

# Achievement 2011

## Regional Collaborative Database

**Southern New Jersey Perinatal Cooperative**

The licensed Maternal and Child Health Consortium  
serving the seven counties of South Jersey



## 2011 ACHIEVEMENT

### Report of the Regional Collaborative Database

Since its inception in 1981, SNJPC has recorded and documented trends in birth weight, mortality and transport in southern New Jersey and presented these findings in the Regional Collaborative Database. Members of the Cooperative have, as part of the agency's core mission, directed their efforts toward developing and maintaining a regional perinatal system that assures that high-risk mothers and infants receive optimal care. The effectiveness of these efforts is documented in the Regional Collaborative Database. This Database also follows ongoing concerns and identifies emerging problems.

The regionalization of perinatal services includes these core objectives:

- accessible quality care for pregnant women and newborns
- appropriate use of perinatal personnel and facilities
- assurance of reasonable cost effectiveness

### *Thank You*

Production of the Regional Collaborative Database report is possible only through the support and assistance of the obstetrical and nursery staffs of our member hospitals. Their contributions are invaluable. We extend our gratitude to these individuals whose consistently high level of professionalism is the basis of the information in this report.

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## SNJPC Member Hospitals

- 1 AtlantiCare Regional Medical Center-Mainland
- 2 Cape Regional Medical Center
- 3 Cooper University Hospital
- 4 Kennedy University Hospital-Washington Township
- 5 Our Lady of Lourdes Medical Center
- 6 Shore Medical Center
- 7 South Jersey Healthcare - Elmer
- 8 South Jersey Healthcare - RMC
- 9 Memorial Hospital of Salem County
- 10 Underwood-Memorial Hospital
- 11 Virtua Memorial
- 12 Virtua Voorhees
- 13 AtlantiCare Regional Medical Center-City



### Hospital Designations

-  Community Perinatal Center (CPC) Basic provides care for mothers expected to deliver infants weighing greater than 2500 grams.
-  Community Perinatal Center (CPC) Intermediate provides care for mothers expected to deliver infants weighing greater than 1500 grams.
-  Community Perinatal Center (CPC) Intensive provides care for mothers expected to deliver infants weighing greater than 1000 grams.
-  Regional Perinatal Center (RPC) provides full range of services for high-risk mothers and newborns

### Cooperative Offices

SNJPC maintains offices in Atlantic City, Camden City and Pennsauken.

## REGIONAL HOSPITAL SUMMARY

	BASIC		INTERMEDIATE		INTENSIVE		RPC		REGION	
	ACTUAL	RATE %	ACTUAL	RATE %	ACTUAL	RATE %	ACTUAL	RATE %	ACTUAL	RATE %
TOTAL BIRTHS IN HOSPITAL (live + still births)	1029		6962		3870		8835		20696	
LIVE BIRTHS IN HOSPITAL	1021		6916		3835		8769		20541	
NEONATAL MORTALITY	0	0	16	2.31	17	4.43	79	9.01	112	5.45
LBW - LIVE BIRTHS <2501 GM	43	4.21%	528	7.63%	319	8.32%	936	10.67%	1826	8.89%
LBW - NEONATAL MORTALITY	0	0	14	26.52	15	47.02	78	83.33	107	58.60
VLBW - LIVE BIRTHS <1501 GM	2	0.20%	52	0.75%	46	1.20%	290	3.31%	390	1.90%
VLBW - NEONATAL MORTALITY	0	0	12	230.77	14	304.35	75	258.62	101	258.97
ELBW - LIVE BIRTHS <1001GM	2	0.20%	27	0.39%	25	0.65%	161	1.84%	215	1.05%
ELBW - NEONATAL MORTALITY	0	0	12	444.44	11	440.00	68	422.36	91	423.26
ELBW2-LIVE BIRTH (500-1000)	2	0.20%	23	0.33%	21	0.55%	117	1.33%	163	0.79%
ELBW2 - NEONATAL MORTALITY	0	0	8	347.83	8	380.95	31	264.96	47	288.34
ELBW3-LIVE BIRTH (751-1000)	2	0.20%	12	0.17%	9	0.23%	61	0.70%	84	0.41%
ELBW3 - NEONATAL MORTALITY	0	0	0	0.00	2	222.22	5	81.97	7	83.33
FETAL MORTALITY > 499 GM	7	6.81	29	4.18	20	5.19	32	3.65	88	4.28
FETAL MORTALITY > 2500 GM	5	5.09	5	0.78	6	1.70	8	1.02	24	1.28
MATERNAL TRANSPORTS (% of total births+trans)	54	4.99%	127	1.79%	48	1.23%	3	0.03%	232	1.11%
NEONATAL TRANSPORTS (% of live births)	40	3.92%	125	1.81%	47	1.23%	85	0.97%	297	1.45%
NEONATAL MORTALITY AFTER TRANSPORT (% of live births)	0	0	5	0.07%	3	0.08%	2	0.02%	10	0.05%
LIVE BIRTHS OUTSIDE HOSP	4	0.39%	24	0.35%	22	0.57%	26	0.30%	76	0.37%



## Electronic Birth Certificate

The New Jersey Electronic Birth Certificate (EBC) system is one of the most comprehensive perinatal data systems in the country. It contains birth record information and perinatal data for each birth that occurs in the birthing facilities in New Jersey.

The current EBC resides on each hospital's network and is voluntarily reported to the Cooperative for regional analysis. This analysis focuses on key risk factors and outcomes from more than 250 individual pieces of data on each delivery. The partnership between SNJPC and its member hospitals has led to improved use of EBC in internal QI systems and the development of needed programs region-wide.

### Disclaimer

The EBC data in the following charts represents births that occur in Cooperative member facilities. Information is limited to those who delivered in or were transferred to a regional facility. This is hospital reported information and is not to be considered official or population based. These data are preliminary and are not considered official by the New Jersey Department of Health and Senior Services and may not be represented as such.

The accuracy of the data contained in this report is dependent upon the completeness and reliability of the information recorded by each EBC birth facility. Moreover, the accuracy of residence information is somewhat limited because it depends on information provided by the mother. A common source of residence error is confusion between mailing and residence address since it is possible to have a postal address with a city/county location that is different from the mother's actual residence.

## Distribution of Births

The birthrate for South Jersey is depicted in Figure 1. The annual number of births peaked in 1990.

Consistent with statewide trends in birthrates, southern New Jersey has had a steady decline in births over the past five years with 20,541 births in 2011, placing the region below the 1984 baseline rate for the first time.

Although the number of births in the region has fluctuated very little over the past 10 years, demographic shifts have precipitated changes in the perinatal healthcare delivery system. The regional consortia system supports the stakeholders in the hospitals and community to use examine these changes and use data to support systemic changes and enhancements that reflect the needs of the community.

The closure of the obstetrical service at AtlantiCare City Division 4 years ago has been accompanied by an increase in maternal transports between the ER at City Division and AtlantiCare Mainland Division. In 2011, there were 158 transports: 136 of the transported mothers were preterm, and 22 were at term. This is not an unexpected finding, since at the time of discontinuing obstetrical services at City Division, AtlantiCare agreed to provide transportation for pregnant women as needed from the ER at City Division to the Mainland Division.

Live Births 1984 - 2011

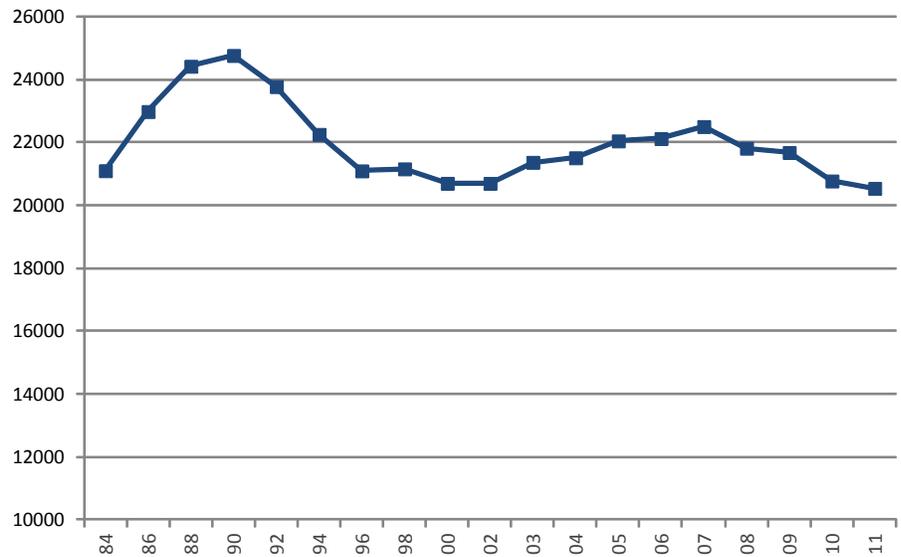


Figure 1

## Characteristics of Births

### County of Residence

Of the 20,065 births that occurred to residents of the Southern Region in 2011:

30.5% (n=6,112) were from Camden County;  
 20% (n=4,012) were from Burlington County;  
 16.9% (n=3,399) were from Atlantic County;  
 14.4% (n=2,891) were from Gloucester County;  
 10.8% (n=2,172) were from Cumberland County;  
 4.6% (n= 913) were from Cape May, and  
 2.8% (n=566) were from Salem County.  
 (Figure 2)

Non-residents accounted for 2.7% (n=552) of births in South Jersey.

Table 1 depicts the number of births in each county from 2002 to 2006 compared with the period from 2007 to 2011. While the numbers of births were stable in most counties the number of births to Burlington county residents decreased during this period. There was also an upward trend in the number of births in Cumberland county during that time.

### Births By Month

On average, 1,718 live births occurred per month at SNJPC member hospitals in 2011. Across the Southern Region in 2011, the largest number of births occurred in July (n=1,904) and the fewest births occurred February (n=1,534). (Figure 3)

County of Residence

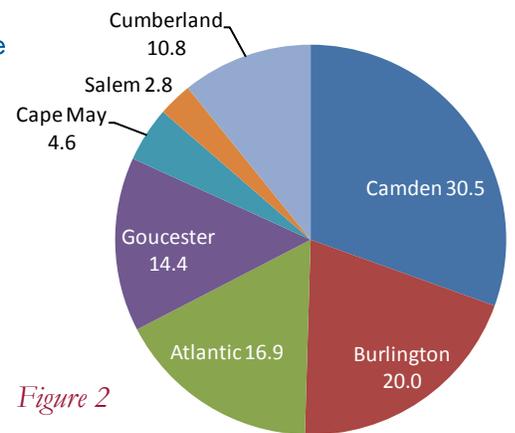


Figure 2

County Birth Totals Five-Year Change 2006 - 2011

Hospital Births by County	2002-2006	2007-2011	%Change
Atlantic	3471	3469	-0.05%
Burlington	4451	4153	-6.70%
Camden	6508	6528	0.31%
Cape May	934	919	-1.67%
Cumberland	2236	2367	5.86%
Gloucester	2934	2967	1.13%
Salem	594	593	-0.03%

Table 1

SNJPC Member Hospitals - Births by Month

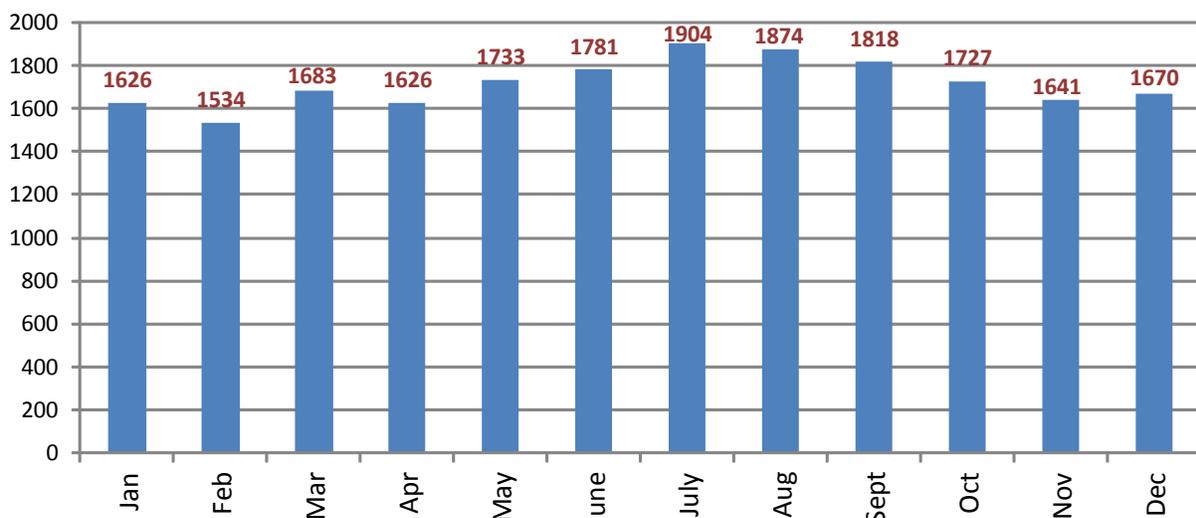


Figure 3

## Maternal Age

In 2011, the highest percentage of births in the region occurred to mothers aged 25-29 years (27.8%), followed by 30-34 years (27.4%), 20-24 years (21.8%), 35-39 years (12.2%), under 20 years (7.8%), 40-44 years (2.7%) and 45 years and older (0.2%). (Figure 4)

Variation in the distribution of births by age group can be seen at the county level in Figure 5. Burlington County had the highest percentage of mothers over 35

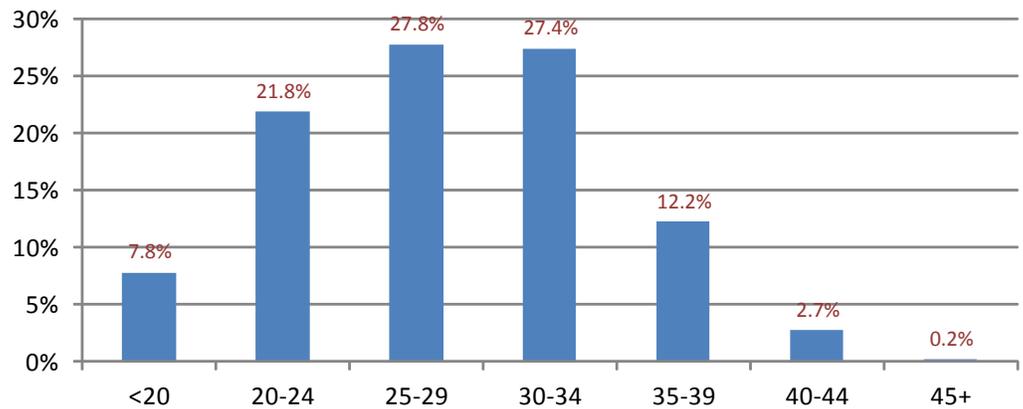
(18.9%) while Salem County had the highest percentage of mothers under 20 (13.1%). Camden County had the most births in these two categories with 911 births to mothers over 35 and 551 births to mothers under 20.

Nationally there has been a decrease in teen births which is reflected in the data for southern New Jersey. Cumberland and Salem counties have consistently struggled to address

high rates of births to young mothers. In partnership with regional, state and federal initiatives the number and capacity of programs for young mothers and teen pregnancy prevention activities are increasing in these areas. These programs seek to address both pregnancy and STDs among young people using model programs focused on education and prevention.

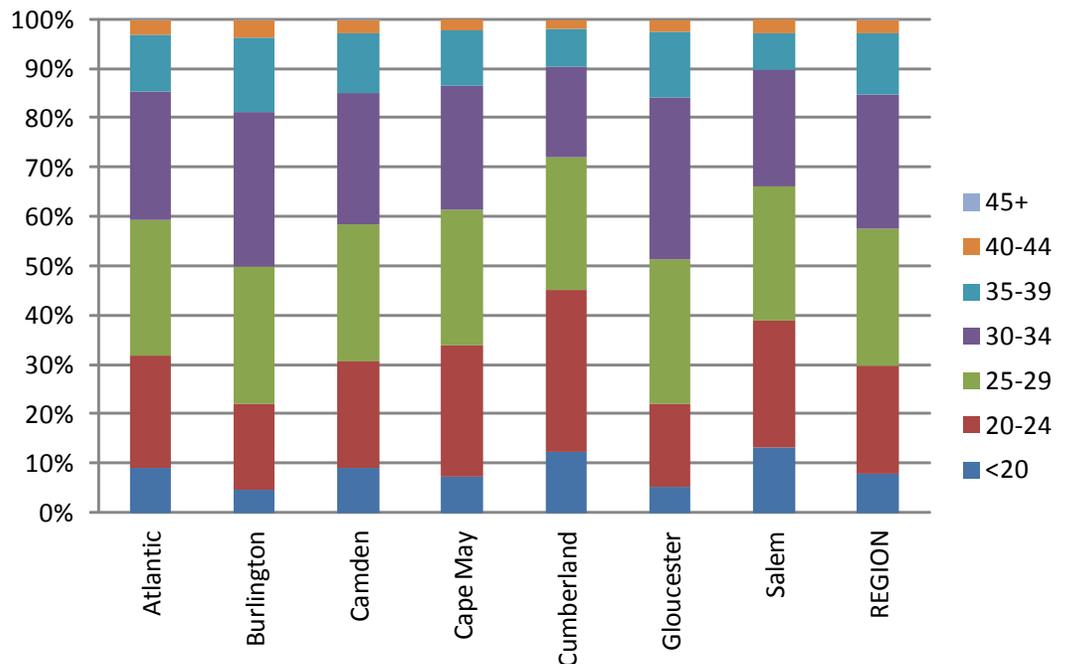
SNJPC Member Hospital Births by Maternal Age

Figure 4



2011 County Births by Maternal Age

Figure 5



### Births to Teens

The percentage of births to teens (under age 18) in the southern region has been on the decline in the past 10 years, decreasing 39% from 3.8% in 2001 to 2.3% in 2011. (Figure 6)

The majority (70.7%) of teens giving birth were 18 and 19 years of age compared with 25.3% to 16 and 17 year-olds, and 4.0% to teens less than 16 years of age. (Figure 7)

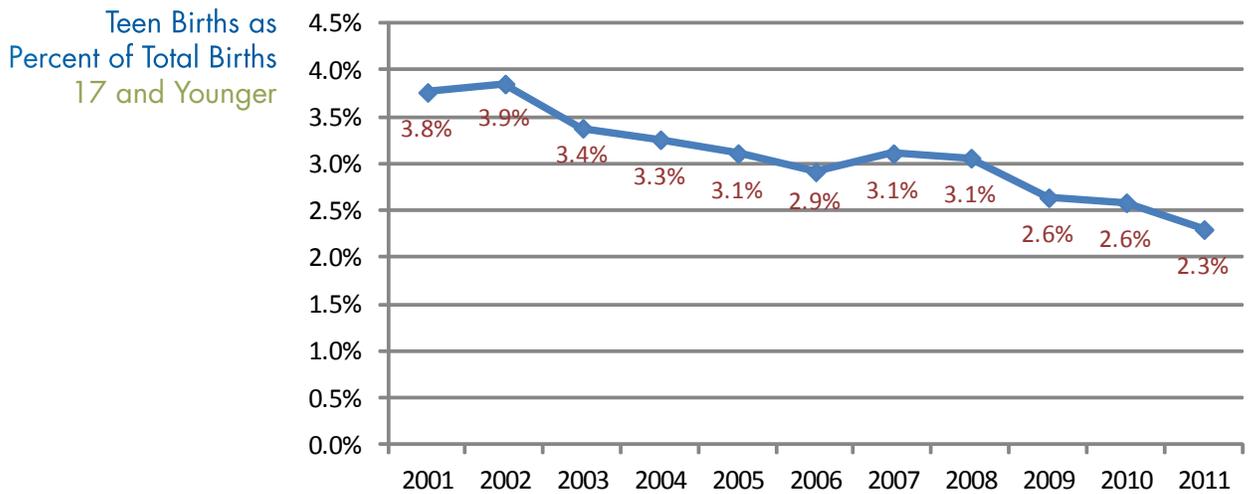


Figure 6

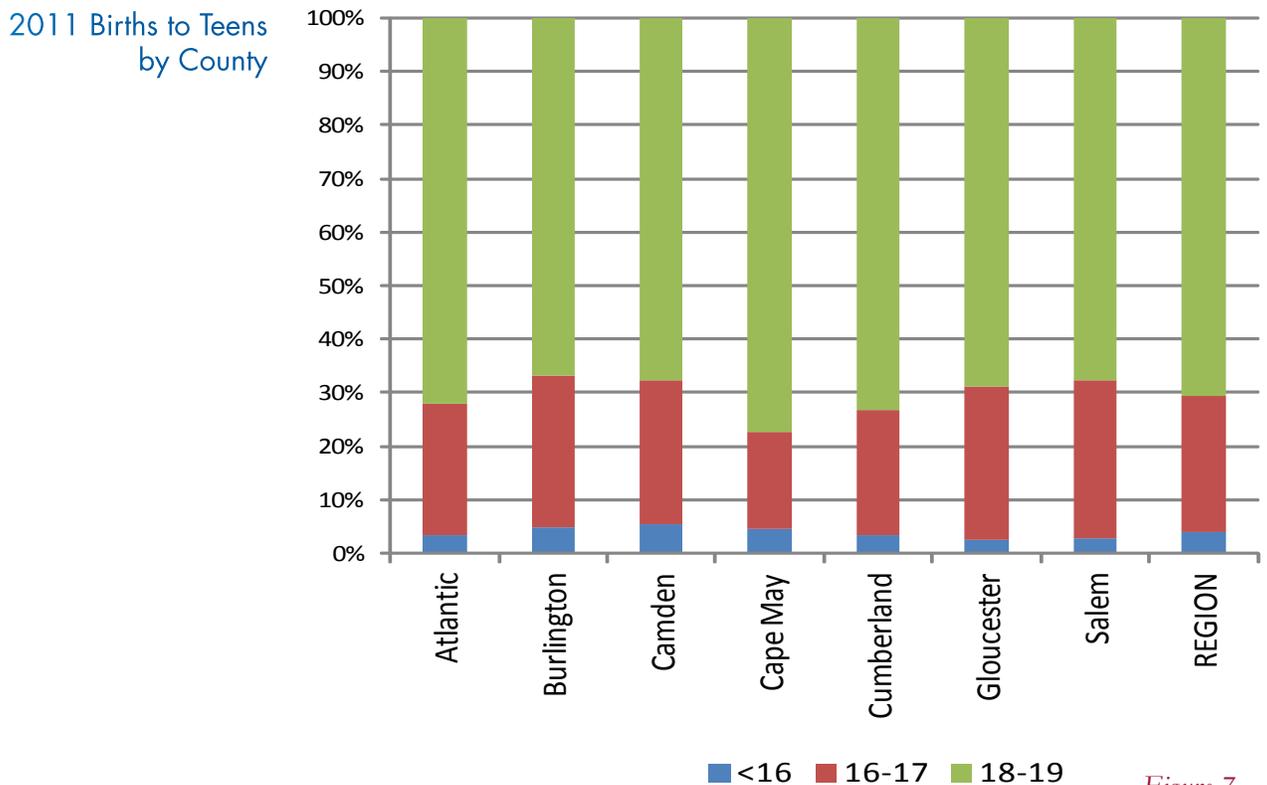


Figure 7

## Pregnancy Characteristics

### Prenatal Care

In 2011, 80% (n=16,125) of all births were to women who began prenatal care in the first trimester, 16% (n=3,245) were to women who began prenatal care in the second trimester, 3% (n=536) were to women who began prenatal care in the third trimester, and 1% (n=188) received no prenatal care (Figure 8). The Healthy People 2020 objective for First Trimester Entry to Prenatal Care is 77.9%. While the region has exceeded this objective, cities throughout the region continue to fail on this measure. SNJPC programs work with mothers, care providers, and community stakeholders to overcome barriers to access for all women in South Jersey.

Entry to Prenatal Care by Trimester  
SNJPC Member Hospital Births

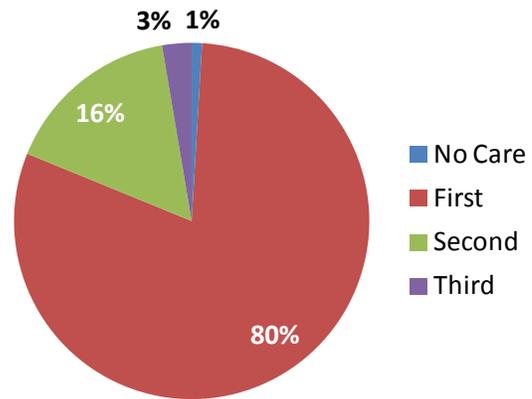


Figure 8

### Plurality

In 2011, singleton births represented 95.5% of all births in the region, twin births represented 4.3%, and triplet births represented 0.2% of all births. There were no quadruplet births in 2011. (Table II)

Between 2001 and 2011 there was a 25% increase in the percentage of births of twins and the percentage of total multiples. A decline in higher order multiples is seen after 2005, with no births greater than triplets in the region. These births often result in preterm, extremely low birthweight deliveries and fetal losses; surviving infants often experience lifelong health problems related to prematurity. Improvements in reproductive technologies were critical to the reduction in these high-risk births.

Year	Singleton		Twin		Triplet		Quadruplet		Total Multiples		Change in % from Baseline
	N	%	N	%	N	%	N	%	N	%	
2001	20163	96.41	710	3.40	36	0.17	4	0.02	750	3.59	
2002	20126	96.27	729	3.49	42	0.20	8	0.04	779	3.73	4%
2003	20888	96.67	681	3.15	39	0.18	0	0.00	720	3.33	-7%
2004	20755	96.08	807	3.74	35	0.16	4	0.02	846	3.92	9%
2005	21352	96.21	810	3.65	27	0.12	4	0.02	841	3.79	6%
2006	21340	95.79	881	3.95	56	0.25	0	0.00	937	4.21	17%
2007	21834	96.04	870	3.83	30	0.13	0	0.00	900	3.96	10%
2008	21155	96.00	834	3.78	48	0.22	0	0.00	882	4.00	11%
2009	21034	95.88	859	3.92	44	0.20	0	0.00	903	4.12	15%
2010	20202	96.16	785	3.74	21	0.10	0	0.00	806	3.84	7%
2011	19844	95.51	888	4.27	45	0.22	0	0.00	933	4.49	25%

Table II

## Risk Assessment

Risk assessment is conducted during pregnancy to identify women who are at high risk for fetal or infant death or infant morbidity. Early identification and intervention are keys to prevention. Because of this, risk assessment is conducted at the first prenatal visit and updated throughout the course of prenatal care.

The goal of risk assessment is to prevent or treat conditions associated with poor pregnancy outcomes and to assure linkage to appropriate services and resources through referral.

Table III depicts some of the risk factors that were associated with VLBW births in 2011. Very low birth weight is associated with risk factors such as multiple births, substance abuse, and inadequate prenatal care.

The association between no prenatal care and late entry to care, and the occurrence of low birthweight is also depicted in Table III. Although only 1% of pregnant women did not receive prenatal care, the no prenatal care rate for women delivering VLBW infants was 5%.

In data reflective of national reports, black women in South Jersey continue to have a higher proportion of low birthweight babies. Table III shows that while 19% of the births in the region were to black women, a higher proportion (36%) of the VLBW births were black. Since low birthweight is closely associated with infant mortality, reducing the incidence of VLBW infants born to black women is essential to reducing the racial disparity that has long challenged the perinatal healthcare community.

The table also shows that inadequate prenatal care, substance abuse, and multiple births (twins, triplets) are more likely to result in the birth of a VLBW infant. Maternal risks such as hypertension and pre-eclampsia can also be associated with decreased birth weight.

<b>Southern Region</b>	<b>ALL</b>	<b>&lt;1501 grams</b>	<b>&gt;1500 grams</b>
<i>Live Births to residents</i>	<b>20617</b>	395	20222
Mother's race: White	<b>64%</b>	45%	64%
Mother's race: Black	<b>19%</b>	36%	19%
Mother's ethnicity: Hispanic	<b>21%</b>	26%	21%
1st trimester entry to prenatal care	<b>78%</b>	67%	78%
No prenatal care	<b>1%</b>	5%	1%
Used tobacco during pregnancy	<b>12%</b>	12%	12%
Used alcohol during pregnancy	<b>1%</b>	3%	1%
Used drugs during pregnancy	<b>3%</b>	8%	3%
Plurality of 2 or more	<b>4%</b>	28%	4%
Mother's age less than 20 years	<b>8%</b>	9%	8%
Mother's age 35 years or greater	<b>15%</b>	17%	15%
Primigravida	<b>29%</b>	26%	29%
Maternal risk: Hypertension in pregnancy	<b>2%</b>	3%	2%
Maternal risk: Pre-eclampsia	<b>1%</b>	9%	1%

Table III

# Achievement 2011

## Method of Delivery

Unfortunately, New Jersey continues to have the highest cesarean birth rate in the nation. Figure 9 depicts the relationship between cesarean births and vaginal deliveries in South Jersey in the past 10 years.

For three years the New Jersey Hospital Association has sponsored a Perinatal Collaborative working to identify quality improvement strategies for perinatal health. Hospitals participating in this Collaborative have had the opportunity to share best practices across the spectrum of perinatal care. The reduction of inductions before 39 weeks was selected as a best practice in this initiative and many hospitals across the state have instituted “hard stops” for this procedure.

An examination of the births to mothers in SNJPC member hospitals based on the unified reporting standards in *Cesarean Delivery: Comparing New Jersey Hospitals in January 2010* ([http://www.state.nj.us/health/fhs/professional/documents/csection\\_by\\_hospital.pdf](http://www.state.nj.us/health/fhs/professional/documents/csection_by_hospital.pdf)) can be seen in Table IV.

The examination of these deliveries exposes opportunities to reduce C-sections for low risk mothers and infants. With over 80% of South Jersey mothers who had a prior C-section repeating this method of delivery, the consideration of VBAC by patients and physicians is an area that merits examination.

Vaginal - Cesarean Births South Jersey 2001 - 2011

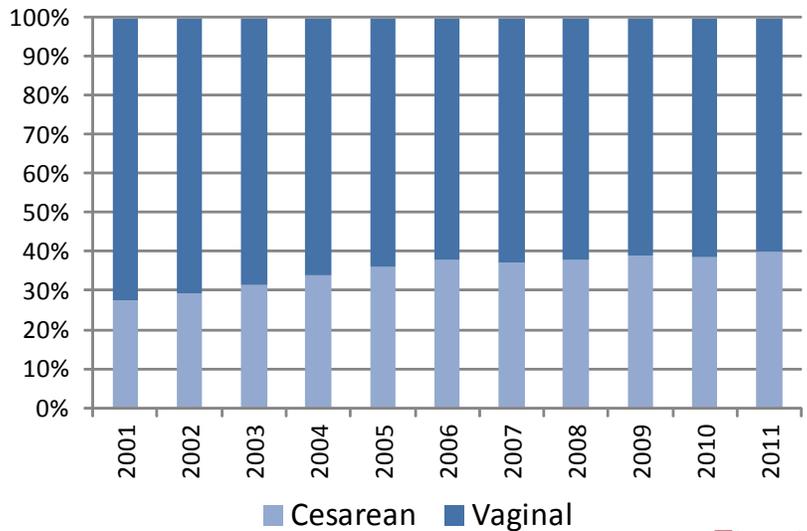


Figure 9

Regional C-Section Rate Percentage of all Deliveries

2001	27.61%	2007	37.25%
2002	29.37%	2008	37.74%
2003	31.36%	2009	38.99%
2004	33.80%	2010	36.36%
2005	36.02%	2011	40.09%
2006	37.66%		

South Jersey  
Cesarean Births,  
VBACs and Inductions  
2001 - 2011

	Nullipara C-section	No Trial Repeat C-section	Failed VBAC	Successful VBAC	Induction <39 wks	Induction 39+ wks	Induction with C-section
2001	24.80%	64.00%	31.20%	68.80%	14.20%	13.70%	4.11%
2002	26.20%	71.70%	32.60%	67.40%	9.00%	14.40%	3.77%
2003	29.90%	72.70%	36.00%	64.00%	4.10%	11.00%	2.90%
2004	31.50%	79.20%	37.90%	62.10%	7.10%	9.60%	4.38%
2005	33.70%	81.40%	44.80%	55.20%	6.00%	9.70%	4.33%
2006	34.80%	83.60%	42.20%	57.80%	6.90%	9.20%	2.30%
2007	33.90%	84.00%	40.90%	59.10%	4.40%	7.60%	3.29%
2008	34.20%	86.90%	45.50%	54.50%	2.70%	8.10%	3.09%
2009	34.50%	84.70%	47.40%	52.60%	4.90%	6.80%	1.61%
2010	34.30%	84.50%	41.50%	58.50%	5.50%	12.60%	4.41%
2011	36.12%	83.96%	48.82%	51.18%	6.70%	13.27%	2.65%
Change over time	45.64%	31.19%	54.74%	-25.61%	-52.82%	n/c	-35.52%

Table IV

## ISSUES

South Jersey Cesarean Births,  
VBACs & Inductions

**1. Nullipara cesareans for standard presenting women.** (First-time, live births, baby head down) In 2011, the rate of these cesarean births was 36.1%. This rate had a dramatic 40.3% increase between 2001 and 2006 going from 24.8% to 34.8%. In the past 5 years, however, the rate has increased only 6.5% from 33.9% in 2007 to the current. Figure 10 shows that even the percentage of first-time pregnant women who had a cesarean birth after no trial of labor has increased 130% since 2001. SNJPC member hospital trends for this group are consistent with state trends in the same period.

**2. Repeat cesareans without a trial of labor.** (Women who have had a previous cesarean birth who are scheduled for the procedure before the onset of labor) In 2011, 83.96% of deliveries to women who had a prior cesarean were cesareans without a trial of labor. This type of delivery has been on the decline in South Jersey. Since 2008 there has been a 3% decrease in repeat c-sections.

**3. Attempted vaginal births after cesarean births (VBACs) at 39+ weeks gestation that end in cesarean. These are defined as "failed" VBACs.** In 2011, the rate of failed VBACs was 48.2%. There was a 54.7% increase from 31.29% in 2001. In 2011 SNJPC participated in a taskforce focused on the promotion of VBAC, The forthcoming white paper from this group focuses on improving education about VBAC among hospital systems, patients and physicians in an effort to reduce New Jersey's high C-section rate. Using data on NJ deliveries, the group identified low risk populations that could be the focus of educational interventions. Improving the understanding about the risk surrounding VBAC is an important first step to increasing the willingness of physicians and patients to consider VBAC.

**4. Induction of labor before 39 completed weeks of gestation:** Since 2001 there has been a steady decrease in this type of birth as a result of increased concern about the problems encountered by babies who are born less than, but near term - which is 40 weeks gestation. The rate of these births in 2011 was 52.8% less than in 2001.

**5. Inductions that end in cesarean.** In 2011, the rate of induced labor after 39 weeks was 2.06%. This rate has decreased 35.52% since 2001, and dropped to a low of 1.6% in 2006. This is likely related to the increased nullipara and repeat cesarean birth rates in the same period.

### Cesarean Deliveries, First-time Mothers, Singleton, Full-Term, Head Down

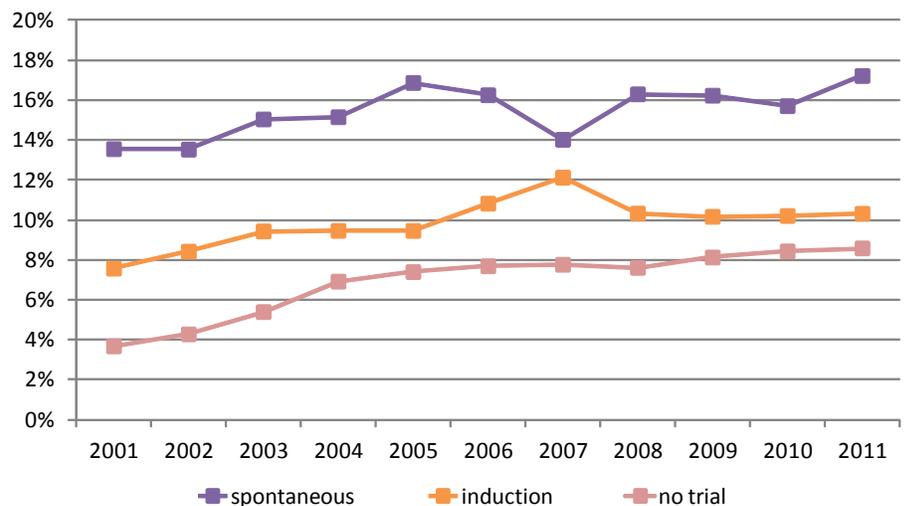


Figure 10

### South Jersey Cesarean Births Trends

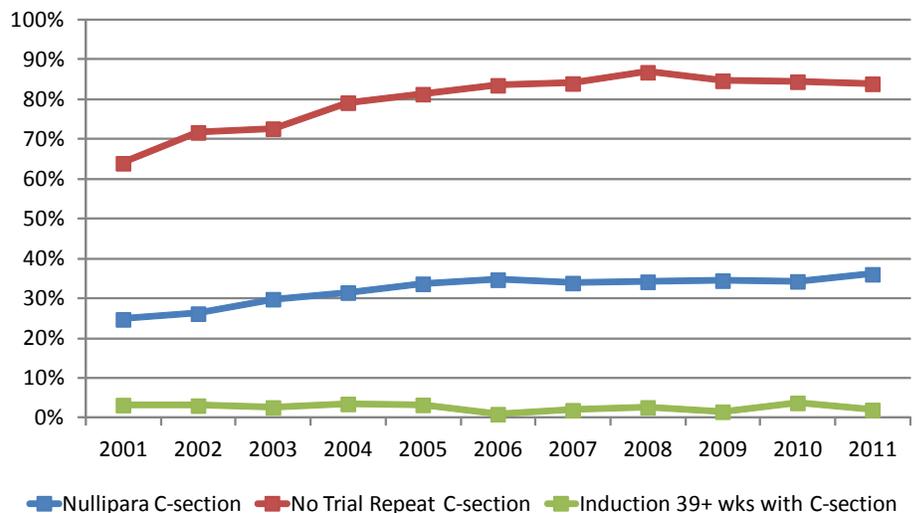


Figure 11

## Newborn Feeding Method

Newborn feeding method refers to the type of feedings given to the newborn in the 24 hours prior to discharge from the hospital. Table V and Figure 12 below show the trends in feeding methods for infants born in SNJPC member hospitals since 2001.

In 2011, 65.6% of women who gave birth in the SNJPC member hospitals breastfed their newborns (either exclusively or in combination with formula); 43.9% exclusively breastfed; 30.6% used formula; and 21.7% used a combination of breastfeeding and formula.

There has been an increase in breastfeeding and a decrease in the number of newborns who were fed exclusively with infant formula. It is likely that this is the result of the increase in the number of mothers who use infant formula to supplement breastfeeding.

Feeding Method Over Time

YEAR	Total Breastfeeding	Exclusive Breastfeeding	Formula	Combination
2001	58.4%	44.3%	39.8%	14.2%
2002	59.6%	44.7%	38.8%	14.9%
2003	59.6%	45.4%	38.2%	14.1%
2004	61.9%	47.1%	36.4%	14.8%
2005	62.5%	46.4%	35.5%	16.1%
2006	63.4%	45.8%	34.4%	17.7%
2007	62.7%	43.9%	34.8%	18.8%
2008	63.6%	44.3%	33.8%	19.3%
2009	64.8%	43.5%	32.6%	21.3%
2010	64.2%	39.7%	33.0%	24.5%
2011	65.6%	43.9%	30.6%	21.7%
Change over time	12.33%	n/c	-23.12%	52.81%

Table V

Feeding Trends 2001 - 2011

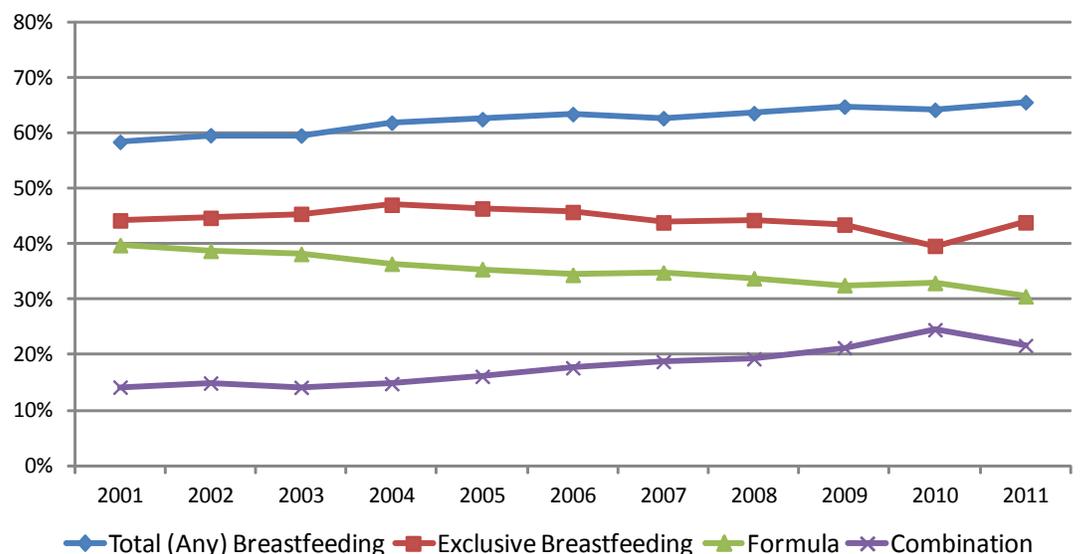


Figure 12

**Exclusive Breastfeeding**

Because of the many positive benefits of breastfeeding for child survival, growth and development, exclusive breastfeeding - which means that an infant receives only breast milk with no additional formula or water - is recommended by the World Health Organization for all infants. Despite its many benefits, many women do not breastfeed exclusively.

Over the last 10 years in South Jersey, even as the percentage of breastfed infants has increased, the percentage of infants who were exclusively breastfed at discharge decreased. Differences by race and ethnicity were observed. Table VI depicts these trends over time. In 2011, the percentage of exclusive breastfeeding was highest for White births (47.9%), Hispanic (34.7%), and Black (32.1%).

Some of the obstacles to exclusive breastfeeding can be overcome in the following ways:

Prevent and treat early problems. Most breastfeeding problems occur in the first 2 weeks of life. These problems all too often

lead to very early infant supplementation and abandonment of exclusive breastfeeding.

Restrict commercial pressures. Aggressive marketing of infant formula often gives new mothers and families the impression that human milk is less modern and thus less healthy for infants than infant formula.

Provide timely and accurate information. Ensuring that women receive complete, accurate, timely, and consistent information is fundamental for any program promoting exclusive breastfeeding.

Establish good practices in health facilities. Distribution of free samples of infant formula, the use of glucose water, and separation of mother from newborn are obstacles to the establishment of good feeding in health services.

Adopting the Baby-friendly Hospital Initiative's "Ten Steps to Successful Breastfeeding" and enhancing the skills of healthcare providers to support exclusive

breastfeeding would help to ensure the best start for infants. (<http://www.babyfriendlyusa.org>)

**Baby Friendly**

*In 2012 **Elmer Hospital** achieved Baby Friendly status. We are so pleased for the staff who worked tirelessly to complete this difficult process. Elmer is the first hospital in New Jersey and the Delaware Valley to achieve Baby Friendly status and their work to support mothers and babies successfully breastfeed serves as a point of pride for the entire region. Many of our other member hospitals are working towards Baby Friendly status currently. The efforts being made to support breastfeeding have impacted the initiation and duration of breastfeeding for families throughout Southern New Jersey.*

**Exclusive Breastfeeding by Race and Ethnicity**

Year	Black	White	Hispanic
2001	28.5%	50.8%	32.3%
2002	28.7%	51.1%	33.6%
2003	30.4%	52.0%	33.7%
2004	32.7%	53.9%	34.3%
2005	31.6%	53.0%	36.0%
2006	32.9%	52.0%	34.5%
2007	31.6%	49.4%	33.6%
2008	29.8%	49.6%	37.0%
2009	28.6%	49.2%	33.6%
2010	26.5%	43.5%	26.7%
2011	32.1%	47.9%	34.7%
<b>Change over time</b>	<b>12.63%</b>	<b>-5.71%</b>	<b>7.43%</b>

Table VI

## Infants Born Outside the Hospital

The regional database also tracks the number of infants born outside of hospitals. These are emergency births and include births at home, in transit or in the hospital emergency room. This number does not include planned home deliveries.

In 1988, the number of births outside the hospital rose sharply and continued until 1993 when the trend was reversed. This rate has remained very low for the past decade (Figure 13).

Although the majority of these infants are full-term, they are, as a group, at increased risk. The fetal and neonatal mortality risk is higher for these infants than those born in the hospital with appropriate care and support. Because of this, surveillance continues to determine preventable causes of these occurrences.

### Outside Birth Trend

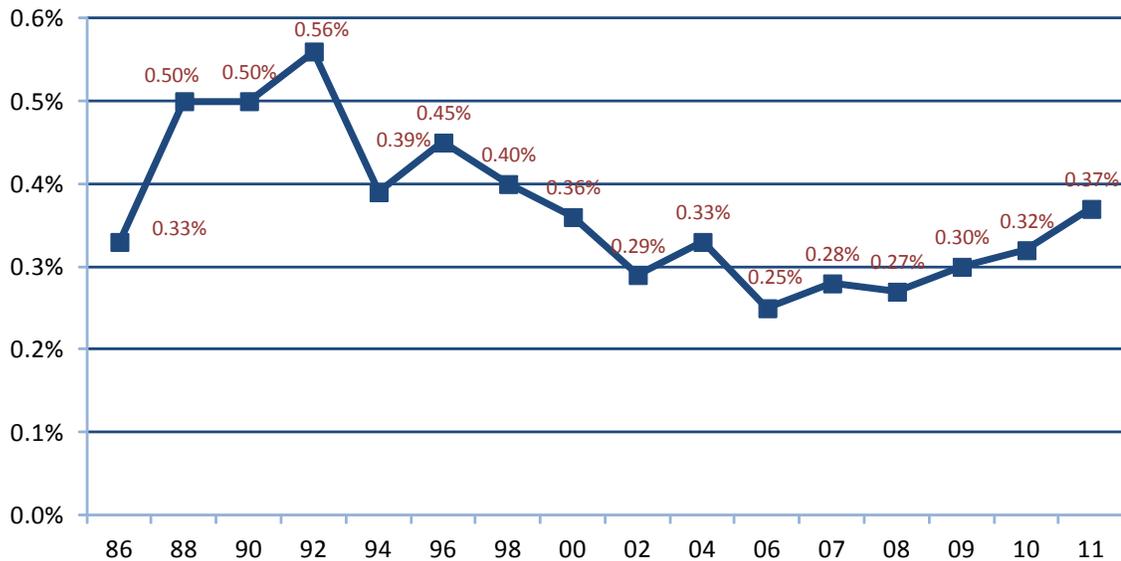


Figure 13

## Birthweight Trends

As seen in Figure 14, a greater proportion of infants weighing less than 5.5 lbs. were born in 2011 than in the baseline year of 1984, (8.9% vs. 6.8%). Table VII depicts the increased birth rates of the last 23 years for infants weighing 1501-2500 grams, 1001-1500 grams and those infants weighing less than 1000 grams at birth. Although we continue to depict regional progress since SNJPC's inception, a more relevant comparison is one that examines our current experience to that of the late 1990's.

Changes in medical management and the coordination provided by perinatal regionalization since 1995 set the stage for the increased birthrate of very small babies since the late 1990s. Technological and medical advances now permit the live birth of many tiny, premature infants who would have died prior to delivery just 15-20 years ago, when the SNJPC database was first developed.

In 2011, 3956 (1.90%) of the babies born in member hospitals were categorized as VLBW (Very Low Birth Weight) because they weighed less than 1500 grams (3.3 lbs). This group of infants is of particular interest because they are the most vulnerable and have the most influence on the neonatal mortality rate. When examined over time, the birth rate of small infants has remained relatively stable since 1999. Throughout the decade, the average birthrate of VLBW infants was 1.69%; the range was 1.58% in 2005 to 1.89% in 2008.

Of particular interest is the subset of the tiniest infants who weigh under 1000 grams (just under 2lbs). These babies are referred to as Extremely Low Birth Weight (ELBW). Figure 15 shows the birthweight trends for these small infants from the baseline year to the present. Although there have been changes year to year, an examination of 10 years of data shows the average birthrate of ELBW infants is 1.05%; the range was 0.80% in 2005 and 1.06% in 2008. In 2011, 215 infants, (1.05% of the total births in the region) weighed less than 1000 grams.

Birthrate of LBW Infants 1984-2011

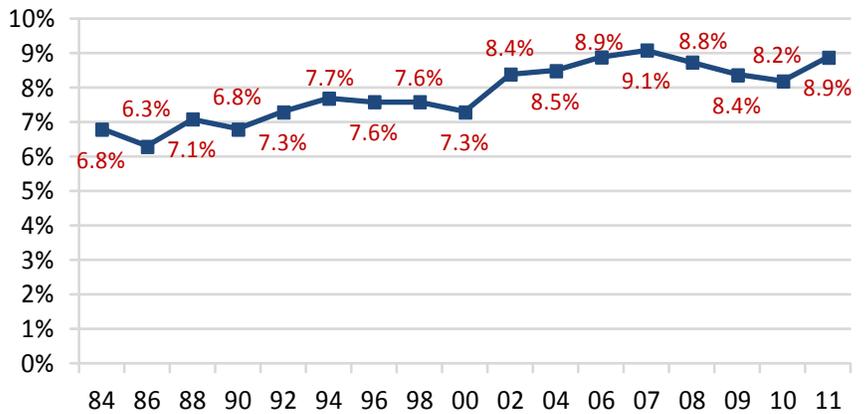


Figure 14

Birthweight Distribution

Weight Group	1988	2011	%Change
1501 -2500 g	5.43	6.99	28.73%
1001-1500 g	0.65	0.85	30.77%
751-1000 g	0.23	0.41	78.26%
500-750 g	0.19	0.38	100.00%
<500 g	0.21	0.25	19.05%

Table VII

ELBW/VLBW Birthrate Comparison

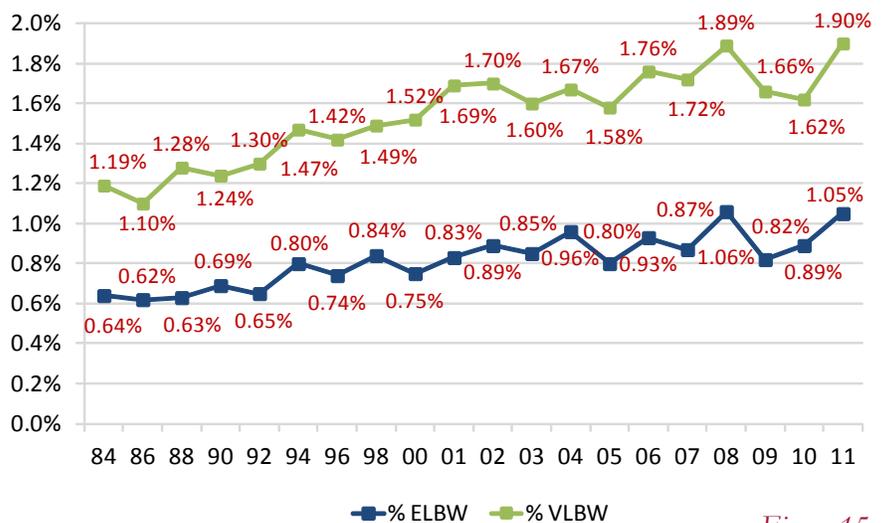


Figure 15

## Neonatal Mortality

The regional neonatal mortality rate trend since 1984 can be seen in Figure 16.

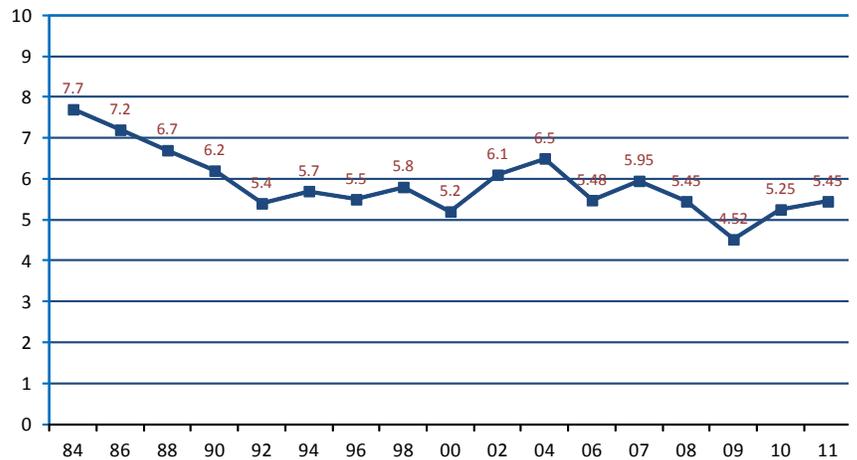
At 5.45 deaths per 1000 live births, the 2011 neonatal mortality rate (NMR) is 29% lower than the baseline year of 1984. Since 2000, the NMR has been less than 6.5 and the average NMR for infants of all weights was 5.53 deaths per 1000 live births.

Since low birth weight is the single most important factor contributing to neonatal mortality, SNJPC monitors the relationship between the incidence of LBW and NMR. Despite the increase in the incidence of low birthweight infants since 1984, the neonatal mortality has decreased for every birthweight category above 500 grams. Several categories exhibit dramatic decreases.

Although the annual birth rate of extremely small babies has significantly increased in the two decades the data have been tracked, the mortality rate for small infants continues to decrease. As can be seen in Table VIII, the mortality rate for LBW, VLBW and ELBW infants decreased 30-40 percent.

The information concerning specific subsets of tiny infants helps explain these trends. Since we have tracked regional data there has been a 35.5% decrease in the mortality rate for smaller infants weighing between 1 and 1.5 lbs. (500-750g). During the same period, the mortality rate for the subgroup of infants weighing between 1.5 and 2 lbs (750-1000g) decreased 76.3% from 351 to 83 per 1000 live births from 1984 to 2011. (Table IX)

Neonatal Mortality 1984-2011



Neonatal Mortality Rate Birthweight Distribution

Weight Group	Baseline	2011	%Change
Overall	7.68	5.45	-29.04%
<2501 g (LBW)	86.53	58.6	-32.28%
<1501 g (VLBW)	424.6	258.97	-39.01%
<1001 g (ELBW)	666.67	423.26	-36.51%

Table VIII

Neonatal Mortality Rate Trends

Weight Group	Baseline	2011	%Change
Overall	7.68	5.45	-29.04%
<2501 g (LBW)	86.53	58.6	-32.28%
<1501 g (VLBW)	424.6	258.97	-39.01%
<1001 g (ELBW)	666.67	423.26	-36.51%

Table IX

## Fetal Mortality

In addition to programs aimed at reducing neonatal mortality, the Cooperative has also coordinated educational and consultation activities directed at reducing the fetal mortality rate (FMR).

The FMR is reported in two ways: deaths of all fetuses weighing more than 500 grams and the subset of fetal deaths in later pregnancy, when the fetus weighs more than 2500 grams.

The fetal mortality rate for births over 500 grams has decreased 28.9% since 1984 but has been fairly stable since 2000. The average FMR since 2000 was 4.13 per 1000 births; the range was 3.59 per 1000 births in 2007 and 5.47 in 2009.

Since 1984, the FMR among infants weighing more than 2500 grams, a marker of late pregnancy complications and management, decreased 43%. The overall rate of 1.28 losses per 1000 births for this group has been stable since 2007.

### Fetal Mortality Rate

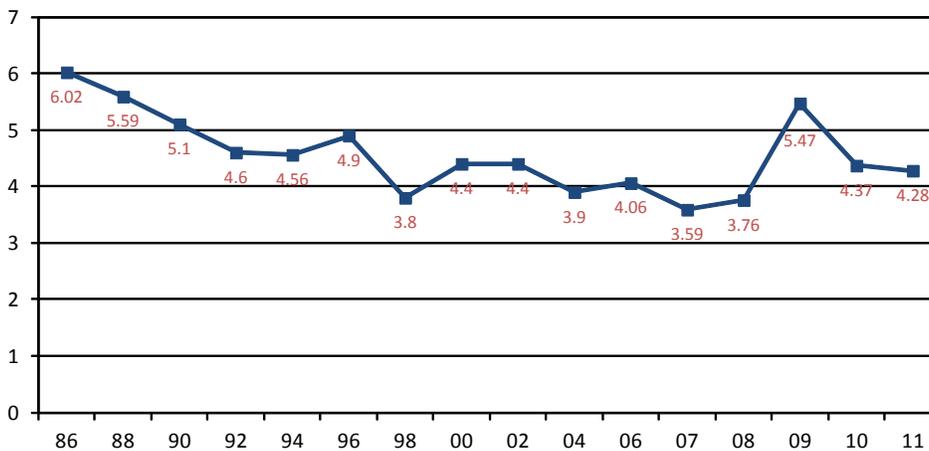


Figure 17

### FMR >2500 1986-2011

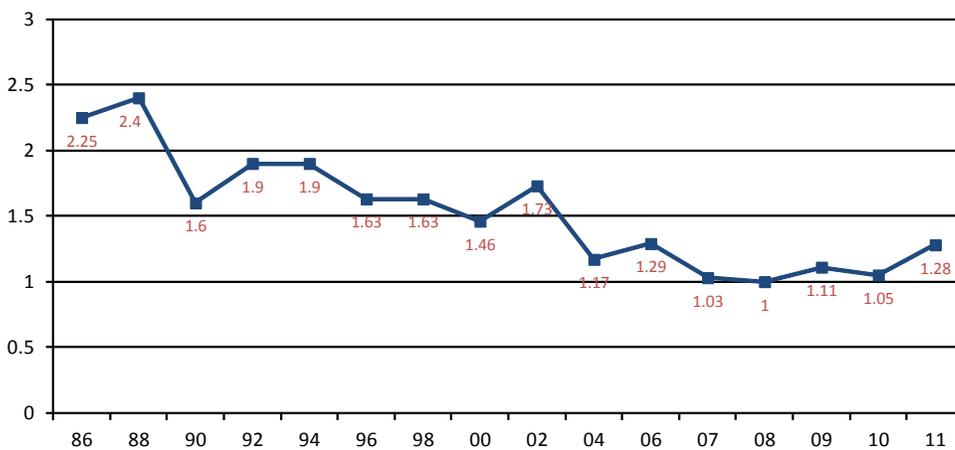


Figure 18

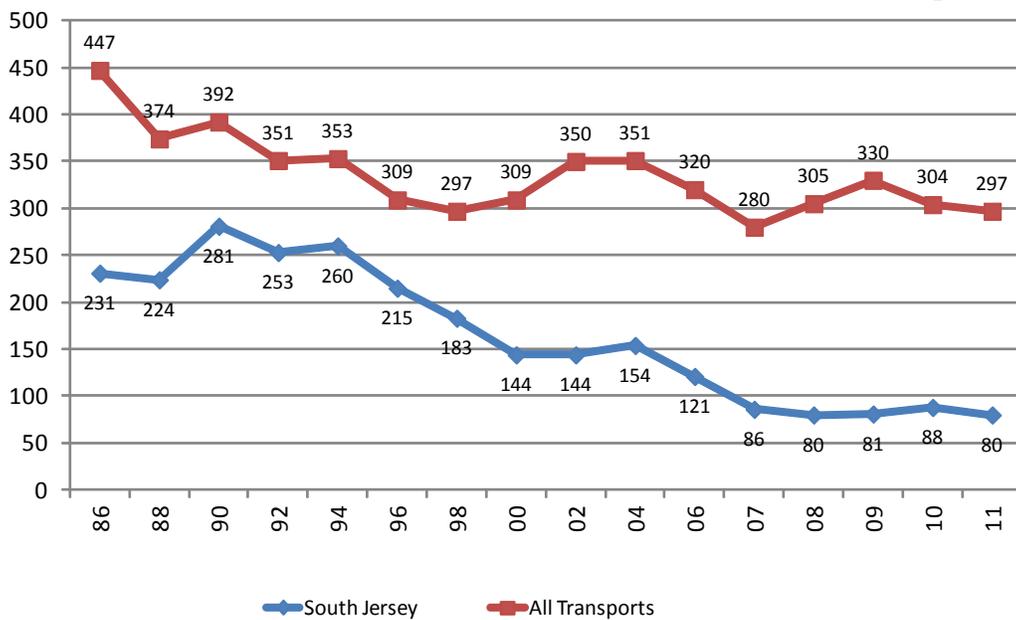
## Transport Patterns

### Neonatal Transports

In 2011, 297 infants were transported from South Jersey hospitals for neonatal intensive care (Figure 19). The effectiveness of the maternal transport system is seen in the fact that only 30% of these transported infants weighed less than 1500 grams. Additionally 52% of the transported infants weighed more than 2500 grams. Many of the larger term or close to term infants who were transported required surgery or other specialized care in New Jersey and neighboring states.

Neonatal Transports

Figure 19



### Maternal Transports

Maternal transport patterns have contributed to the reduction in the mortality rate for ELBW infants. Survival rates for tiny infants, those weighing less than 1500 grams, improve when they are born at a hospital with a Neonatal Intensive Care Unit (NICU).

In 2011, 430 pregnant women were transported to high-risk perinatal centers. The proportion of these transports going to South Jersey RPCs has consistently exceeded 90%. (Figure 20). Eighty two percent (82%) of the mothers transported to the perinatal centers were 32 weeks gestation or less. This trend corresponds with the decreased incidence of small babies born in hospitals without NICUs and the increased survival of tiny infants.

One of the consistent findings in the SNJPC Regional Database Report is the effectiveness of the regional maternal transport system in assuring that few infants weighing less than 2 lbs are born at community hospitals without NICU's. Although every CPC (Community Perinatal Centers) Intermediate and CPC Basic hospital is appropriately staffed and equipped to stabilize and care for tiny infants, having to transport these babies to a hospital with a NICU is a risk that can be avoided if the mothers can be transported prior to delivery.

Early identification, referral and transport of high-risk mothers helped to insure the majority of the smallest infants who benefit the most from specialized neonatal care are born at hospitals with these services. Figure 21 depicts the great change in where these infants are born since the first year these data were collected, when only 68% of the infants weighing 1 and 2 lbs. were born at hospitals with NICUs. In 2011, 85% of the tiniest infants were born at Regional Perinatal Centers (RPCs) and CPCs-Intensive.

### Maternal Transports

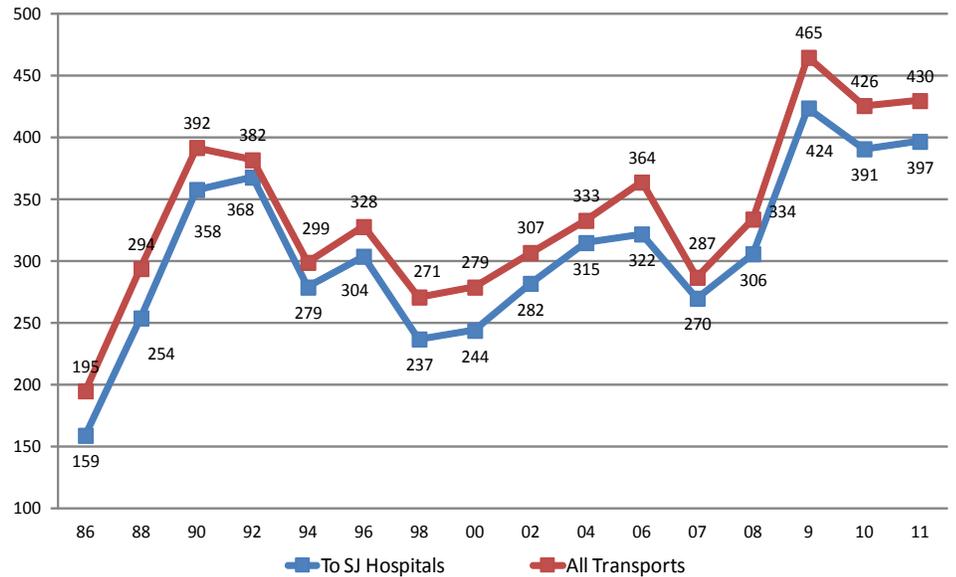


Figure 20

### 500-1000 gm Born at RPC & Intensive

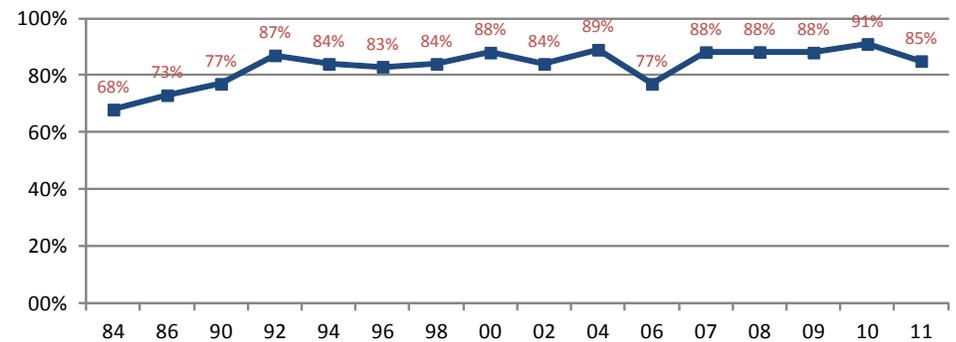


Figure 21

## Definitions

### **Live Births**

Births of infants who take at least one breath regardless of gestational age or weight. Unless otherwise indicated, "births" in this document refers to live births.

### **Total Births**

Live births of any gestation and fetal deaths greater than 19 weeks gestation.

### **Birth Rate**

Annual number of births to women at SNJPC member hospitals.

### **Birth Weight**

The first weight of the newborn obtained after delivery. Birth weight is recorded in grams.

### **Extremely Low Birth Weight (ELBW)**

Birth weight of less than 1,000 grams, which is approximately 2 pounds 3 ounces.

### **Gestational Age**

Clinical estimate of the length of time from the first day of the mother's last normal menstrual period to the date of delivery.

### **Induction**

Labor brought on by medical intervention.

### **Low Birth Weight (LBW)**

Birth weight of less than 2,500 grams, or approximately 5 pounds, 8 ounces.

### **Newborn Feeding Method**

The type of feedings (breast, formula, or both) given in the 24 hours prior to discharge from the hospital.

### **Nullipara**

A woman who has not delivered a live infant.

### **Teen Birth**

Birth to a mother under 20 years of age.

### **Tobacco, alcohol, and drug use during pregnancy**

Use of these substances as self-reported by mother.

### **Trimester of Pregnancy:**

The first trimester includes the first 12 weeks of pregnancy, the second trimester encompasses the 13th through the 24th weeks and the third trimester is the period after the 24th week through delivery.

### **Vaginal Birth After Previous Cesarean (VBAC)**

Vaginal delivery of a woman who has previously had a cesarean delivery.

### **Very Low Birth Weight (VLBW)**

Birth weight of less than or equal to 1,500 grams, or approximately 3 pounds, 5 ounces.

### **Fetal Death:**

Death of a fetus prior to birth and after 19 weeks gestation.

### **Neonatal Death:**

Death of an infant within the first 27 days of life.

### **Perinatal Mortality**

The sum of fetal deaths of 20 or more weeks gestation plus neonatal deaths.

### **Post Neonatal Death**

Death of an infant aged 28 days to one year of life.



**2011 Regional Perinatal Database for South Jersey**

*Making possible data-driven interventions to  
improve the health status of mothers and babies*



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