

INFANT MORTALITY IN EL PASO COUNTY: ETHNIC  
AND SOCIOECONOMIC CORRELATES

by

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## TABLE OF CONTENTS

	Page
INTRODUCTION . . . . .	1
LITERATURE REVIEW . . . . .	3
Methods of study . . . . .	3
National study, 1960 . . . . .	6
Studies focusing on socioeconomic status . . . . .	8
Studies focusing on biomedical variables . . . . .	11
Exogenous and endogenous factors . . . . .	15
Cultural influences . . . . .	16
RATIONALE OF THE STUDY . . . . .	19
Summary of literature . . . . .	19
Background of study . . . . .	21
Hypothesis . . . . .	25
PROCEDURE AND METHODS . . . . .	26
FINDINGS . . . . .	29
ANALYSIS OF FINDINGS . . . . .	42
SUMMARY AND CONCLUSIONS . . . . .	49
Suggestions for further research . . . . .	50
APPENDIX: CAUSES OF DEATH DATA . . . . .	51
BIBLIOGRAPHY . . . . .	52

## TABLES

		Page
TABLE 1.	Anglo and Spanish Surname Neonatal and Postneonatal Deaths	29
TABLE 2.	Anglo and Spanish Surname Neonatal and Postneonatal Deaths by Median Income of Census Tract	30
TABLE 3.	Anglo and Spanish Surname Neonatal and Postneonatal Deaths by Occupation (White Collar and Blue Collar) of the Father	32
TABLE 4.	Anglo and Spanish Surname Neonatal and Postneonatal Deaths by Categories of Father's Occupation	33
TABLE 5.	Anglo and Spanish Surname Neonatal and Postneonatal Deaths by Causes of Death Associated with Environmental Conditions	34
TABLE 6.	Observed and Expected Frequencies of Postneonatal Deaths from Causes Associated with Environmental Conditions by Anglo and Spanish Surname Group	36
TABLE 7.	Observed and Expected Frequencies of Neonatal and Postneonatal Deaths Associated with Environmental Conditions by Anglo and Spanish Surname	37
TABLE 8.	Prenatal Care of Anglo and Spanish Surname Socioeconomic Groups as Determined by Occupation of Father	39
TABLE 9.	Attendant at Birth for Anglo and Spanish Surname Socioeconomic Groups as Determined by Occupation of Father	41
TABLE 10.	Anglo, Latin, and Black Neonatal and Postneonatal Deaths in Lubbock, Texas, 1965 and 1966	43

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## INTRODUCTION

After a decline in the infant mortality rate of 4.7 percent per year during the 1940's in the United States, the rate of decline leveled off at one percent each year between 1951 and 1962 (Shapiro, 1968). During the 1950's and early 1960's, when infant mortality was declining more slowly, high risk groups, such as infants weighing 2500 grams or less at birth, infants born to mothers who previously had a fetal death, and non-white infants, showed little improvement. In some large cities the rate even increased.

Prior to the rate decline in the 1950's, the major contributory factor in reducing rates was the reduction in mortality from infectious diseases of all types. This reflected advances in maternal and child care, and improvement in medical facilities and economic and environmental conditions in the United States. Behar (1964) pointed out that, although they have been eliminated as influences upon infant mortality rates in the United States, nutritional and infectious factors still influence the rates in preindustrial societies.

In the late 1960's and early 1970's the United States again experienced a more rapid decline in infant mortality rates. The rate dropped from 47.0 per 1,000 live births in

1940 to 29.2 in 1950, then only to 26.0 in 1960 and 24.7 in 1965. Since 1965 the rate has dropped by almost one per 1,000 each year and in 1974 was 16.5 (provisional data).<sup>1</sup> The infant mortality rate in Texas in 1965 was 26.1<sup>2</sup> which was slightly higher than the national rate. The 1974 Texas rate was 17.4 (provisional data).<sup>3</sup>

This study of infant deaths in El Paso County focuses upon the two dominant ethnic groups of the area, Spanish surname and Anglo.

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<sup>1</sup>Monthly Vital Statistics Report, Provisional Statistics. Annual Summary for the United States. United States Department of Health, Education, and Welfare, Rockville, Md., 1974.

<sup>2</sup>Vital Statistics, Texas 1965. Texas State Department of Health, Austin, Texas, 1966.

<sup>3</sup>Monthly Vital Statistics Report, Provisional Statistics. Annual Summary for the United States. United States Department of Health, Education, and Welfare, Rockville, Md., 1974.



## LITERATURE REVIEW

Although studies of infant mortality have considered different kinds of samples, used dissimilar procedures for collecting data, and defined the independent variables differently, one conclusion is fairly consistently supported: infant mortality is related to low birth weight, and low birth weight is related to certain socioeconomic factors.

Infant mortality data are generally divided into two periods, neonatal, the first 28 days, and post neonatal, the remaining eleven months of the first year. Deaths in the neonatal period are found to be closely related to birth weight and/or gestation time, while postneonatal deaths are attributed to many factors including those related to socioeconomic status and environmental features.

### Methods of study

Infant mortality has been studied in relationship to socioeconomic status as indicated by family income, education of father, education of mother, census tract of residence, and occupation of father. Biomedical considerations have included mother's age, parity, previous fetal loss, period of gestation, birth weight, age at death, cause of death, prenatal care, and maternal smoking. Other variables considered

in infant mortality studies include illegitimacy status, race, ethnic group, and sex of the infant.

Infant mortality has been treated differently by several investigators. Fischler (1971) investigated the validity of an additive model using variables of mother's age, parity, and race. First order interactions between age and parity were found to be important, while second order interactions were negligible.

Jiobu (1972) studied the relationship of differential socioeconomic status between blacks and whites to racial differential in infant mortality rates. Path analysis showed black-white differentials in neonatal mortality not to be related to the socioeconomic measures. Postneonatal mortality differences were affected by socioeconomic differences, especially along the dimensions of income, education, and regional location.

Shah (1971) summarized previous studies to show that socioeconomic status, race, mother's age, parity, prenatal care, and birth weight affect infant death rates. He pointed out that these factors are all closely interrelated and designed his study to separate the effects of each of the factors, thereby determining the relative importance of each of them in neonatal and postneonatal mortality. The study analyzed data from matched birth and death records by Feldstein's binary variable multiple regression method. Birth

weight was the most important factor in both neonatal and postneonatal mortality. In the neonatal period the factors of race, socioeconomic status, and maternal age were important only because they were related to birth weight. In the post-neonatal period, next to birth weight, maternal age and live birth order were the most important factors. Stockwell (1961) had obtained similar results using the same method of analysis.

Most recent studies of infant mortality have used linked records. Since many factors affecting a child's chance for survival are found only on the birth certificate, information is taken partly from the death record and partly from the live birth record of the same infant. Advantages of these linked records are that there is a greater number of variables available and that they permit the computing of infant mortality rates according to characteristics found only on the birth record (Chase, 1970).

Donabedian (1965) studied infant mortality in Boston by mapping census tracts which were ranked by a combined socioeconomic score and by perinatal (still births and deaths which occur from 0 through 27 days of life) mortality rates. He found a sharp geographic localization of the areas of highest mortality and striking correspondence in the two maps. This methodology of social area analysis had been used earlier by Willie (1959, 1962) and by Stockwell (1962, 1963) in studies

done in Hartford, Connecticut; Syracuse, New York; and Providence, Rhode Island. Donabedian concluded that "the median income of census tract of residence is perhaps the most discriminating variable" in pointing out the association between socioeconomic status and mortality (Donabedian, 1965 p. 1088).

Kessner (1973 p. 112) criticized census tract studies stating that "the socioeconomic status of a tract is determined by an average of characteristics and therefore combinations of census tracts result in socioeconomic heterogeneity in each category. The result is that difference in mortality may be attenuated or even disappear."

#### National study, 1960

A nationwide cohort study was made by the National Center for Health Statistics linking birth and death certificates for each infant born in the United States in 1960 who died before reaching the age of one year. Several publications of the National Vital Statistics System reported findings of the survey. Chase (1970) described the method and registration aspects of the study. Armstrong (1972) analyzed the relationship of infant mortality to birth weight, gestation period, age of mother, color, sex, plurality, and age at death and found birth weight to have the greatest effect on the infant mortality rate. The non-white rate was

86.9 percent above the rate for white infants. Differences in distribution of births by birth weight accounted for about two-thirds of the excess mortality of non-whites. Infants fulfilling the criteria of less than 2500 gram birth weight and less than 37 weeks of gestation were most vulnerable.

Chase (1972) compared results of the 1960 survey with a study of a 1950 cohort. Neonatal mortality had continued to be a major component of infant mortality. The neonatal death rate for white infants had declined from 18.9 to 16.9, but for non-whites the rate remained unchanged at 26.7. The comparison suggested an increase in the proportion of non-white infants weighing 2500 grams or less from 9.7 to 12.9 percent. This disadvantageous distribution of birth weight was offset by more favorable neonatal mortality rates for non-whites in birth weight groups up through 3009 grams. This more favorable neonatal mortality rate may be associated with greater maturity, suggesting that data by gestation needs to be included in such studies.

Varva (1973) reported information gained from the linked records of the 1960 study regarding the relationship of age of mother, total birth order, color, sex, illegitimacy, and age at death to infant mortality rates. The rate for male infants exceeded that for females by 30 percent. The rate for non-white infants was double that for white infants and was higher at each age of death. Relative differences were greater