

**REPORT**  
**OF**  
**PERINATAL PERIODS OF RISK**  
**IN**  
**TARRANT COUNTY**

**September 2006**

**A collaboration of**

**Tarrant County Public Health**

**City of Fort Worth Public Health Department**

**and the**

**Tarrant County Infant Mortality Task Force**



*Awareness, Data Analysis, Change Catalyst...Saving lives is our mission*



**TARRANT COUNTY  
PUBLIC HEALTH**



**TABLE OF CONTENTS**

LIST OF TABLES.....3

LIST OF FIGURES.....4

EXECUTIVE SUMMARY.....5

OVERVIEW.....6

PERINATAL PERIODS OF RISK – PHASE I.....7

REGIONAL DIFFERENCES IN FETAL-INFANT MORTALITY: FORT WORTH,  
ARLINGTON & NORTHEAST TARRANT COUNTY.....11

REFERENCE GROUPS AND PERINATAL PERIODS OF RISK.....12

SUBPOPULATIONS STRATIFICATION BY RACE/ETHNICITY.....15

PERINATAL PERIODS OF RISK – PHASE II.....17

CONCLUSION.....21

LIMITATIONS.....21

NEXT STEPS.....21

## LIST OF TABLES

Table 1	Frequency of Live Births, Fetal and Infant Deaths in Tarrant County for PPOR Inclusion, 2001-2003.....	7
Table 2	Tarrant County Fetal-Infant Mortality Rate by Race/Ethnicity, 2001-2003.....	8
Table 3	Tarrant County, Fort Worth, Arlington & NE Tarrant County Fetal-Infant Mortality Rates, 2001-2003.....	11
Table 4	Excess Fetal-Infant Mortality Rates Corresponding to each PPOR Component, Tarrant County, 2001-2003.....	13
Table 5	Excess Fetal-Infant Mortality Rates Corresponding to each PPOR Component, Tarrant County 2001-2003 (External Reference Group).....	15
Table 6.a	Birthweight-Specific Components for the Absolute Difference in Overall Fetal-Infant Mortality Rates among Black Tarrant County Women, 2001-2003.....	18
Table 6.b	Birthweight-Specific Components for the Absolute Difference in Overall Fetal-Infant Mortality Rates among Black Tarrant County Women, 2001-2003.....	18

## LIST OF FIGURES

Figure 1	Graphic Representation of the Perinatal Periods of Risk Approach.....	7
Figure 2	Tarrant County Fetal-Infant Mortality Rates for All Racial/Ethnic Groups, 2001-2003 .....	7
Figure 3	PPOR for Maternal Health/Prematurity by Race/Ethnicity, Tarrant County, 2001-2003.....	9
Figure 4	PPOR for Maternal Care by Race/Ethnicity in Tarrant County, 2001-2003.....	9
Figure 5	PPOR for Newborn Care by Race/Ethnicity in Tarrant County, 2001-2003.....	10
Figure 6	PPOR for Infant Health by Race/Ethnicity in Tarrant County, 2001-2003.....	10
Figure 7	Tarrant County, Fort Worth, Arlington & North East Tarrant County Fetal-Infant Mortality Rates, 2001-2003.....	11
Figure 8	Using Reference Groups to Calculate Excess Fetal-Infant Mortality.....	12
Figure 9	Tarrant County Fetal-Infant Mortality Rates: Internal Reference Group and Excess Mortality.....	13
Figure 10	Tarrant County Fetal-Infant Mortality Rates: External Reference Group and Excess Mortality.....	14
Figure 11	Tarrant County Fetal-Infant Mortality Rates: Excess Mortality by Race/Ethnicity.....	16
Figure 12	Pathways for Maternal Health Prematurity Excess Mortality.....	17
Figure 13	Overall Excess Mortality for Black Tarrant County Women, 2001-2003.....	19
Figure 14	Tarrant County Infant Mortality Rate by ZIP Code, 2001-2003.....	20

## EXECUTIVE SUMMARY

Throughout the world infant mortality is considered an indicator of the health and well-being of a community. Due to infant mortality's association with socioeconomic status, access to health care and the health status of women of childbearing age, a tragedy for individual families becomes a symbol of the entire health of a neighborhood, a community or a nation. The connection between the health of the baby and the health of the mother continues becoming better defined with each data report. The steadily increasing rate of infant deaths over the past several years and the persistent disparity between Black and White infant deaths demand thoughtful attention not only to the monitoring of these trends, but to researching the causes. Research suggests that improving the health of the mother before she becomes pregnant holds the most promise in reducing infant mortality in Tarrant County.

This report presents data updates to Phase I of the Perinatal Periods Of Risk (PPOR) and introduces findings from Phase II. In Phase I, the four mortality components, Maternal Health/Prematurity, Maternal Care, Newborn Care and Infant Health, were examined and compared to the standard external and internal reference groups to estimate excess mortality. The overall infant mortality rate remains relatively unchanged, from 7.8 live births and fetal deaths per 1000 in 2000-2002 to the rate of 7.9 in 2001-2003. However, the mortality rates for each of the periods of risk have shifted. An improvement was noted from the previous report in the fetal-infant mortality rate for Maternal Health/Prematurity as indicated by a significant decrease (22.5%). Maternal Care also showed a slight rate decrease from 1.9 to 1.7. In contrast, both Newborn Care and Infant Health had a rate increase from 0.9 to 1.4 and 1.0 to 1.7, respectively. Previously, the top two periods of risk contributing the most to the fetal-infant mortality rate included Maternal Health/Prematurity followed by Maternal Care. While Maternal Health/Prematurity continues to be the largest contributor to excess deaths, Infant Health has replaced Maternal Care as the second highest period of risk for women in Tarrant County.

While PPOR Phase I identified the population with excess deaths and the mortality component that is responsible for the highest rate of excess deaths, PPOR Phase II explores the reasons behind the excess mortality. Findings from this phase allow formulating targeted interventions. It is important to explore the excess deaths among Black babies within the Maternal Health/Prematurity period of risk since this group accounts for the majority of the excess deaths. Of all excess deaths among Blacks, more than half occurred among very low birth weight babies (under 1500 grams) from which the majority of these excess deaths specifically occurred among those babies born weighing between 500-749 grams. Overall, in 2003 most infant deaths occurred to women between ages 20 to 35.

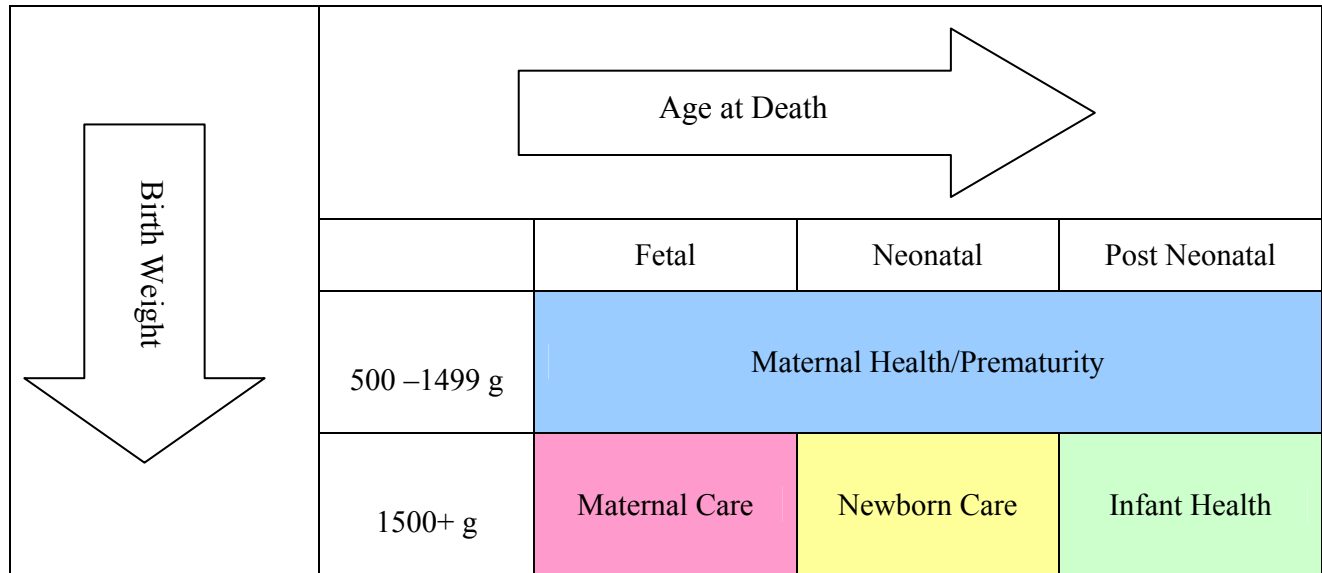
The next step in this process is to look at measuring the impact of the different preventive risk factors for prematurity and/or very low birthweight since these contribute the most to the excess deaths and to delve deeper into what is causing the excess deaths in the next highest period of risk, Infant Health. While these steps will deepen our understanding of the problem, there is sufficient evidence to focus interventions, assess current programs and activities and mobilize new partners to affect change in Maternal Health. This year a new companion, "Call to Action: A Guide to Reducing Infant Mortality in Tarrant County," was created to translate the data, which can at times be too technical and thus ineffective, into recommendations that help focus the community towards action.

**OVERVIEW**

For over a decade, the Perinatal Periods of Risk (PPOR) approach developed by Dr. Brian McCarthy from the Centers for Disease Control and Prevention (CDC) and the World Health Organization has been used to monitor and investigate Fetal-Infant mortality and to identify gaps, target resources, and mobilize communities to action.

The graphical representation of the PPOR model is depicted in Figure 1. This model assigns fetal-infant mortality into four strategic prevention areas: Maternal Health/Prematurity, Maternal Care, Newborn Care, and Infant Health. PPOR mapping of fetal-infant mortality enables communities to focus attention on contributing risk factors and formulate targeted interventions. Detailed information of the PPOR approach is available at [www.citymatch.org](http://www.citymatch.org).

**Figure 1. Graphic Representation of the Perinatal Periods of Risk Approach**



**PERINATAL PERIODS OF RISK – PHASE I**

PPOR Phase I identifies the populations with excess mortality. It examines the four components – Maternal Health/Prematurity, Maternal Care, Newborn Care and Infant Health; for various populations and uses a reference group to estimate excess mortality.

In 2006, the PPOR Phase I analysis was completed with 2001-2003 fetal-infant mortality data. Using the PPOR model required merging and condensing the original databases of live births and infant deaths generally used by the Texas Department of State Health Services. The inclusion criteria for PPOR analysis includes gestational age  $\geq 24$  weeks and birth weight greater than 500 grams. A new measure of infant mortality, the Fetal-Infant Mortality Rate, was computed. This approach requires that fetal deaths, neonatal, and post-neonatal deaths be combined to generate the numerator. The number of live births and the number of fetal deaths are also combined to generate the denominator. Using the linked birth and death records and filtering based on the inclusion criteria for 2001-2003 in Tarrant County, the denominator used for the overall computation for the fetal infant mortality rate was 80,566 as shown in Table 1. Figure 2 displays the PPOR results for Tarrant County in 2001-2003.

**Table 1. Frequency of Live Births, Fetal and Infant Deaths in Tarrant County for PPOR Inclusion, 2001 -2003**

Group	Frequency
Fetal Deaths	219
Infant Deaths	421
Live Births	80,566

**Figure 2. Tarrant County Fetal-Infant Mortality Rates for All Racial/Ethnic Groups, 2001-2003**

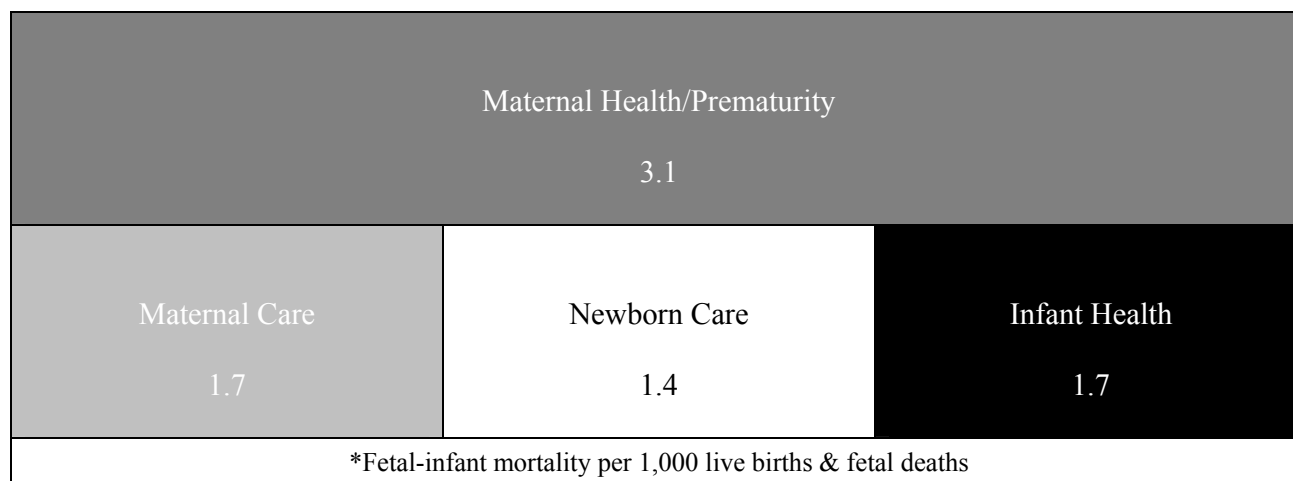


Table 2 displays the fetal-infant mortality rates by race/ethnicity in Tarrant County between 2001 and 2003.

**Table 2. Tarrant County Fetal-Infant Mortality Rate by Race/Ethnicity, 2001-2003**

	*Maternal Health/Prematurity	*Maternal Care	*Newborn Care	*Infant Health
Tarrant County	3.1	1.7	1.4	1.7
White	2.5	1.5	1.3	1.5
Black	6.0	2.2	2.1	3.6
Hispanic	2.7	1.5	1.3	1.4

\*Fetal-infant mortality per 1,000 live births and fetal deaths

Comparing Black PPOR results to White PPOR results:

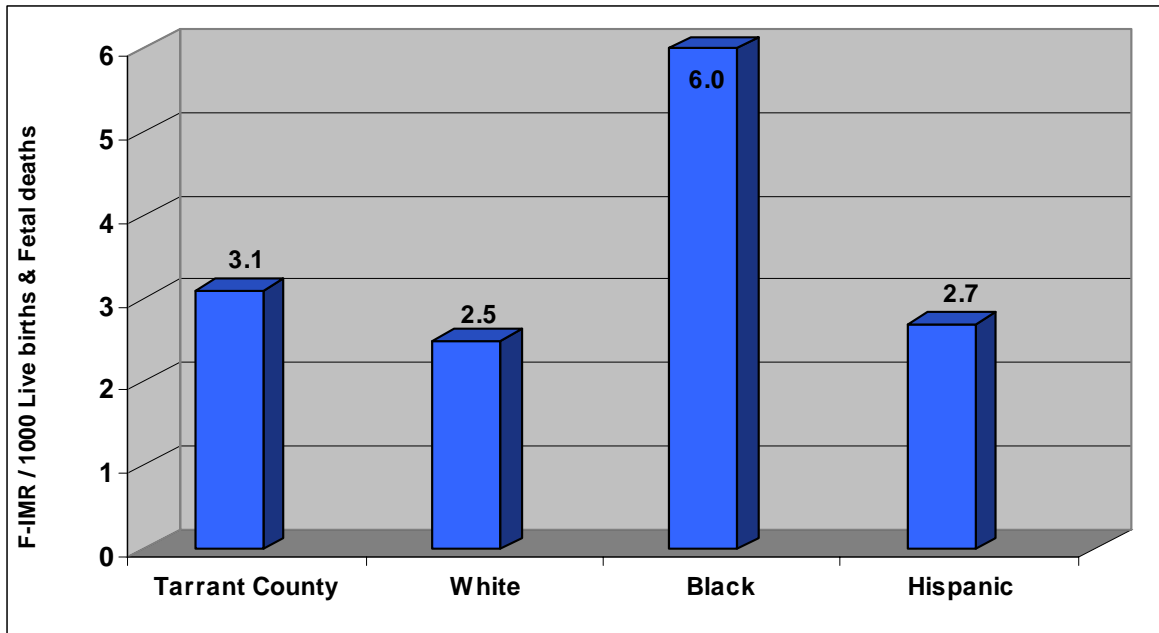
- Maternal Health/Prematurity rates are nearly twice as high (2.4x)
- Maternal Care rates are one-and-a-half times as high (1.5x)
- Newborn Care rates are slightly over one-and-a-half times as high (1.6x)
- Infant Health rates are slightly over twice as high (2.4x)

Comparing Hispanic PPOR results to White PPOR results:

- Maternal Health/Prematurity rates are approximately equal
- Maternal Care rates are equal
- Newborn Care rates are equal
- Infant Health rates are approximately equal

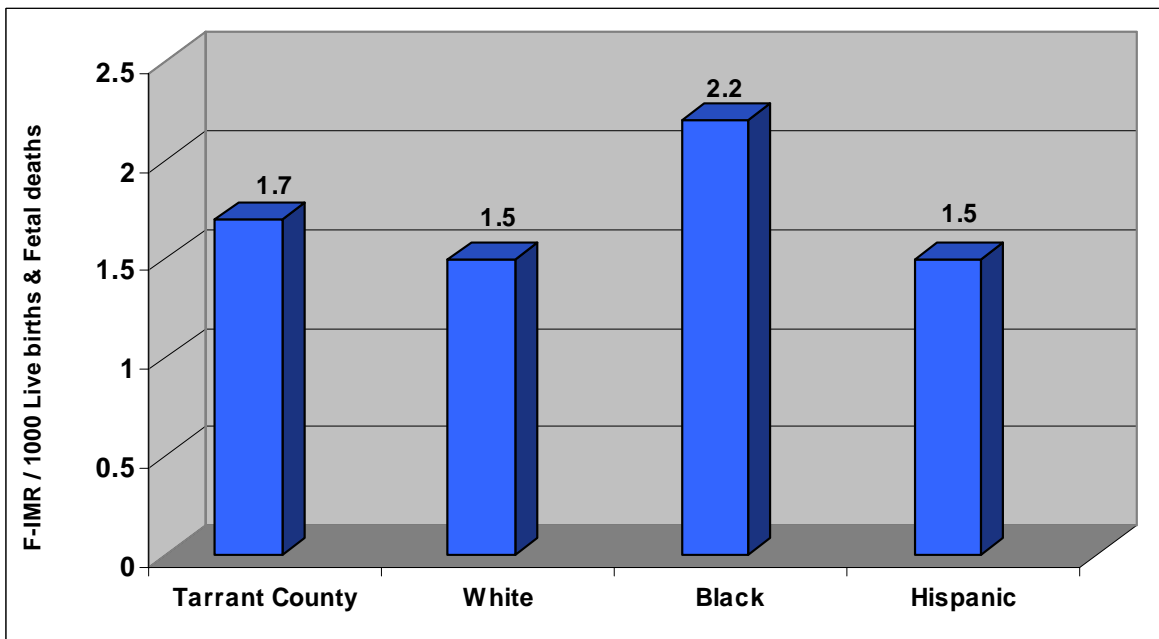


**Figure 3. PPOR for Maternal Health/Prematurity by Race/Ethnicity, Tarrant County, 2001-2003**



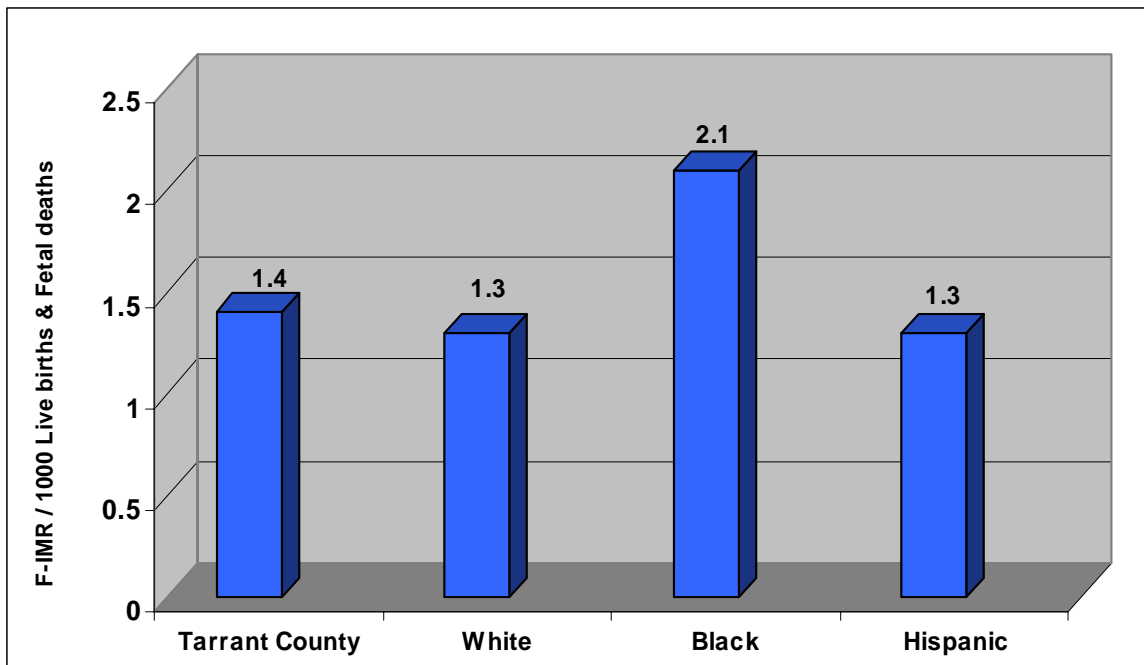
It is observed that the Black fetal-infant mortality rates of Maternal Health/Prematurity in Figure 3 are more than twice the rates for both Whites and Hispanics and are well above the overall rate for Tarrant County.

**Figure 4. PPOR for Maternal Care by Race/Ethnicity, Tarrant County, 2001-2003**



Examining the PPOR rates for Maternal Care in Figure 4 again reveals higher fetal-infant mortality in Blacks, although the differences are not as dramatic as those seen in Figure 3.

**Figure 5. PPOR for Newborn Care by Race/Ethnicity, Tarrant County, 2001-2003**



Once again, PPOR fetal-infant mortality rates for Newborn Care are highest in Blacks in Tarrant County compared to other racial/ethnic groups, as seen in Figure 5.

**Figure 6. PPOR for Infant Health by Race/Ethnicity, Tarrant County, 2001-2003**

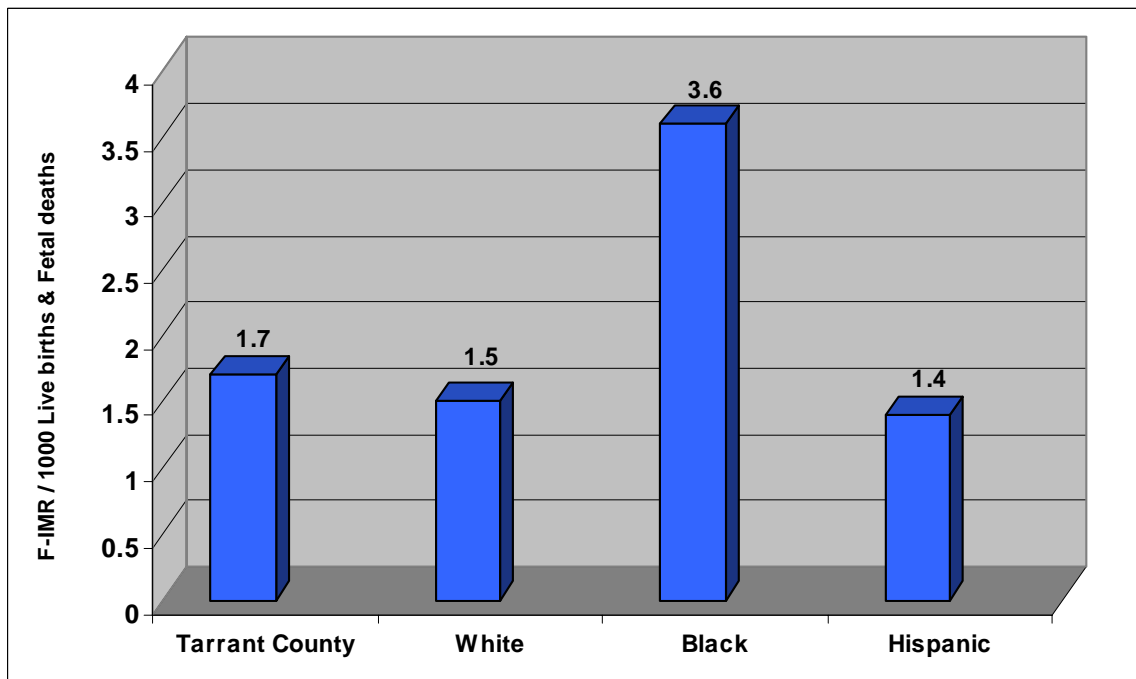


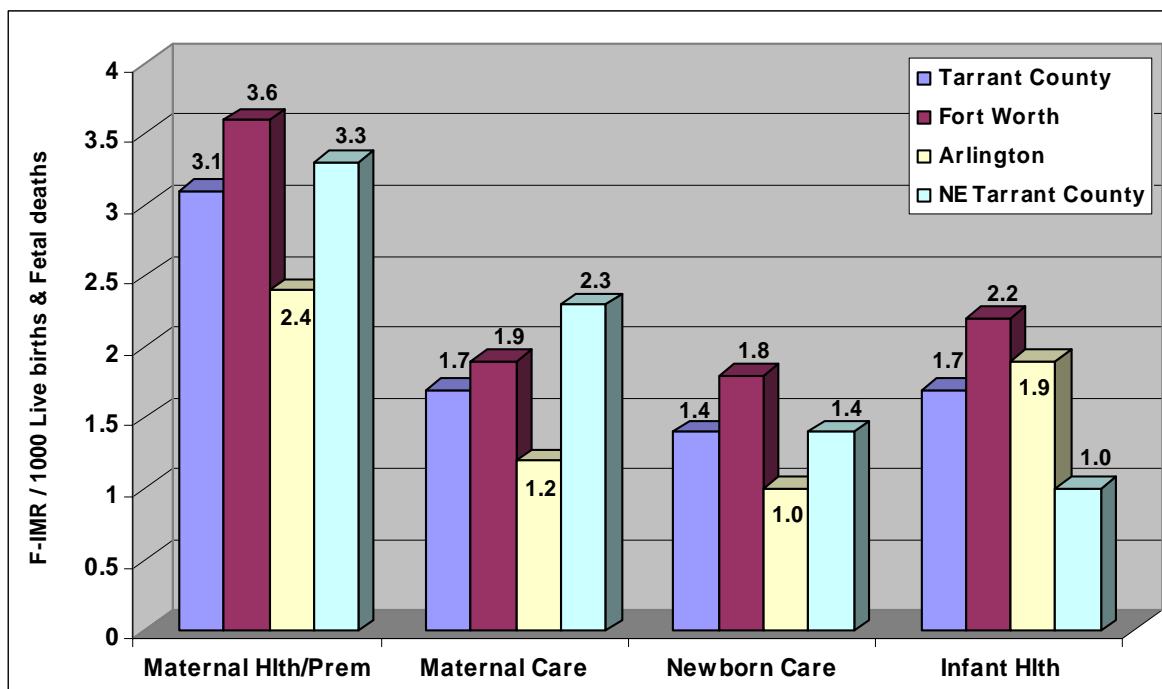
Figure 6 examines the Infant Health component of the PPOR. Compared to Whites and Hispanics, the Black fetal-infant mortality rate is nearly twice as high.

**REGIONAL DIFFERENCES IN FETAL-INFANT MORTALITY: Tarrant County, Fort Worth, Arlington and North East Tarrant County.**

**Table 3. Tarrant County, Fort Worth, Arlington & NE Tarrant County Fetal-Infant Mortality Rates, 2001-2003**

	Maternal Health/Prematurity	Maternal Care	Newborn Care	Infant Health
Tarrant County	3.1	1.7	1.4	1.7
Fort Worth	3.6	1.9	1.8	2.2
Arlington	2.4	1.2	1.0	1.9
North East Tarrant County	3.3	2.3	1.4	1.0

**Figure 7. Tarrant County, Fort Worth, Arlington & North East Tarrant County Fetal-Infant Mortality Rates, 2001-2003**



The fetal-infant mortality rates in each of the four categories in Fort Worth exceeded the Tarrant County rates. In Arlington, rates in Maternal Health/Prematurity, Maternal Care, and Newborn Care are slightly lower than those in Tarrant County overall; however, Infant Health fetal-infant mortality rates are slightly higher. In Northeast Tarrant County, fetal-infant mortality rates in Maternal Health/Prematurity and Maternal Care are higher than those in Tarrant County but equal in the Newborn Care category and lower for Infant Health category (Table 3 & Figure 7).

## REFERENCE GROUPS AND PERINATAL PERIODS OF RISK

The use of a reference group in the PPOR analysis of fetal-infant mortality data allows a community to further examine infant deaths with the goal of targeting resources to areas in which they can have the most impact. Reference groups are generally chosen to include women with the best infant health outcomes; usually White, non-Hispanic women of twenty or more years of age having thirteen or more years of education. Both internal and external reference groups can be used; internal groups compare a county/city's mortality rates to the group with the optimal outcomes in the county, and external groups compare to the United States as a whole. CityMatCH currently has national reference data available for the period 1998 through 2000. By examining excess fetal-infant mortality when compared to reference groups—the mortality above and beyond that which would be expected given rates in the reference group (Figure 8), communities can begin to determine where the most preventable fetal-infant deaths are currently occurring.

**Figure 8. Using Reference Groups to Calculate Excess Fetal-Infant Mortality**

$$\boxed{\text{Excess Fetal-Infant Mortality}} = \boxed{\text{F-IMR in Analysis Group}} - \boxed{\text{F-IMR in Reference Group}}$$

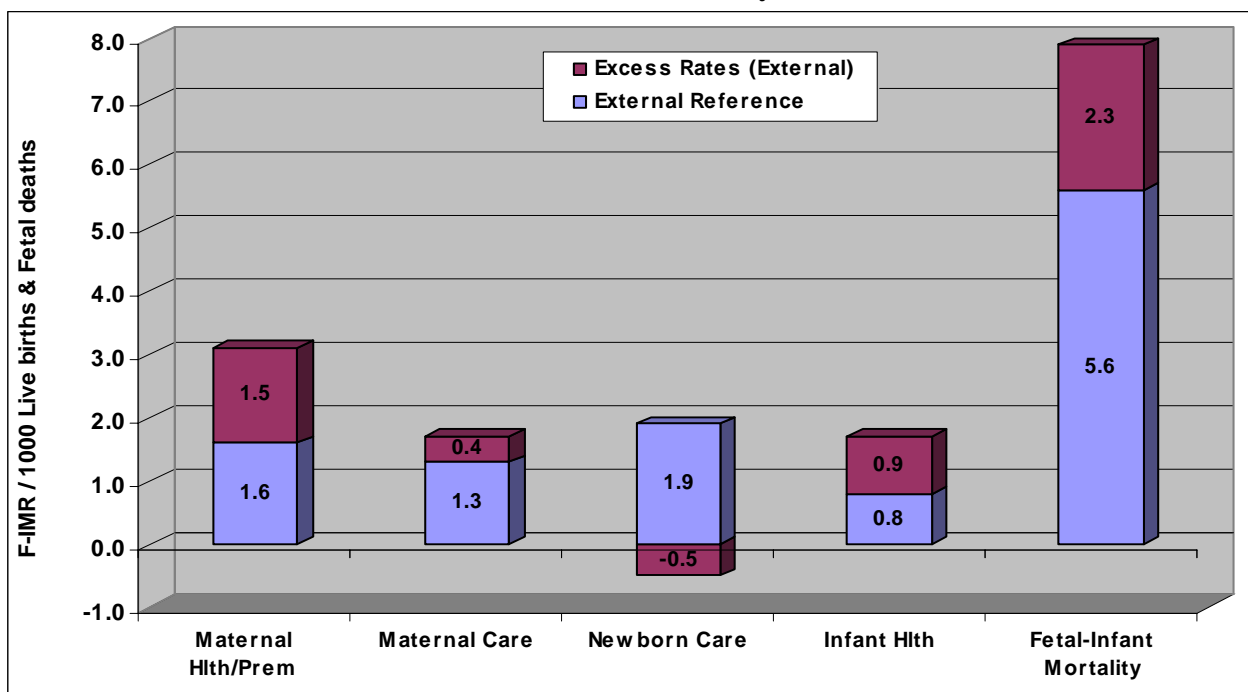
In Table 4, the fetal-infant mortality rates calculated for Tarrant County are compared to both an internal and an external reference group. The advantage of comparing to both groups is that information is then available on how Tarrant County's rates can be lowered among different racial/ethnic groups, as well as among the county residents as a whole. In this analysis, the internal reference group chosen consisted of non-Hispanic White women of twenty or more years of age having thirteen or more years of education residing in Tarrant County. The external group used the same selection criteria applied nationally. Both reference groups currently shown are for years 1998-2000; updated reference data is under request from CityMatCH.

**Table 4. Excess Fetal-Infant Mortality Rates Corresponding to each PPOR Component, Tarrant County, 2001-2003**

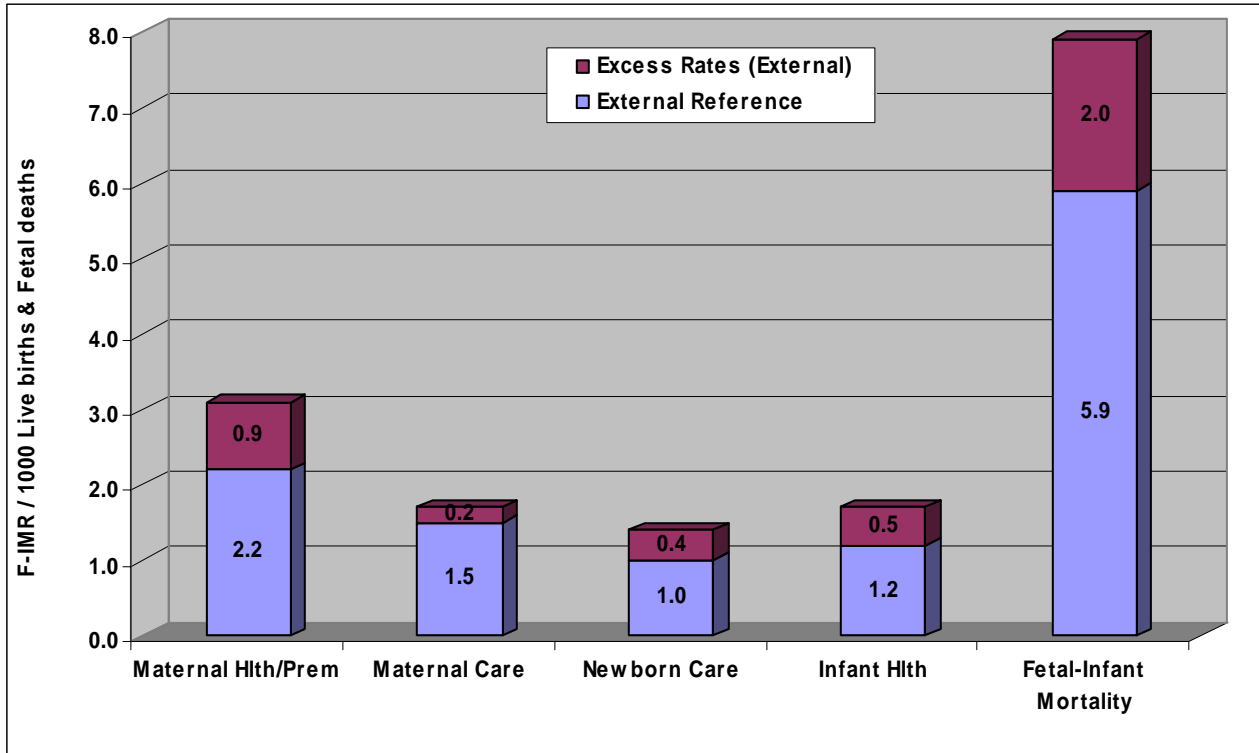
Group	Maternal Health/ Prematurity	Maternal Care	Newborn Care	Infant Health	Fetal-Infant Mortality
Tarrant County	3.1	1.7	1.4	1.7	7.9
Internal Reference— White, 20+, 13+ yrs educ in Tarrant Co.	1.6	1.3	1.9	0.8	5.6
External Reference— White, 20+, 13+ yrs educ in USA	2.2	1.5	1.0	1.2	5.9
Excess Rates (Internal)	1.5	0.4	(-0.5)	0.9	2.3
Excess Rates (External)	0.9	0.2	0.4	0.5	2.0

Table 4 and Figures 9 and 10, below, suggest that the greatest excess fetal-infant mortality in Tarrant County occurs in the Maternal Health/Prematurity PPOR component, followed by Maternal Care. None of the excess fetal-infant mortality in the county is attributable to the Newborn Care component. In Figure 9, the total fetal-infant mortality rate in Tarrant County is shown with the portion attributable to the internal reference group and the excess mortality. Figure 10 shows the same stratification using the external, or national, reference group.

**Figure 9. Tarrant County Fetal-Infant Mortality Rates: Internal Reference Group and Excess Mortality**



**Figure 10. Tarrant County Fetal-Infant Mortality Rates: External Reference Group and Excess Mortality**



Comparison of results using the internal and external reference groups shows a fairly consistent pattern, with the largest excess rates in the Maternal Health/Prematurity category, followed by Infant Health. The main difference between the two analyses is that excess rates are higher overall when compared to the external reference group, suggesting that overall Tarrant County fetal-infant mortality rates may be slightly elevated, even among those with the best outcomes (White women of twenty or more years of age having thirteen or more years of education).

**SUBPOPULATION---STRATIFICATION BY RACE/ETHNICITY**

Using the external reference group discussed above, Tarrant County's PPOR components stratified by race/ethnicity are compared and excess mortality computed in Table 5.

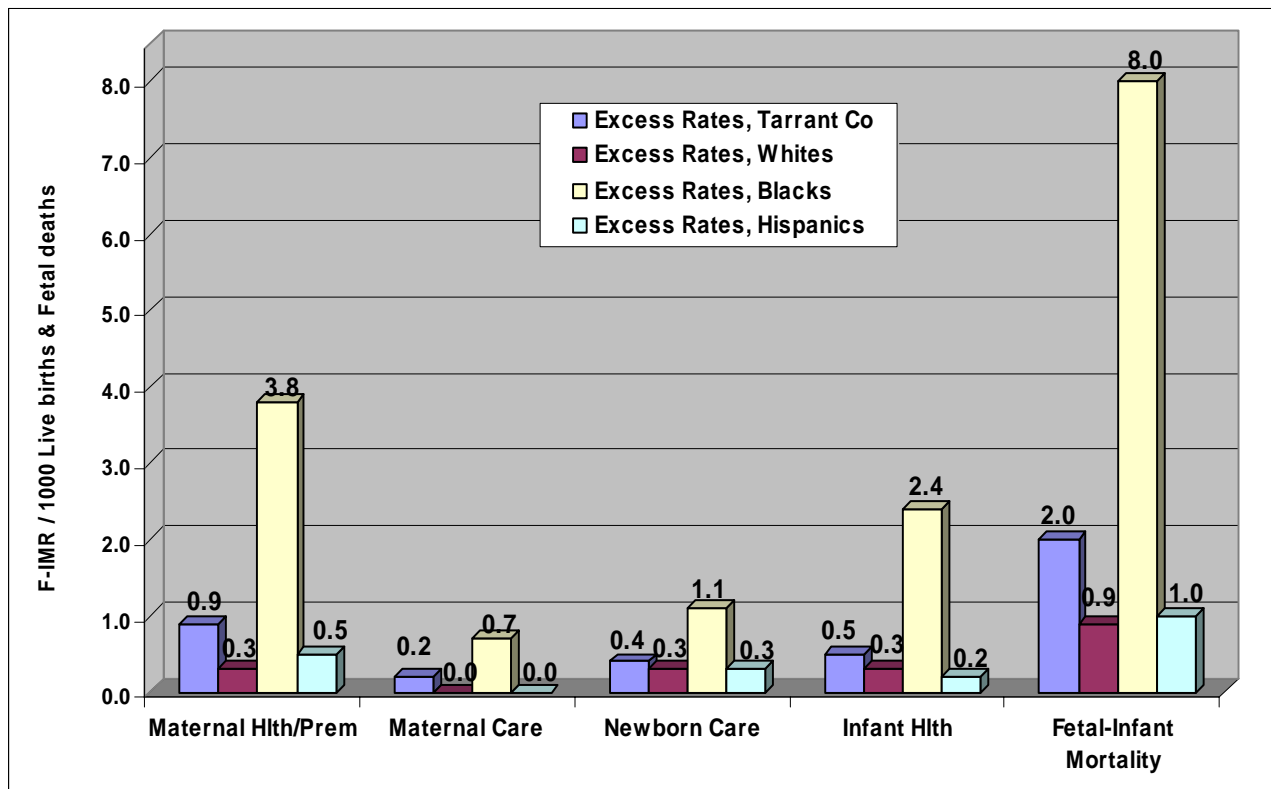
**Table 5. Excess Fetal-Infant Mortality Rates Corresponding to each PPOR Component, Tarrant County 2001-2003 (External Reference Group)**

Group	Maternal Health/ Prematurity	Maternal Care	Newborn Care	Infant Health	Fetal-Infant Mortality
Tarrant County	3.1	1.7	1.4	1.7	7.9
White	2.5	1.5	1.3	1.5	6.8
Black	6.0	2.2	2.1	3.6	13.9
Hispanic	2.7	1.5	1.3	1.4	6.9
External Reference - White, 20+, 13+ yrs educ in USA	2.2	1.5	1.0	1.2	5.9
Excess Rates: Tarrant County	0.9	0.2	0.4	0.5	2.0
White	0.3	0.0	0.3	0.3	0.9
Black	3.8	0.7	1.1	2.4	8.0
Hispanic	0.5	0.0	0.3	0.2	1.0
Excess Deaths: Tarrant County	72	16	32	42	162
White	16	0	11	11	33
Black	44	8	13	26	91
Hispanic	14	0	8	5	27

The pattern in the PPOR components by race/ethnicity discussed previously continue among Blacks with higher fetal-infant mortality rates when compared to the reference group as well. Hispanic fetal-infant mortality excess rates are slightly greater than those for Whites, although the differences are much smaller (an overall 0.1 rate difference) than those seen among Blacks who have an overall 7.9 rate difference. Figure 11 illustrates excess rates among the PPOR components for each of the three racial/ethnic groups included in the analysis. Translating the excess rates to excess deaths (multiplying the rate by the number of live births plus the number of fetal deaths and dividing it by 1000) indicates that there are 162 excess deaths in Tarrant County for the three aggregated years, 2001-2003. Of those excess deaths, 44 percent are due to Maternal Health/Prematurity, followed by almost 26 percent (25.9 percent) within Infant Health.

Table 5 illustrates the number of excess deaths in Tarrant County (162). This is based on the national comparison group of non-Hispanic White women of twenty or more years of age having thirteen or more years of education. It is also observed that Blacks have a disproportionate share of excess deaths, at 91 compared to 33 and 27 among Whites and Hispanics, respectively.

**Figure 11. Tarrant County Fetal-Infant Mortality Rates: Excess Mortality by Race/Ethnicity**



Analyses of Tarrant County PPOR fetal-infant mortality components using reference groups provides consistent results in that Maternal Health/Prematurity and Infant Health rates are contributing the greatest amount of excess mortality in all racial/ethnic groups and in both internal and external comparisons. These data strongly suggest that interventions to reduce infant mortality in the community should be directed at these two subcomponents to achieve the greatest effect and improve desired outcomes.



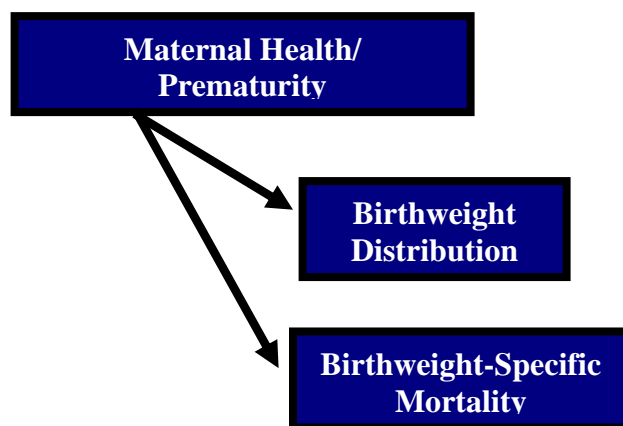
## PERINATAL PERIODS OF RISK - PHASE II

Using the Perinatal Periods of Risk Approach (PPOR) based on the internal reference group (non-Hispanic White Tarrant County women with twenty or more years of age and thirteen or more years of education), it was found that the Maternal Health/Prematurity period of risk contributed the majority of excess deaths (Table 5). Excess Maternal Health/Prematurity deaths include all deaths above what would have been expected if the target population had the same rate of deaths as the reference group.

We chose to focus our PPOR Phase II analysis on Black women as the majority of excess deaths in the Maternal Health/Prematurity category, occurred among them.

Maternal Health/Prematurity deaths include fetal deaths at 24 or more weeks of gestation and weighing between 500 and 1500 grams and infant deaths weighing between 500 and 1,500 grams. There are two general pathways for the Maternal Health/Prematurity excess mortality (Figure 12).

**Figure 12. Pathways for Maternal Health Prematurity Excess Mortality**



The first pathway is a higher frequency of very-low-birthweight (VLBW) births in the Black population. Since the mortality rates for the VLBW births are much higher compared to normal births, a difference in the percentage of VLBW births between the target population, i.e.; Black women compared to the national reference group (non-Hispanic White women of 20 or more years of age with 13+ years of education) leads to a difference in the mortality rate.

The second pathway for the Maternal Health/Prematurity excess deaths is the higher mortality rate among VLBW babies compared to the external or national reference group.

The causes and risk factors for VLBW births are generally different than those for birthweight-specific mortality. The former pathway, generally referred to as “VLBW births” relates to behavioral, social, health and economic disparities of the mothers. The latter pathway, referred to as “perinatal care” generally relates to the perinatal or medical care provided to the mothers and infants prior to, during or after birth. Hence it is critical to differentiate between these two pathways in order to formulate appropriate interventions to reduce infant mortality in a target population.

Following the standard procedures for PPOR Phase II, the Kitagawa analysis was adopted to determine the pathway that with the highest impact within the Maternal Health/Prematurity in terms of excess deaths in Tarrant County. The results are presented in Tables 6.a & 6.b.

There were 17.4 percent of infant deaths with unknown birthweights and 10 percent of fetal deaths with unknown birthweights. Therefore, these missing infant and fetal birthweights were imputed using the guideline provided by CityMatCH.

**Table 6.a. Birthweight-Specific Components for the Absolute Difference in Overall Fetal-Infant Mortality Rates among Black Tarrant County Women, 2001-2003**

Birthweight (in grams)	Actual Contribution to the difference in Excess Mortality Rates*		
	Birthweight distribution	Fetal-infant Mortality Rates	Total
500-749	2.9	-0.6	2.3
750-999	0.8	-0.1	0.7
1,000-1,249	0.5	0.0	0.5
1,250-1,499	0.3	0.2	0.5
Total	4.5	-0.5	4.0

\*Compared to a National Reference Group

**Table 6.b. Birthweight-Specific Components for the Percentage Difference in Overall Fetal-Infant Mortality Rates among Black Tarrant County Women, 2001-2003**

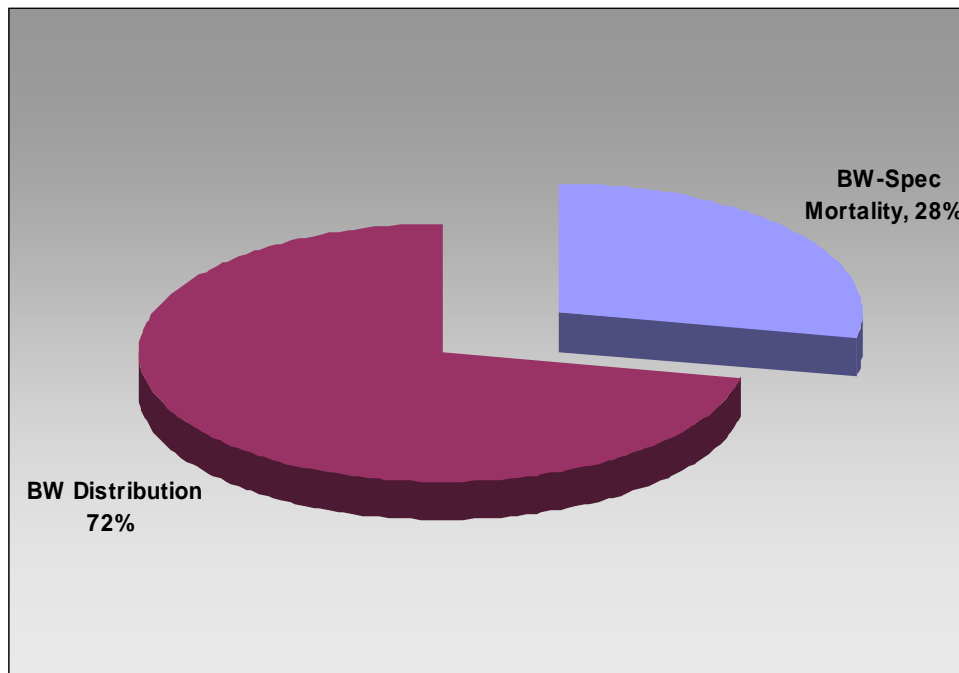
Birthweight (in grams)	Actual Contribution to the difference in Excess Mortality Rates*		
	Birthweight distribution	Fetal-infant Mortality Rates	Total
500-749	35.9%	-7.4%	28.5%
750-999	10.5%	-1.5%	9.0%
1,000-1,249	6.8%	0.0%	6.9%
1,250-1,499	4.2%	2.4%	6.6%
Total	112.5%	-12.5%	100.0%

\*Compared to a National Reference Group

The overall contribution of VLBW to the higher mortality rates among Black Tarrant County women is 4.0, of which 4.5 (112.5%) is attributable to birthweight distribution, and only -0.5 (-12.5%) corresponds to birthweight-specific mortality in the target population, Black Tarrant County women (Table 6.a & Table 6.b). The negative contribution of birthweight-specific mortality means that Black babies born at very low birthweights (especially 500-750 grams) are surviving at higher rates than the reference population's babies born at those weights.

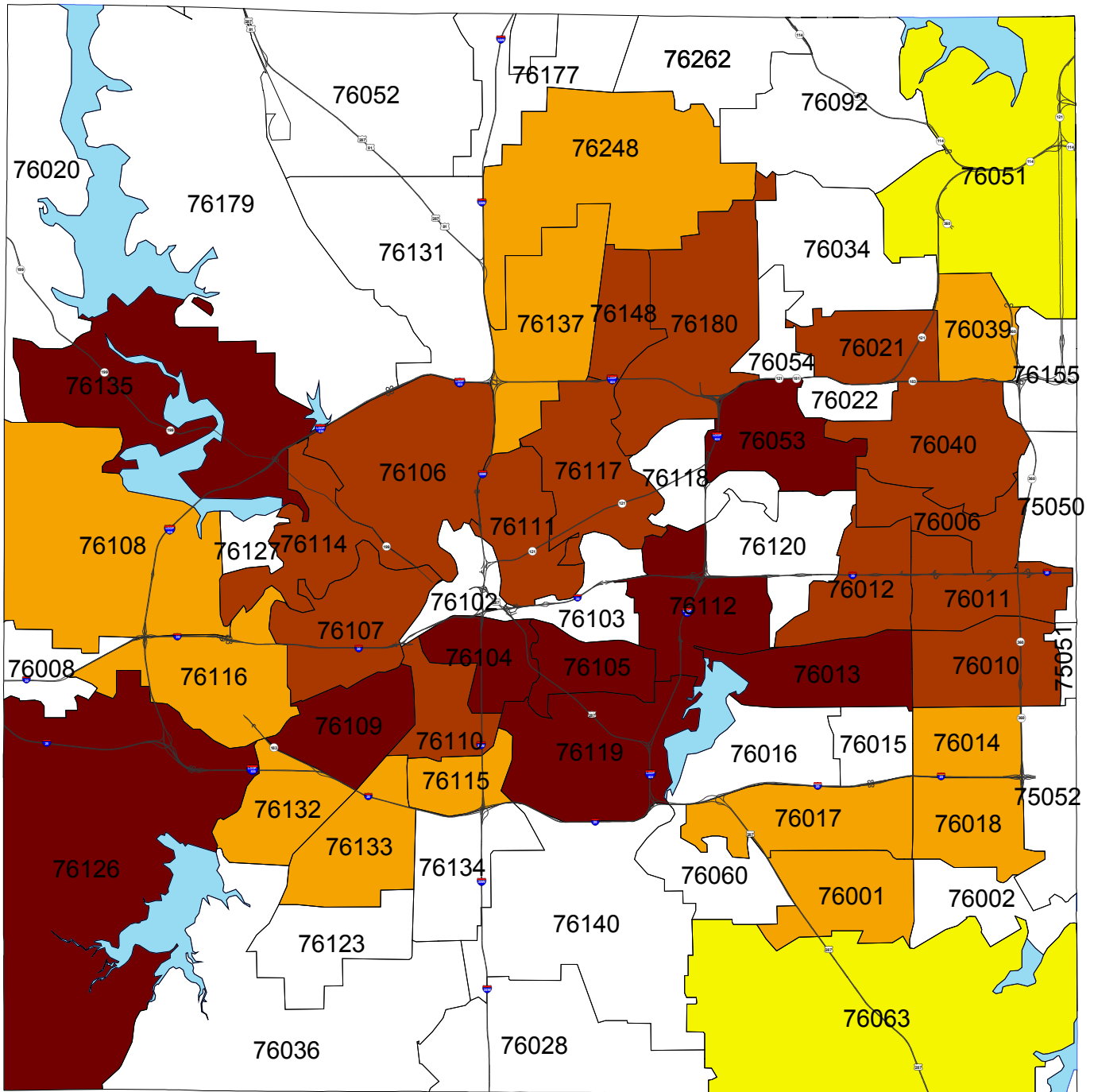
Overall, birthweight-specific mortality contributes only twenty-eight percent to the overall excess mortality rates while birthweight distribution mortality contributes seventy-two percent to the overall excess mortality rates among Black Tarrant County women compared to the national reference group (Figure 13).

**Figure 13. Overall Excess Mortality\* among Black Tarrant County Women, 2001-2003**

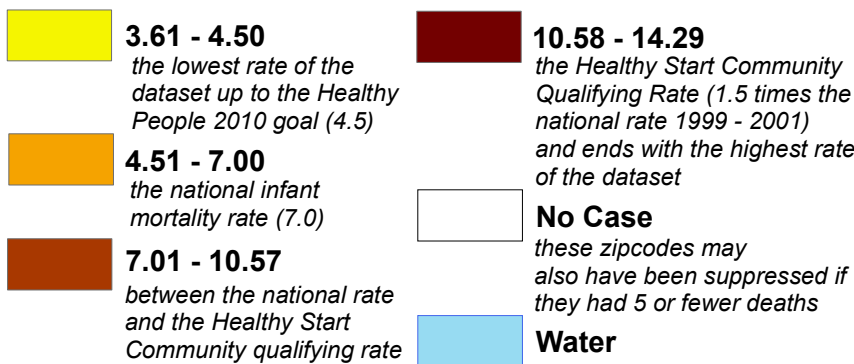


\*Compared to a National Reference Group

**Figure 14: Tarrant County Infant Mortality Rates, 2001 - 2003**

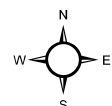


**Rate per 1,000 live births**



THIS MAP WAS PREPARED BY THE TARRANT COUNTY PUBLIC HEALTH DEPARTMENT FOR ITS USE, AND MAY BE REVISED AT ANY TIME WITHOUT NOTIFICATION TO ANY USER.

THE TARRANT COUNTY PUBLIC HEALTH DEPARTMENT DOES NOT GUARANTEE THE CORRECTNESS OR ACCURACY OF ANY FEATURES ON THIS MAP. TARRANT COUNTY ASSUMES NO RESPONSIBILITY IN CONNECTION THEREWITH.



09/07/2006

Source: Mortality Data from TDSHS

## CONCLUSION

Maternal Health/Prematurity was identified as the primary contributor of infant mortality in Tarrant County. Black women in Tarrant County had the highest number and rates of infant mortality compared to White and Hispanic women. In addressing Maternal Health/Prematurity excess in Tarrant County, special attention should be directed to reducing the percentage of very low birth weight among Black women. Since the mortality rates for VLBW births are much higher compared to normal births, a higher percentage of VLBW births in the target population (Black Tarrant County women) has led to a higher infant mortality rate in this population. Based on the finding of the PPOR analysis, it is clearly evident that improving preconceptual health is imperative in reducing infant mortality in Tarrant County.

## LIMITATIONS

Although the data in this report provides greater insight into the possible contributing causes for perinatal death, there are some limitations. As incidence of death decreases, the sample size may limit reliability of the data, which is why the analysis maintains a sample size of at least 60. Some local data does not match Texas Department of State Health Services information because some linked birth and death files at the state level are not complete. Unfortunately, there is no way to reconcile the differences as some births and deaths have taken place out of state and fetal death records are often incomplete. When linking records at the county level instead of using state linked data, care must also be taken not to bias results by births and deaths that have taken place outside of the county. There are different requirements among states for the type of information collected, resulting in a large percentage of unknowns for fetal deaths. Completion of birth certificates is assumed to be uniform across hospitals and counties, and states. Systematic bias may occur if institutions had different policies regarding the completion of birth certificate information. Such policies may have affected the quality of the data reported for specific subgroups. The presence of the prenatal care medical record would facilitate accurate documentation on the certificate of a live birth. Conversely, the absence of a prenatal care medical record would result in reliance on maternal recall and/or her partner's knowledge. Additional useful information could conceivably be gleaned from examining income level, insurance status, maternal occupation, and hospital; however, these data are either missing or not collected on a majority of Texas birth certificates. Such information could be collected in a Fetal Infant Mortality Review (FIMR) and aggregated with the data to provide useful detail on socioeconomic factors influencing infant death.

## NEXT STEPS

- To continue monitoring the prevalence of known risk factors in Tarrant County by race/ethnicity.
- To assess the impact of these already known risk factors on infant mortality by race/ethnicity.
- To formulate guidance/direction for appropriate and targeted interventions.

## Data Sources

- Texas Department of State Health Services, Center for Health Statistics
- U.S. Census Bureau, Census 2000

*Special thanks to Anita K. Kurian, DrPH, MPH, MBBS and Dorian F. Villegas MPH, DrPH(c) for their technical contributions and efforts in the creation of this document. We would also like to thank Michelle S. Markham, MS for providing the Infant Mortality map.*