

STATISTICAL NEWS

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Each year the Pennsylvania Department of Health reports statewide and county cancer incidence and mortality statistics. These data are often used to evaluate and assess the health status... *Continue reading this article>>>*

Healthy People 2010: Low Birth Weight

Obj 16-10a - Reduce infants born at low birth weight....Target: 5.0 percent

The percent of low birth weight infants born to Pennsylvania residents increased from 8.1 in 2003 to a high of 8.5 in 2006 and stayed about the same (8.4%) in 2007. Until 2002, the percentage of low birth weight... *Continue reading this article>>>*

Using Data to Address an Increase in Gonorrhea

Data Driven Management & Geospatial Technologies Help STD Program

The Pennsylvania Department of Health has a Sexually Transmitted Disease (STD) program, whose primary mission is the prevention of and intervention in the transmission of STDs. In 2007, Delaware County experienced an 80 percent increase in gonorrhea; jumping from 513 reported cases in 2006 to 921 cases in 2007 (see Chart 1).

Over the nine year period from 1998 to 2006, the number of reported gonorrhea cases remained fairly consistent with a nine-year average of just 424 cases. This large increase in 2007 was abnormal and deserved serious attention because gonorrhea is a communicable disease and would continue to spread without intervention. So the question is... Where do you start? The simple answer is... with data.

The program area knew that it would not be efficient or cost-effective to create a county-wide initiative. They decided that perhaps data analysis, including geospatial data analysis, might lead to a specific population or sub-county area on which they could target their efforts. In Table 1, you'll notice that 504 out of 921 (55 percent) of the county's gonorrhea cases occurred in individuals between the ages of 15 and 24. This is not unusual since sexually transmitted diseases, including gonorrhea, are typically more prevalent in younger populations. The data simply confirmed that the problem was evident in this particular population segment.

The next phase of the process involved geocoding all of the 2007 gonorrhea case data. Geocoding refers to the process of deriving latitude/longitude coordinates and other geographic identifiers from address data. This process was completed using ESRI's ArcGIS desktop software. Once the data were geocoded, points were overlaid on a county map

along with other data layers including aerial photography, streets, schools, school districts, universities and census tracts. School and university data were included because the cases were most prevalent in the population ages 15 to 24. This level of detail was appropriate for the program area to review as they have access to this confidential data. However, to share this information with other decision-makers the data were aggregated by census tract to remove confidentiality concerns.

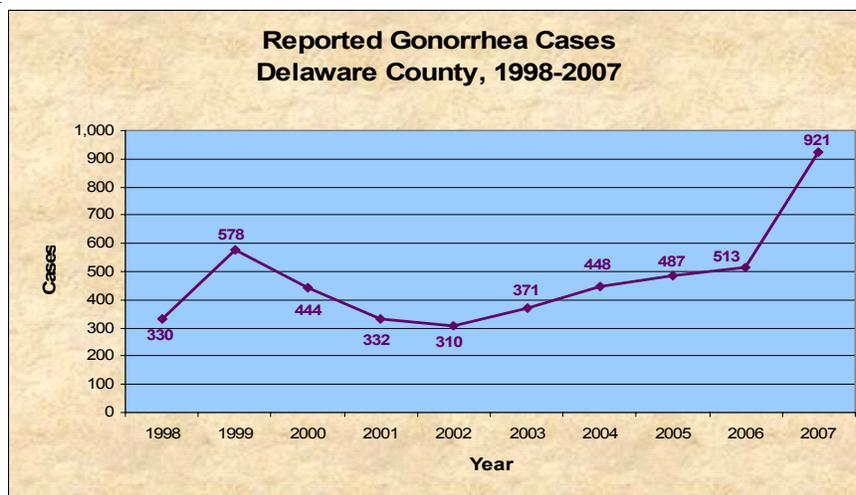
Delaware County's population is concentrated in the eastern and south central areas. In Map 1 (next page), you can see that the majority of cases occurred in the Chester/Upland area in the south central part of the county. Although it isn't shown on the map, the red areas all fall within the Chester Upland school district. Map 2 shows an image zoomed into

continue reading this article >>>

Table 1
Number of Reported Gonorrhea Cases by Age Group
Delaware County Residents, 2007

Age	Gonorrhea Cases
0-14	11
15-19	225
20-24	279
25-29	169
30-34	74
35-39	70
40-44	34
45+	59
Total	921

Chart 1



Continued...

Using Data to Address an Increase in Gonorrhea

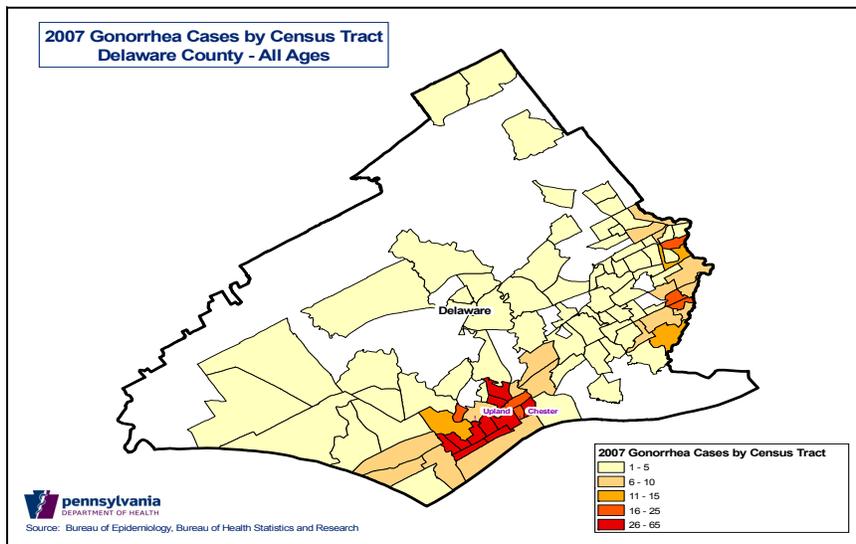
the area showing this concentration. You can observe that there is a large area of high incidence bounded by I95 to the north, West 2nd St to the south, Highland Avenue to the west, and Avenue of the States to the east.

Based on data analysis, the program area now knew where and within what population segment the majority of the gonorrhea cases could be found. They set a goal of reducing disease occurrence to pre-outbreak levels within six

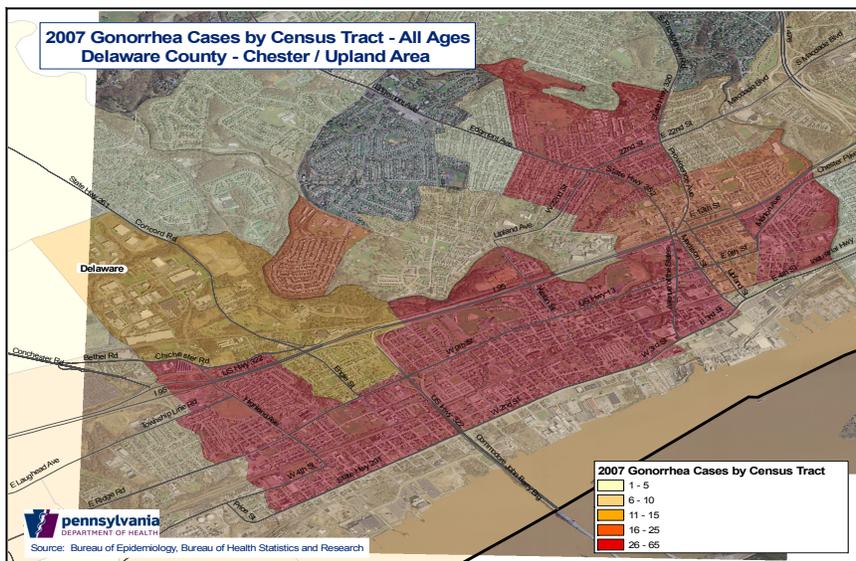
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Map 1



Map 2



Continued...

Using Data to Address an Increase in Gonorrhea

months. They also developed and completed an action plan. On April 8, 2008, the Chester Upland School District sponsored an educational health conference where a Department representative presented an overview of STD morbidity and shared some opportunities that may exist for implementing STD interventions in the community. On April 21, 2008, a public health advisory was released through the Health Alert Network containing statistics about the gonorrhea problem, recommendations for Delaware County residents, treatment recommendations, and information on the management of sex partners. On April 26, 2008, the city of Chester, in cooperation with the Delaware State Health Center, hosted a one-day health fair which included free confidential urine-based gonorrhea testing. In the summer of 2008, the Ches Penn STD clinics expanded their hours to evenings and weekends because they thought that it might allow more school-aged children to use the clinics' services.

After six months, the data were re-evaluated to assess the results from these efforts. The gonorrhea rate for the county had dropped to pre-outbreak levels. Success!

This example demonstrates what can be achieved by using data to drive program-related initiatives. Let's review the steps that were taken. First, a problem was identified.

This example demonstrates what can be achieved by using data to drive program-related initiatives.

There was a large increase in disease occurrence, more specifically gonorrhea, in Delaware County. Second, data were analyzed to identify a specific population segment and geographic area where the problem was occurring. The program then set a realistic, measurable goal which was to reduce the gonorrhea occurrence to pre-outbreak levels within six months. They developed strategies and worked with local partners to combat the problem. They then re-evaluated the data to determine the results of their efforts.

The moral of this story is simple. If you want the results of your program to be great, drive your decisions and manage them with d-a-t-a, DATA! If you have a public health problem that you need to fix, you should start by looking at health statistics.

If you have any questions about this article, contact the Bureau of Health Statistics and Research at 717-783-2548.

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Premature Rupture of the Membranes Reviewed

Amniotic Sac Is Vital in Development and Survival of Fetus

Almost everyone has heard the phrase “don’t burst my bubble” at one point or another. And, if babies could talk while in the womb, they would say the *exact* same thing. This is because during pregnancy there exists a bubble, or sac, that surrounds the developing infant (fetus). This sac, called the amniotic sac, performs many functions which, first and foremost, include protection from infection to the fetus. The amniotic sac, also known as the “bag of waters”, contains a liquid called amniotic fluid that surrounds and helps cushion the fetus while in the womb. The fluid also allows the fetus to move while permitting musculoskeletal development. Furthermore, the amniotic fluid allows the umbilical cord to float, preventing it from being compressed and cutting off the fetus’s supply of oxygen and nutrients (<http://medical-dictionary.thefreedictionary.com/premature+rupture+of+membranes>). Additionally, amniotic fluid helps the lung development of the fetus. As you can see, the amniotic sac is vital in the development and survival of the fetus.

When the amniotic sac ruptures before the onset of labor, it is commonly known as premature rupture of the membranes (PROM). Certain sources may define PROM slightly different, taking into account the number of weeks gestation of the fetus at the time of rupture. The Pennsylvania Department of Health collects the occurrence of premature rupture of membranes on the certificate of live birth and defines it as the “spontaneous tearing of the amniotic sac (natural breaking of the bag of waters) 12 hours or more

Among births to Pennsylvania residents between 1990 and 2007, the occurrence of premature rupture of the membranes averaged about four percent per year.

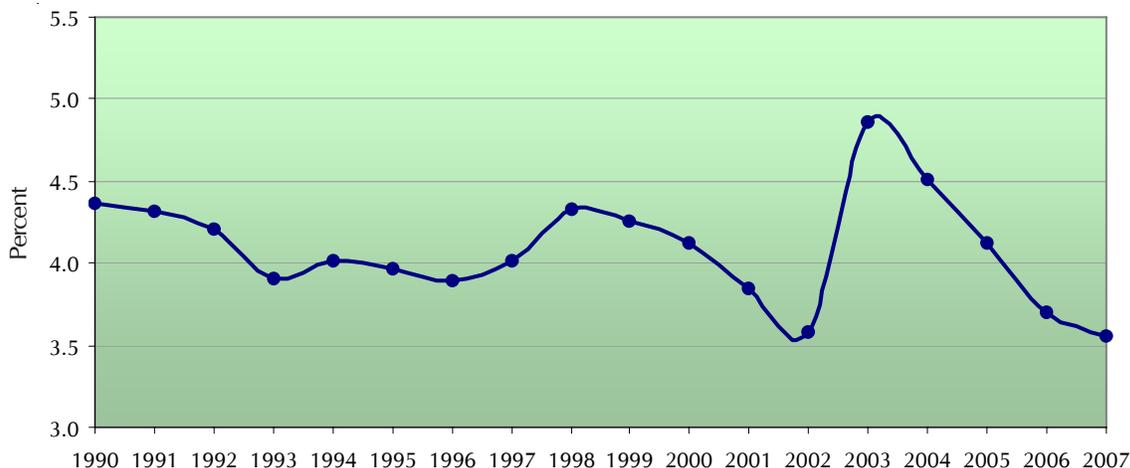
before labor begins.” The remainder of this article will investigate the occurrence of PROM by discussing percentages and relative-risk ratios (RR) at the state and national levels.

Raising awareness of premature rupture of the membranes is important because of the risks associated with it. Such risk factors include delivery at less than 37 weeks gestation (preterm birth), intrauterine infection (e.g. chorioamnionitis, which is inflammation of the membranes that surround the fetus, usually associated with bacterial infection), prolapsed umbilical cord (when the umbilical cord exits the uterus before the fetus), and abruptio placentae (when the placental lining separates from the uterus of the mother which can cause fetal and maternal mortality).

Just as the primary risks of premature rupture of the membranes can be severe, the occurrence of PROM in Pennsylvania is not something to dismiss. Among births to Pennsylvania residents between 1990 and 2007, the occurrence of premature rupture of the membranes averaged about four percent per year (see Chart 1). This equates to an average rate of approximately 40.0 per 1,000 live births. As can be seen in

continue reading this article >>>

Chart 1
Percent* of Births with Premature Rupture of the Membranes
Pennsylvania Residents, 1990-2007



* Unknowns excluded from calculations

Continued...

Premature Rupture of the Membranes Reviewed

Chart 1, the occurrence of premature rupture of the membranes has remained relatively stable for Pennsylvania from 1990 through 1998, followed by a steady decline from 1999 through 2002. The increase in 2003 coincides with the certificate of live birth revision. The question on the certificate changed slightly, from "premature rupture of membranes (>12 hours)" to "premature rupture of the membranes (prolonged \geq 12 hours)". The decrease in PROM during the subsequent years after the spike in 2003, appears to be similar to the downward trend from 1999 to 2002 prior to the revision. Why the decline in the percentage of Pennsylvania births with PROM occurred during recent years is not obvious and may have been caused by a number of reasons. Better understanding of the revised question on the certificate could be leading to better reporting from the hospitals and birthing centers. Physicians may now have a better knowledge of premature rupture of the membranes and some of the abnormal or unusual pregnancy issues that increase the risk of PROM. Proper care and diet of the mother, including the intake of prenatal vitamins, may reduce the chances of the mother developing an infection and, thereby, potentially reducing the risk of PROM. Although medical science is advancing, there is still a lot to learn about premature rupture of the membranes and its risk factors.

There are risks that appear to be elevated when premature rupture of the membranes occurs. For example, births to Pennsylvania residents during 2003-2007 where PROM occurred were shown to be more likely to have a cesarean delivery than a vaginal delivery (RR=1.09 CI: 1.07-1.11). Also,

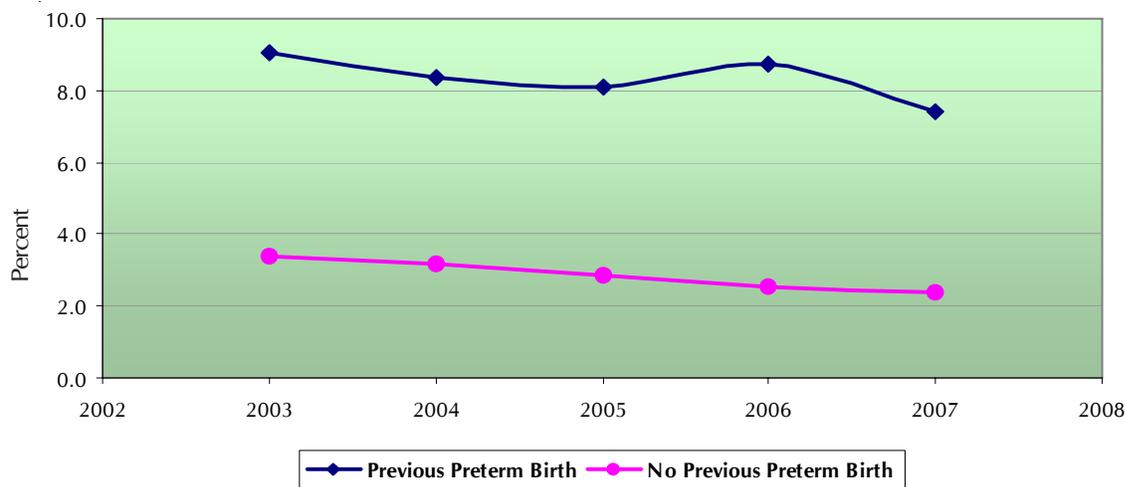
While the cause of premature rupture of the membranes is still being determined, a plan of action, management, and surveillance of the mother and baby are critical when PROM occurs.

when premature rupture of the membranes occurred, there was a 1.4 times greater probability of infection than when PROM did not occur (RR=1.41 CI: 1.35-1.48), during the same timeframe.

Another serious risk is the increased likelihood of a preterm birth. Births to resident mothers during 2003 and 2007 saw a nine times greater probability of having a very preterm birth (under 32 weeks gestation) and a five times greater probability of having a preterm birth (under 37 weeks gestation) when PROM occurred than when PROM did not occur (RR=9.03 CI: 8.70-9.37 and RR=4.97 CI: 4.89-5.04, respectively). The risk of experiencing preterm birth goes hand-in-hand with the risk of having a low birth weight baby. An almost eight times greater risk of a very low birth weight baby (under 1500 grams) and about four and one-half times greater risk of a low birth weight baby (under 2500 grams) was seen when premature rupture occurred among Pennsylvania births during the same time period, compared to births without PROM (RR=7.92 CI: 7.60-8.24 and RR=4.36 CI: 4.28-4.44,

continue reading this article >>>

Chart 2
Percent* of Births with Premature Rupture of the Membranes
By Previous Preterm Birth Status, Pennsylvania Residents, 2003-2007



Note: Births to mothers who did not have a previous live birth were excluded. * Unknowns excluded from calculations

Continued...

Premature Rupture of the Membranes Reviewed

respectively). Again, there is a strong correlation between preterm births and low birth weight so the increased risk for a low birth weight outcome was expected.

So far the cause of premature rupture of the membranes is not clearly understood. It is believed that sexually transmitted diseases and other lower genital tract conditions such as bacterial vaginosis may play a role in the cause of PROM (Beckmann, Charles R.B., Frank W. Ling, Roger P. Smith, et al. Obstetrics and Gynecology. 5th ed. Philadelphia: Lippincott Williams & Wilkins, 2006.) Also, having a previous preterm birth may increase the risk of premature rupture of the membranes occurring. As seen in Chart 2, resident births with premature rupture of the membranes between 2003 and 2007 were almost three times as likely to have occurred when the mother had a previous preterm birth compared to births with PROM for whom the mother did not have a previous preterm birth (RR=2.78 CI: 2.65-2.91).

While the cause of premature rupture of the membranes is still being determined, a plan of action, management, and surveillance of the mother and baby are critical when PROM occurs. Although there are certain standard procedures used to help diagnose PROM (nitrazine test, “fern test”, ultrasound, etc.), the steps taken to manage the situation vary drastically depending upon how far along the child has developed. Certain medications such as steroids, antibiotics, or tocolytic therapy may be administered depending upon

...the best plan of action for a pregnant woman and her baby is regular communication with her physician.

the gestational age of the child. Induction of labor may be the best option for the mother and child if the gestational age is between 34 and 36 weeks, but may be avoided if the gestational age is before 24 weeks. It is best for the woman to relay anything abnormal (e.g. fluid leaking from the vagina, oral temperature exceeding 100.4° F, uterine tenderness, etc.) to her doctor and get regularly scheduled check-ups. Whether premature rupture of membranes occurs or not, the best plan of action for a pregnant woman and her baby is regular communication with her physician.

Please note that all relative-risk statistics, associated confidence intervals, and percentages mentioned above had unknowns removed from the calculations. For more information or questions about this article, please contact the Bureau of Health Statistics and Research at 717-783-2548 or via an e-mail link from our website at www.health.state.pa.us/stats

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Lung and Bronchus Cancer Statistics Reviewed at the State Health District Level

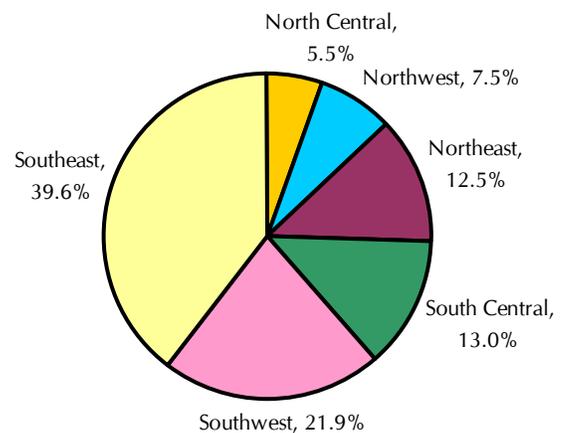
Each year the Pennsylvania Department of Health reports statewide and county cancer incidence and mortality statistics. These data are often used to help evaluate and assess the health status of Pennsylvania's population and its counties. In this article, age-adjusted lung and bronchus cancer rates were calculated for multi-county regions known as health districts. The Pennsylvania Department of Health has six designated health districts and corresponding district offices: Northwest, North Central, Northeast, Southwest, South Central and Southeast districts.

In Figure 2, a colored map of Pennsylvania indicates which counties fall within each Pennsylvania health district. In 2006, the Southeast health district (includes Philadelphia County) had the largest population followed by the Southwest, South Central, Northeast, Northwest and North Central health districts. As shown in the pie chart (Figure 1), the Southeast health district accounted for 39.6 percent of Pennsylvania's population in 2006 while the North Central health district accounted for only 5.5 percent.

To help measure the lung and bronchus cancer burden for these six health districts, a simple comparison was made using age-adjusted cancer incidence and cancer death rates for Pennsylvania and for each of the six health districts. Unfortunately, due to limitations of the estimated population

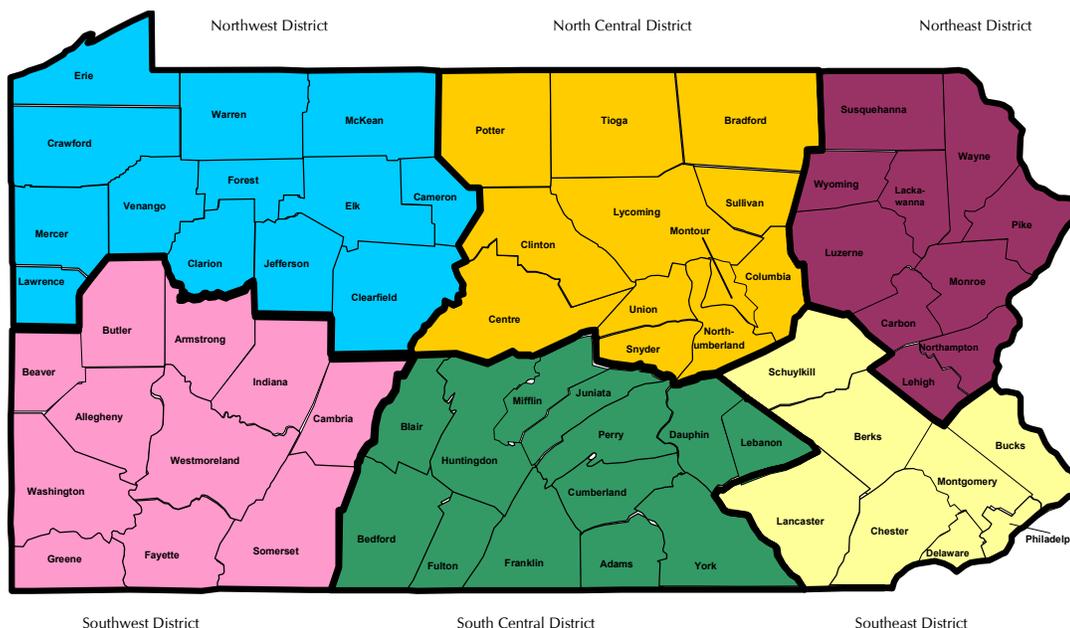
...age-adjusted cancer incidence rates for the health districts ranged from a low of 62.7 per 100,000 (North Central) to a high of 72.0 per 100,000 (Southeast).

Figure 1
Percent Population Distribution by Pennsylvania Health Districts, 2006



continue reading this article>>>

Figure 2
Pennsylvania County Outline Map with Designated Health Districts



Continued...

Lung and Bronchus Cancer Statistics Reviewed...

(denominator) data, statistics were not computed by racial categories for Pennsylvania's six health districts.

In 2006, Pennsylvania residents had a total of 10,445 invasive lung and bronchus cancers diagnosed for an age-adjusted rate of 70.0 per 100,000 (2000 U.S. standard million population). For comparison, age-adjusted lung/bronchus cancer incidence rates for the health districts ranged from a low of 62.7 per 100,000 (North Central) to a high of 72.0 per 100,000 (Southeast). Based on 95 percent confidence intervals, the incidence rate for the North Central health district was significantly lower than Pennsylvania (see Chart 1). Compared to the state, none of the health districts were significantly higher at the 95 percent confidence level. However, the Southeast and Southwest health districts were significantly higher than the North Central health district.

Pennsylvania residents had 7,892 deaths due to lung and bronchus cancers in 2006 for an age-adjusted rate of 52.8 per 100,000 (2000 U.S. standard million population). Unlike the cancer inci-

dence rates, none of the six Pennsylvania health districts had significantly different lung/bronchus cancer death rates, compared to the state, at the 95 percent confidence level. Chart 2 shows that the North Central health district had the lowest age-adjusted death rate (48.1) while the Northwest health district had the highest rate (54.4).

While it is difficult to draw any conclusions based solely on these simple comparisons, it is nonetheless worthy of review. On the one hand, lung/bronchus cancer death rates did not vary much from one district to another or in comparison to the entire state of Pennsylvania. However, some districts had incidence rates that were significantly different

Chart 1
Age-Adjusted Invasive Lung and Bronchus Cancer Incidence Rates By Pennsylvania Health Districts, Pennsylvania Residents, 2006

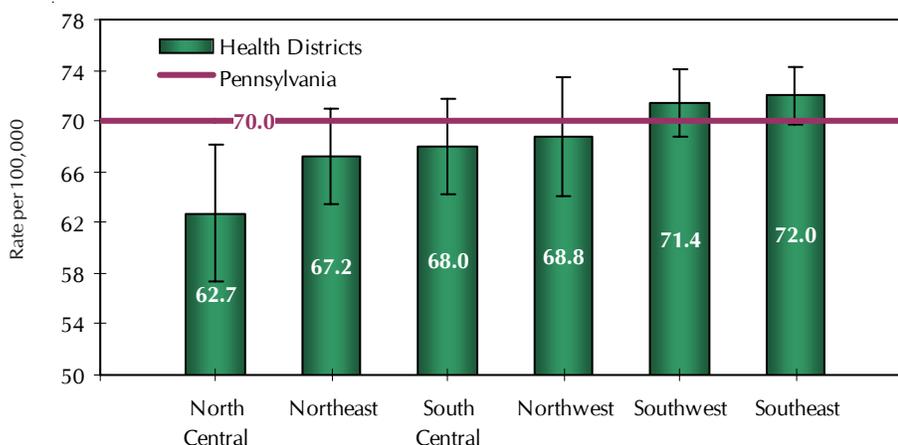
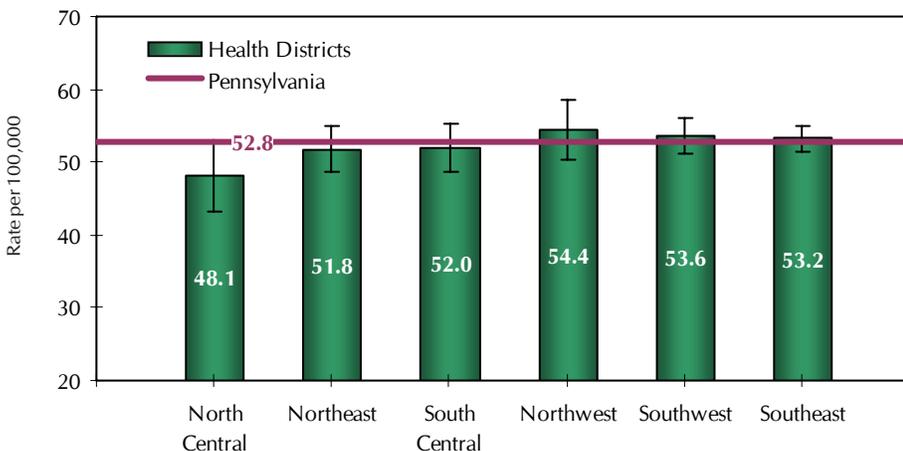


Chart 2
Age-Adjusted Lung and Bronchus Cancer Death Rates By Pennsylvania Health Districts, Pennsylvania Residents, 2006



from the state or from one another. Further analysis and surveillance at the county level should be helpful in explaining the cancer burden in the different health districts. Additional cancer data, including county level cancer statistics, can be quickly and easily obtained from our online statistical reports or EpiQMS (web-based data query tool) at www.health.state.pa.us/stats.

For questions about this article or to obtain additional cancer statistics not available online, contact the Bureau of Health Statistics and Research at 717-783-2548.

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Update: Healthy People 2010 Objectives

Focus Area 16: Maternal, Infant, and Child Health

16-10a - Decrease percent of infants born at low birth weight... 2010 Target: 5.0%

All Births and

Race/Ethnicity of Mother:

The percent of low birth weight infants born to Pennsylvania residents increased from 8.1 in 2003 to a high of 8.5 in 2006 and stayed about the same (8.4%) in 2007. Until 2002, the percentage of low birth weight infants had not been above 8.0 since the late 1960s. In addition to recent medical advances that help smaller babies survive, the higher percentages in recent years may also be related to more women having multiple births – about 25 percent more between 1997 and 2007 (4,243 vs. 5,323).

The low birth weight percentages for Whites and Blacks decreased in 2007, but increased among Asian and Hispanic mothers. The highest annual percentages, by far, consistently occurred for births to Black mothers during the five-year period of 2003-2007. In 2007, the second highest percentage

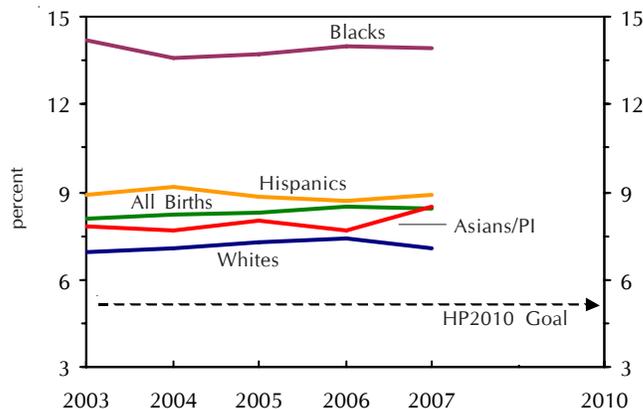
of low birth weight infants was to Hispanic mothers (8.9), followed by Asians/Pacific Islanders (8.5) and Whites (7.1).

Age of Mother:

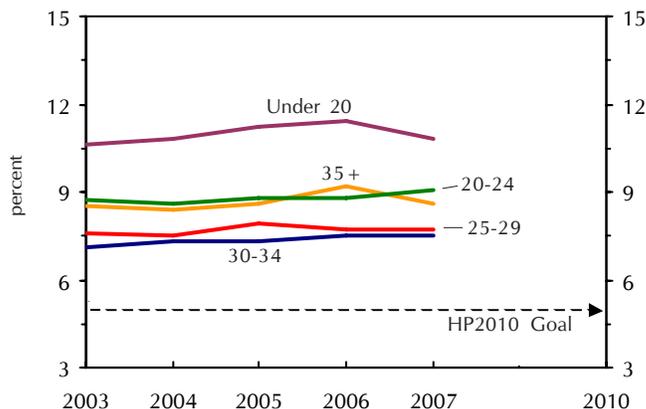
The percentage of low birth weight infants decreased among teenage mothers (under 20) and mothers age 35 and older in 2007. The percentage remained the same as recorded in 2006 for mothers in the 25-29 and 30-34 age categories and increased for those age 20-24.

Births to the youngest (under 20) mothers consistently had the highest percentages of low birth weight babies during 2003-2007 and had been increasing until the percentage went down in 2007. Among all of the age groups (and race/ethnic groups), it seems the national Healthy People 2010 goal of 5.0 percent is very unlikely to be reached in Pennsylvania.

Percent Low Birth Weight By Race and Hispanic Origin* of Mother, PA Resident Live Births 2003-2007



Percent Low Birth Weight By Age of Mother Pennsylvania Resident Live Births 2003-2007



*Hispanics can be of any race

Percent Low Birth Weight By Race/Ethnicity and Age of Mother, PA Resident Live Births 2003-2007

Race/Ethnicity	2003	2004	2005	2006	2007
All Births	8.1	8.2	8.3	8.5	8.4
White	6.9	7.1	7.3	7.4	7.1
Black	14.2	13.6	13.7	14.0	13.9
Asian/Pacific Islander	7.8	7.7	8.0	7.7	8.5
Hispanic	8.9	9.2	8.8	8.7	8.9

Age	2003	2004	2005	2006	2007
Under 20	10.6	10.8	11.2	11.4	10.8
20-24	8.7	8.6	8.8	8.8	9.1
25-29	7.6	7.5	7.9	7.7	7.7
30-34	7.1	7.3	7.3	7.5	7.5
35+	8.5	8.4	8.6	9.2	8.6

NOTE: Hispanic can be of any race.

HP2010 State and County Data on the Web

To access the Department of Health's web page of Healthy People 2010 statistics for the state and counties, go to www.health.state.pa.us/stats. The latest available statistics as well as trend data are shown. You can view data for the state, all counties, a specific demographic element (age, sex, race, etc.) or just for a specific county. Complete data sets for the state and counties can be downloaded. There is also a link to the national HP2010 web site.