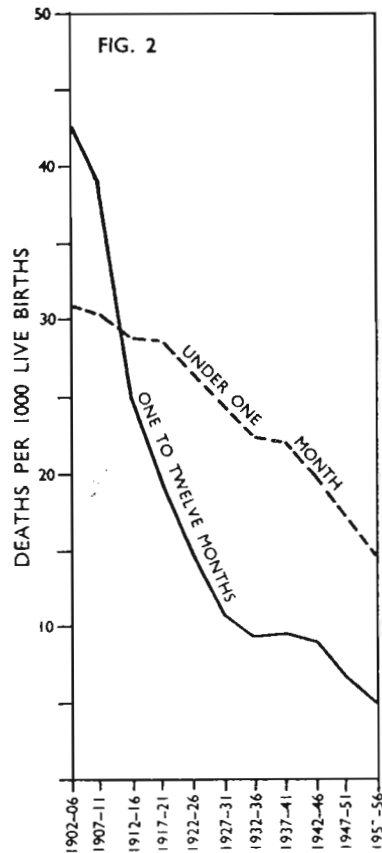
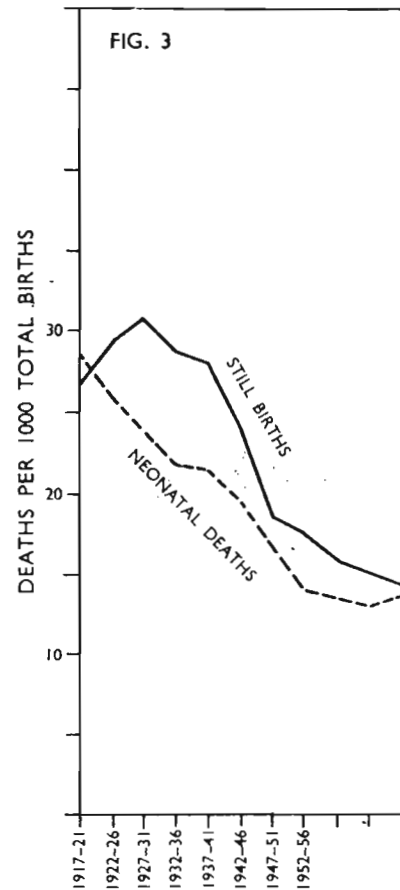


INFANT MORTALITY (EUROPEANS)
RATES PER 1000 LIVE BIRTHSSTILL BIRTHS & NEONATAL DEATHS.
RATES PER 1000 TOTAL BIRTHS.

available as antenatal clinics, while some of the Plunket nurses were trained in antenatal work.

For a number of years also Jellett, the Department's Consulting Obstetrician, and Paget, the Inspector of Maternity Hospitals, used their influence to reduce the high incidence of forceps delivery which was an important cause of infant deaths from birth injuries.⁽⁴⁾

Finally, as the Karitane hospitals became available, and skill was acquired in the treatment of premature infants, it became possible to save an increasing proportion of premature babies.

The influence of the New Zealand Obstetrical and Gynaecological Society also helped to bring about an improvement in the general standard of obstetrics, and with the introduction of maternity benefits

in 1939, every pregnant woman became entitled to antenatal supervision and treatment by her own doctor. The combined result of these various measures has been a reduction in neonatal deaths from 28.9 per 1,000 live births in 1917-21 to 13.89 in 1957, and of still births from 29.73 per 1,000 total births in 1922-26 to 15 in 1958. This represents a very substantial saving of infant life.

Causes of Still Births

In 1943 regulations were enacted requiring doctors to notify the cause of death of the foetus in cases of still birth, and also the cause of death of foetuses dying between the twentieth week and the twenty-eighth week of pregnancy. Notifications have been very incomplete, but between 1953 and 1958 388 foetal deaths were thus reported on with the following results:

Table 8: Causes of Still Births

Cause	Deaths
Chronic disease in mother	9
Acute disease in mother	5
Diseases and conditions of pregnancy and childbirth	61
Difficulties in labour	8
Other causes in mother	8
Placental and cord conditions	89
Congenital malformation of foetus	22
Diseases of foetus and ill-defined causes	120
Unspecified	66
Total	388

This gives some indication of the preventive measures likely to bring about a reduction of still births, but more information is needed before a comprehensive campaign of prevention can be undertaken.

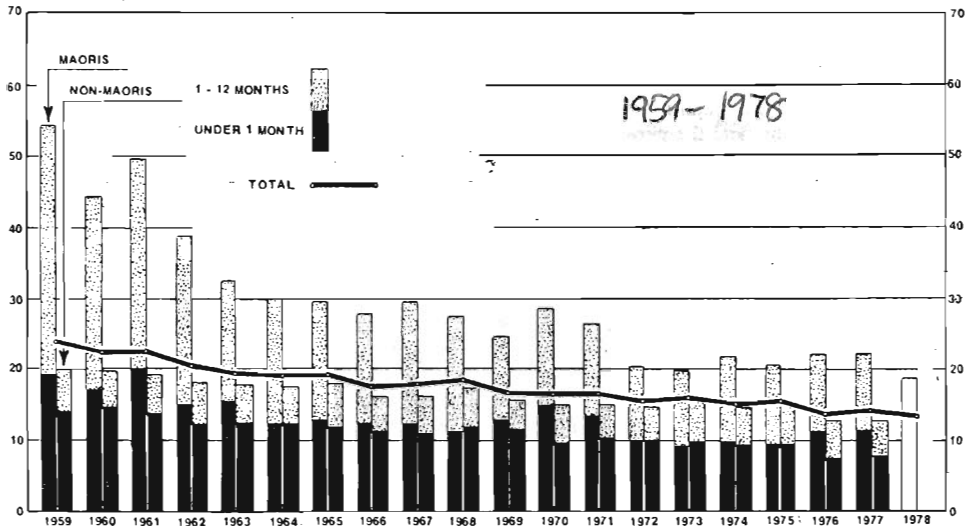
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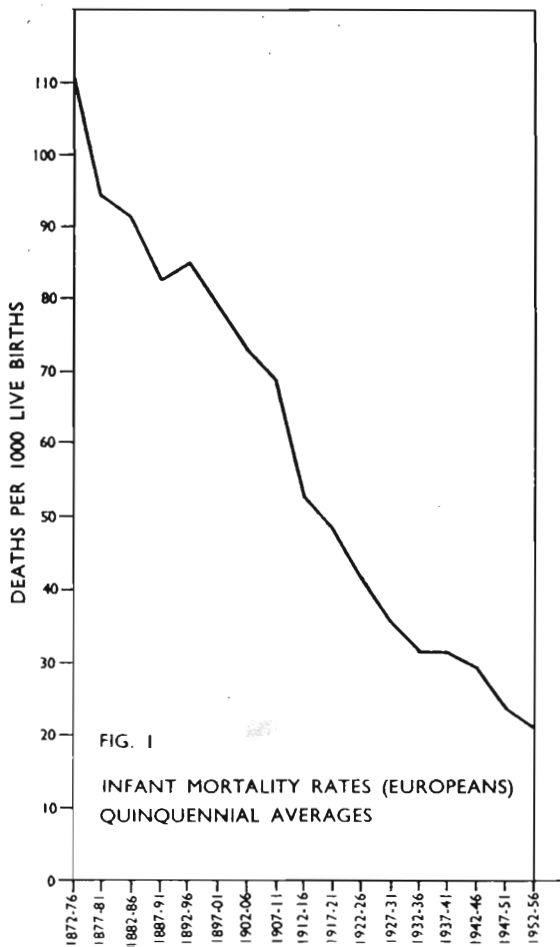
Conclusion

It will be clear that the problems of infant mortality, including still births, are complex and varied, and must be attacked on a wide front and with a variety of methods. The Plunket Society has been successful in reducing deaths after the first month of life, and particularly those due to the diarrhoeal diseases, and deaths arising from maternal ignorance. No further great improvement can be achieved by these methods, because deaths between the first and the twelfth months have already reached the low figure of about five per 1,000 live births. Infant welfare services, as supplied by the society, will continue to be an important public health function in maintaining infant mortality at its present

The following diagram illustrates infant mortality rates in New Zealand.

INFANT DEATHS UNDER 12 MONTHS
AVERAGE RATE PER 1000 BIRTHS



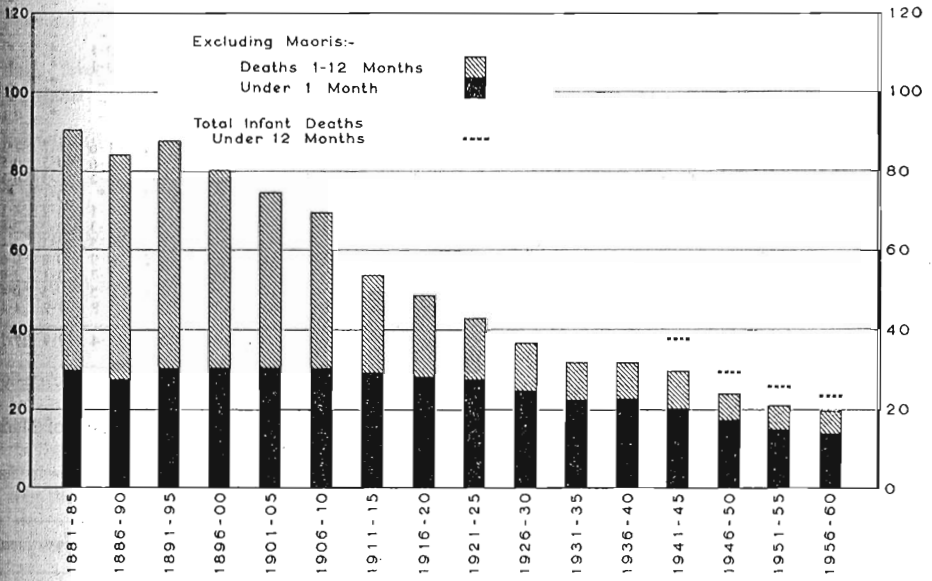


1881-1960

The accompanying diagram further illustrates the reduction in the infant-mortality rate that has taken place over a long period, and the relatively steady low rate of recent years.

INFANT DEATH RATE

AVERAGE RATE PER 1,000 LIVE BIRTHS.



years would also probably be due to meningitis. The following table shows quinquennial average death-rates of infants under one year of age, per 1,000 live births.

Period.	Epidemic Diseases.	Tuberculosis.	Infantile Convulsions.	Respiratory Diseases.	Gastric and Intestinal Diseases.	Malformations.	Early Infancy.	Other Causes.	Totals.
1872-1876	13.5	5.5	9.7	12.9	24.2	1.2	25.0	17.3	109.3
1877-1881	10.2	5.2	7.5	12.3	19.8	1.4	21.9	15.3	93.6
1882-1886	9.3	4.7	7.9	11.8	19.1	1.2	25.5	12.3	91.8
1887-1891	8.9	3.7	6.3	10.5	18.5	1.3	24.7	8.8	82.7
1892-1896	9.8	3.3	6.6	11.0	16.6	1.4	24.9	11.2	84.8
1897-1901	6.1	2.6	5.6	10.0	17.2	1.5	26.2	9.7	78.9
1902-1906	5.5	1.5	4.1	9.7	15.3	1.3	27.6	7.9	72.9
1907-1911	5.9	1.3	3.3	7.6	15.5	1.9	26.7	6.3	68.5
1912-1916	3.6	0.6	2.2	5.1	7.4	3.9	26.2	3.5	52.5
1917-1921	3.2	0.5	1.9	4.7	4.5	4.3	26.1	2.9	48.1
1922-1926	1.8	0.4	1.3	4.3	2.8	4.8	22.4	3.3	41.1
1927-1931	1.5	0.3	0.5	3.7	1.7	5.0	19.4	3.1	35.2
1932-1936	1.5	0.2	0.6	3.3	1.2	5.0	17.5	2.4	31.7
1937-1941	1.4	0.2	0.2	3.1	1.3	5.5	17.4	2.5	31.6
1942-44 (3 years)	1.3	0.1	0.1	3.4	1.3	4.6	16.4	2.9	30.1

The rates per 1,000 births for the two sexes combined at different ages during the first year of life are now given for each of the last 11 years.

INFANT-MORTALITY RATES, 1950-60 (PER 1,000 LIVE BIRTHS)

Year	Under 1 Day	1 Day and Under 2 Days	2 Days and Under 1 Week	Total Under 1 Week	1 Week and Under 2 Weeks	2 Weeks and Under 3 Weeks	3 Weeks and Under 1 Month	Total Under 1 Month	1 Month and Under 12 Months	Total Under 1 Year
1950	7.3	3.1	4.2	14.6	1.2	0.6	0.2	16.6	6.2	22.8
1951	6.9	2.9	4.9	14.7	1.0	0.2	0.3	16.2	6.6	22.8
1952	6.3	2.4	4.3	13.0	1.2	0.4	0.5	15.1	6.7	21.8
1953	5.9	2.1	4.1	12.1	1.1	0.6	0.5	14.3	5.8	20.1
1954	6.0	2.4	4.2	12.6	1.0	0.4	0.4	14.4	5.6	20.0
1955	6.4	1.9	3.5	11.8	1.3	0.5	0.5	14.1	6.0	20.1
1956	6.5	1.5	3.6	11.6	1.1	0.4	0.3	13.3	6.0	19.4
1957	6.9	2.3	3.1	12.3	1.0	0.3	0.2	13.8	6.1	20.0
1958	6.8	1.8	3.0	11.6	0.9	0.7	0.4	13.6	5.8	19.4
1959	7.1	1.8	3.3	12.1	0.9	0.5	0.4	13.9	6.0	19.9
1960	7.5	2.2	3.2	12.9	0.8	0.5	0.3	14.5	5.2	19.7

Infants who die in the first year of life may be grouped roughly into two main classes, viz, those dying within one month of birth and those surviving the first month of life but dying before their first anniversary of their birth. Deaths amongst the first class, called neo-natal deaths, are due principally to pre-natal and natal influences. The second group covers those infants who have succumbed in the main to causes arising from post-natal influences such as the various epidemic diseases, diseases of the respiratory system, faulty feeding, and other environmental factors.

The next table shows that, whereas in the quinquennium 1956-60 the death rate for children under one month of age was 53 per cent lower than in the quinquennium 1881-85, the rate for children who had survived the first month of life was only approximately one-tenth as high as in the eighties. In other words, whereas formerly over 60 children out of every 1,000 who survived the first month of life died before reaching one year of age, now only six such deaths occur. While the decline in the under-one-month group has been progressive for some years, it was among infants who had survived the first month of life that the most marked reductions were achieved. In the thirties, however, the reduction of this rate was arrested, and in the quinquennium 1941-45 an increase was recorded for the first time. For some years it had been considered that any further substantial decrease in the total infant-mortality rate would have to be achieved in the under-one month group. The figures for 1956-60, however, indicate that, whereas this group recorded a decrease of 31 per cent from the 1941-45 rate, the one-month-and-over group declined by 39 per cent.

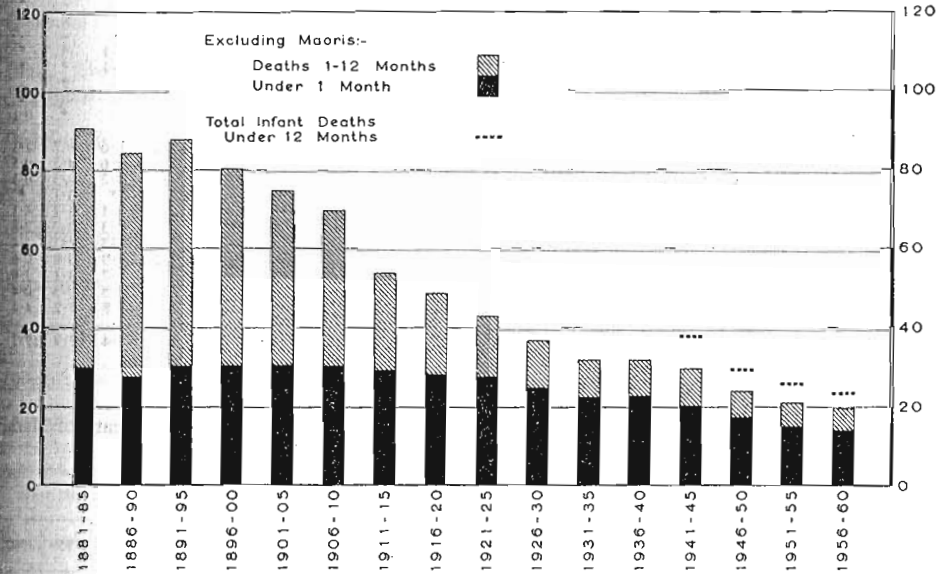
Period	Deaths per 1,000 Births		
	Under 1 Year	Under 1 Month	Between 1 and 12 Months
1881-1885	90.60	29.77	60.83
1886-1890	84.09	27.57	56.52
1891-1895	87.60	30.34	57.26
1896-1900	80.06	30.38	49.68
1901-1905	74.77	30.64	44.13
1906-1910	69.62	30.28	39.34
1911-1915	53.63	29.28	24.35
1916-1920	48.62	28.16	20.46
1921-1925	42.75	27.48	15.27
1926-1930	36.70	24.82	11.88
1931-1935	31.88	22.34	9.54
1936-1940	31.83	22.51	9.32
1941-1945	29.53	20.01	9.52
1946-1950	23.92	17.31	6.61
1951-1955	20.95	14.84	6.11
1956-1960	19.67	13.87	5.80

INFANT MORTALITY 113
1951-1960

The accompanying diagram further illustrates the reduction in the infant-mortality rate that has taken place over a long period, and the relatively steady low rate of recent years.

INFANT DEATH RATE

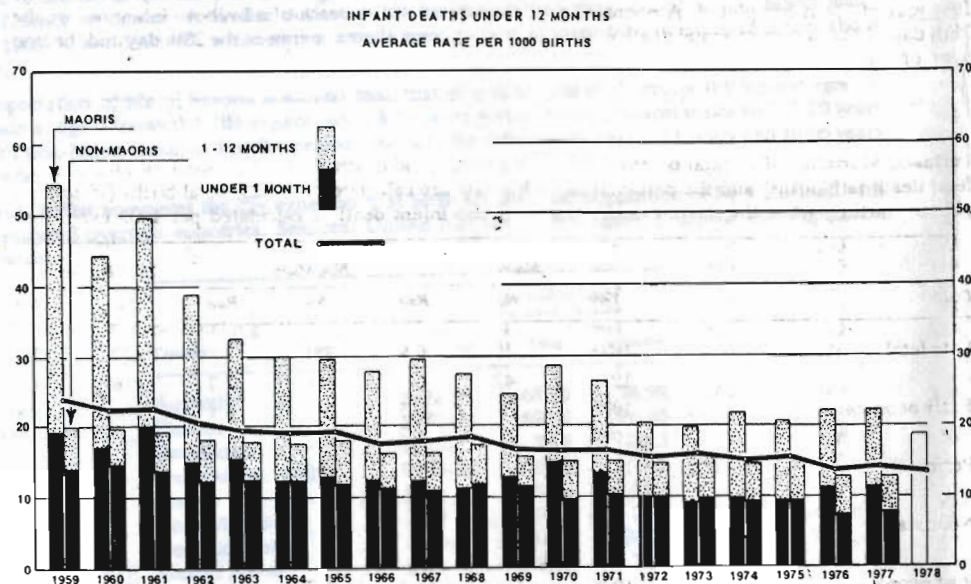
AVERAGE RATE PER 1,000 LIVE BIRTHS



Causes of European Infant Mortality - The principal causes of infant mortality over the last 10 years, showing both numbers and rates per 1,000 live births, are shown in the following table. The classification is according to the Sixth (1948) and Seventh (1955) Revisions of the International List.

Causes of Death	Number of Deaths									
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Tuberculosis, all forms	-	-	-	-	-	2	2	1	-	1
Congenital syphilis	-	-	-	-	1	-	-	-	-	1
Enteric fever and other salmonella infections	-	-	-	-	2	-	-	-	-	1
Dysentery, all forms	-	-	-	-	1	-	-	-	-	1
Diphtheria	-	-	-	-	-	-	-	-	-	-
Whooping cough	4	6	4	2	1	1	-	6	2	1
Meningococcal infections	5	10	7	7	9	8	9	5	2	2
Tetanus	1	-	-	-	1	1	-	-	1	-
Poliomyelitis	-	2	1	-	2	-	-	-	-	-
Measles	-	2	2	2	-	-	-	-	1	4
Influenza, pneumonia, and bronchitis after the first four weeks of life	96	79	73	77	79	84	107	87	91	70
Pneumonia of the newborn	30	22	24	28	21	35	26	31	30	29
Gastro-enteritis after the first four weeks of life	26	10	12	16	10	14	10	9	16	6
Diarrhoea of the newborn	-	1	5	1	3	2	3	3	5	1
Congenital malformations	151	205	163	208	196	186	165	223	231	226
Birth injury	146	118	127	110	144	143	135	123	119	151
Asphyxia and atelectasis	164	174	152	110	137	128	172	134	124	135
Haemolytic disease of newborn (erythroblastosis)	38	34	37	40	40	39	26	50	43	32
Immaturity unqualified	191	191	162	198	162	143	176	132	167	164
Accidents	33	26	24	17	27	26	39	27	27	21
Other and undefined causes	131	129	136	152	164	166	167	213	228	244
Totals	1,017	1,014	931	968	1,002	978	1,036	1,043	1,089	1,090

The following diagram illustrates infant mortality rates in New Zealand.



Causes of Infant Mortality—Deaths from the principal causes of infant mortality, and the rate per 1000 live births, are shown for the latest available 3 years in the following table.

Cause of Death	Number of Deaths			Rate per 1000 Live Births		
	1975	1976	1977	1975	1976	1977
Influenza, pneumonia, and bronchitis ...	111	103	98	2.0	1.9	1.8
Gastro-enteritis, diarrhoea, also dysentery ...	15	13	9	0.3	0.2	0.2
Congenital anomalies ...	214	186	185	3.8	3.4	3.4
Neonatal disorders arising from certain diseases of the mother ...	57	32	34	1.0	0.6	0.6
Birth injury, difficult labour, and other anoxic and hypoxic conditions ...	44	34	30	0.8	0.6	0.6
Asphyxia of newborn unspecified ...	39	20	21	0.7	0.4	0.4
Haemolytic disease of newborn ...	8	7	4	0.1	0.1	0.1
Hyaline membrane disease ...	37	23	19	0.7	0.4	0.4
Immaturity and multiple pregnancy ...	58	56	60	1.0	1.0	1.1
All other causes ...	324	300	310	5.7	5.4	5.7
Total infant deaths ...	907	774	770	16.0	14.0	14.2

MATERNAL DEATHS—The Maternal Mortality Research Act 1968 defines a maternal death as "a death that occurs during pregnancy or within a period of 3 months after the date of termination of a pregnancy". Deaths from complications of pregnancy, childbirth, and the puerperium numbered 10 in 1977 with a rate of 1.8 per 10 000 live births. Deaths occurring during pregnancy or within 3 months of delivery but not due to complications of pregnancy or childbirth or the puerperium numbered 12 in 1977 with a rate of 2.2 per 10 000 live births.

DEATHS OF PRE-SCHOOL CHILDREN—Recent *Yearbooks* have included a review of mortality rates among children aged 1 to 4 years in New Zealand and in selected overseas countries. New Zealand's ranking has been disappointingly low. A review based on 1974 data gave New Zealand's age-specific mortality rate for children aged 1-4 as 83 per 100 000 compared with (for example) 44 per 100 000 in Sweden, 65 per 100 000 in England and Wales, and 74 per 100 000 in the United States.

The main cause for New Zealand's poor showing is the relatively high rate of mortality among pre-schoolers from accidents and violence, especially motor-vehicle accidents and drowning. In 1974 New Zealand's mortality rate from accidents and violence among 1-4 year-old children approached 3 times the Swedish rate and was more than twice the rate in England and Wales. Various explanations have been attempted, but the fact remains that New Zealand pre-schoolers are at higher risk of accidental death than pre-schoolers in many other countries with similar standards of living.

The following table shows the number of deaths of pre-school children from accidents and violence in New Zealand during 1977. The leading causes, accounting for 48 of the 84 deaths, were accidents involving motor vehicles and drowning.

Causes of Death	Sex	Ages (In Years)				Total
		1	2	3	4	
Motor vehicles ...	M	2	1	7	5	15
	F	2	3	4	5	14
Drowning ...	M	3	5	1	4	13
	F	3	1	2	-	6
Homicide ...	M	1	1	1	2	5
	F	2	-	1	-	3
Fire ...	M	-	-	2	1	3
	F	-	2	-	1	3
Fall ...	M	1	-	1	1	3
Mechanical suffocation ...	M	1	1	-	-	2
	F	-	-	1	-	1
Poisoning ...	M	-	1	-	1	2
Struck by falling object ...	M	-	1	-	1	2
Machinery ...	M	1	1	-	-	2
Water transport ...	M	-	-	-	1	1
Hit by train ...	F	1	-	-	-	1
Kicked by horse ...	F	-	1	-	-	1
Landslide ...	M	-	-	1	-	1
Inhalation of stomach contents ...	M	-	1	-	-	1
Caught between objects ...	F	1	-	-	-	1
Piercing object ...	F	1	-	-	-	1
Scalds ...	F	-	-	-	1	1
Electric current ...	F	1	-	-	-	1
Late effect of fall ...	F	-	-	1	-	1
Total ...	M	9	12	13	16	50
	F	11	7	9	7	34
Total		20	19	22	23	84

DEATHS AMONG TOTAL POPULATION FROM EXTERNAL CAUSES—Accidents, poisonings, and violence caused approximately 8 percent of the total deaths in each of the years 1975 to 1977.