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ACTIVITIES OF AN EXPERIMENTAL RURAL HEALTH PROGRAM
IN SIX COUNTIES DURING ITS FIRST FISCAL YEAR, 1942-43

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I SUMMARY STATEMENT

Plan of Operation

During the latter half of 1942 the Department of Agriculture, acting through its Interbureau Committee on Post-War Programs, sponsored health service associations among the farm population of six different rural counties. These associations were set up with the assistance of Farm Security Administration personnel, which also provided a certain amount of supervision and advice on their operation. The primary purpose of the undertaking was to assist local rural groups in working out plans for meeting their health problems, and to add to the fund of experience in the field of health service to rural people. The associations were formally incorporated with boards of directors in active charge of their operation. Membership was open to all residents in the counties, in which the associations were located, who secured most of their income from agricultural pursuits.

Members paid annual dues amounting to six per cent of their net cash income during 1941 and these payments were supplemented where necessary from Farm Security Administration funds in sufficient amount to bring the total payments per member to a sum ranging from \$50 to \$57 for the different associations. This membership fee was then distributed in definite amounts to funds designated for the different types of service to be provided. The fund for each service was then divided into twelve equal parts and one of these parts was used to pay the cost of that service each month.

For all services, except physicians and drug service in one county, payments were made on the basis of bills submitted for services rendered (the fee-for-service plan). In one county the physicians dispensed their own drugs and each one was paid for service and drugs on the basis of the number of families for whom he was recognized to be the family physician during the month, regardless of the amount of service rendered (the capitation plan).

The services offered were general practitioners' care, surgeons' and specialists' care, hospitalization, drug service, dental care and, in four associations, community nursing service. Due to the shortage of nurses, only three of the four associations were able to actually provide nursing service and they succeeded in doing it for only part of the year.

The membership of the different associations ranged from 461 families 2,015 persons to 2,379 families of 10,337 persons. Membership of the

six associations together totaled 8,141 families of 35,827 persons. The percentage which the membership in these associations constituted of the total rural-farm population of the counties in which they were located ranged from 31 to 69 per cent for the different associations and averaged 45 per cent for all associations. The average annual net cash income per member-family in 1941 is available for three of the associations. It was \$383, \$180 and \$114 per family respectively.

Volume of Service

The amount of medical care received by members of these associations was well above that found to have been received by the general rural population, according to the survey of the Committee on the Costs of Medical Care. Almost three times as many cases received physicians' care as received this service in the general rural population and a similar increase was noted in the number of cases hospitalized. The number of physicians' office and home calls was also considerably more than that for the general rural population, though the increase was less marked than the increase in the number of cases. This is to be expected since the additional cases receiving physicians' care would naturally be less severe cases requiring a proportionately smaller amount of care. It is significant that the increase in the number of calls was entirely in the field of office calls, the number of home calls being actually reduced by half - a natural effect of illness receiving earlier care. In spite of the number of hospital admissions being quite above that for the general rural population, the number of days of hospitalization received is slightly less. This is the only one of the rates, showing volume of physicians', surgeons', hospital, and dental service, which was higher for the general rural population than it was for the health associations. The number of health association members receiving surgical care was one and one-half times as high as that for the general rural population and the number of tonsillectomies was almost three times as high. Dental service rates also ranged from one and one-half to two times the rates for the general rural population.

The rates indicating the volume of the different kinds of service received by the members of each of the six associations varied considerably. For physicians' service, the association rates ranged from 1964 to 1022 cases and from 5495 to 1778 calls per thousand persons per year. The averages for all associations were 1408 cases and 2917 calls per thousand persons per year. A close correlation was noted between the rates indicating the number of cases served and the number of calls per case. The associations serving the smaller number of cases also rendered the smaller number of service that would be left. As the number of calls were reduced the proportion of home and hospital calls was found in general to increase, supporting the theory, proposed above, that for associations rendering a smaller volume of service the proportion of more severe cases is relatively high.

The monthly call rates for the different associations showed some unnatural fluctuation during the first month or two of operation, and for three associations they were affected by the collapse of the drug service. The average month-to-month rate for all six associations is, however, quite even, with a slight increase in volume apparent through the months from November, 1942 forward. This increase in the number of physicians' calls is accompanied by a slight decrease in the number of cases served, resulting in a rise in the number of calls per case for all six associations from 1.85 in September, 1942 to 2.49 in August, 1943. This trend characterized the experience of each of the six associations. The proportion of the total volume of calls which were home calls was found to reach its highest point during January, February, and March for four of the six associations.

On surgical cases the record is not complete, since some minor surgery was reported as general physicians' service. This incomplete record, however, gives a high case rate, averaging 70 cases per thousand persons and ranging from 196 to 36 cases for the different associations. Complete records have been secured on tonsilleotomies, appendectomies, and surgical operations on gynecological cases. Rates for these services for all associations were 34 cases per thousand persons per year for tonsilleotomies and 8.4 and 9.0 cases respectively for the other two services. This is two and a half times the tonsilleotomy rate for the general rural population and a fifty per cent increase over the prevailing rates for the other two types of service. The monthly surgical case rates for all associations, if tonsilleotomies are omitted, remain relatively constant through the year. The monthly variation in the tonsilleotomy rates conforms closely to the corresponding variation for the general population.

Hospital admissions for all associations averaged 110 per thousand persons per year with the rates of the different associations ranging from 177 to 59. These admissions constituted from 5.3 to 8.7 per cent of the total cases receiving physicians' and surgeons' care. The number of days of hospitalization per thousand persons per year averaged 424 for all associations and ranged from 727 to 266. This rate showed a tendency to decline slightly through the year with a rise during the winter months and a pronounced rise at the end of the year possibly associated with a corresponding rise in the number of surgical cases. This same pattern, noted in the monthly variation in the number of days of hospitalization used, is also evident in the monthly rates showing number of days of hospitalization per case.

Drug service gave the associations more difficulty than any other service offered. For two of the associations this service collapsed once during the year, and these two associations and also a third one had to require part payment of the cost of prescriptions by members in order to carry the service through the year. The effect of this requirement was evident in the reduced number of prescriptions used and it may also have reduced the volume of physicians' service, though

evidence on that point is not conclusive. The reductions in the number of prescriptions used for these three associations brought them to the point where they compared closely with the monthly rates for the other associations. This rate was between two and two and a half prescriptions per person per year. The charges per prescription ranged from 69 cents to \$1.19 for the different associations with 83 cents the average for all associations. The two associations which succeeded in carrying their drug programs through the year without adjustment showed the lowest average charges. They ran 69 and 71 cents per prescription. Examination of the monthly average charges per prescription for the different associations shows a slightly declining trend in the averages for these two associations, while for the other associations the rate tended to rise after the patient began to pay part of the charge.

The dental services offered under the program were limited. Emergency dental service was provided for all members and beyond this, prophylaxis, extractions and fillings were provided particularly for children and young people to the extent that the allowance of funds and the time of the cooperating dentists would permit. It was found that emergency service, as contrasted with service which might be postponed to some later date, was a much less dominant part of the dental service than it was of the other services offered by these associations. One of the associations provided no fillings but centered its attention on extractions and examinations including a large number of diagnostic x-rays, and this was the only association for which the charges submitted during the year exceeded the funds provided for their payment. The extraction rate for this association was 745 teeth per thousand persons per year. Extraction rates for the different associations ranged from this 745 down to 404 with an average of 571 for all associations. The rates for fillings in the different associations ranged from 528 to 282 per thousand persons per year with 368 the average for all associations. Total dental services including prophylaxis, examinations, treatments and other similar services in addition to extractions and fillings averaged 1,056 per thousand persons per year for all associations. Of the total number of cases receiving extractions 25 per cent were children under 15 years of age, and 43 per cent of the cases receiving fillings belonged in this age group. The trend in the monthly rates for both fillings and extractions was downward for all associations with a tendency toward a rise at the end of the year for several of them. The number of extractions was rather consistently in excess of fillings all through the year for all except one association which came to the end of the year with a ratio of 1.3 fillings per extraction. The ratio for the five associations providing fillings was seven-tenths of a filling per extraction.

Community nursing service was planned by four of the six associations as a part of their program. Only three of the four were, however, able to

secure nurses and they for only part of the year. Reports on nursing service were received from only one of the three. In this association the nurses collaborated with the nurses of the local county health unit and rendered a very satisfactory volume of the usual health unit services.

Charges and Payments

In all except one of the associations payment was made for all services rendered, except nursing, on the fee-for-service basis. Payment for nursing was made on the salary basis, and in one of the associations the physicians dispensed all drugs prescribed and received payment for their services and drugs on the capitation basis. For the services for which charges were submitted, the average charge per family was found to vary widely for the different associations. For physicians' service for which the variation was the broadest, it ranged from \$56.47 to \$20.66 per family. Variation in volume of service was a major factor in producing this variation in charge though the associations rendering the largest volume of service also had comparatively high fee rates. Payments averaging 55.9 per cent and ranging from 96 to 32.7 per cent were made on physicians' charges. Surgeons' and specialists' charges came next after physicians' in point of variation from the average. They averaged \$9.81 per family with a range from \$13.80 to \$7.03. Payments ranged from 96 to 43.5 per cent and averaged 67 per cent. Hospital charges averaged \$11.28 per family, drug charges \$10.18 and dentists' charges \$6.62. These charges were relatively uniform for all associations and payments on them averaged 88.1, 87.6 and 97.9 per cent respectively. It was found that the association which had a high average charge per family for one service was likely to have high averages for other services also with the result that the cumulative charge per family for all services in the different associations shows a wider variation than is found in the charges per family for any individual service. On the basis of this cumulative charge per family the five associations for which charges for all services were submitted fall into distinct groups, one having charges per family totaling over \$90 and the other having charges totaling only between \$50 and \$55.

Percentage distribution of charges by type of service for all associations shows 47.4 of the charges for physicians' service, approximately equal amounts around 13 or 14 per cent each for the three categories, surgical and specialists' services, hospitalization, and drugs, and ten per cent for dental service. Similar distributions shown in the reports of the Committee on the Costs of Medical Care and the Consumer Purchases Study are only roughly comparable to these for the five associations but tend to indicate that the five associations' charges for physicians' and surgeons' services may constitute a slightly larger proportion of their total than these charges constitute for the other two groups. This is consistent with the increased volume of physicians' and surgeons' service which the members of these associations are shown to have received.

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Disbursements of the six associations totaled \$416,367.57. The cost of administration averaged 6.6 per cent of this total for all associations, with the percentages for the different associations ranging from 5.5 to 10.7 per cent.

II ORGANIZATION AND MEMBERSHIP

Organization

The counties in which the Experimental Rural Health Program was to be carried on were chosen with the approval of the Interbureau Committee on Post-War Programs according to carefully developed criteria. The following are seven major points on which the counties were tested: (a)

1. Active County Agricultural (see below) Planning Committee
2. Known local interest in medical care needs
3. Typical rural county
4. Farm income approximately the same as in the State as a whole
5. Medical, dental and hospital facilities reasonably adequate and reasonably accessible to all farm families in county or area
6. Receptive attitude on part of professional groups
7. Desirable: Full-time local public health unit

On the basis of these criteria six counties were chosen in which health associations were set up. The names of these associations, the states in which they are located and the dates on which they began operation are shown below.

<u>Association</u>	<u>State</u>	<u>Activities started</u>
Cass County Rural Health Service	Texas	Sept. 1, 1942
Hamilton County Medical Aid Association	Nebraska	Sept. 1, 1942
Nevada County Rural Health Services Association, Inc.	Arkansas	Sept. 15, 1942
Newton County Rural Health Services Association, Inc.	Mississippi	Aug. 1, 1942
Walton County Agricultural Health Assn.	Georgia	Nov. 1, 1942
Wheeler County Rural Health Service	Texas	July 1, 1942

This report briefly describes the basis on which the associations operated and the amount of services of different types which were received by the members from month to month, through the year. It is based on information found in monthly reports of the different associations and is limited to an analysis of the gross volume of the different types of service received. A more detailed study, involving age, income and race of the members and illness diagnosis, is in progress.

- (a) Experimental Rural Health Program, Interbureau Coordinating Committee on Post-War Programs, U. S. Department of Agriculture, March, 1942.

Local initiative in forming these associations was provided by the County Agricultural Planning Committees. They brought together representative farmer groups who heard the proposal of the Interbureau Committee on Post-War Programs and finding it acceptable, formed associations, drew up their constitutions and by-laws, elected boards of directors and were formally incorporated according to the laws of their various states. The boards of directors then assumed active charge of the programs and carried them through the year.

Membership was open to all families and persons who secured most of their livelihood from agricultural pursuits. Each family was required to pay a fee equal to six per cent of its net cash income during 1941, with a minimum fee of five dollars for the Newton and Nevada County associations, six dollars for the Cass, Walton and Wheeler County associations and ten dollars for the Hamilton County association, and with a maximum fee equivalent to the over-all per family cost of the program as agreed upon in advance. These fees were supplemented from Farm Security Administration funds through grants to the associations in sufficient amounts to bring the total up to the full amount per member required to cover the cost of service. According to this plan only those members unable to pay the full cost benefited from the Farm Security Administration grant funds made available to the associations. The estimates on cost of service per family were made by the boards of directors after due consultation with the local professional groups to whom they would look for provision of the health services to be secured for their members. The amounts settled upon were \$50 for the Cass and Walton County associations, \$54 for the Nevada, Newton and Wheeler County associations and \$57 for the Hamilton County association.

Services Offered and Provision for Payment

The services offered by all associations were physicians' care, surgeons' and specialists' care, hospitalization, prescribed drugs, and limited dental service. Community nursing service was also included in the program of three associations. Specific limitations on the services varied for different associations but the tendency was to provide medical care for virtually all types of cases except definitely chronic conditions such as tuberculosis and cases which were either eligible for service through local health departments or covered by some form of insurance. Hospitalization was limited in most associations to 14 days per case. The trend with reference to dental care was to provide for all members prophylaxis and extractions necessary for removal of threat to health, and in addition amalgam and synthetic porcelain fillings for children. The distribution of membership fees to cover the cost of these various types of service in the different associations is shown in Table 1.

Table 1. Allocation of membership fee to different types of service

Service	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
Physicians'	\$16.00	\$22.00	\$16.00	\$16.00	\$17.00	\$18.00
Surgeons'-Specialists'	6.00	6.00	6.00	6.00	6.00	6.00
Hospital	10.00	10.00	10.00	10.00	8.00	12.00
Drug	5.00	5.00	7.00	7.00	6.00	6.00
Nursing	3.00	—	2.50	2.50	3.00	—
Dental	7.00	7.00	7.00	7.00	6.00	6.00
Contingent	1.00	3.00	2.50	2.50	—	3.00
Administration	2.00	4.00	3.00	3.00	4.00	3.00
Total	50.00	57.00	54.00	54.00	50.00	54.00

The funds allocated in this manner to the different types of services (except contingent and administration funds) were divided into 12 equal portions and one portion was made available for use each month through the year. For all services, except physicians' and drug services in Wheeler County, these monthly allotments were then used for the payment of bills submitted for professional services rendered during the month. If such funds were adequate to cover the bills in full, they were paid in full and surpluses were carried to the end of the year. If the total of bills exceeded the total of funds, the percentage relationship of each fund to the total of bills it was to cover was determined and that percentage was paid on all bills paid from that fund. The contingent fund was used in various ways to supplement the funds allotted for the different services. Balances unpaid at the end of each month were carried to the end of the year when surpluses were used to make further payment on them.

This arrangement applied for all services except physicians' and drug services for the Wheeler County association. In this association physicians accepted responsibility for provision of drugs as well as physicians' services and elected to be paid on the capitation plan. According to this plan, the funds for these two services were pooled and distributed at the end of each month on the basis of the number of members for whose care each physician was responsible during the month. The roster of members used for this purpose was secured by each member indicating his choice of physician as he was received into membership. Change of physician could be made at the end of any month by arrangement with the manager of the association.

Enrollment of Members

The membership of each association at the end of its fiscal year is shown in Table 2. The total number of families was 8,141, consisting of 35,827 persons.

Table 2. Membership at end of fiscal year

County	State	Fiscal Year Ended	Membership	
			Families	Persons
All associations			8141	35,827
Cass	Texas	Aug. 31, 1943	2379	10,337
Hamilton	Nebraska	Aug. 31	478	2,079
Nevada	Arkansas	Sept. 14	1437	6,350
Newton	Mississippi	July 31	1985	8,958
Walton	Georgia	Oct. 31	881	4,031
Wheeler	Texas	June 30	981	4,072

The Wheeler County association, as it approached the end of its fiscal year, found that it would not be able to begin a second year's operation immediately on the conclusion of its first year and in an effort to avoid suspending service, it invited its members to participate in an extension of its program for an additional period of two months along the same lines which had been followed during the previous year. A total of 715 of its 981 member-families accepted this invitation and paid a sixth of the membership fee they had paid during the first year for this additional two months' service.

Of the total of 8141 member-families reported by all associations at the end of their fiscal years, 7191 families or almost 90 per cent represent acquisitions in the course of their membership campaigns prior to beginning operation and during their first month of service. Table 3 shows the monthly membership changes of the various associations during the year.

Table 3. Monthly membership of each association

Month of operation	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	Number of member-families						
First	7191	2379	396	773	1963	714	966
Second	7680	2379	449	1126	1973	773	980
Third	7918	2379	457	1302	1982	816	980
Fourth	7966	2379	463	1344	1982	829	980
Fifth	8041	2379	468	1371	1983	860	980
Sixth	8083	2379	477	1389	1985	872	981
Seventh	8111	2379	477	1413	1985	876	981
Eighth	8129	2379	477	1428	1985	879	981
Ninth	8134	2379	477	1433	1985	881	981
Tenth	8140	2379	478	1436	1985	881	981
Eleventh	8141	2379	478	1437	1985	881	981
Twelfth	8141	2379	478	1437	1985	881	981

The record of the Cass County association shows evidence of an especially successful membership campaign prior to the beginning of operations. It secured a membership larger than that of any of the other five associations and had to refuse the applications of many more prospective members due to the fact that it had exhausted its grant of Federal funds used to match membership fees paid by members and thus limited the group from which members could be drawn to families who could pay the full membership fee. The Wheeler County association also exhausted its Federal funds allocated for matching membership fees paid by families in the course of its second month of operation and the membership of the Newton County association reached this point in its sixth month of operation. The other three associations did not have this check on their growth in membership. Two of these, the Hamilton and Walton County associations had, however, practically ceased adding new members at the end of their first six months of operation. The Nevada County association showed a slower rate of growth. During its year of operation it almost doubled the membership with which it began operation and 48 of the 58 families added during the latter half of the fiscal year were added by this association.

Only five terminations of membership were reported during the year. One of these was reported by the Newton County association, and two each by the Walton and Nevada County associations. In addition to these terminations, there have doubtless been a number of members who have moved from the areas served by the different associations without formal notification of such removal. No record is available of the total of such terminations.

Income Grouping of Members

Information on net cash income during the 1941 crop year of each applicant for membership was required by the associations for computation of payments by members. The net cash income was determined by having each member submit a schedule listing all sources of income and the amounts received, and all farm operating expenditures. The difference between these two totals then represented the net cash income. These schedules were reviewed by persons generally familiar with the families concerned, such as board members and the County Agricultural Agent.

The Hamilton, Nevada and Walton counties have classified their members by income groups on the basis of this information with the results shown in Table 4.

Table 4. Distribution of member-families by net cash income, 1941 in the Hamilton, Walton and Nevada County associations

Income Group	Hamilton		Walton		Income Group	Nevada	
	Number	Per cent	Number	Per cent		Number	Per cent
Under \$150	114	23.8	414	47.0	Under \$133.33	961	66.9
150 - 199	85	17.8	166	18.8	133.33 - 183.32	247	17.2
200 - 299	83	17.4	170	19.3	183.33 - 233.32	115	8.0
300 - 399	59	12.3	73	8.3	233.33 - 283.32	60	4.2
400 - 499	60	12.6	27	3.0	283.33 - 333.32	19	1.3
500 - 649	17	3.5	31	3.6	333.33 - 383.32	15	1.0
650 - 799	60	12.6			383.33 & over	20	1.4
800 & over							
Total	478	100.0	881	100.0		1437	100.0

The information supplied by these counties, giving details for the higher income groups, beyond that shown above, indicates an average net cash income of \$383 for the Hamilton County association, \$180 for the Walton County association and \$114 for the Nevada County association.

While definite information of this sort has not been received from the other three associations, some indication of the average income of their members is provided in their average payment per family on membership fees. These payments represented six per cent of the net cash income of the members during the 1941 crop year with a minimum set by each association representing the smallest amount to be accepted from any family regardless of income. This provision had the effect of producing an average payment per family slightly above six per cent of the average annual income. The average payments by families on membership fees for the different associations are listed below in order of size of payment. The minimum fee accepted from any family by each association is also shown.

Association	Payment per member	Minimum fee	Association	Payment per member	Minimum fee
Hamilton	\$25.47	\$10	Cass	\$9.50	\$6
Wheeler	21.63	6	Nevada	7.88	5
Walton	11.77	6	Newton	6.06	5

Percentage of Eligible Families Holding Membership

It is of interest to note the percentage which the membership of these associations constituted of the total rural-farm population of the counties in which they were located, (Table 5). Membership in

these associations is available to a slightly broader group than that included in the rural-farm classification of the Bureau of the Census. The usual qualification for membership was that the family earn more than half of its income from agricultural pursuits whereas the rural-farm population is limited to families living on farms. However, the alternative population figure available is that for the entire rural population and, of the two, the rural-farm population more nearly defines the group from which the membership of these associations was drawn.

Table 5. Percentage which members of each association represented of the total rural-farm population of the county in which it was located

Association	Membership		Rural-farm population (1940 census)	Per cent holding membership
	End of fiscal year	Families			Persons
All Assns.	8141	35,827	79,552	45.0
Cass	2379	10,337	22,701	45.5
Hamilton	478	2,079	6,060	34.3
Nevada	1437	6,350	13,796	46.0
Newton	1985	8,958	17,910	50.0
Walton	881	4,031	13,146	30.7
Wheeler	981	4,072	5,939	68.6

It is to be remembered in this connection that the percentage of the farm population covered by membership in these associations cannot in every case be considered a measure of the acceptance of the program by the farm groups in the various counties. In three of the associations - Cass, Wheeler and Newton Counties - the funds available for supplementing membership fee payments by members were exhausted and when that point was reached they were able to add only such new members as were able to pay the entire membership fee themselves. Among the six associations the lowest percentage of the rural-farm population holding membership was 31 per cent in Walton County, Georgia and the highest was 69 per cent in Wheeler County, Texas. The average for the six associations was 45 per cent.

III VOLUME OF SERVICE

Comparison with Service to General Rural Population

The volume of each of the different types of service received during the year, charges, payments, and certain significant rates for each association and for all associations taken together are shown in Table 25. Rates shown indicate that the volume of service is consistently high for all types of service. Comparison of the more significant rates with corresponding rates for the general rural population are shown in Table 6. The rates shown for the general rural population are based on the findings of the Committee on the Costs of Medical Care in its survey made in 1928-31. It seems evident after the points of difference have been taken into account, that the health association members received from 60 to 75 per cent more physicians' calls than the general rural population. Health association rates are also higher for all other types of service except hospitalization. Here the number of hospital admissions is higher than that for the general rural population but the number of days of hospitalization is slightly lower. The higher admission rate may be taken to be reasonably satisfactory evidence that cases needing hospital care at least secure admission to the hospital more readily than they did without the help of these associations and this is significant. Hospital care has been made available to them. If the total number of days of hospitalization used is less than among the general rural population it is due to earlier discharge from the hospital and it is a safe assumption that, having secured admission to a hospital, a case will not be dismissed until at least it is past its more critical stage.

It will be noted that the high hospital admission rate shown in Table 6 for the health associations is matched by a correspondingly high rate for cases receiving physicians' care. Both of these rates are almost three times the rates for the rural population and this is the widest contrast to be found among the two groups of rates shown in Table 6. The corresponding rates for days of hospitalization and physicians' calls among health association members differ much less widely from those for the general rural population. This is taken to indicate that under the health association program there has been a tendency to call on the doctor or seek admission to the hospital for much less severe illnesses or complaints. The result has been a marked increase in the number of cases for which

physicians' care or hospitalization or both have been requested but a marked decrease in the amount of service each case required. The significant averages indicated for health association cases are 2.0 office and home calls per physicians' case and 3.9 days of hospitalization per admission as compared with 3.0 office and home calls per physicians' case and 11 days of hospitalization per admission for the general rural population (a). Further support of the theory that higher case rates for physicians' and hospital service are due to less severe cases requesting service is found in the marked reduction in the number of physicians' home calls. The number of home calls received by health members is 208 per thousand persons as compared with 530 among the general rural population. The increase in volume of physicians' service has been entirely in the field of office calls. The percentage of office and home calls which were home calls was seven per cent for the health associations as compared with 34 per cent for the general rural population. The major significance of this trend in the health associations' program lies in its bringing less severe cases of illness under physicians' care -- with hospitalization where necessary -- and thus averting more severe illness. In addition to this there is also the conservation of the physicians' time indicated in this reduction in the number of home calls. This decrease in the home call rate over that for the general rural population should also allay the fears sometimes expressed that there will be a tendency on the part of the patients to call physicians to their homes unnecessarily if they do not have to pay an extra fee for such service.

Physicians' Services Received by Each Association

The rates shown in Table 6 represent the average of the experience

- (a) Collins, Selwyn D.: Variation in Hospitalization with Size of City, Family Income and Other Environmental Factors. Public Health Reports 57; 1635-1659 (October 30, 1942). This is the rate indicated by crude totals of admissions and days of hospitalization. Age - adjusted rates for admissions and days of hospitalization shown in Table 6 indicate an average of 12 days of hospitalization per case.

Table 6. Selected rates per thousand persons per year for services rendered by all associations and corresponding rates for the general rural population

Service	Health associations	General rural population
<u>Physicians' service</u>		
Cases	1409	526(a)
Calls, office and home	2821	1570(b)
" , office	2613	1040(b)
" , home	208	530(b)
<u>Surgical cases</u>		
Cases	70.4	47.7 (c)
Tonsillectomies	34.3	13.5 (c)
Appendectomies	8.4	5.2 (c)
Gynecological	9.0	5.5 (c)
<u>Hospital service</u>		
Admissions	110	42 (d)
Days hospitalized	424	505 (d)
<u>Dental services</u>		
Cases	294	159 (e)
Extractions	571	275 (e)
Fillings	368	249 (e)

- (a) Collins, Selwyn D.: Frequency and Volume of Doctor's Calls Among Males and Females in 9,000 Families, Based on Nation-Wide Periodic Canvasses, 1928-31. Public Health Reports 55: 1977-2020. P. 1985, Table 1. The rate shown is the rate for the general population, urban and rural and so is probably somewhat higher than the corresponding rate for the rural population only.
- (b) Hollingsworth, Helen; Klem, Margaret C.: Medical Care and Costs in Relation to Family Income. Social Security Board, Bureau Memorandum No. 51, March, 1943. Table 100. These rates are not entirely comparable to the corresponding health association rates, since they include calls of surgeons and specialists while the health association rates cover the services of general practitioners and only a limited amount of surgery. Correction for this factor would tend to decrease the general rural population rates and so increase the difference between them and the health association rates. On the other hand, the general rural population rates are limited to services to cases of illness while the health association rates include physical examinations, immunizations and other services not related to illness. Unpublished data of the Committee on the Costs of Medical Care, however, indicate that such services constitute only from five to nine per cent of the total volume of physicians' calls. They are, therefore, only a minor factor in accounting for the difference between these rates for the general rural population and the health associations

of all six health associations. Examination of the records of each of these associations shows considerable variation among them in the volume of different types of service received.

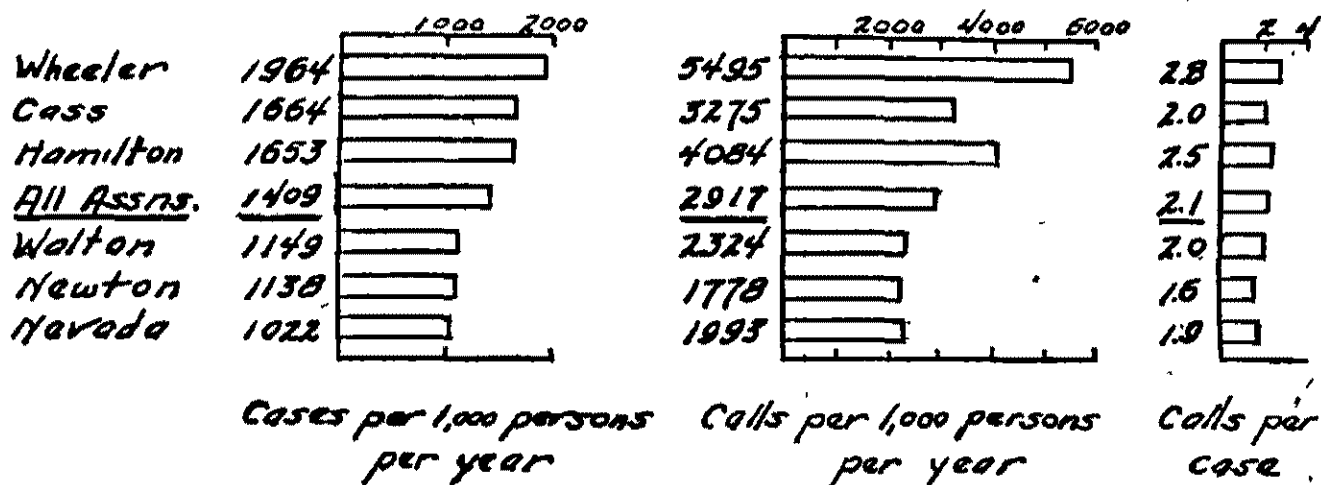


Fig. 1 Rates showing physicians' service for each association.

The rates per thousand persons per year indicated by the number of cases receiving physicians' care and the number of physicians' office, home and hospital calls they received in each association are shown in Figure 1. The call rates range from 5495 to 1993.

It should be pointed out in this connection that in one of the associations - in Wheeler County - the membership included a large group who were already accustomed to paying for their physicians' care on an annual pre-payment basis. For some time prior to the beginning of this program a group of physicians in this county had been receiving a set annual service fee, rather than a separate fee for each service, from such of their patients as wished to pay them in that manner, and when this county-wide association was formed, these physicians and their group of patients became a part of it. Due chiefly to this situation, the physicians' service in Wheeler County was rendered on the capitation basis, physicians being paid on the basis

Footnotes (Continued from page 17)

- (c) Collins, Selwyn D.: Frequency of Surgical Procedures Among 9,000 Families Based on Nation-Wide Periodic Canvasses 1928-31. Public Health Reports 53: 587-628 (April 22, 1938) Reprint No. 1926.
- (d) Same as Footnote (a), page 16.
- (e) Collins, Selwyn D.: Frequency of Dental Services Among 9,000 Families, Based on Nation-Wide Periodic Canvasses 1928-31 Public Health Reports 54: 629-657 (April 21, 1939).

of the number of families for whose care they accepted responsibility, regardless of the amount of service rendered. In the other five associations, physicians were paid on the customary fee-for-service basis. It is not possible to determine from information now available to what extent these factors are responsible for the large volume of physicians' service shown to have been received by the Wheeler County association membership.

Returning to our study of Figure 1, it will be noted that the number of physicians' cases and calls per thousand persons per year and the number of calls per case for each association are shown with the case rates arranged in descending order. With only two exceptions the call rates are shown to descend in the same order as the case rates but the decrease is more pronounced. The lowest case rate of 1022 cases is a little over half the highest rate of 1964 cases but the lowest call rate of 1993 cases is only slightly over a third of the highest rate of 5495 calls. This trend is also apparent in the rates showing the number of calls per case for the different associations. They decrease in somewhat the same order as the total volume of service, indicating that, among the associations, those rendering the smaller amount of physicians' service (1) had fewer cases receiving physicians' care and (2) those cases which did receive physicians' care received fewer calls. This second observation is rather surprising since it would be expected that as the number of cases receiving physicians' care is reduced, it would be the less severe cases that would be eliminated and that the remaining cases would consequently require more service per case.

Table 7. Number of physicians' office, home and hospital calls per thousand persons per year, and percentage distribution of these calls for each association

Assn.	Physicians' Calls							
	Number				Per cent			
	Total	Office	Home	Hospital	Total	Office	Home	Hospital
Wheeler	5495	5359	70	66	100.0	97.5	1.3	1.2
Hamilton	4084	3819	213	52	100.0	93.5	5.2	1.3
Cass	3275	2873	215	182	100.0	87.2	6.6	5.5
All assns.	2917	2613	208	96	100.0	89.6	7.1	3.3
Walton	2324	1805	463	56	100.0	77.7	19.9	2.4
Nevada	1993	1709	231	53	100.0	85.8	11.6	2.6
Newton	1778	1567	144	67	100.0	88.1	8.1	3.8

Another evidence of the severity of the illness receiving physicians' care is the proportion of home and hospital calls as compared with office calls. In Table 7 the number of each type of call per thousand persons per year and their percentage distribution is shown for each association, with the associations listed in order according to their total volume of physicians' calls. The record of hospital calls shown in Table 7 is incomplete as is evidenced by a comparison with rates covering hospital service shown in Table 14. Even the hospital admission rates (Table 14)

are in excess of the hospital call rates shown above (Table 7). This record in Table 7 includes all hospital calls for which physicians submitted charges. However, much of the physicians' service to hospitalized cases was rendered by hospital staff physicians and consequently no separate charge was made for it. There is also reason to believe that physicians, calling at hospitals to visit their patients, frequently did not submit charges for such calls. However, should the hospital call rate even equal the rate for days of hospitalization (Table 16) it would not be large as compared with the total of office and home calls and so would not greatly affect the general picture.

The two associations which have the highest rates for total calls also show the highest percentage of office calls, suggesting again that the need for home service is being averted by early attention at the physician's office. Among the other associations, the percentage of office calls ranges from 89.6 to 85.8 except for the Walton County association which reports only 78 per cent of its calls as office calls, and 20 per cent as home calls. This is almost twice as high as the corresponding home call rate for any other association. Examination of the monthly records of this association indicate that this relatively high rate persisted through the year, the lowest monthly rate being 353 home calls per thousand persons per year which was reported for January and the highest being 705, which was the rate reported for April. Even the high rate of 463 home calls per thousand persons per year which is shown as the annual rate of this association is, however, below the corresponding rate of 530 home calls shown in Table 6 for the general rural population.

Monthly Variations in Physicians' Service

In Figure 2, the annual rates for physicians' calls indicated by the number of calls received each month is shown for each association. The associations are divided into two groups for this purpose in order to facilitate tracing the line of each association. The solid line, representing the ratio for all six associations, is shown in both graphs to aid in comparison of lines of the associations shown in one graph with those shown in the other. The most prevalent characteristic of these lines is the rise between the first and second months for each county except Newton indicating that a much larger volume of physicians' service was received during the second month than during the first. This is probably due largely to the fact that the program was just getting into operation during the first month. Figures on membership at the beginning of the first month are not available but it is also likely that many of the first month's members had the service available for only a part of the month.

Another characteristic is the decrease in service during the third month as compared with the second month, which is shown for four of the six associations. This is interpreted as an evidence of a tendency among the members to try the program out. This tended to produce an abnormally high rate for the second month. For three of the six associations the decline in volume of physicians' service continued into the fourth month,

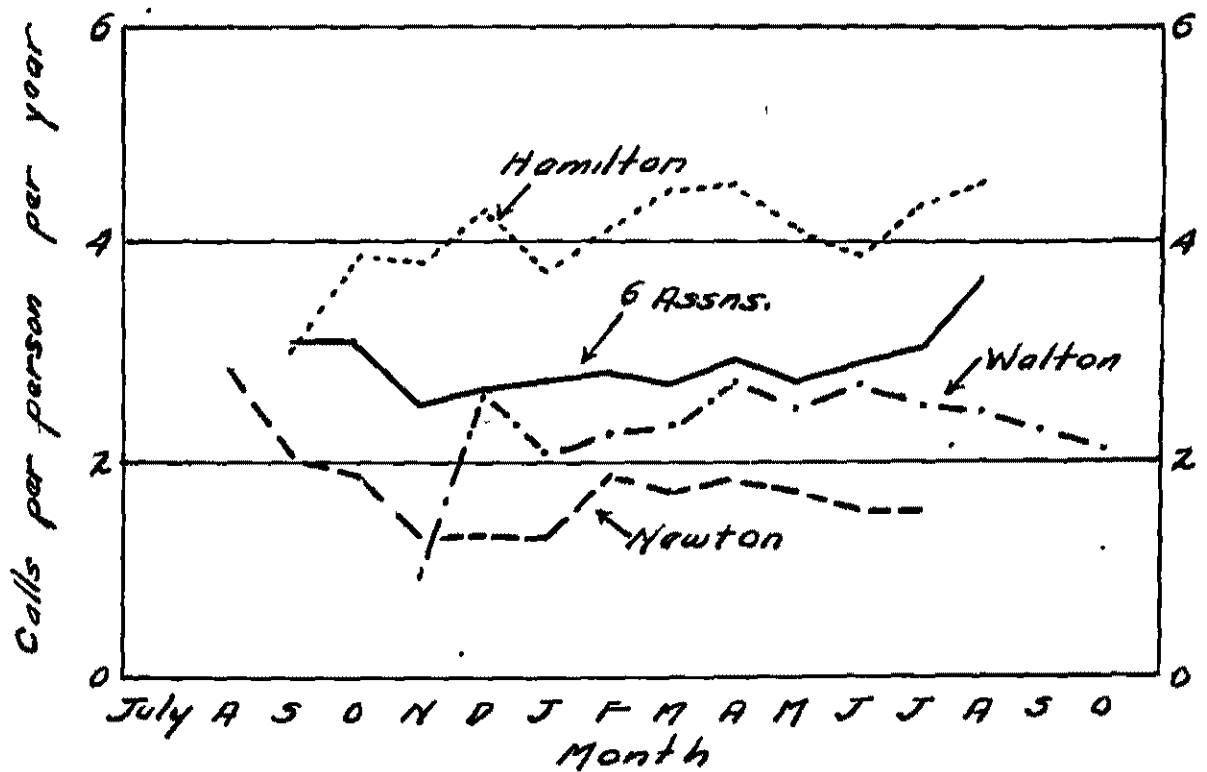
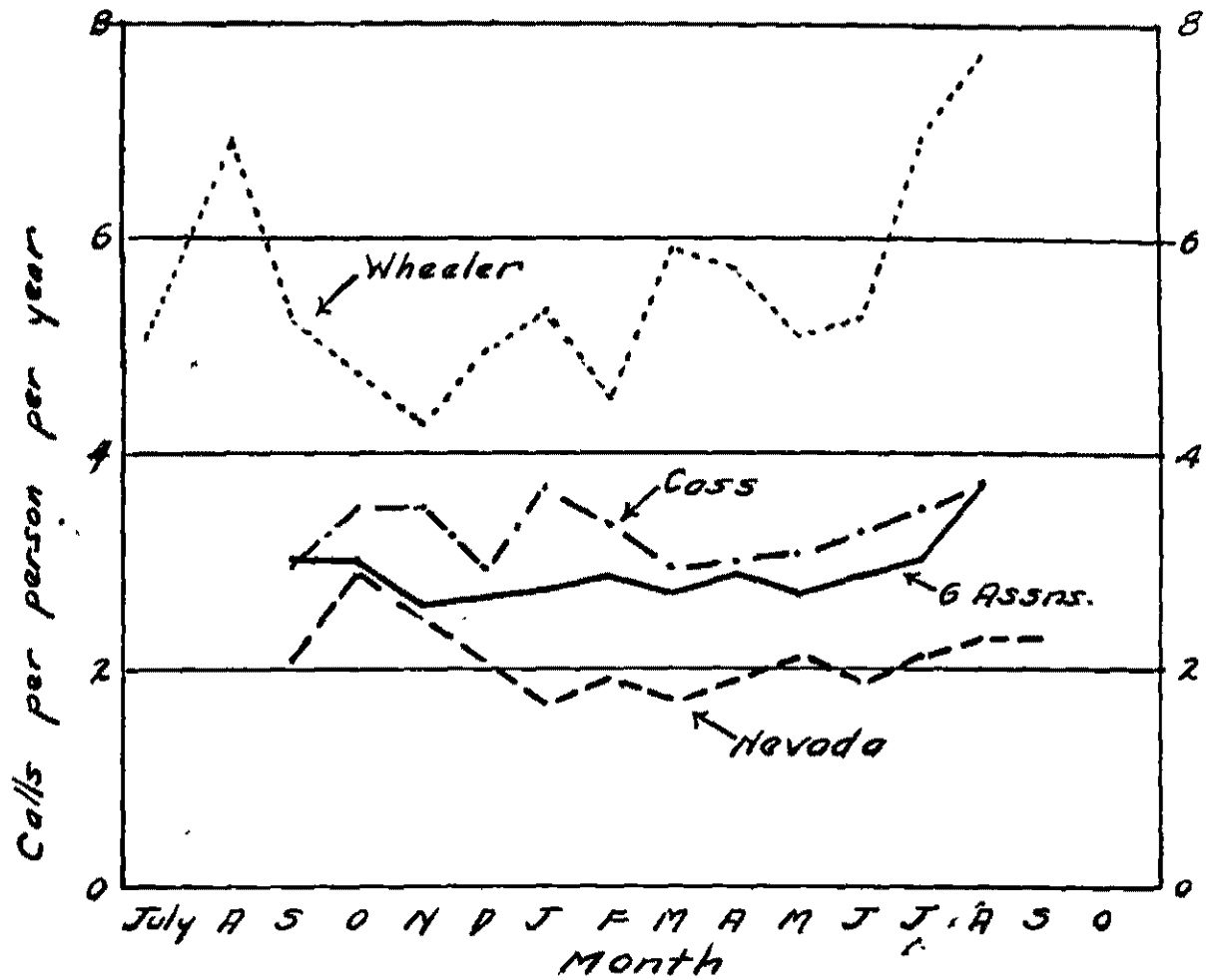


Fig. 2. Monthly rates for physicians' calls for each association

but for one of these three - the Newton County association - an extraneous factor in the form of difficulty with their drug service was introduced at this point and it is not certain to what extent the decline in the volume of physicians' service in October was due to that cause. The Nevada County association - the other association which shows a persistent decline in volume of service - also reported similar difficulty with its drug service in January. The drop in the Cass County association's rates for February and March may be attributed at least in part to its difficulty with its drug service during this period. Of the other three associations, Hamilton County shows a constant high volume of service through the winter except for a slight drop in January and then another drop during the spring months. A similar pattern is shown for the Wheeler County association during the winter and spring months with a winter drop in February.

In explanation of the abnormal rise in the rates of the Wheeler County association for July and August reference is made to the fact which has already been pointed out that this was a supplementary program added to this association's fiscal year which ended June 30 and that it was carried on with about 75 per cent of the original memberships. In the general discussion of membership, it was also pointed out that the membership of the Wheeler County association included a group which had been paying for their physicians' service on an annual fee basis prior to the formation of this association. It is understood that this group was among those who continued their membership and high service rates prevailing among them might be responsible for the rise shown for these two months.

The Walton County association after its first and second months' fluctuation, settled to a rather constant demand for physicians' service with a gradual rise to a high point in April and a drop from then on to the end of the program in September.

Table 8. Monthly rates for physicians' cases in terms of number of cases per thousand persons per year.

Month	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	Number of cases per thousand persons per year						
July '42	...	...	...	...	...	...	2374
August	...	...	...	...	1926	...	1968
September	1669	1569	1740	1411	1800	...	1720
October	1673	1862	1772	1911	1458	...	1370
November	1483	2044	1678	1569	867	654	1315
December	1422	1673	1801	1343	786	1375	2149
January '43	1385	1981	971	997	903	1070	1738
February	1365	1809	1714	846	1150	1062	1675
March	1358	1549	1634	1152	890	1254	2158
April	1272	1409	1946	807	868	1318	2112
May	1188	1356	1588	844	810	1330	1813
June	1375	1548	1638	647	1324	1387	1894
July	1295	1539	1478	861	884	1148	2565
August	1488	1607	1914	915	...	1163	2342
September	...	...	...	788	...	1093	...
October	...	...	...	...	...	862	...

Case rates, corresponding to the call rates on which Figure 2 is based, are shown in Table 8. The rates for all associations taken together show only a small variation from the average for the year of 1409 (Figure 1) though there is a decline during the spring months reaching a low point of 1188 cases per thousand persons per year for May. This reduced case rate for May is reflected in the records of four of the six associations, two of them showing their lowest rates for that month. In general the rates show trends similar to the call rates. In Figure 5 the case rates and corresponding call rates of four of the six associations have been sketched and in all four cases the lines show much the same variation through the year. For two of the associations - the Cass and Nevada County associations - a tendency for the distance between the two lines to increase is evident, indicating a rise in the ratio of calls to cases. This relationship is more clearly brought out in Table 9 showing the monthly averages of physicians' calls per case for each association. For most associations this table shows a gradual and rather consistent increase in the number of calls per case through the year. For all associations taken together it rose from 1.85 in September, the first month

Table 9. Monthly averages of physicians' calls per case for each association

Month	All	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	assns.	Number of calls per case					
July '42	...	...	...	...	...	...	1.76
August	...	...	...	...	1.46	...	3.48
September	1.85	1.84	1.75	1.44	1.16	...	3.12
October	1.84	1.89	2.22	1.42	1.28	...	3.43
November	1.74	1.69	2.28	1.55	1.56	1.52	3.21
December	1.85	1.70	2.34	1.55	1.68	1.89	2.32
January '43	1.99	1.85	3.90	1.64	1.50	1.90	3.06
February	2.08	1.82	2.40	2.28	1.69	2.11	2.71
March	2.05	1.87	2.70	1.54	1.94	1.84	2.75
April	2.27	2.13	2.33	2.34	2.07	2.11	2.73
May	2.34	2.28	2.45	2.47	2.10	1.86	2.84
June	2.05	2.12	2.38	2.94	1.17	2.01	2.75
July	2.33	2.33	2.98	2.43	1.76	2.19	2.67
August	2.49	2.30	2.40	2.44	...	2.09	3.27
September	...	...	...	2.81	...	2.20	...
October	...	...	...	...	...	2.41	...

when a majority of the associations were in operation, to 2.49 in the following August. The most pronounced consistent rise is shown for the Nevada County association which shows a rate of 1.44 calls per case for its first month of operation and 2.81 calls per case for its last month, with a peak rate of 2.94 calls per case in June.

In view of this trend toward an increase in the number of calls per case, which might be taken to indicate an increase in the severity of the average illness treated, it is of interest to note whether or not there is a related trend through the year toward an increase in the number of home calls in relation to office calls. The percentage of monthly totals of office and home calls which were home calls is shown in Table 10. For all associations taken together, this percentage is slightly higher during the final months of the year than it was for the first months, but this is not outstanding.

Table 10. Percentage of monthly totals of physicians' office and home calls which were home calls

Month	All	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	assns.	Percentages					
July	...	...	...	...	...	...	1.00
August	...	...	...	...	7.33	...	1.15
September	4.27	7.28	.48	8.21	5.29	...	.34
October	4.49	6.04	6.60	8.20	7.13	...	.43
November	6.32	5.25	5.55	8.39	11.28	26.42	.28
December	7.68	6.96	3.41	10.50	11.50	19.97	.88
January	8.81	8.90	5.79	16.64	12.47	17.71	.20
February	9.24	8.56	6.18	16.84	9.75	23.07	.49
March	9.90	10.29	11.04	17.78	11.24	16.85	2.14
April	9.07	7.09	5.84	10.46	12.22	26.14	2.39
May	7.43	6.33	5.53	9.63	6.47	13.97	3.48
June	7.74	6.40	4.95	14.42	7.29	21.79	.52
July	5.65	5.70	2.70	11.05	4.31	16.05	1.25
August	6.30	4.91	3.73	11.61	...	16.89	2.18
September	...	...	...	10.25	...	24.25	...
October	...	...	...	...	...	19.65	...

The most pronounced trend is the rise during the winter months followed by a decline during the spring to approximately the rate for the first months. This is characteristic of the rates for most of the associations taken separately, four of the six showing the highest percentage of home calls, for January, February, or March.

Surgical Services Received by Each Association

It has been impossible to fully dissociate surgery and specialists' services from general physicians' services and consequently the record on these special services is not complete. A separate fund was provided by each association to cover charges for surgeons' and specialists' services, and these services for which charges are paid from this fund have been definitely counted, but those for which payment was made from the physicians' fund have been counted with varying degrees of completeness in the different associations.

Even this incomplete record of surgical cases, however, shows a very high rate as compared with the corresponding rate for the general rural population. The rate per thousand persons per year for all associations is shown in Table 11 to be 70.4 as compared with a rate of 47.7 (Table 6) for the general rural population. The rates for the different associations range widely from 196 cases per thousand persons per year for the Hamilton County association to 35.9 cases for the Nevada County association. This rate of the Nevada County association is, however, the only

Table 11. Number of surgeons' and specialists' cases per thousand persons per year in each association

Service	All	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	assns.						
Number of cases per thousand persons per year							
All surgery	70.4	78.1	196.0	35.9	57.2	55.7	80.1
Tonsillectomies	34.3	42.7	78.4	11.4	34.5	20.7	36.4
Appendectomies	8.4	13.1	5.0	4.4	5.5	9.2	9.6
Gynecological	9.0	7.6	8.4	7.1	6.9	4.7	22.2
Other	18.7	14.7	104.2	13.0	10.2	21.1	11.9
Non-surgical Specialists	11.5	1.7	33.7	6.6	30.3	2.1	.9

one which falls below the rate of 48 cases for the general rural population. While it is felt, as has already been stated, that the records of surgical cases generally are not altogether complete, this criticism does not apply for the totals of tonsillectomies and appendectomies since these services are definitely considered surgical services and are certain to be consistently reported as such. Half of the surgical cases reported for all associations were tonsillectomies. The ratios for the different associations range from 60 per cent in the Newton County association to 32 per cent in the Nevada County association. The tonsillectomy rate for all associations was 34.3 per thousand persons per year which is more than two and a half times the rate of 14 for the general rural population (Table 6). The rates for the individual associations range from 78.4 for the Hamilton County association to 11.4 for the Nevada County association. It is natural that there should be an extraordinarily high rate for tonsillectomies due to the backlog of elective surgery of this type which exists especially among rural people. The wide variation in rates for the different associations is probably due quite as much to the varying limitations on service such as scarcity of surgeons, etc., as it is the variation in need for this service in the different associations.

The appendectomy rate for all associations taken together was 8.4 cases per thousand persons per year which is 50 per cent above the rate of 5.2 cases for the general rural population (Table 6). The rates for the different associations range from 13.1 cases for the Cass County association to 4.4 cases for the Nevada County association.

Surgery for gynecological conditions among women averaged 9.0 cases per thousand persons per year for all associations with the range for the different associations running from an extremely high rate of 22.2 cases for the Wheeler County association to 4.7 cases for the Walton County association. The comparable rate for the general rural population is 5.5 cases (Table 6). The high rate for the Wheeler County association is accounted for at least in part by a tendency on the part of this association to count cases for whom service at the time of obstetrical delivery included surgical repair of lesions sustained or other like service.

Information on other types of surgical operation is not available at this time but will be provided in a more detailed study now under way.

Monthly Variations in Surgical Services

The rates per thousand persons per year indicated by the surgical operations performed each month are shown in Table 12 to drop markedly during the winter and spring months. However, exclusion of tonsillectomies from the total rates indicates that they are almost entirely responsible for this variation, the rate for other operations remaining relatively constant through the year. The marked rise in August in the rate for

Table 12. Rates per thousand persons per year indicated by the number of tonsillectomies and other surgical operations performed each month during the year

Month	All surgery	Tonsillectomies	All surgery except tonsillectomies
September	113.2	85.0	28.2
October	78.3	45.9	32.4
November	66.5	35.0	31.5
December	44.9	19.7	25.2
January	50.3	15.2	35.1
February	52.4	18.9	33.5
March	47.5	17.0	30.5
April	65.2	23.0	42.2
May	50.2	20.5	29.7
June	71.2	39.2	32.0
July	82.2	32.6	49.6
August	127.2	60.0	67.2

other surgery as well as for tonsillectomies is possibly due to an effort prior to the end of the fiscal year to take care of various surgical cases which had not received earlier attention. Examination of the rates of the various associations on surgical cases for August shows that they are all well above the average rates of the same associations for the year, indicating that they all contribute toward elevating this August rate.

The variation in the monthly tonsillectomy rates for the different health associations is shown in Figure 3. For all associations except the one in Hamilton County the rate reached its lowest point during the winter months with considerably higher rates prevailing for the warmer months at the beginning and end of the fiscal year. In Table 13, a percentage distribution of all tonsillectomies performed in different months of the year in the six associations is compared with a similar distribution of tonsillectomies in the surgery of the general population, found in unpublished data of the Committee on the Costs of Medical Care. The exceedingly close similarity in the percentages shown for the different months

Table 13. Percentage of tonsillectomies done in each month of the year in Experimental Health Program and among the general population

Month	Six assns.	General population	Month	Six assns.	General population
January	4.6	3.3	July	14.6	12.2
February	4.1	5.5	August	20.6	20.3
March	5.6	5.6	September	11.1	10.8
April	5.0	4.8	October	8.5	7.5
May	9.5	6.9	November	4.8	7.2
June	7.9	10.3	December	5.7	5.7

indicates that the variation in the association rates from month to month can be accounted for largely by seasonal influences and that there is, therefore, no appreciable evidence of a tendency toward a reduction in their rates as the year has progressed. There was some expectation of such a reduction as the backlog of accumulated need for tonsillectomies was reduced, but apparently the work of this first year has not made sufficient headway in meeting this need to bring about such a reduction.

Hospital Services Received by Each Association

Significant rates covering hospital service for the various associations are shown in Table 14.

Table 14. Number of admissions and days of hospitalization per thousand persons per year, number of days of hospitalization per case, and percentage of physicians' and surgeons' cases hospitalized for each association

Association	Admission rates	Rates for days of hospitalization	Days per case	Per cent of attended cases hospitalized
All assns.	110	424	3.9	7.4
Cass	130	503	3.9	7.4
Hamilton	99	580	5.8	5.3
Nevada	59	266	4.5	5.6
Newton	102	297	2.9	8.5
Walton	76	305	4.0	6.3
Wheeler	177	727	4.1	8.7

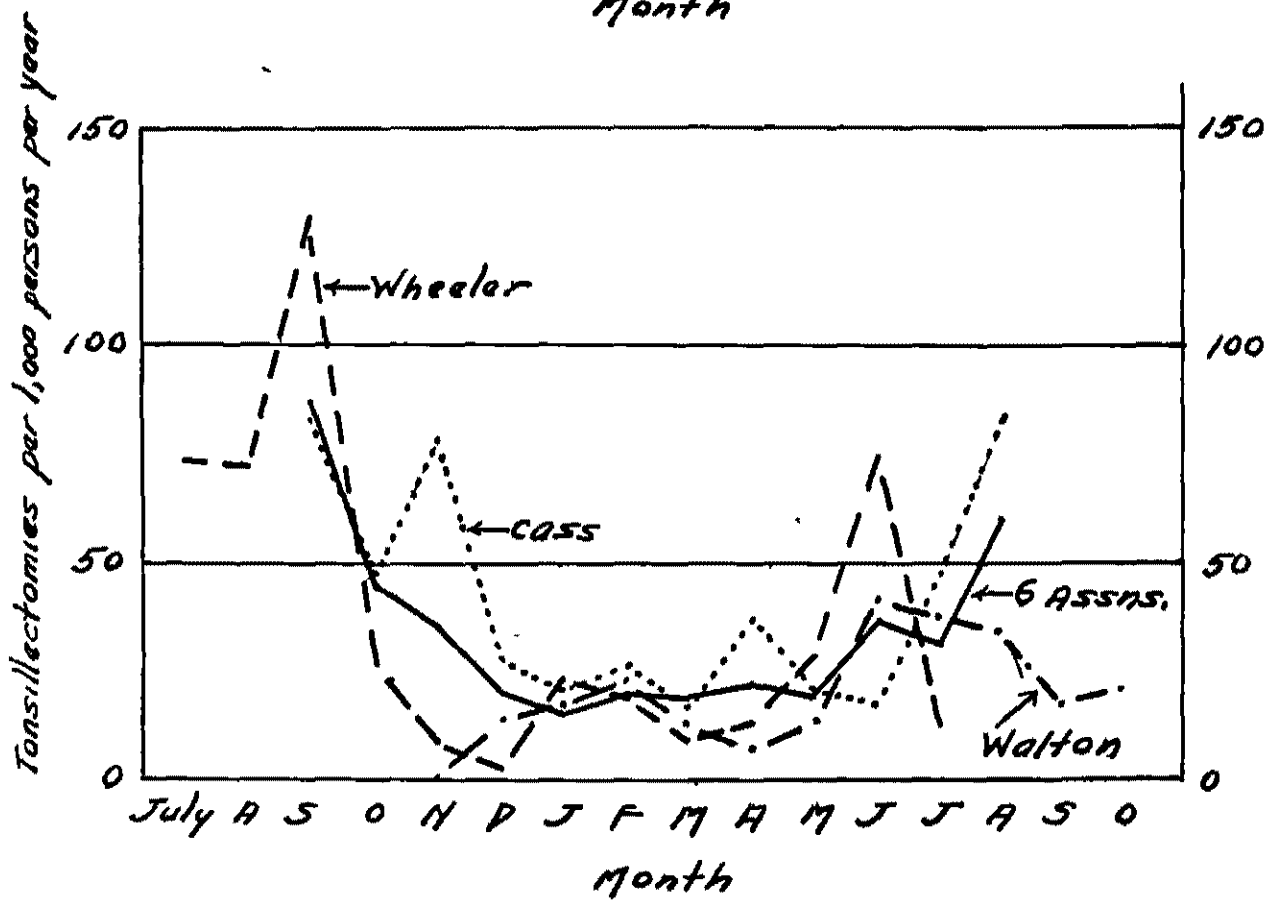
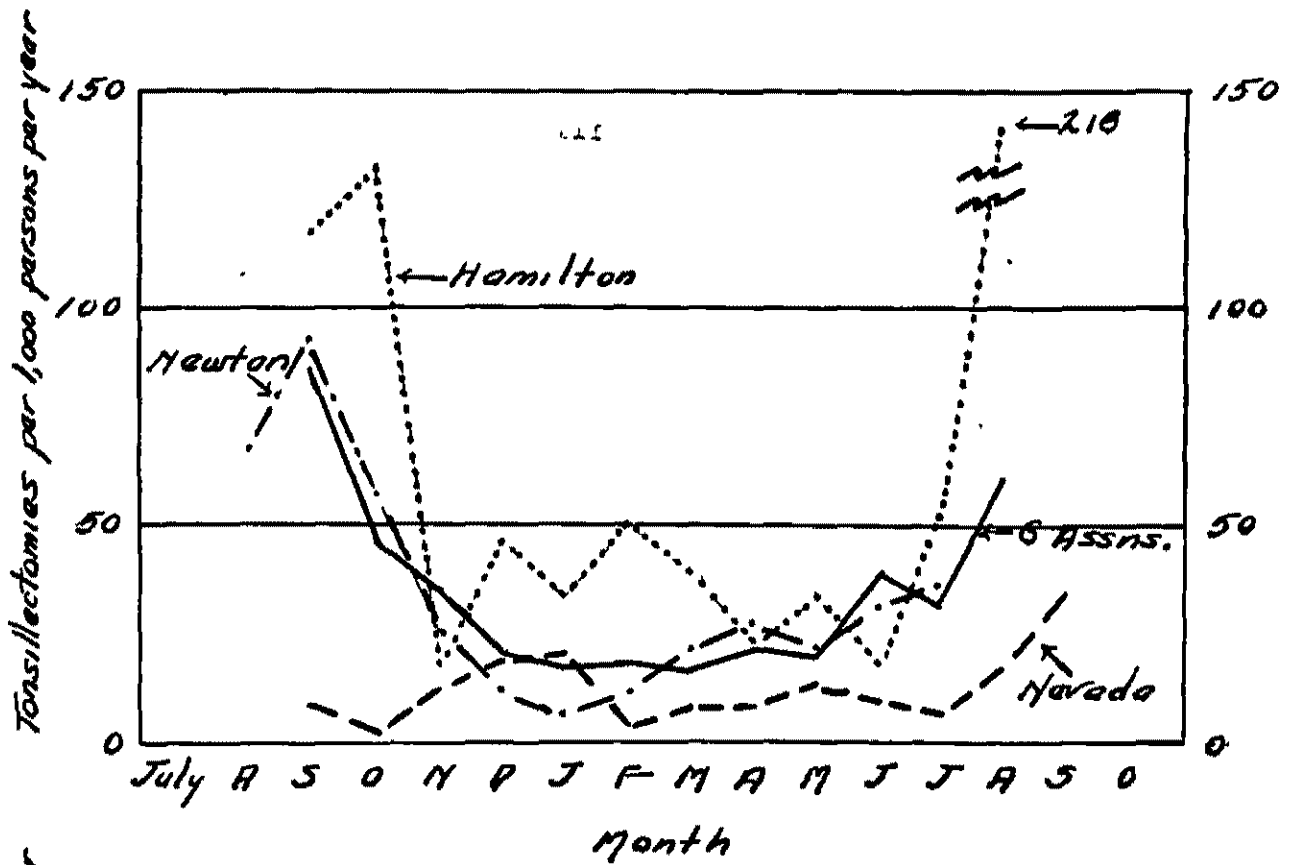


Fig. 3. Monthly tonsillectomy rates for each association

There is evidence that the admission totals reported for particularly the Cass, Newton, and Wheeler County associations include a limited number of cases which received X-ray, laboratory, operating room, or other hospital service without actually being admitted to hospital residence. This would account in part for the low number of days per case and also for the higher percentage of physicians' and surgeons' cases receiving hospitalization, which is shown for these associations. The high rates covering days of hospitalization for especially the Cass and Wheeler County associations, however, indicate that they rendered a large volume of service to in-patients and that removal of these out-patient cases from their records would probably not materially affect their rates. The rates shown for all the associations including those which did not feature this out-patient service indicate a high rate of hospital admissions with apparently a preponderance of less severe cases, which resulted in a very short average period of hospitalization per case. The admission rates ranged from 177 to 59 which compares favorably with the rates of 42, shown in Table 6, for the general rural population, and the average number of days hospitalized per case ranged from 2.9 to 5.8 as compared with the corresponding rate of 11 days for the general rural population (a).

Charges per case and per day are shown in Table 25. The average charge per case for all associations was \$23.70 and for the different associations it ranged from \$20.86 for the Newton County association to \$37.28 for the Nevada County association. The charge per day for all services averaged \$6.04 for all associations and ranged from \$4.94 for the Hamilton County association to \$8.26 for the Nevada County association. These rates covered ward care, operating room, delivery room, routine laboratory, drug, and related services. They are somewhat affected by having included in them the charges for service to out-patients, already mentioned. These out-patient charges are, however, not included in the rate for room or ward service only, also shown in Table 25. This rate ranged from \$3.82 for the Newton County association to \$5.00 for the Cass and Wheeler County associations, with an average of \$4.53 for all associations.

Monthly Variations in Hospital Services

Figure 4 shows a slight decrease through the year in the number of days of hospitalization used by the various associations with a small seasonal rise during the winter months and a rather pronounced rise at the close of the year. This latter rise is likely due in part at least to the unusually large amount of surgery done at the end of the year, to which reference has already been made.

The average number of days of hospitalization per case for each association during each month of the year under review is shown in Table 15.

(a) Same as Footnote (a), Page 16.

Table 15. Monthly averages of number of days of hospitalization per case for each association

Month	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	Number of days of hospitalization per case						
July '42	....	....	....	....	....	....	2.99
August	....	....	....	....	2.36	....	3.38
September	2.80	2.97	4.77	3.42	2.30	....	2.87
October	3.40	3.03	4.12	3.96	3.04	....	4.72
November	3.96	3.94	6.86	5.03	1.90	1.22	5.00
December	4.10	3.79	7.57	3.25	5.38	4.50	3.23
January '43	4.80	4.09	8.70	4.11	4.73	1.15	5.59
February	4.69	4.64	6.69	4.69	2.72	4.15	5.19
March	4.34	3.80	7.37	4.87	4.78	2.81	4.46
April	4.31	3.90	6.78	4.15	3.61	4.12	5.67
May	4.12	4.13	7.37	5.20	2.89	4.79	3.98
June	3.70	4.43	3.68	4.96	2.66	4.16	3.44
July	4.13	4.13	5.78	4.91	3.20	4.13	5.28
August	4.64	4.13	3.87	8.00	....	3.90	5.38
September	....	....	....	2.21	....	3.70	....
October	....	....	....	....	....	4.59	....

The trend indicated by the rates for all the associations taken together is toward a longer period of hospitalization per case during the winter months followed by a shorter period during the spring and early summer and then a more lengthy period again at the end of the year. The rates for the different associations shown in Table 15 all adhere closely to this general trend. There are scattered high rates for other than the winter months and the final months of the year under review but in general higher rates tend to prevail during these periods. This also describes the trend of the line showing monthly rates for days of hospitalization in Figure 4. These variations in the rates shown in Figure 4 were attributed to seasonal factors for the rise during the winter months and to an increase in surgical cases for the rise during the final months, and these same factors are likely responsible in some measure for the variation in the number of days of hospitalization per case.

Drug Service

Information on drug service is available for only five of the six associations. In the sixth association - in Wheeler County - the physicians dispensed their own drugs and were paid for them on the capitation basis just as they were paid for their professional services. No record of the number of prescriptions dispensed has been provided by this association. Of the remaining five associations, the Newton, Nevada, and Cass County associations found it necessary, due to the low percentages paid

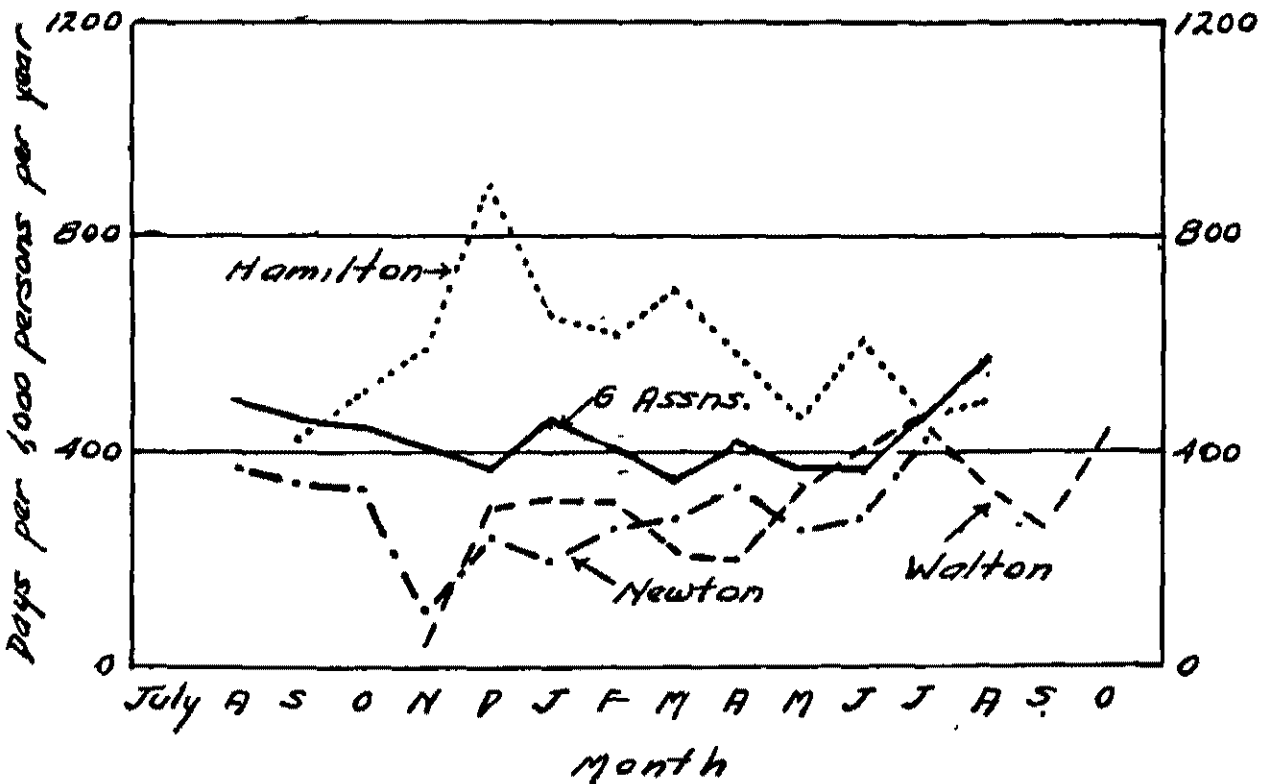
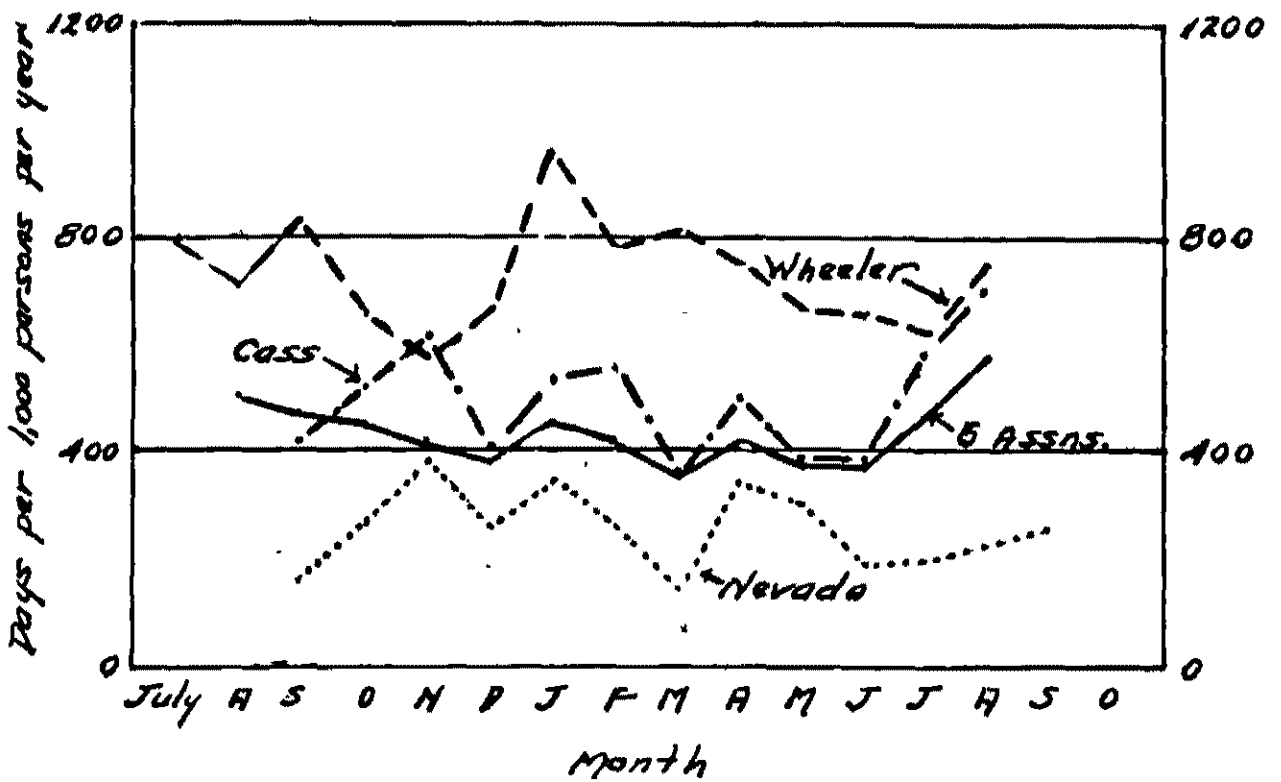


Fig. A. Monthly rates for days of hospitalization for each association

on drug charges, to make adjustments in their drug program during the year. The Newton County association was the first to adjust. As is indicated in Figure 5, an exceedingly large number of drug prescriptions were filled for this association during its first month of operation. The rate indicated by this first month's service was 3726 prescriptions per thousand persons per year which was 20 per cent above the average rate for all associations for the year and more than twice the rate finally established by this association for the year. Only 45 per cent was paid on drug charges for this month. The number of prescriptions issued during the second month was less than during the first month, but still quite high. In the third month the druggists reached the conclusion that the basis on which the service was being operated was untenable for them, and during the fourth month no prescriptions were issued. In the fifth month the service was resumed with the patient paying half the cost of each prescription at the time he received it, and the association paying the other half at the end of the month. This arrangement began in December and continued through April. In May the part of the charge paid by the patient was reduced to one-fourth with the association paying three-fourths. This arrangement continued through May, June, and July. It is of interest to note in Figure 5, that this reduction in the patient's payment on each prescription did not apparently increase the number of prescriptions issued, though there was for some reason a marked increase in the number of prescriptions issued in July.

The Nevada County association was the next to develop difficulty with its drug service. After getting under way in September its prescription rate mounted to 3315 per thousand persons per year in October with 64 per cent payment on druggists' bills for that month. This situation continued practically unchanged through November, and in December there was a reduction in the number of prescriptions issued but the average charge per prescription (Table 17) rose, keeping the percentage payment on druggists' bills still at 64 per cent. Very few prescriptions were issued during January; on February 11, an arrangement whereby the patient paid half of the cost of the prescription was put into effect, and the service was operated on this basis through the rest of the year.

The other association to make adjustments in its drug service was the Cass County association. It started in September with an exceedingly high rate of 4084 prescriptions per thousand persons per year and a payment of 44 per cent on its druggists' bills. Through educational methods among its physicians and members it gradually reduced the number of prescriptions issued through October, November and December, but in January the record (Figure 5) shows a return to the September situation with a reversion to the December rate in February. In March the plan of requiring the patient to pay half of the cost of his prescription was introduced and the service was continued to the end of

the year on this basis. Figure 5 shows the rate at which prescriptions were issued through the rest of the year. A marked decrease is shown for May and June but it is doubtful whether this can be attributed to the requirement that the patient pay half of the cost of his prescription since the higher rates for March, April, July and August were established under this arrangement.

In addition to the records of the three associations which found it necessary to make adjustments in their drug service during the year, there is included in Figure 5, the record of the Walton County association, one of the two associations which was able to avoid making such adjustments. After a period of adjustment at the beginning of the year its rates for physicians' calls and drug prescriptions follow each other closely through the year with the number of prescriptions slightly under the number of physicians' calls.

Lines showing the monthly rates for physicians' calls and cases have been included in Figure 5 to show something of the relationship which exists between physicians' and drug service. In all three associations which made adjustments in their drug service, the rate for physicians' calls reached its lowest point of the year at the time when the drug service was more or less in suspense and the adjustment was in the process of being made. Following this adjustment period, however, the number of physicians' calls and the number of drug prescriptions gradually increased, and it is difficult to say to what extent, if any, patients were deterred from calling on their physician through the requirement that they pay part of the cost of their prescriptions. It is noted, however, that in both the Cass and Newton County associations the number of drug prescriptions issued under the association program dropped below the number of physicians' calls made in the same month during the period of adjustment and, while recovering somewhat as the part-payment arrangement got into operation, continued to be less than the related total of physicians' calls through the rest of the year. The fact that the totals of drug prescriptions were less than the related totals of physicians' calls throughout the year for the Walton County association, in which the association continued to pay the full cost of all prescriptions through the year, suggests that this may be a normal relationship for these services. But in the Nevada County association the totals of prescriptions rose above the related total of physicians' calls after the patient began paying half of the prescription charge and maintained this relationship through the rest of the year.

The number of prescriptions per thousand persons per year and related charges per prescription for each association and for all associations taken together are shown in Table 16.

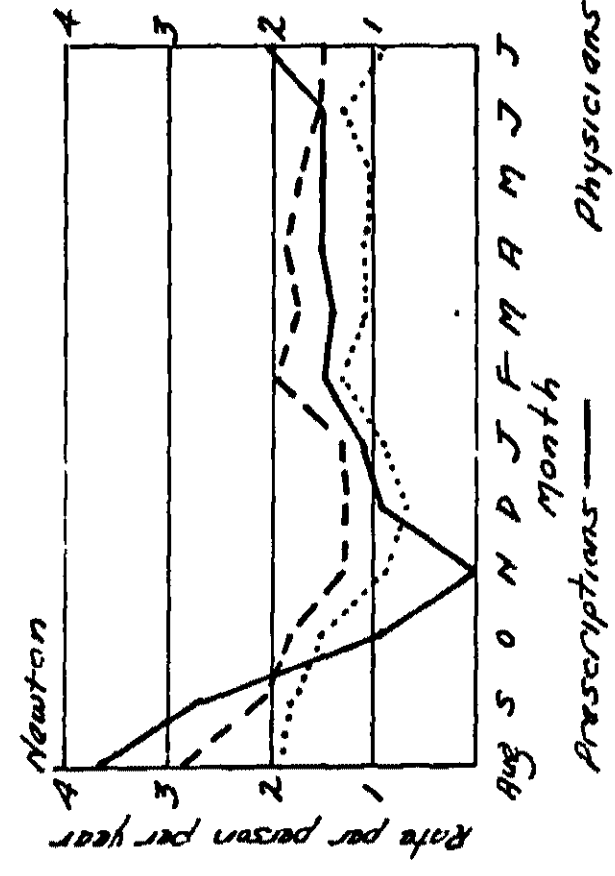
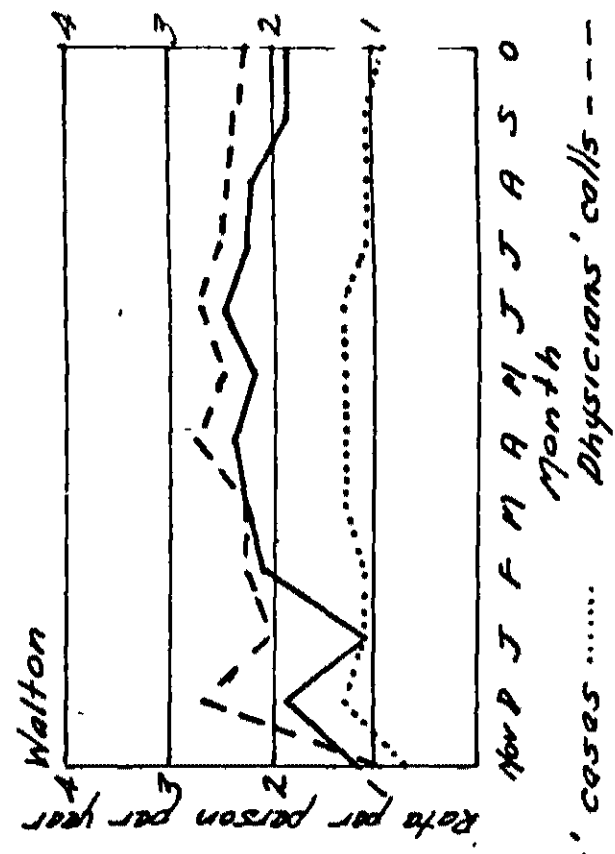
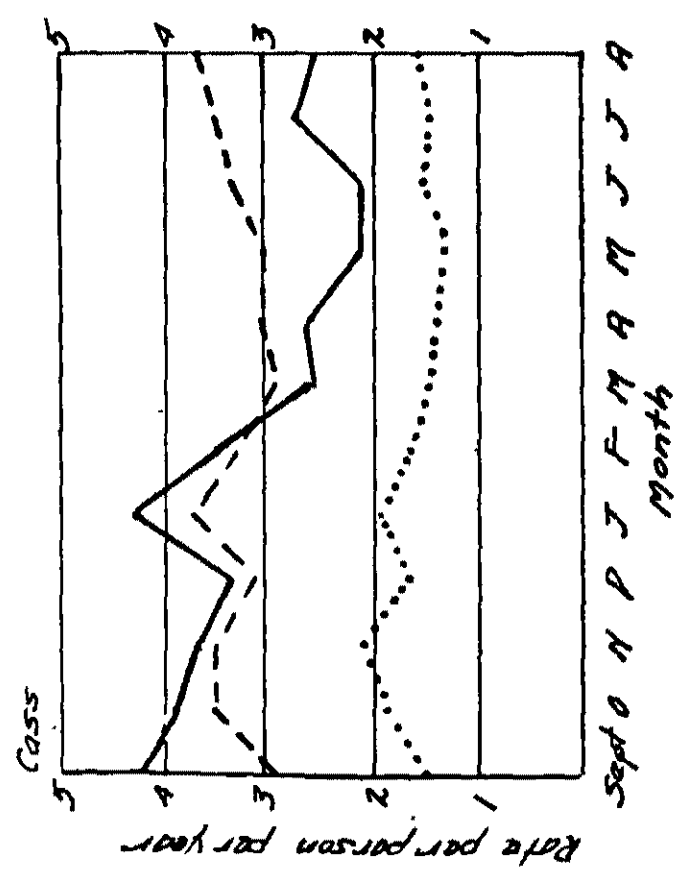
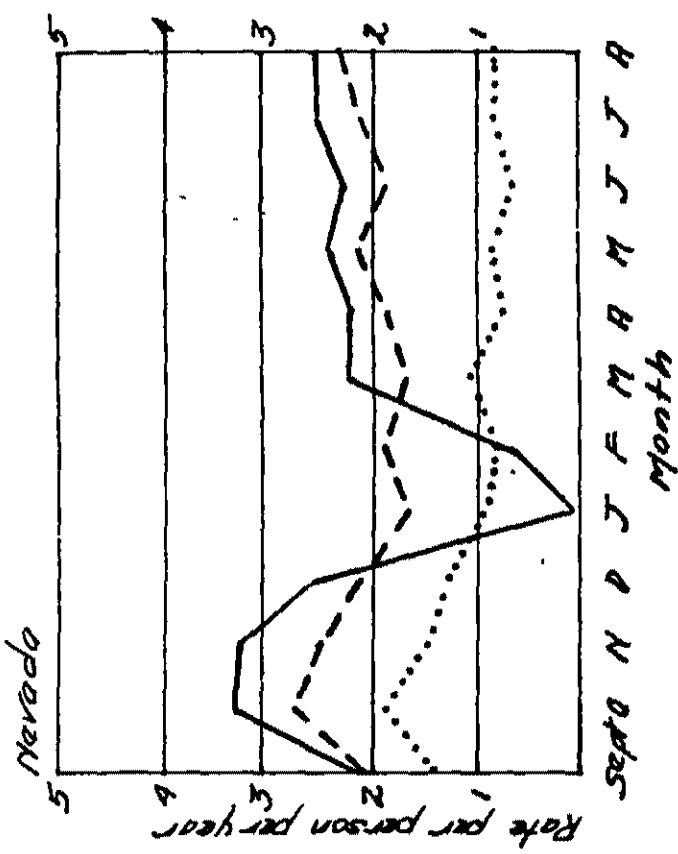


Fig. 5 Monthly rates for druggists' prescriptions and physicians' cases and calls for the Cass, Nevada, Newton and Walton County associations

Table 16. Number of prescriptions per thousand persons per year and average charge per prescription for each association under various plans of operation .

Assns.	Period covered	No. of prescriptions per thousand persons per year	Charges per prescription
All assns.	Full payment	2976	\$0.83
	Part payment	2158	1.02
Cass	Sept. '42 - Jan. '43	3866	.88
	Feb. - Aug. '43	2599	.92
Hamilton Nevada	Sept. '42 - Aug. '43	2559	.69
	Sept. - Dec. '42	2875	.92
Newton	Mar. - Sept. '43	2360	.99
	Aug. - Sept. '42	3265	.90
Walton	Jan. - July '43	1518	1.15
	Nov. '42 - Oct. '43	2112	.71

For the associations which paid only part of the cost of prescriptions during part of the year, separate rates are shown for the periods during which these arrangements were in effect, and for the Newton and Nevada County associations the records for the months during which their drug programs more or less ceased operating were omitted in calculating these rates. Both this table and Figure 6, showing the monthly prescription rates for each association, emphasize the fact, which has already been noted, that the prescription rates for the associations which found it necessary to make adjustments in their arrangements for their drug service during the year were abnormally high during their first months of operation. They ranged from 2875 to 3866 per thousand persons per year as compared with 2559 and 2112 respectively for Hamilton and Walton County associations.

Another factor which doubtless played a large part in making necessary the adjustment in the drug services of the Cass, Nevada, and Newton County associations was their higher average charge per prescription. Table 16 shows the average charge per prescription for the Hamilton and Walton County associations to be 69 and 71 cents respectively, while for the Cass, Nevada, and Newton County associations this charge ranged from 88 to 92 cents while the associations were paying the full cost of the prescriptions and from 92 cents to \$1.19 when part was being paid by the patient. Table 17 shows the monthly variation in the average charge per prescription for each association. The Hamilton and Walton County associations began their year with averages of about 80 cents per

Table 17. Average monthly charge per drug prescription (including charge to patient, if any) for each association

Month	All	Cass	Hamilton	Nevada	Newton	Walton
	assns.	Charge per prescription				
August '42	...	...	...	...	\$0.89	...
September	\$0.90	\$0.90	\$0.79	\$0.87	.92	...
October	.87	.82	.82	.87	.87	...
November	.86	.88	.74	.87	...	\$0.82
December	.94	.90	.69	1.03	.97	.80
January '43	.91	.91	.63	1.09	1.18	.80
February	.93	.90	.62	1.11	1.11	.70
March	.91	.90	.73	.93	1.13	.70
April	.91	.93	.62	1.00	1.10	.69
May	.96	.96	.67	1.03	1.18	.65
June	.96	.96	.69	1.05	1.23	.66
July	.98	.88	.71	1.04	1.12	.69
August	.91	.93	.67	1.06	...	.69
September	...	...	...	1.08	...	.71
October	...	...	...	...	...	.71

... Indicates point at which arrangement, requiring patient to pay part of cost of prescription, was introduced.

prescription, which were considerably lower than those for the other three associations, and during the year they were able to reduce these averages so that the average for the entire year was 69 cents for the Hamilton County association and 71 cents for the Walton County association. The lowest monthly average shown during the year for the Hamilton County association was 62 cents and for the Walton County association, 65 cents. The monthly averages for the other three associations shown in Table 17 show a definite tendency to increase following the adoption of the plan requiring the patient to pay part of the cost of his prescription. The tendency is not great for the Cass County association; more marked, and also beginning a few months before the new arrangement became effective, for the Nevada County association; and quite pronounced for the Newton County association. The point at which the new arrangement became effective for each of the three associations is indicated by a line drawn across the column of averages in Table 17.

Reference has already been made to Figure 6, showing the number of prescriptions per person per year indicated by the number of prescriptions issued each month in the different associations. Possibly the most significant fact to be noted in this graph is the manner in which the various associations, after adjusting their difficulties by various

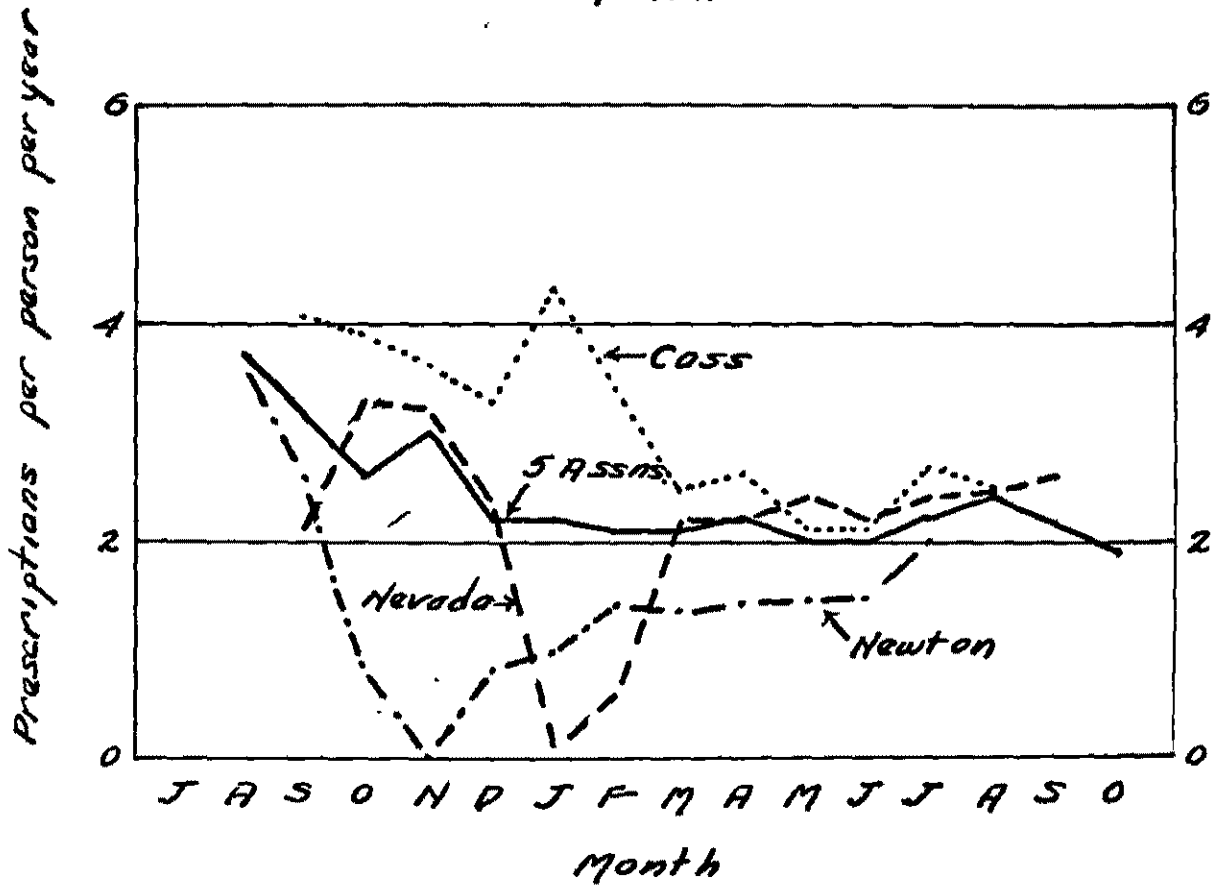
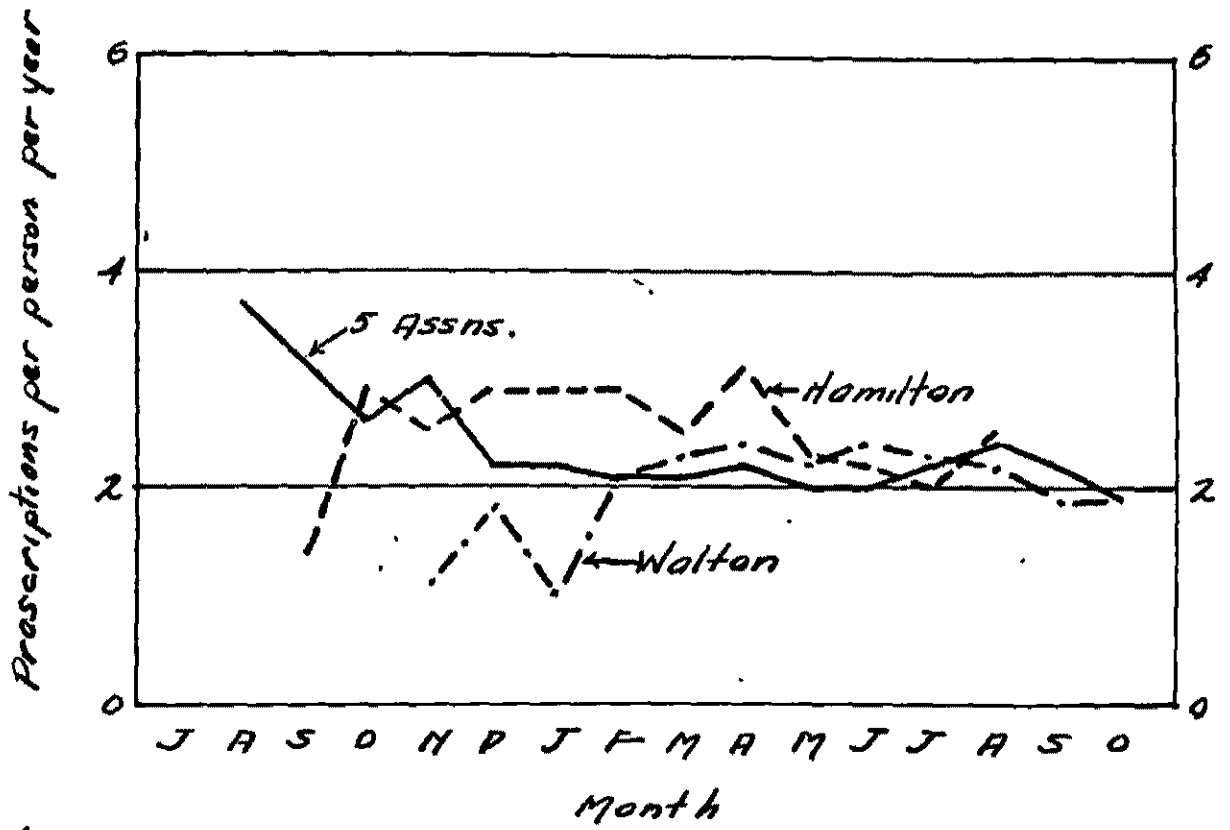


Fig. 6. Monthly prescription rates for each association in terms of number of prescriptions per person per year

methods during the first months their programs were in operation, finally settled to prescription rates which were strikingly uniform for all associations. From March on to the end of the year the lines for all the different associations, except possibly the Newton County association, adhered very closely to the average for the five associations, and the Newton County association rate approached this average in July. This is possibly the nearest approach to uniformity to be found in the widely varied experience with drug service of the five associations.

Dental Services Received by Each Association

Dental services differ from the other services offered by these associations in that the emergency factor is much more dominant in determining what medical care shall be rendered a case than it is in determining what dental care the case shall receive. Dental emergencies created by severe toothache, or other like situations which would be considered emergencies in the estimation of the members of these associations, constitute a relatively small percentage of the cases normally receiving dental care. A large proportion of the dental care rendered has therefore been elective, and the cooperating dentists have on this account been able to delimit the program so as to make the most efficient use of the six or seven dollars per family allotted to them for dental services. The rule followed has generally been to give first consideration to severe toothache or other emergency situations for any member of the association, and then to go as far as their time and funds would permit in providing fillings, extractions, prophylaxis, and other indicated service (exclusive of replacements) for children and young people under 15 or 18 years of age

On this basis the associations developed programs which provided services, the charges for which adhered reasonably closely to the funds designated for dental care. The allotment for dental service during the fiscal year 1942-43 was \$7 per family in all associations, except the Wheeler County association, in which it was \$6. Table 18 shows the allocation of funds in the different associations on the basis of this allotment, the charges submitted for dental services, and the amount those charges exceeded or fell short of the total allocated.

Table 18. Allocation of funds and charges for dental service in each association and surplus or deficit at the end of the year

Assn.	Allocation	Charges	Surplus or deficit (-indicates deficit)
All assns.	\$56,001	\$54,070	\$1,931
Cass	16,653	16,626	28
Hamilton	3,341	4,507	-1,166
Nevada	10,059	9,067	992
Newton	13,895	13,342	553
Walton	6,167	5,168	999
Wheeler	5,886	5,361	525

It should be pointed out that these fund allocations in Table 18, while they represent the totals theoretically due the dental programs out of the different associations' budgets, do not in all cases reflect the actual totals of funds made available for this service. For members joining the associations after the first month of the fiscal year, the full year's fee was charged, but out of this in some cases, only one-twelfth of the six or seven dollar dental allotment for each of the remaining months of the fiscal year was actually drawn for dental service, and that part of the dental allotment which belonged to months prior to the time the membership became effective was put in a general fund with similar contributions from the fund allocations for other services, and this general fund was used to equalize in some measure the percentage payment on bills for different types of service.

The only association shown in Table 18 to have charges for dental service in excess of the funds allocated is the Hamilton County association and, rather strangely, this is the only one of the six associations which did not include fillings in its program. Its extraction program was somewhat heavier than that of the other associations, its rate being 745 teeth extracted per thousand persons during the year, as compared with a rate of 571 extractions for all six associations, but the distinctive feature of its program was its emphasis on examinations, including X-ray films. In all the other associations, except the Wheeler County association, the charges for dental service closely approximate the funds actually made available for this service. In the Wheeler County association only one dentist was available, and the volume of dental service rendered was limited by the amount of time he was able to give association members.

The rates for dental cases, extractions, fillings, and all services for the various associations during the fiscal year 1942-43 are shown in Table 19. The term "dental case", as used in this connection, refers to a visit or series of visits in the course of which the dentist completed the service desired by the patient at that time. The term "all services" includes prophylaxis, treatments, examinations, and other similar services covered by the program, in addition to extractions and fillings.

Table 19. Number of dental cases, extractions, fillings, and all services per thousand persons per year for each association

Assn.	Cases	Extractions	Fillings	All services
Rates per thousand persons per year				
All assns.	294	571	368	1056
Cass	247	712	282	1049
Hamilton	371	745	...	1329
Nevada	275	624	329	1072
Newton	338	432	517	1004
Walton	303	539	308	974
Wheeler	300	404	528	1106

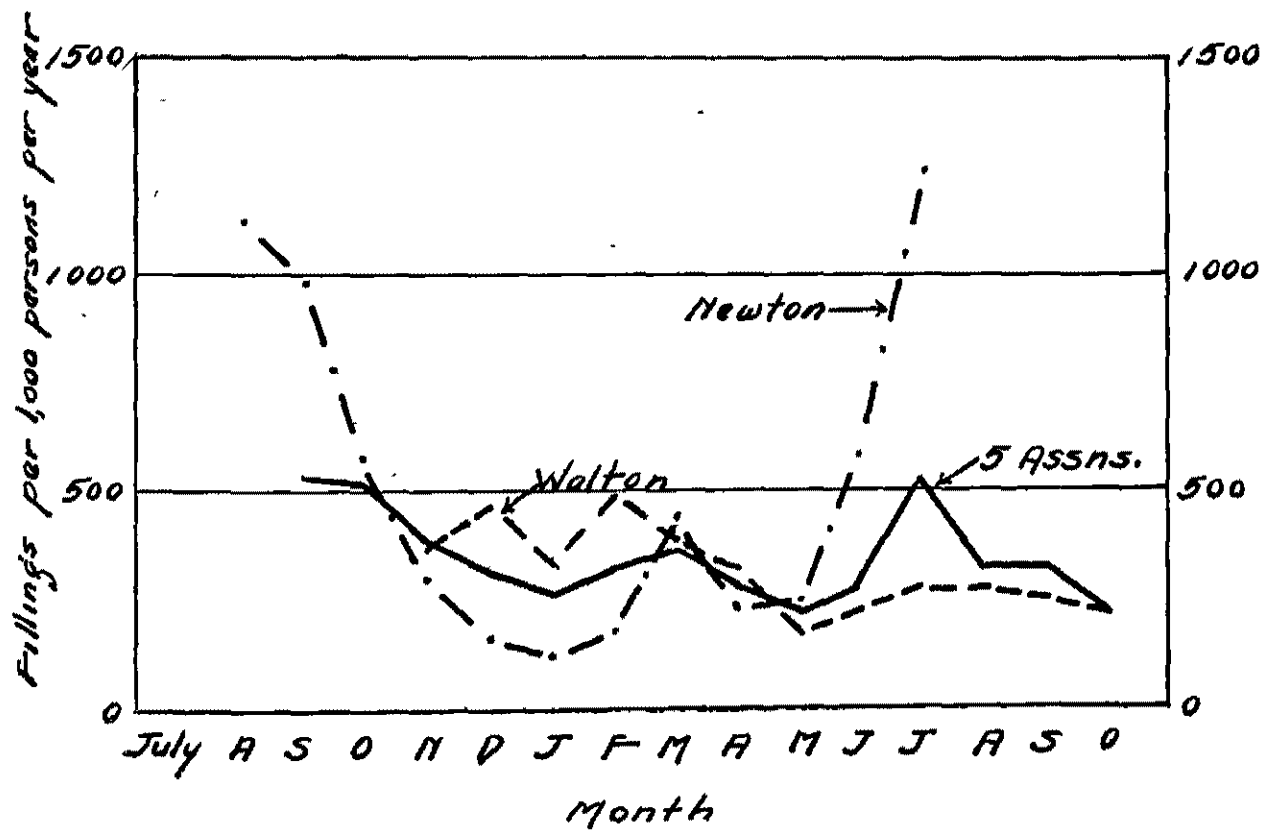
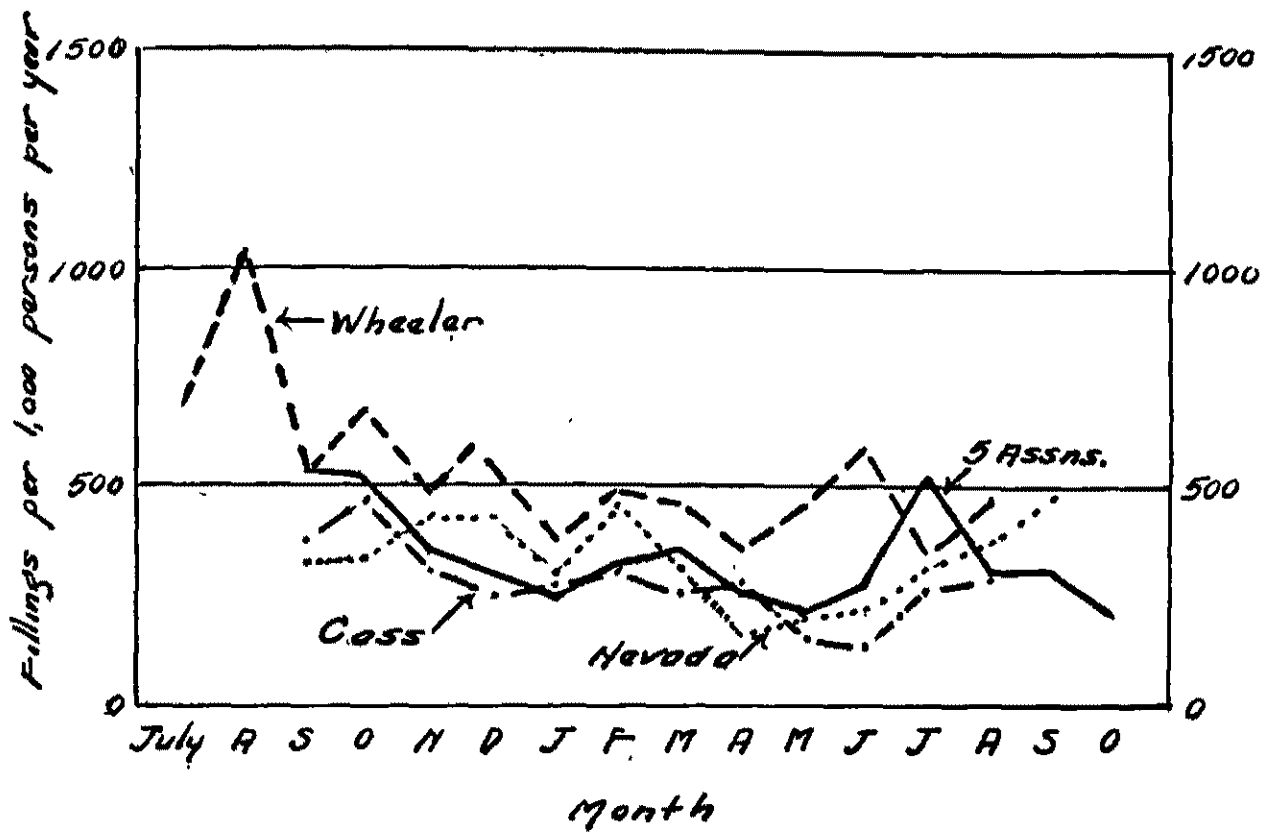


Fig. 7. Variation in monthly rates for dental fillings

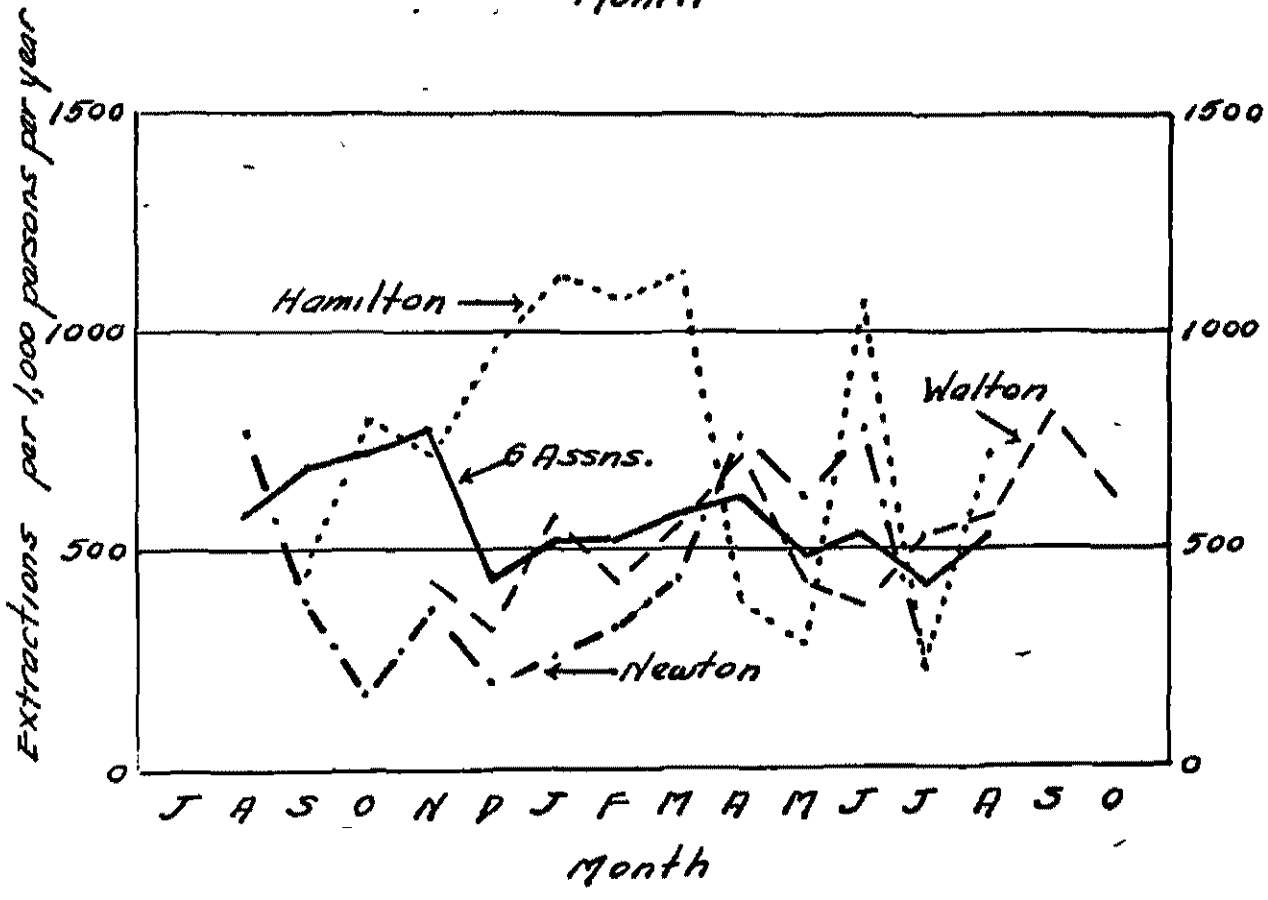
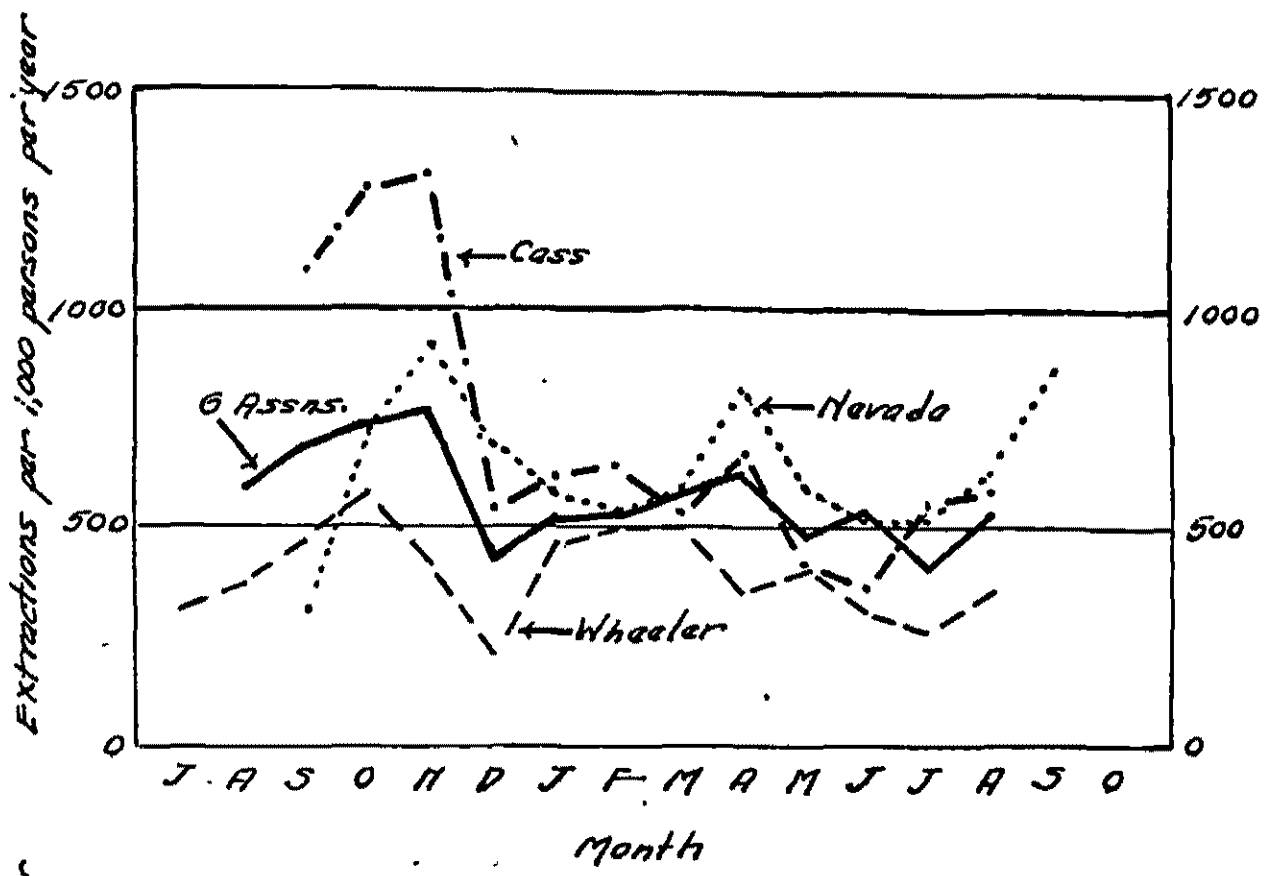


Fig. 8. Variation in monthly rates for dental extractions

The rates shown for the Hamilton County association in Table 19 show it to stand first with reference to the number of cases treated, number of extractions, and number of services of all kinds taken together. As previously stated this association did not provide fillings, its services in addition to extractions being mostly examinations, including X-ray. The justification for this emphasis on diagnostic service is difficult to establish in view of the limited use which could be made of the diagnostic findings under the program. The rates nevertheless indicate that it conducted a very active program within these limitations set by the local dentists.

The filling rates of the Newton and Wheeler County associations were relatively outstanding, being over 500 per thousand persons per year with the highest corresponding rate among the remaining three associations which offered fillings being 329. These two associations were also the only ones which provided more fillings than extractions in the course of their year's activities.

In view of the emphasis which has been placed on service for children, it is of interest to note what percentage of cases receiving fillings and extractions were under 15 years of age. These percentages are as follows:

<u>Service</u>	<u>All assns.</u>	<u>Cass</u>	<u>Hamilton</u>	<u>Nevada</u>	<u>Newton</u>	<u>Walton</u>	<u>Wheeler</u>
Extractions	24.5	15.1	26.2	17.1	33.7	27.1	33.8
Fillings	42.9	20.0	....	18.9	68.0	49.9	30.0

As is to be expected, the emphasis on service for children was much greater for fillings than it was for extractions. Only in the Wheeler County association did the percentage of children receiving extractions exceed the percentage receiving fillings. In the Newton County association 68 per cent of the cases receiving fillings were under 15 years of age, and in the Walton County association, 50 per cent.

Monthly Variations in Dental Services

The adjustment of the dental program to the limits of its resources in funds available and in dentists' time is shown quite clearly in the reduction from very high rates for the first months of the program shown in Figures 7 and 8. Fillings and extractions were received during the first three months of the program at a rate which, if continued through the year, would have resulted in the high rates of 572 fillings and 737 extractions per thousand persons per year, as compared with the rates of 368 fillings and 571 extractions already quoted for the first year of operation. The Cass and Newton County associations were chiefly responsible for these high rates during their first months of operation, the Cass County association more particularly in the field of extractions and the Newton County association for both extractions and fillings. The Newton County rates for its first month of operation, if continued through

the year, would have resulted in 1102 fillings and 778 extractions per thousand persons for its members. It was immediately evident, however, that this rate could not be maintained and various methods were used to cut it down during the second and third months. Then in the fourth month the program was limited rather severely to children 12 years of age and under except for emergency service. This accounts for the low rates for both fillings and extractions shown for this association during the winter months in Figures 7 and 8. In March the age limit for the broader program of service was raised from 12 to 18 years and the rate for July in Figure 7 indicates a record effort in the provision of fillings in this last month of this association's first year of operation.

The prevailing tendency in all associations was for extractions to exceed fillings. An effort has been made in Figure 9 to bring out this relationship more clearly. An arbitrary standard of one filling per extraction has been set, and the extent to which the monthly rates for fillings and extractions for each association exceeds or falls short of this standard is indicated by the projection of the columnar line for that month above or below the line indicating the one to one norm. While this ratio of one filling per extraction has been referred to as an arbitrary standard, it closely approximates the ratio of nine tenths of a filling per extraction, found for the general rural population. (a)

The Wheeler County association shows up best in this test, fillings exceeding extractions during nine months of the year and for two months the ratio was in excess of 2.5 fillings per extraction. The ratios for the two supplementary months which this association added to its fiscal year were 1.3 and 1.2 fillings per extraction respectively. The Newton County association also had four months and the Walton County association two months in which the number of fillings exceeded the number of extractions. For the other two associations extractions were always in excess of fillings and for the five associations taken together fillings exceeded extractions only during the last month of the fiscal year. This was largely the result of the high ratios of fillings to extractions which the Wheeler and Newton County associations established for their twelfth month of operation. For the year taken as a whole, the Wheeler County association is the only one for which the number of fillings exceeds the number of extractions.

Nursing Service

The Cass, Nevada, Newton, and Walton County associations included in their programs, as originally drawn up, provision for community nursing. Due to the shortage of public health nurses and other factors, however, the Newton County association was unable to do anything in this field,

- (a) Collins, Selwyn D.: Frequency of Dental Services Among 9,000 Families Based on Nation-wide Periodic Canvasses 1928-31 Public Health Reports 54: 629-657 (April 21, 1939).

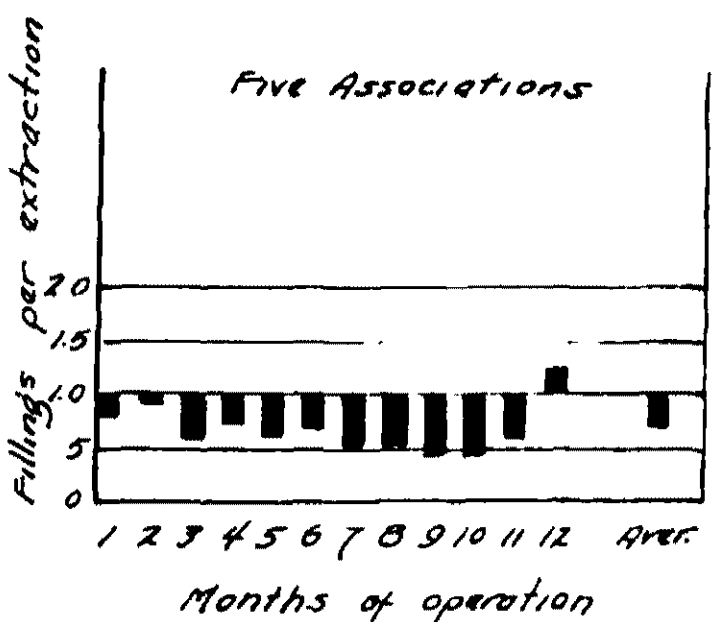
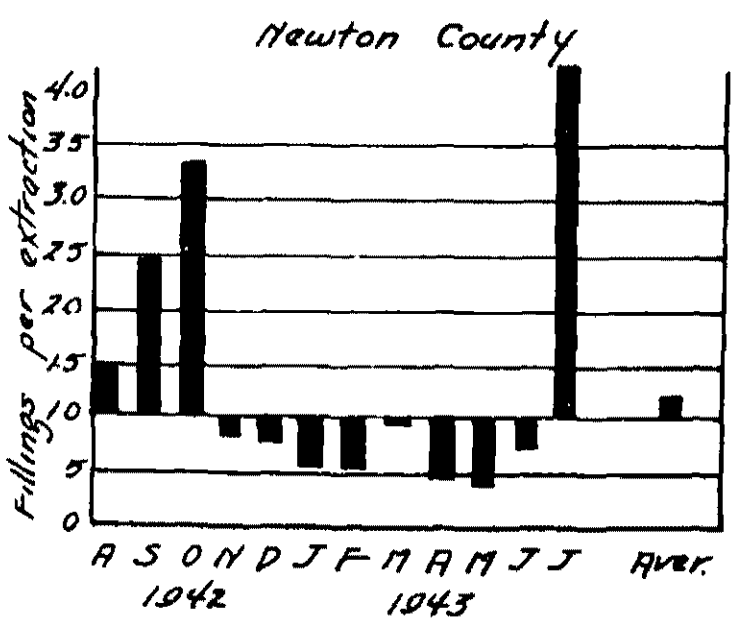
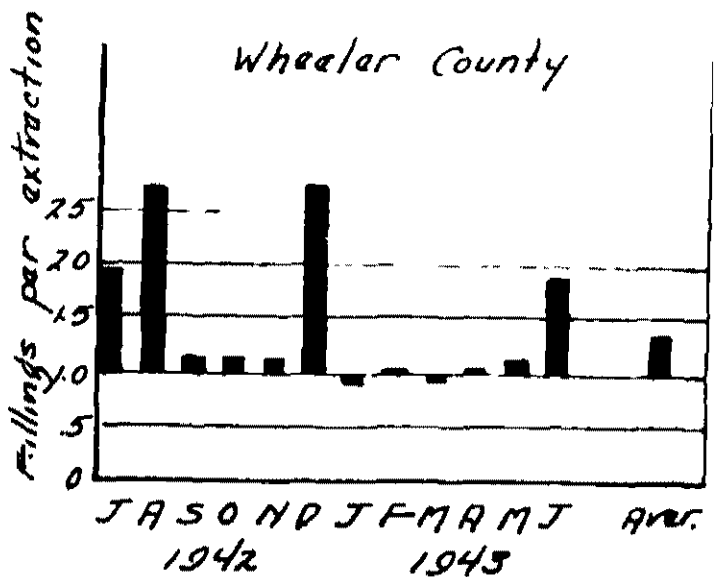
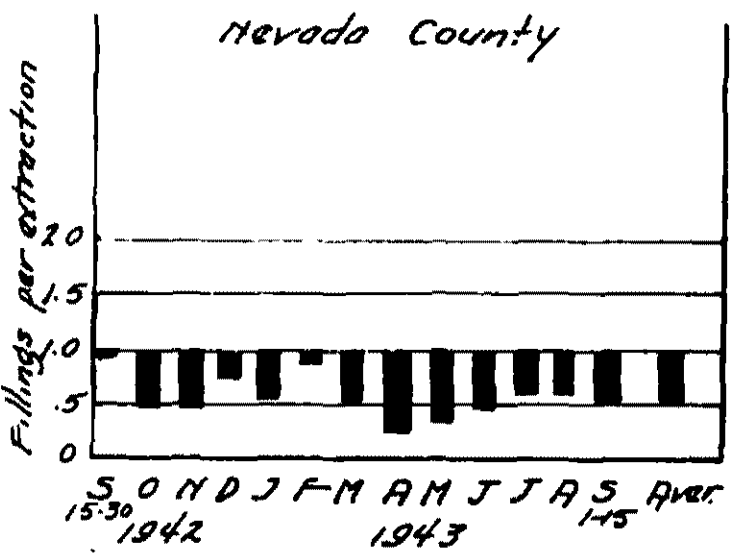
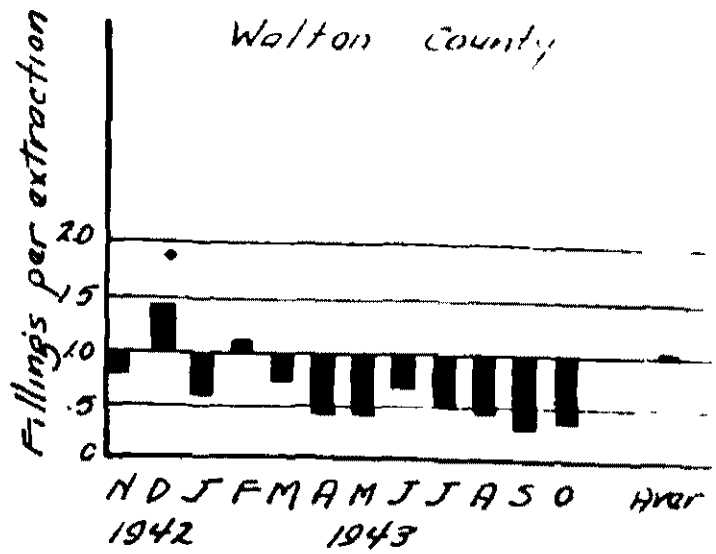
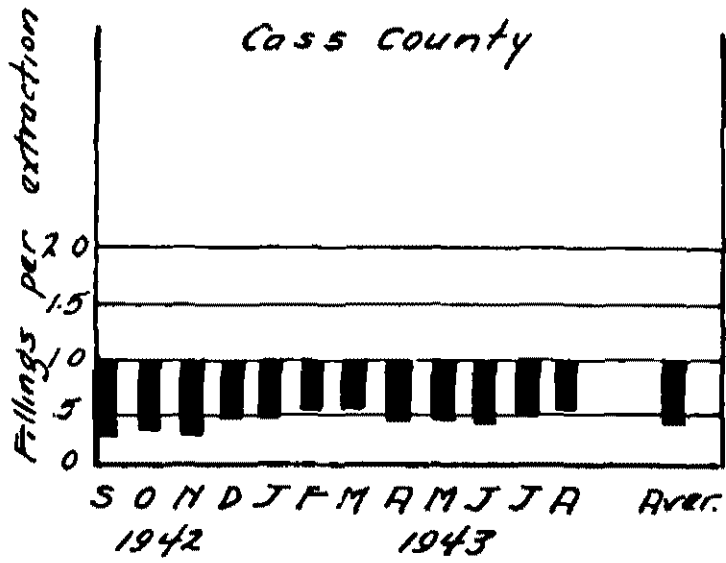


Fig 9 Variation from ratio of one filling per extraction in monthly dental filling and extraction rates for five associations

Table 20. Nursing service to Walton County association members

<u>Service</u>	<u>Cases</u>	<u>Visits</u>	
		<u>Field</u>	<u>Office</u>
Communicable disease	51	57	...
Scarlet fever	(a)	4	...
Whooping cough	(a)	53	...
Venereal disease control	7	4	222(b)
Tuberculosis control	41	64	35(b)
Positive cases	1	2	2
Suspected cases	32	50	3
Contacts	8	12	5
Tuberculin tests	62	...	...
Positive	25	...	...
Negative	37	...	...
Maternity service			
Prenatal cases	57	100	32
Postpartum cases	78	169(c)	(c)
Infant and pre-school hygiene			
Infants	84	240	12
Pre-school children	52	70	5
School hygiene	50	207	9
Morbidity service	17	22	1
Immunizations	1139	...	...
Smallpox	241	...	...
Diphtheria	128	...	...
Typhoid fever	704	...	...
Whooping cough	66	...	...

(a) Information not available.

(b) Visits to venereal disease and tuberculosis control clinics.

(c) Total under Field Visits represents both field and office visits.

and the other three associations succeeded in only partially carrying out the programs they had planned.

The Walton County association had the most extensive activity in this field. It had no nursing service during its first months of operation but one nurse came on duty January 1 and a second January 14, 1944 and this two-nurse staff was maintained through the remainder of the fiscal year except for April, May, June and half of July during which period only one nurse was on duty. These nurses worked in cooperation with two other nurses, who constituted the nursing staff of the Walton County Health Department, in carrying out the Health Department nursing program for the County. This made it possible to divide the county into four rather than two districts, reducing by one-half the area covered by each nurse and so providing for a more intensive program of nursing service than would otherwise have been possible.

For the Cass County association, nursing service was provided during January and a few days in February and then from April to the end of the fiscal year in August. The Nevada County association succeeded in securing the services of a nurse for a period of about four months beginning in February and ending in June, 1944.

Information on services rendered through the Cass and Nevada County nursing programs, is not available. The more significant totals from reports submitted by the Walton County association are shown in Table 20.

Table 21. Charges per family per year for different types of service and volume of service rendered

	All Assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
<u>Physicians</u>							
Charges	\$ 33.22 (b)	\$ 48.92	\$ 56.47	\$ 22.64	\$ 20.66	\$ 23.18	(b)
Per cent paid	55.9 (b)	32.7	43.5	89.3	96.0	73.5	(b)
Call rate (a)	2534.9 (b)	3275.3	4083.9	1992.9	1778.4	2323.7	(b)
<u>Surgeons-Specialists</u>							
Charges	\$ 9.81	\$ 13.80	\$ 10.22	\$ 7.03	\$ 7.62	\$ 9.84	\$ 8.27
Per cent paid	67.1	43.5	62.0	94.9	96.1	61.0	78.9
Case rate (a)	70.4	78.1	196.0	35.9	57.2	55.7	80.1
<u>Hospitals</u>							
Charges	\$ 11.28	\$ 12.15	\$ 12.52	\$ 9.27	\$ 9.61	\$ 8.18	\$ 17.47
Per cent paid	88.1	82.3	83.2	100.0	100.0	100.0	78.0
Day rate (a)	424.1	503.0	580.1	266.4	296.9	304.8	727.1
<u>Drugs</u>							
Charges	\$ 10.18 (b)	\$ 12.23	\$ 7.74	\$ 10.74	\$ 9.11	\$ 6.83	(b)
Per cent paid	87.6 (b)	78.4	70.6	100.0	100.0	84.2	(b)
Prescription rate (a)	2546.8 (b)	3133.2	2559.3	2516.2	1907.9	2111.2	(b)
Charges	\$ 10.94 (c)	\$ 14.81 (c)		\$ 11.74 (c)	\$ 13.42 (c)		
Prescription rate (a)	2975.8 (c)	3866.4 (c)		2875.3 (c)	3265.2 (c)		
Charges	\$ 9.50 (d)	\$ 10.38 (d)		\$ 10.32 (d)	\$ 7.88 (d)		
Prescription rate (a)	2157.6 (d)	2598.6 (d)		2359.6 (d)	1518.3 (d)		

Table 21. Charges per family per year for different types of service and volume of service rendered (continued)

	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
<u>Dentists</u>							
Charges	\$ 6.62	\$ 6.99	\$ 9.77	\$ 6.50	\$ 6.62	\$ 6.16	\$ 4.81
Per cent paid	97.9	100.0	76.7	100.0	99.9	98.2	100.0
Service rate (a)	1055.8	1047.3	1329.3	1071.9	1003.5	974.4	1106.0
<u>All services</u>							
Charges	\$ 70.38	\$ 94.06	\$ 96.72	\$54.29	\$52.54	\$54.19	

a/ Rate per one thousand persons per year.

b/ Wheeler County association operated on the capitation plan. Rates for this Association are consequently not available and so not included in average for all associations.

c/ Covers experience of five, three and a half, and two months, respectively, for the Cass, Nevada, and Newton County associations during which these associations accepted full responsibility for drug charges.

d/ Covers experience of seven, six and a half, and seven months, respectively, for the Cass, Nevada, and Newton County associations. During the period the association paid half and the patient paid half of the drug charges in Cass and Nevada County associations. In the Newton County association, the association paid half and the patient paid half from December through April after which time the association paid three-fourths and the member one-fourth.

IV CHARGES AND PAYMENTS FOR SERVICE

Totals Charged and Percentage Paid Per Family

In five of the six associations all services except nursing were rendered on the fee-for-service basis and in the sixth association - in Wheeler County - surgery and specialists' service, hospitalization, and dental service were rendered on the fee-for-service basis, and physicians' and drug service on the capitation basis. Table 21 shows the average charge per family during the year for each type of service and the percentage paid on that charge, together with the rate indicating the volume of service received. For drugs, two additional sets of figures are shown for three of the associations. The first supplementary set of figures covers the period during which these associations accepted full responsibility for payment of charges for drugs, and the second set covers the period during which the patient paid part of those charges. For the Nevada and Newton County associations there was a period after the first plan had been suspended and before the second plan had been introduced when no plan was actually in operation. This period has not been included in either set of figures nor is it included in the averages for the year. The charges for drugs in all cases include charges made to patients as well as to associations if patients participated in the payments for drugs, and the percentage payment is estimated on the basis of total payments by patients as well as by associations.

Since the allocations of funds for the different types of service (Table 1) were relatively uniform, the variation in the percentage paid on charges in the different associations bears a rather close inverse relation to the charges per family for the different types of service. The widest variation is in charges and percentages paid for physicians' services. The variation in charges for this service ranged from \$56.47 per family for the Hamilton County association to \$20.66 for the Newton County association and percentages paid on charges ranged from 32.7 per cent for the Cass County association to 96 per cent for the Newton County association. In this case the percentage paid by the Hamilton County association was higher than that paid by the Cass County association in spite of the fact that the Hamilton County association charges were also higher. This was due to the Hamilton County association allotting \$22 per family for payment of physicians' charges whereas the Cass County association allotted only \$16. Two of the other three associations offering this service on the fee-for-service basis also allotted \$16 for it. The variation in physicians' call rates follows closely the variation in the related charges per family, indicating that volume of service received was a major factor in accounting for the wide variation in charges though higher fee rates also had a part in producing the high charges per family shown for the Cass and Hamilton County associations.

Percentages paid by the different associations on surgeons' and specialists' charges came next after physicians' percentages in point of variation from the average. They ranged from 43.5 to 96.1 per cent and averaged 67.1 per cent. Percentages paid for hospital and drug services were rather similar though for three of the associations adjustment of the drug program was needed to produce this result. The percentage paid on charges for dental service for five of the six associations approached very close to 100 per cent while for the Hamilton County association it was 77 per cent.

It will be noted that in general the associations which had high rates for charges and volume of service for physicians' service, had high rates also for surgeons' and specialists' services, hospitalization, and drugs. The cumulative effect of this tendency is apparent in the totals representing charges per family for all services for the different associations. These totals fall rather definitely into two groups, those for the Cass and Hamilton County associations being over \$90 and those for the Nevada, Newton and Walton County associations being just over \$50, a little over half of the \$90 total. A number of factors doubtless work together to produce this wide variation in the volume of service received. Chief among them is the custom which has prevailed with reference to the use of medical services in the areas in which the associations were located. People who cannot afford to see a physician or enter a hospital except in extremity may carry over for a time an aversion for these services even when the economic deterrent is removed. Availability of service was also a foremost factor with reference to physicians' and surgeons' services particularly and also with reference to hospitalization in some areas. Moreover, even where hospital capacity was not taxed, lack of physicians' and surgeons' services tended to restrict the use of hospital services. The percentage paid on charges also had a varied effect in the different associations. In some instances a good deal of attention was paid to securing as high payment as possible on charges through discouragement of request for service of a less emergency type. Insofar as this factor operated to restrict the volume of service received by the members of the associations, the financial deterrent, which had interfered with their receipt of needed medical care before they joined these associations, had not been entirely removed. An increase in the size of the membership fee would be one way of improving this situation.

Distribution of Charges by Type of Service

The percentage distribution of charges for the five different types of health service in five of the six associations is shown in Table 22. The Wheeler County association totals are not included in this table since some of its services was rendered on the capitation basis and for them charges for service were not submitted.

Table 22. Percentage distribution by type of service of totals of charges for health service

Type of service	All	Cass	Hamilton	Nevada	Newton	Walter
	assns.					
Percentage distribution of charges						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Physicians	47.4	52.0	58.4	41.6	39.0	42.9
Surgeons - Specialists	14.6	14.7	10.7	13.2	15.5	18.3
Hospitals	14.6	12.9	12.9	17.0	17.1	15.0
Druggists	13.5	13.0	8.0	16.0	15.4	12.5
Dentists	9.9	7.4	10.0	11.9	13.0	11.3

The distribution of charges for the five associations is relatively uniform. The high charges for physicians' service in the Cass and Hamilton County associations as compared with the other three associations have already been commented on. Surgeons' and specialists' charges range from 11 to 18 per cent of the total and, for two of the associations, they exceed hospital charges. For all five associations taken together, the totals of charges submitted for surgeons' and specialists' services and for hospital services were practically identical, each constituting 14.6 per cent of the total. Druggists' charges ranged from 8 to 16 per cent of the total. These charges represent total charges for drugs whether made to patient or to the association. In the Cass, Nevada, and Newton County associations patients paid part of these charges during part of the year. The charges for dental service ranged from 7 to 13 per cent of the total. As has already been pointed out, this service in general limited itself closely to the funds available to meet its charges. These percentages are, therefore, not significant as an indication of need or demand for dental service among these groups.

In Table 23, an effort is made to compare the percentage distribution of charges for health services for these five associations and for comparable groups in the general rural population. It should be noted, however, that the figures shown in Table 25 are only roughly comparable. Their chief difference lies in the fact that the CCMC^(a) and CPS^(b) figures represent charges for all medical care received by the families surveyed while the percentages shown for the five associations represent services rendered by these associations only. For druggists' service this limits

(a) Hollingsworth, Helen; Klem, Margaret C.: Medical Care and Costs in Relation to Family Income. Social Security Board, Bureau Memorandum No. 51, March, 1943. Table 46.
 (b) See (a) above, Table 43.

the service of the five associations to prescribed drugs only whereas the CCMC and CPS percentages include all drugs, home remedies, and patent medicines except cod liver oil, disinfectants, mouth washes, dentifrices, and similar items. For dental service, the five associations limited their service in general to prophylaxis, amalgam and cement fillings, and extractions for children and to prophylaxis and emergency extractions for adults, while the CCMC and CPS percentages represent all dental services secured by the surveyed groups including replacements. Other

Table 23. Percentage distribution of charges by type of service for five associations and for similar groups surveyed by the Committee on the Costs of Medical Care and for the Consumer Purchases Study

Type of service	Five assns.	CCMC	CPS
Physicians	47.4	} 42.9	34.2 ^(c)
Surgeons - Specialists	14.6		9.0 ^(c)
Hospitals	14.6	13.6	^(d)
Druggists	13.5	16.9 ^(e)	15.7 ^(e)
Dentists	9.9	14.5	11.9
Other services		12.1	29.2

services for the CCMC and CPS groups include glasses, private nursing, health and accident insurance, and service by non-medical practitioners, which are not offered by the five associations. It also includes X-ray, laboratory tests, immunizations and, for the CPS, hospital services, which are included under other headings for the five associations. The CPS survey covered non-relief farm families only, and the total charges per family averaged \$47 per year. The CCMC survey covered all white residents in rural areas and the percentages shown are for the \$1200 - \$1999 income groups for which the average charges were \$53.70 per family per year. The chief difference between the figures shown for the five associations and those for the other two groups is in the field of physicians' and surgeons' services. Charges for physicians' and surgeons' services for the five associations represented 62 per cent of the total charges, whereas for the other two groups they were only 42.9 and 43.2 per cent respectively of the total. This proportionate increase in charges for these services in the five associations over that found for other groups is consistent with the increased volume of physicians' and surgeons' services which members of these associations are receiving (Table 6).

- (c) Obstetrical service is included under specialists' service in the CPS distribution and under physicians' service for the five associations.
- (d) Included under other services.
- (e) Include all drugs while for the five associations the charges are for prescribed drugs only.

Disbursements

Total disbursements of the six associations, distributed by type of service, and percentage of these totals, are shown in Table 24. The disbursements shown in this table do not include payments for drugs by association members. They do, however, cover all expenditures made by the associations. The payments for different types of service were made in accordance with budgetary allocation of funds, at the beginning of the fiscal year (Table 1). Consequently they do not reflect the demands of the different types of service on the resources of the associations as satisfactorily as the distribution of charges shown in Table 22. The distribution does not conform exactly to the budgetary distribution shown in Table 1 since contingency funds and balances from the funds of any service, for which charges had been paid in full, have been distributed among the different types of service in proportion to their need.

The cost of administration averaged 6.6 per cent of the total expenditures of all associations. It ranged from 5.5 per cent for the Nevada County association to 10.7 for the Walton County association. The higher percentages (10.7 and 8.6 per cent) for the Walton and Hamilton County associations are accounted for largely by their smaller membership - 881 and 478 families respectively. Expenditures for administration and travel covered the salary of a manager, the salaries of his clerical staff, the rental and maintenance of his office, and the provision of forms and records required for the operation of the association.

Table 24. Disbursements by type of service and their percentage distribution for each association

Type of Service	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
				<u>Expenditures</u>			
Total	\$416,367.57	\$118,021.80	\$27,406.95	\$72,344.65	\$102,971.09	\$43,747.53	\$51,875.55
Physicians	148,176.48	38,064.00	11,329.74	28,182.62	38,581.41	14,389.21	17,629.50
Surgeons -							
Specialists	53,839.84	14,274.00	2,941.80	9,488.30	15,398.09	5,110.95	6,626.70
Hospitals	79,266.89	23,790.00	4,798.74	12,936.08	17,641.97	6,858.90	13,241.20
Druggists	50,473.30	16,653.00	2,526.07	8,102.39	12,181.57	4,824.66	6,185.61
Dentists	52,420.19	16,625.01	3,455.87	9,066.50	13,333.32	5,072.49	4,867.00
Nurses	4,742.38	1,359.65		582.73		2,800.00	
Administration	27,448.49	7,256.14	2,354.73	3,986.03	5,834.73	4,691.32	3,325.54
				<u>Percentage distribution</u>			
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physicians	35.7	32.2	41.3	39.0	37.5	32.9	34.0
Surgeons -							
Specialists	12.9	12.1	10.8	13.1	15.0	11.7	12.8
Hospitals	19.0	20.2	17.5	17.9	17.1	15.7	25.5
Druggists	12.1	14.1	9.2	11.2	11.8	11.0	11.9
Dentists	12.6	14.1	12.6	12.5	12.9	11.6	9.4
Nurses	1.1	1.2		.8		6.4	
Administration	6.6	6.1	8.6	5.5	5.7	10.7	6.4

Table 25. Membership, amount of each type of service received and related charges, payments and rates for each association

	All Assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler (14 Mo.)
<u>Average membership</u>							
Families	7,996	2,379	461	1,395	1,980	839	942
Persons	34,941	10,337	2,015	5,880	8,960	3,822	3,927
<u>Physicians' service</u>							
Cases	50,155	17,199	3,331	6,011	10,200	4,392	9,022
Total	103,860	33,856	8,229	11,718	15,934	8,881	25,242
Calls, office	93,055	29,756	7,695	10,050	14,038	6,898	24,618
" , home, day	6,543	1,780	376	1,230	1,154	1,721	282
" , home, night	851	440	54	128	140	49	40
" , hospital	3,411	1,880	104	310	602	213	302
Obstetrical cases	86,502 195		59	135	109,157	14,619	137
Charges	\$233,780.00 (a)	\$116,400.75	\$26,048.98	\$31,550.97	\$40,197.40	\$19,581.90	(a)
Payments	\$130,546.98 (a)	\$38,064.00	\$11,329.74	\$28,182.62	\$38,581.41	\$14,389.21	(\$19,774.50)
<u>Surgeons'-Specialists' service</u>							
Surgical cases	2,507	807	395	211	513	213	368
Tonsillectomies	1,221	441	158	67	309	79	167
Appendectomies	299	135	10	26	49	35	44
Gynecological	320	792	17	42	62	18	102
Other	667	152	210	76	93	81	55
Non-surgical cases	409	18	68	39	272	8	4
Charges	\$81,325.78	\$32,831.00	\$4,744.50	\$9,994.00	\$16,027.03	\$8,373.25	\$9,356.00
Payments	\$54,598.51	\$14,274.00	\$2,941.80	\$9,488.30	\$15,398.09	\$5,110.95	\$7,385.37

Table 25. Membership, amount of each type of service received and related charges, payments and rates for each association (continued)

	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler (14 Mo.)
Hospital service							
Admissions	3,906	1,340	200	347	912	292	815
Obstetrical cases hospitalized	309 354	98	851	19	522	227	137
Total days hospitalized	15,101	5,200	1,169	15,665	26,605	1,165	3,310
Charges	\$91,164.85	\$28,912.50	\$5,766.40	\$12,936.08	\$17,641.97	\$6,858.90	\$19,049.00
Payments	\$80,875.64	\$23,790.00	\$4,798.74	\$12,936.08	\$17,641.97	\$6,858.90	\$14,849.95
Drug service							
No. of prescriptions	72,088	32,388	5,157	12,334	14,140	8,069	
Charges	\$66,661.16(a)	\$29,106.80*	\$3,575.74	\$12,351.31	\$15,898.61	\$5,728.70	(a)
Payments	\$58,410.23(a,b)	\$22,809.58(b)	\$2,526.07	\$12,351.31(b)	\$15,898.61(b)	\$4,824.66	(\$ 6,185.61)
Dental service							
Cases	10,482	2,554	748	1,618	3,028	1,157	1,377
Extractions							
Cases - under							
15 years	1,776(c)	325	111	190	627	212	311(c)
15 years and over	5,476(c)	1,829	312	921	1,234	571	609(c)
Teeth - deciduous	} 20,317	345	154	228	} 3,872	313	451
permanent		7,014	1,347	3,442		1,748	1,403
Fillings							
Cases - under							
15 years	2,327(c)	223	(c)	139	1,446	215	304(c)
15 years and over	3,092(c)	890	(c)	598	679	216	709(c)
Teeth - deciduous	} 13,084	36	(c)	105	} 4,636	59	288
permanent		2,877	(c)	1,828		1,118	2,137

Table 25. Membership, amount of each type of service received and related charges, payments and rates for each association (continued)

	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler (14 Mo.)
<u>Dental service (continued)</u>							
Other service							
Cases - under							
15 years	956	81	291	78	183	143	180
15 years and over	3,238	472	880	622	300	343	621
Total services	37,612	10,842	2,672	6,303	8,991	3,724	5,080
Charges	\$54,069.50	\$16,625.01	\$4,507.00	\$9,066.50	\$13,341.99	\$5,168.00	\$5,361.00
Payments	\$52,914.19	\$16,625.01	\$3,455.87	\$9,066.50	\$13,333.32	\$5,072.49	\$5,361.00
Charges, all services		\$223,876.06	\$44,642.62	\$75,898.86	\$103,107.00	\$45,710.75	

Rates per thousand persons per year

Physicians' services

Cases	1408.5	1663.8	1653.1	1022.3	1138.4	1149.1	1964.0
Total	2916.7	3275.3	4083.9	1992.9	1778.4	2323.7	5494.8
Calls, office	2613.3	2878.6	3818.8	1709.2	1566.7	1804.8	5359.0
" , home	207.7	214.8	213.4	231.0	144.4	463.1	70.1
" , hospital	95.8	181.9	51.6	52.7	67.2	55.7	65.7
Obstetrical cases	24.2 23.0	18.9	29.3	23.0	21.1 17.5	38.2 31.1	29.8

Surgery

Cases	70.4	78.1	196.0	35.9	57.2	55.7	80.1
Tonsillectomies	34.3	42.7	78.4	11.4	34.5	20.7	36.4
Appendectomies	8.4	13.1	5.0	4.4	5.5	9.2	9.6
Gynecological	9.0	7.6	8.4	7.1	6.9	4.7	22.2

Hospital service

Admissions	109.7	129.6	99.3	59.0	101.7	76.4	177.4
Days hospitalized	424.1	503.0	580.1	266.4	296.9	304.8	727.1

Table 25. Membership, amount of each type of service received and related charges, payments and rates for each association (continued)

	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler (14 Mo.)
Rates per thousand persons per year							
<u>Drug service</u>							
No. of prescriptions	2546.8(d)	3133.2	2559.3	2516.2(d)	1907.9(d)	2111.2	
<u>Dental service</u>							
Cases	294.4	247.1	371.2	275.2	337.9	302.7	300.0
Extractions	570.6	711.9	744.9	624.1	432.1	539.2	403.6
Fillings	367.5	281.9	(c)	328.7	517.4	308.0	527.8
Total services	1056.3	1048.9	1329.4	1071.9	1003.5	974.4	1106.0
<u>Physicians' services</u>							
No. of calls per case	2.1	2.0	2.5	1.9	1.6	2.0	2.8
No. of office calls per home and hospital call	8.6	7.3	14.4	6.0	7.4	3.5	39.4
Charges per case	\$5.68(a)	\$6.77	\$4.81	\$5.25	\$3.94	\$4.46	(a)
Amount paid per case	\$3.00	\$2.21	\$3.35	\$4.69	\$3.78	\$3.28	\$2.19
<u>Hospital service</u>							
No. of days per case, all cases	3.9	3.9	5.8	4.5	2.9	4.0	4.1
Per cent of physicians' and surgeons' cases hospitalized	7.4	7.4	5.3	5.6	8.5	6.3	8.7
Per cent of hospital cases admitted for delivery	7.9 9.1	7.3	8.25 5	5.5	6.0 2.4	8 9.2	16.8
Per cent of deliveries hospital- ized	35.9 44.1	50.3	68.6 4	14.1	29.2 14.0	8 22.7	100.0
Charges per case	\$23.34	\$21.58	\$28.87	\$37.28	\$19.34	\$23.49	\$23.37
Charges per day, all service	\$6.04	\$5.56	\$4.94	\$8.26	\$6.63	\$5.89	\$5.70
" " " , room only	\$4.53	\$5.00	\$4.00	\$4.80	\$3.82	\$3.00	\$5.00
<u>Drug service</u>							
Charge per prescription	\$.91(a)(d)	\$.84	\$.69	\$.99(d)	\$1.06(d)	\$.71	(a)

Table 25. Membership, amount of each type of service received and related charges, payments and rates for each association (continued)

	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler (14 Mo.)
<u>Dental service</u>							
No. of fillings per extraction	.64(c)	.40	(c)	.53	1.2	.57	1.3
Per cent of cases under 15							
Extractions	24.5	15.1	26.2	17.1	33.7	27.1	33.8
Fillings	42.9(c)	20.0	(c)	18.9	68.0	49.8	30.0
<u>Per cent paid on charges</u>							
Physicians	55.8(a)	32.7	43.5	89.3	96.0	73.5	(a)
Surgeons-specialists	67.1	43.5	62.0	94.9	96.1	61.0	78.9
Hospitals	88.1	82.3	83.2	100.0	100.0	100.0	78.0
Druggists	87.6(a,b)	78.4(b)	70.6	100.0	100.0	84.2	(a)
Dentists	97.9	100.0	76.7	100.0	99.9	98.2	100.0

- (a) The Wheeler County association made payments for physicians' and drug service on the capitation basis. Totals of charges and related payments for these services and percentage payment and other rates based on charges for the services for all associations are, therefore, based on the records of the other five associations.
- (b) Includes payments by patients on charges for prescriptions.
- (c) Information from the Wheeler County association on dental cases receiving extractions and fillings covers the period from November forward only. The Hamilton County association did not provide dental fillings. Totals and rates for all associations, therefore, do not represent the full experience of all six associations.
- (d) These rates are for periods during which drug service was in operation. (See Table 18).

Appendix Table 26. Monthly rates (annual basis) for physicians' calls for each association

Month	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
Number of calls per thousand persons per year							
July '42	5048	.....	.....	.....	.....	.....	5048
August	2934	.....	.....	.....	2819	.....	6846
September	3081	2886	3052	2039	2094	.....	5374
October	3086	3526	3929	2706	1862	.....	4693
November	2576	3462	3834	2436	1354	997	4222
December	2628	2850	4211	2076	1317	2606	4983
January '43	2762	3660	3792	1631	1360	2028	5328
February	2833	3285	4118	1932	1942	2235	4544
March	2790	2905	4413	1770	1730	2311	5939
April	2889	3000	4525	1888	1801	2774	5763
May	2774	3087	4033	2086	1696	2478	5157
June	2823	3281	3903	1900	1547	2783	5211
July	3024	3593	4400	2093	1559	2510	6856
August	3712	3696	4592	2237	.....	2431	7662
September	2319	.....	.....	2216	.....	2400	.....
October	2078	.....	.....	.....	.....	2078	.....

Appendix Table 27. Monthly rates (annual basis) for tonsillectomies for each association

Month	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	Number of tonsillectomies per thousand persons per year						
July '42	74	...	...	...	...	...	74
August	35	...	...	...	67	...	73
September	85	88	118	7	93	...	130
October	46	46	133	3	56	...	26
November	35	80	18	11	26	...	9
December	20	28	47	18	14	14	3
January '43	15	22	35	18	5	16	23
February	19	27	51	2	12	24	19
March	17	18	40	8	22	12	9
April	23	38	23	8	29	6	12
May	21	19	34	14	23	15	29
June	39	19	18	10	30	42	78
July	33	46	51	6	36	38	15
August	60	82	216	17	...	35	...
September	25	...	...	35	...	18	...
October	21	...	...	...	...	21	...

Appendix Table 28. Monthly rates (annual basis) for days of hospitalization for each association

Month	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	Number of days of hospitalization per thousand persons per year						
July '42	...	...	...	...	...	...	790
August	495	...	...	...	364	...	710
September	446	429	429	145	349	...	836
October	441	517	519	252	334	...	647
November	412	714	589	372	110	41	571
December	383	405	886	255	240	283	654
January '43	450	532	653	346	205	303	955
February	430	538	617	268	268	290	781
March	360	360	669	154	276	225	812
April	424	487	557	342	333	203	729
May	367	382	459	301	251	353	668
June	366	387	603	187	255	402	648
July	457	580	459	189	438	459	628
August	563	702	504	401	...	342	740
September	...	...	...	247	...	257	...
October	...	...	...	...	...	430	...

Appendix Table 29. Monthly rates (annual basis) for drug prescriptions filled for each associatio

Month	All assns.	Cass	Hamilton	Nevada	Newton	Walton
	Number of drug prescriptions filled per thousand persons per year					
August '42	3726	...	...	...	3726	...
September	3228	4084	1490	2147	2791	...
October	2669	3919	2930	3316	952	...
November	3054	3645	2595	3209	...	1185
December	2258	3352	2953	2465	842	1185
January '43	2211	4322	2902	129	1073	1073
February	2144	3404	2986	603	1501	2187
March	2137	2565	2592	2211	1412	2320
April	2224	2607	3101	2202	1514	2401
May	2025	2104	2371	2402	1565	2207
June	2076	2172	2206	2249	1518	2484
July	2287	2768	2005	2449	2045	2308
August	2486	2590	2503	2476	...	2223
September	2284	...	...	2668	...	1983
October	1970	...	...	...	...	1970

Appendix Table 30. Monthly rates (annual basis) for dental fillings for each association

Month	All assns.	Cass	Nevada	Newton	Walton	Wheeler
	Number of dental fillings per thousand persons per year					
July '42	...	...	...	...	...	692
August	...	...	...	1103	...	1048
September	530	258	345	982	...	531
October	515	470	349	578	...	662
November	360	318	444	302	357	484
December	312	258	473	156	455	593
January '43	254	288	320	130	343	392
February	325	330	461	165	472	496
March	362	265	316	439	382	482
April	267	283	181	239	305	382
May	224	187	211	244	183	466
June	299	157	239	590	230	586
July	521	265	322	1242	275	357
August	308	302	364	...	275	465
September	344	...	463	...	251	...
October	234	...	...	...	234	...

Appendix Table 31. Monthly rates, (annual basis) for dental extractions for each association

Month	All assns.	Cass	Hamilton	Nevada	Newton	Walton	Wheeler
	Number of dental extractions per thousand persons per year						
July '42	...	...	...	...	...	...	371
August	565	...	...	...	778	...	388
September	669	1075	450	353	395	...	465
October	730	1261	791	729	173	...	583
November	758	1265	704	933	371	1148	435
December	438	537	971	667	197	322	217
January '43	510	607	1121	558	234	569	463
February	519	634	1056	518	320	430	477
March	554	522	1140	581	460	567	491
April	623	670	399	825	561	720	359
May	495	448	284	597	608	438	419
June	546	392	1071	514	793	357	311
July	435	550	221	540	294	532	268
August	546	582	725	605	...	596	379
September	856	...	...	888	...	830	...
October	605	...	...	...	...	605	...