Reported Incidence of Blindness in Selected States in 1962

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THERE has been a continuing need for reliable statistics on the number and characteristics of the blind and severely visually impaired population of the United States. This is evidenced by the repeated attempts to obtain such data in each of the 11 decennial censuses from 1830 through 1930 and in the various national health surveys since 1935. Based as they were on family interviews, these sources could not provide information on clinically verified blindness. Problems in definition and enumeration led to statistics which were inaccurate, incomplete, or of limited value.

A summary of these attempts to obtain statistics on the nation's blind population and the limitations of the resulting data has been reported elsewhere (*1*). It will suffice here to note that the U.S. Bureau of the Census, in its report on the 1930 Census of the Blind, stated that "enumeration of the blind . . . has doubtless always been more or less inaccurate and incomplete" (*2*). Probably the most widely used estimates of blindness prevalence in the United States were those prepared by Hurlin (*3*, *4*) for 1952 and 1960, utilizing the North Carolina Register of the Blind.

Until 1962, when the Model Reporting Area for Blindness Statistics (MRA) was developed, all efforts to obtain national estimates of the blind population apparently were limited to prevalence. We are not aware of any other direct and concerted efforts which may have been made to obtain national estimates of the incidence of blindness. A crude estimate of incidence, based on prevalence data, was made by Britten (*5*) in his analysis of the 1935–36 National Health Survey results.

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The Model Reporting Area

Recognizing the need for uniform and reliable statistics on the incidence, prevalence, and causes of blindness, the Biometrics Branch of the National Institute of Neurological Diseases and Blindness, Public Health Service, turned its attention to developing a program which would produce uniform and reliable statistics on this population group. With the support of various interested official and voluntary agencies, the Biometrics Branch organized the Model Reporting Area for Blindness Statistics in 1962.

The Model Reporting Area for Blindness Statistics is a voluntary association of States which maintain registers of persons with severe visual impairment. The basis for membership in the MRA is the maintenance, by a single State agency, of a statewide register of blind persons and the adherence to a specific set of standards. These standards include the adoption of a uniform definition of blindness, collection of specified information, annual updating of the register to reflect current status, adoption of the Standard Classification of Causes of Severe Vision Impairment and Blindness (prepared by the National Society for the Prevention of Blindness), and preparation of specified summary tabulations. In 1962 the Model Reporting Area included nine States comprising about 14

percent of the total U.S. population. The development and organization of the MRA has been described in detail (*1*).

The term "blindness" as used in this paper and by the Model Reporting Area includes severe vision impairment and is defined as follows: visual acuity of 20/200 or less in the better eye with best correction, or visual acuity of better than 20/200 if the widest diameter of the field of vision subtends an angle no greater than 20 degrees. Individuals with a progressive eye condition which does not yet meet this definition are excluded.

Our data are confined to the nine States comprising the Model Reporting Area in 1962: Connecticut, Kansas, Louisiana, Massachusetts, New Hampshire, New Jersey, North Carolina, Rhode Island, and Vermont. This report is a first attempt to provide statistics on reported incidence of blindness based on uniformly collected information in a number of States.

Certain cautions concerning these data should be emphasized. First, incidence data for the Model Reporting Area are based on reports of blindness to the respective State registers and must be termed "reported incidence" or "register additions." Although the completeness of reporting is unknown, each of the States has good rapport with the potential sources of report, such as ophthalmologists, optometrists, official and voluntary agencies, hospitals, and clinics. Completeness of reporting is believed, therefore, to be fairly high. However, to the extent that reporting is incomplete, the data presented in this paper would understate the incidence of diagnosed blindness.

Second, the statistics refer to all those who were first reported to be blind in 1962 and to readditions to the register. Readditions include new reports of blindness of persons who were previously removed from the register because of "recovered vision" and those previously removed because they had moved from the State.

Third, this report is confined to the nine States comprising the Model Reporting Area in 1962. Consequently, the data are not to be interpreted as representative per se of the entire country.

Finally, these data cover only a single year's experience and contain the limitations that may be inherent in a program in effect for such a short time. Both of these factors probably contribute to interstate variation in the reported incidence.

Despite these limitations and cautions, the data are being presented because of the strong and continued expression of interest in information on the incidence of blindness. The authors feel that these statistics can have significant meaning to various individuals and agencies at this time if such information is used and interpreted in light of the limitations outlined. With further development and growth of the Model Reporting Area, better estimates of the incidence of blindness will become available.

Reported Incidence of Blindness

Additions to the blindness registers of the 9 MRA States during 1962 totaled 4,303 (table 1). Of these, 4,155 (or 97 percent) were first additions and 148 (or 3 percent) were readditions.

The crude rate for all additions to the MRA States was 16 per 100,000 population, ranging

Table 1. Estimated population, number of additions to blindness registers, crude and age-adjusted rates for all additions, by State, Model Reporting Area for Blindness Statistics, 1962

State	Estimated population as of July 1, 1962 (thousands) [1]	Additions in 1962	Rate per 100,000	
			Crude	Age-adjusted [2]
MRA total	26, 347	4, 303	16. 3	16. 2
Connecticut	2, 625	288	11. 0	10. 7
Kansas	2, 215	437	19. 7	17. 2
Louisiana	3, 371	499	14. 8	15. 8
Massachusetts	5, 188	947	18. 3	16. 1
New Hampshire	622	135	21. 7	18. 7
New Jersey	6, 357	745	11. 7	11. 6
North Carolina	4, 704	1, 036	22. 0	26. 2
Rhode Island	878	99	11. 3	10. 6
Vermont	387	117	30. 2	25. 5

[1] Source of population estimates: Bureau of the Census, Current Population Reports, Series P–25, No. 272, Sept. 20, 1963. The figures include persons in the Armed Forces stationed in each State and exclude Armed Forces overseas.

[2] Adjusted by the direct method. The standard population used was the U.S. population as enumerated in the 1960 census.

Table 2. All additions to blindness registers by age and sex, Model Reporting Area for Blindness Statistics, 1962

Age group (years)	Number			Rate per 100,000		
	Total	Male	Female	Total	Male	Female
MRA total	[1] 4, 303	2, 005	2, 294	[1] 16. 3	15. 5	17. 1
Under 5	139	81	58	4. 7	5. 4	4. 0
5–19	[2] 459	286	171	[2] 6. 5	7. 9	4. 9
20–44	456	276	180	5. 3	6. 6	4. 1
45–64	[3] 1, 154	574	579	[3] 21. 6	22. 3	21. 0
65–74	721	286	435	44. 6	39. 2	49. 0
75–84	801	330	471	118. 3	116. 6	119. 5
85 and over	427	121	306	302. 8	232. 7	343. 8
Unknown	[3] 146	51	94	----------	----------	----------

[1] Includes 4 persons with sex not stated.
[2] Includes 2 persons with sex not stated.
[3] Includes 1 person with sex not stated.

from 11 per 100,000 for Connecticut to 30 per 100,000 for Vermont. Reasons for the wide rate differences among States are not clear. Differences in reporting practices that may affect completeness of reporting and differences by age and race need to be studied.

When the crude rates were adjusted for differences in the age composition of the respective populations in the nine States, the interstate variation in reported incidence rates was affected only slightly. The age-adjusted rates ranged from 11 to 26 per 100,000 population.

It is unlikely that possible racial differences in reported blindness could alone account for the observed differences among the States. For example, the populations of Vermont and Connecticut are similarly constituted by race according to the 1960 census, 99.8 and 95.6 percent white respectively (*6*), yet their respective age-adjusted rates are among the highest and lowest of the nine Model Reporting Area States. Similarly, North Carolina, with 25 percent of its population nonwhite (*6*), had an age-adjusted rate almost the same as that of Vermont.

In table 2, all additions in 1962 for the nine MRA States combined are presented by age and sex. Rates were computed based on population estimates obtained as follows: For each State, the proportion in a given age-sex group of the total State population enumerated in the census on April 1, 1960, was applied to the total resident population in the State as estimated by the Census Bureau for July 1, 1962. Population totals were obtained by addition.

Rates for additions were lowest for the age groups under 45 years and increased sharply thereafter with the highest rate (about 300 per 100,000) observed for the 85-and-over age group. Only small differences were noted between the three youngest age groups.

Rates for each sex followed similar patterns. Those for males were higher than for females under 65 years of age and lower after that age. However, except for the 65–74 and the 85-and-over age groups, the rates did not differ greatly by sex. The higher rate for females in the 85-and-over age group (344 compared with 233 per 100,000) may in part be caused by an older female than male population in the last open-ended age category. The data do not appear to indicate any major sex difference in rates.

Table 3. All additions to blindness registers by degree of vision, Model Reporting Area for Blindness Statistics, 1962

Degree of vision	Number	Percent
MRA total	4, 303	100. 0
Absolute blindness	282	6. 6
Light perception or projection	393	9. 1
Less than 5/200	703	16. 3
5/200 but less than 10/200	445	10. 3
10/200 but less than 20/200	758	17. 6
20/200	1, 005	23. 4
Restricted field	246	5. 7
Unknown	471	10. 9

The 4,303 additions to the blindness registers of the 9 MRA States are shown by degree of vision in table 3. Of the total, 1,005 (23 percent) were reported to have had vision of precisely 20/200, the level at which blindness is defined. It is likely that many reports of 20/200 are for borderline cases and for those with less vision but for whom the examiner recorded only the upper limit of blindness. At the other extreme, 282 (7 percent) were totally blind. Those with central visual acuity better than 20/200, but with field restriction to 20 degrees or less, numbered 246 (6 percent). The specific degree of vision was unknown for 471 persons (11 percent) who were presumed blind by definition. This "unknown" group included individuals who could not be adequately examined because of age, infirmity, or other reasons, as well as those with no report of the actual visual acuity.

Summary

Reported incidence of blindness for the 9 States comprising the Model Reporting Area for Blindness Statistics was 16 per 100,000 population in 1962, the first year of the MRA's existence. Blindness is defined as visual acuity of 20/200 or less in the better eye with the best correction, or visual acuity of more than 20/200 if the widest diameter of the field of vision subtends an angle no greater than 20 degrees.

Among those added to the blindness register in 1962 there were no major differences by sex. Rates were consistently low at about 6 per 100,000 in age groups under 45 years and increased markedly thereafter to a rate of about 300 per 100,000 at 85 years or over. Approximately 7 percent of all registered blind during the year were totally blind, and about 6 percent had visual acuity better than 20/200 but with field of vision restricted to 20 degrees or less.

Caution is urged in the projection of the data to the national population because the information represented only 1 year's experience for States comprising only 14 percent of the total U.S. population.

REFERENCES

(*1*) Goldstein, H., and Goldberg, I. D.: The Model Reporting Area for Blindness Statistics. Sight-Saving Rev 32: 84–91, Summer 1962.

(*2*) U.S. Bureau of the Census: The blind and deaf-mutes in the United States, 1930. U.S. Government Printing Office, Washington, D.C., 1931.

(*3*) Hurlin, R. G.: Estimated prevalence of blindness in the United States. American Foundation for the Blind, New York, 1953.

(*4*) Hurlin, R. G.: Estimated prevalence of blindness in the United States and in individual States, 1960. Sight-Saving Rev 32: 4–12, Spring 1962.

(*5*) Britten, R. H.: Blindness as recorded in the National Health Survey: Amount, causes, and relation to certain social factors. Public Health Rep 56: 2191–2215 (1941).

(*6*) U.S. Bureau of the Census: United States census of population: 1960. General population characteristics, U.S. summary. Final Report PC(*1*)–1B. U.S. Government Printing Office, Washington, D.C., 1961.

National Stroke Congress Scheduled

A National Stroke Congress, covering the aspects of prevention, management, and rehabilitation, will be held October 29–31, 1964, in Chicago. Sponsors are the American Medical Association, the American Heart Association, the Heart Disease Control Program of the Public Health Service, and the Vocational Rehabilitation Administration. Program features include the problem and prevention of strokes, the care of the early stroke patient, the convalescent and continuing care of the stroke patient, and community programs for stroke.

Advance registration forms and program information may be obtained from Dr. Ralph E. De Forest, executive secretary, National Stroke Congress, 535 North Dearborn Street, Chicago, Ill., 60610.