR and Three or More Other Places	20	9	18	28	28

Table 4. Number of places of residence during lifetime by size of the usual place of residence: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

stay in the UPOR, but at the older ages, the length of stay is of shorter duration for females than for males. For each age and sex grouping, the proportion who had lived in the UPOR their entire lives was greater for the resident deaths in the larger than in the smaller places.

It was noted earlier that about one-quarter of the decedents allocated to urban or rural nonfarm places in SMA's lived their entire lives in the UPOR. According to their lifetime residence histories, about one-quarter had lived in two places, and about the same fraction had lived in three places and in four or more places, respectively. (Table 4.) On the average, decedents lived in about 2.5 places during their lifetimes. Decedents in Philadelphia and Pittsburgh had lived in the fewest number of places.

On the average, decedents at ages 20 to 65 years had lived in slightly fewer than two places, compared with decedents at the older ages who resided in about 2.5 places during their lifetime. (Table 5.) At the younger ages, male decedents had lived in more places than female decedents, but at the older ages the reverse was true.

In many uses of mortality tabulations, the specific place to which the death is allocated is of secondary interest to its population size. For example, in studies of specific diseases, it is customary to examine mortality differentials with respect to

Number of Places of Residence	Total	Age and Sex of Decedent					
		20 to 65 Years of Age			65 Years and Older		
		Total	Male	Female	Total	Male	Female
Sample Size	349	162	108	54	187	102	85
Total (Per Cent)	100	100	100	100	100	100	100
UPOR Only	28	46	45	45	19	24	11
UPOR and One Other Place	28	17	12	26	33	38	32
UPOR and Two Other Places	24	22	20	23	26	23	29
UPOR and Three or More Other Places	20	15	23	6	22	15	28

Table 5. Number of places of residence during lifetime by age and sex of decedent: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

the population size of the place of residence. From this viewpoint, it is pertinent to consider the duration of residence in places of the same population size as the UPOR, hereafter referred to as the length of stay in PUPOR.

For purposes of measuring the length of stay in PUPOR, each place of residence reported in the lifetime residence history was coded to one of ten population size classes according to the 1950 Census.[3] For places having the same assigned code as the UPOR, the years of residence were summed to obtain the number of years the deceased person lived in the PUPOR.

Based upon the population size groupings used in this analysis, about 35 per cent of the decedents had lived in PUPOR their entire lives. This is an increase of about 5 per cent over the proportion of decedents who had lived in UPOR their entire lives. In general, differences between the distribution of deceased persons by length of stay in UPOR and PUPOR are very small. The relationship noted earlier between length of stay in UPOR and size of UPOR holds also for length of residence in PUPOR and size of UPOR. (Figure 3.)

[3] The ten population size classes were: (1) 1 million or more, (2) 500,000–1 million, (3) 100,000–500,000, (4) 50,000–100,000, (5) 2,500–50,000, metropolitan county, (6) 2,500–50,000, non-metropolitan county, (7) rural, nonfarm, metropolitan county, (8) rural, nonfarm, non-metropolitan county, (9) rural farm, and (10) foreign.

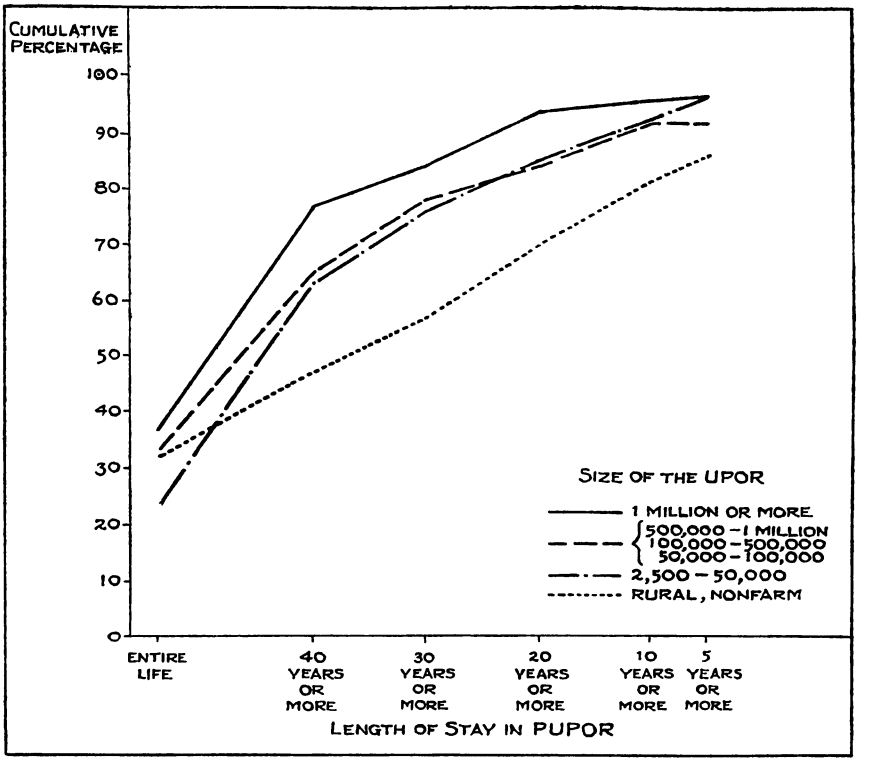


Fig. 3. Cumulative percentage distribution of decedents by length of stay in places of the population size of the usual place of residence: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

In general, the age and sex differentials in length of stay in UPOR which were demonstrated earlier are consistent for the length of stay in PUPOR, although the gradients are somewhat smaller. (Table 6.) Older recedents lived in PUPOR for shorter periods than younger decedents, and at the older ages, females lived in PUPOR for shorter periods than males.

How much more descriptive of the lifetime residence history of deceased persons would the UPOR become if places of short-term residence (other than the UPOR) were excluded from consideration? This question is relevant because for some uses of lifetime residence history material, places of short-term residence may be of negligible interest. For example, in studies relating chronic disease mortality and environmental factors, such as air pollution, there would be relatively little concern

Length of Stay in Places of the Population Size of the Usual Place of Residence	Total	Age and Sex of Decedent					
		20 to 65 Years of Age			65 Years and Older		
		Total	Male	Female	Total	Male	Female
Sample Size	349	162	108	54	187	102	85
Total (Per Cent)	100	100	100	100	100	100	100
Entire Life	34	46	46	47	24	29	20
Not Entire Life	66	54	54	53	76	71	80
20 Years or More	51	38	37	39	60	61	59
Less Than 20 Years	15	16	17	14	16	10	21

Table 6. Length of stay in places of the population size of the usual place of residence by age and sex of decedent: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

with the effects associated with residence places of short duration. With this thought in mind, the concept, "exposure places of residence" was developed. An exposure place of residence is defined as place(s) of the same population size in which the deceased lived for a period of at least 5 years during his lifetime. This concept is analogous to the concept of occupation exposure used in studies of differential occupation mortality. (1)

Grouping the places of residence reported for each decedent according to the 10 population size classes referred to earlier resulted in about two-fifth of the decedents being classified as having lived in only one exposure residence during their lifetimes. About two-fifths lived in two exposure places, and one-

Table 7. Number of exposure places by size of the usual place of residence: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

Number of Exposure Places	Total	Size of the Usual Place of Residence			
		1 Million or More	50,000–1,000,000	2,500–50,000	Rural, Nonfarm
Sample Size	349	120	76	80	73
Total (Per Cent)	100	100	100	100	100
One Exposure Place*	38	46	33	27	42
Two Exposure Places	45	42	47	54	38
Three or More Exposure Places	17	12	20	19	20

* Includes decedents with no exposure places who constituted less than 1 per cent of the cases.

fifth lived in three or more exposure places. It is noteworthy that the population size of the UPOR was not an exposure place of residence for about 5 to 10 per cent of decedents. For each size of UPOR, more than 50 per cent of the decedents lived in two or more exposure places. (Table 7.) Decedents whose usual place of residence was Philadelphia or Pittsburgh lived in fewer exposure places than did other decedents.

About one-half the decedents under age 65 lived in more than one exposure place as compared to about 70 per cent of the older decedents. (Table 8.) It will be noted, particularly at the older ages, that females lived in more exposure places than males.

Discussion of Findings

Most of the decedents who were allocated on a *de jure* basis to nonfarm places in Standard Metropolitan Areas in Pennsylvania had lived there for substantial periods—more than 50 per cent had lived there for periods of 40 years or longer, and about 75 per cent had lived there for 20 years or longer. Tabulations of the usual place of residence are inadequate substitutes, however, for tabulations of lifetime residence histories. About three-fourths of the decedents had spent part of their lives in one or more places other than the usual place of residence at death. About two-thirds of the decedents had spent substantial pe-

Table 8. Number of exposure places by age and sex of decedent: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

Number of Exposure Places	Total	Age and Sex of Decedent					
		20 to 65 Years of Age			65 Years and Older		
		Total	Male	Female	Total	Male	Female
Sample Size	349	162	108	54	187	102	85
Total (Per Cent)	100	100	100	100	100	100	100
One Exposure Place*	38	51	48	55	30	31	29
Two Exposure Places	45	36	41	30	50	54	47
Three or More Exposure Places	17	13	11	15	20	15	24

* Includes decedents with no exposure places who constituted less than 1 per cent of the cases.

riods of their lives in places of a different population size than the usual place of residence. Eliminating residences of the same population size in which the deceased person had resided for less than an exposure period of 5 years did not resolve the problem. Between 5 and 10 per cent of the deceased persons had not resided in places of the population size of the usual place of residence for an exposure period. About three-fifths of the decedents had lived in two or more different population size places for periods of 5 years or longer.

The adequacy of the usual place of residence at death for describing the lifetime residence history varied according to the population size of the usual place of residence. About two-fifths of the decedents in Philadelphia and Pittsburgh were lifetime residents of these two cities; in comparison, about one-fifth of the deceased persons in smaller size places had lived their entire lives in the UPOR. As would be expected from what is known about the growth of urban fringe areas, decedents in rural nonfarm places in Standard Metropolitan Areas had lived in the usual place of residence for the shortest periods of time—about 15 per cent of them having lived there for periods of less than 5 years. It is noteworthy that misstatements of residence information on the vital records and the resulting errors in place of residence allocation are most serious for these same urban fringe areas. (2)

The age factor itself offers a partial explanation for the finding that twice as many of the younger decedents had lived their entire lives in the usual place of residence than had older decedents. Immigration is another factor which helps to explain the age differential. About 20 to 25 per cent of the decedents at ages 65 and over were born in foreign countries, compared to about 10 to 15 per cent of the decedents at the younger ages.

Although sex differentials in the length of stay in the usual place of residence were negligible for decedents at ages 20 to 65 years, at the older ages the length of stay in the usual place of residence was substantially longer for males than for females. Since the average age at death for decedents 65 years and older

was greater for females, they had more years in which to migrate than had males. The sex difference in age at death resulted in a larger proportion of widows among the female decedents than widowers among the male decedents; widows and widowers, as compared to married and single persons, had shorter periods of stay in the usual place of residence. (Table 9.)

Marriage itself appears more likely to change the place of residence of females than of males. Thus, about 34 per cent of

Table 9. Length of stay in the usual place of residence by age, sex, and marital status of decedent: Deaths at ages 20 years and over in Pennsylvania Standard Metropolitan Areas, 1956.

Age, Sex, and Marital Status of Decedent	Sample Size	Total Per Cent	Length of Stay in the UPOR		
			Entire Life	20 Years Or More	Less Than 20 Years
20 Years and Older					
Male	210	100	32	50	18
Married	149	100	34	49	17
Single	20	100	51	31	18
Widowed	41	100	13	65	22
Female	139	100	21	52	27
Married	58	100	25	46	29
Single	20	100	48	33	19
Widowed	61	100	9	62	29
20 to 65 Years of Age					
Male	108	100	45	32	23
Married	85	100	41	35	24
Single	11	100	a	a	a
Widowed	12	100	a	a	a
Female	54	100	45	34	21
Married	33	100	34	38	28
Single	11	100	a	a	a
Widowed	10	100	a	a	a
65 Years or Older					
Male	102	100	24	62	14
Married	64	100	27	63	10
Single	9	100	a	a	a
Widowed	29	100	5	71	24
Female	85	100	11	59	30
Married	25	100	11	60	29
Single	9	100	a	a	a
Widowed	51	100	7	63	30

[a] The sample size was not large enough to warrant computation.

married males, as compared to 25 per cent of married females, had spent their entire lives in the UPOR. This sex differential was evident for both the younger and the older age groups, but was much more pronounced for decedents 65 years of age and older.

Summary and Conclusions

In vital statistics, deaths are allocated on a *de jure* basis according to the city, town, or rural place of residence of the deceased person as reported on the death certificate. Tabulations based upon this method of assignment are used for a wide variety of purposes. For some uses the adequacy of these tabulations depends upon how long the deceased person resided in the usual place of residence reported on the death certificate. Thus, it is important to evaluate residence data on the basis of how completely the usual place of residence reflects the residence history of the deceased person.

Lifetime residence histories for a sample of about 400 deaths, assigned on a *de jure* basis to nonfarm places in Standard Metropolitan Areas in Pennsylvania, were collected by means of a household survey of family informants identified on the death certificates. The survey demonstrated the feasibility of collecting lifetime residence histories of deceased persons. Although it seemed advisable in this report to confine the analysis to deaths for which information was collected by personal interviews, relaxation of the data specifications and improvements in self-enumeration techniques have made it possible to collect adequate residence histories by means of mail surveys of family informants. Thus, in a national lung cancer study adequate lifetime residence histories are being collected by mail query for about 80 per cent of the sample deaths.

Although approximately three-fourths of the decedents had resided in the usual place of residence for periods of 20 years or longer, only about one-fourth had resided there during their entire lives. Whether or not tabulations based upon these deaths would be adequate depends, of course, on the uses made

of them. Residence tabulations by population size were inadequate for purposes of defining the major population size places in which deceased persons had resided during their lifetimes. About three-fifths of the decedents had lived in more than one population size place for at least 5 years, and between 5 and 10 per cent of the decedents had resided in places of the same population size as the usual place of residence for less than 5 years.

It is possible to collect residence histories for a sample of the total population as well as for decedents, and to allocate the population and deaths on a common residence basis. This is currently being done in the national lung cancer survey mentioned earlier. In this collaborative study with the National Cancer Institute, the National Office of Vital Statistics is collecting data for a national sample of deaths and the Public Health Service has arranged for the Bureau of the Census to obtain similar data for the living population. By collecting residence history information from both sources, death rates may be computed in terms of types of lifetime residence patterns (e.g., entire life spent in one population size place or in combinations of two or more population size places).

At present, residence histories are not reported on the standard death certificate. Since it would be impractical to collect this information on the death record, a study based upon a sample of death certificates involving a small number of deaths would provide a more efficient method for collecting data needed for special purposes. On the other hand, it might be well to reconsider the desirability of adding an item concerning the length of stay in the usual place of residence at the next revision of the standard death certificate. This information is currently being reported on the death certificates in several registration areas. By including the item on the death record, it is possible to screen the deceased persons who resided in the usual place of residence for extremely short periods as well as those who resided there during their entire lives.

It was not within the scope of this report to evaluate national

tabulations of residence derived from *de jure* allocations of the place of residence at death. Whether or not differentials in the length of stay in the usual place of residence in terms of age, sex, and population size of place of residence as reported here apply to deaths other than those allocated to nonfarm places in Standard Metropolitan Areas in Pennsylvania during 1956 remains to be tested. The results, however, appear to indicate both the need for and the feasibility of conducting further studies of this type on a wider geographic basis.

More work is needed in developing methods for quantifying lifetime residence histories. Some methods for measuring lifetime residence history data as they relate to the usual place of residence were explored in this study. Quantification of lifetime residence histories in terms of a series of "residence moves" would appear to offer demographers unusual data for migration studies.

Glossary of Terms

1. *Lifetime Residence History:* The lifetime residence history of a deceased person included the usual place of residence at death and a chronological listing of each prior city, town, and rural place in which he lived continuously for one year or longer during his lifetime. It also included the length of stay in each place.

2. *Usual Place of Residence (UPOR):* The city, town, or rural place to which the death was allocated on a *de jure* basis according to the place of residence as reported on the death certificate defined the UPOR.

3. *Population Size of The Usual Place of Residence (PUPOR):* The number of years of residence that the deceased person lived in places coded to the same population size class as his UPOR was summed to obtain the number of years he lived in the PUPOR. Each place of residence reported in the lifetime residence history was assigned a population size class according to the 1950 Census as follows:

1 million or more
500,000–1 million
100,000–500,000

50,000–100,000
2,500–50,000, metropolitan county
2,500–50,000, non-metropolitan county
Rural, nonfarm, metropolitan county
Rural, nonfarm, non-metropolitan county
Rural, farm
Foreign

4. *Exposure Place of Residence:* An exposure place of residence is a place or a combination of places of residence in the same population size class (see above) in which the deceased person lived for at least five years.

References

1. Buechley, R., Dunn, J. E., Linden, G., Breslow, L.: Death Certificate Statement of Occupation: Its Usefulness in Comparing Mortalities, *Public Health Reports,* November, 1956, Vol. 71, No. 11, pp. 1105–1111.

2. National Office of Vital Statistics, *Vital Statistics of the United States,* 1950, Vol. I, pp. 36–39.