

## Utah Health Status Update:

# Trends and Characteristics of Home Births in Utah 2004–2013

July 2017

### Introduction

The home birth rate in Utah has been on the rise and is much higher than the national average. In 2013, the proportion of home births in Utah was double the national rate (2.12% vs. 0.92%, Figure 1). However, little is known about birth outcomes among infants delivered at home. Studies comparing birth outcomes associated with home birth versus hospital birth are contradictory; results of some studies determined home birth to be a relatively safe option, while others observed elevated risk associated with home delivery. The Utah Department of Health conducted a study with three specific goals: 1) to examine the trends in planned home births over last decade; 2) to understand the demographic characteristics of planned home births; and 3) to assess the maternal and neonatal outcomes associated with planned home births compared with hospital deliveries.

### Methods

All three parts of this study utilized birth certificate data obtained from the Utah Office of Vital

Records and Statistics. A home birth was defined as a delivery that both took place at home and was planned to take place at home. Demographic characteristics of planned home births were compared to all births including hospital deliveries in Utah between 2010 and 2013. This time period was selected because of revisions to the birth certificate that were implemented in 2009, allowing for more detailed analyses of home births than was formerly possible. A sub-analysis was performed to assess the birth outcomes among low-risk women in Utah. Low-risk was defined as women who had a singleton birth with cephalic presentation (born head-first) and at term (infants born between 38–40 weeks gestation) without birth defects. Finally, women who delivered at birthing centers, who had an unplanned home birth, or who planned for home birth but delivered elsewhere were excluded from this sub-analysis, restricting the sub-sample to intended home deliveries and intended hospital deliveries. Chi square tests of independence and multivariate logistic regression models were used to test all associations.

### Results

#### Trends

The percentage of home births increased rapidly from 2004 to 2013. Nationally, home births increased by 64% between 2004 and 2013 (0.56% to 0.92%). Meanwhile, the prevalence of home births in Utah increased by 89% between 2004 and 2013 (1.12% to 2.12%).

#### Demographic Profile of Planned Home Births

There were 205,486 births among Utah mothers between 2010 and 2013, of which 3,701 were planned home births. Demographic characteristics of the study population are presented in Table 1.

Compared to hospital births, women who planned home births were more likely to be older ( $\geq 35$  years; 16.8% vs. 11.3%), married (86.3% vs. 80.8%), and multiparous (83.4% vs. 67.3%). Women who had planned a home birth were more likely to have post-high school or college education than women who delivered in hospitals (74.3% vs. 69.1%), and were more likely to have late initiation of prenatal care compared to women who had a hospital birth (47.6% vs. 20.7% beginning after the second trimester). Home birth rates were also slightly higher among women residing in rural locations (37.6% vs. 33.4%).

#### Assessment of Maternal Outcomes

Selected interventions during labor and delivery, as collected in birth certificate data, were less common in home births compared to hospital births. Table 2 shows that planned home births experienced significantly fewer medical interventions including induction or augmentation of labor (0.50% vs. 16.2% and 2.4% vs. 32.7%, respectively), or operative vaginal delivery (0.04%\* vs. 5.9%). There were no differences in the rates of perineal lacerations (1.2% vs. 1.6%) or maternal admission to an intensive care unit (0.12% vs. 0.05%) by place of delivery. However, women who planned home births had higher rates of prolonged labor (1.5% vs. 0.66%), precipitous (rapid) labor (9.1% vs. 1.6%), and premature rupture of membranes (PROM) (2.2% vs. 0.39%).

### KEY FINDINGS

- In 2013, the proportion of home births in Utah was double the national rate (2.12% vs. 0.92%).
- Utah women who had planned a home birth had more education, were older, and more likely to be married than women who had hospital births.
- Selected interventions during labor and delivery, such as induction, augmentation, and operative vaginal were less common in planned home births in Utah.
- Infants of planned home births were more likely to have a low 5-minute Apgar score and were less likely to have ventilator support or be admitted to NICU.
- Utah home births were associated with increased odds of prolonged labor and premature rupture of membrane (PROM).

## Demographic Characteristics

Table 1. Demographic characteristics of study population by birth setting, Utah, 2010–2013

Characteristics	Percentage of All Births (n=205,486)	Percentage of Planned Home Births (n=3,701)	Percentage of Hospital Births (n=199,947)
<b>MATERNAL AGE*</b>			
≤24	28.07	21.22	28.28
25–34	60.49	62.03	60.41
≥35	11.44	16.76	11.31
<b>MATERNAL EDUCATION*</b>			
<HS	11.56	6.90	11.66
HS/GED	19.23	18.85	19.23
Associate/some college	39.03	43.26	38.98
Bachelor's or higher	30.17	30.99	30.07
<b>MATERNAL RACE*</b>			
White/Caucasian	91.97	97.03	91.84
<b>MATERNAL ETHNICITY*</b>			
Hispanic or Latino	15.42	3.37	15.74
<b>MATERNAL RESIDENCY*</b>			
Urban	66.61	62.42	66.65
Rural	33.39	37.58	33.35
<b>PARITY*</b>			
0	32.37	16.62	32.71
1	27.68	21.80	27.81
2	19.82	18.41	19.86
3 or more	20.14	43.17	19.62

\* p < 0.0001

### Assessment of Neonatal Outcomes

Infants of women who had planned home birth were more likely to have a 5-minute Apgar score of <4 (0.24% vs. 0.13%) or <7 (1.5% vs. 0.78%) (see Table 3). Infants of women who had planned home births were less likely to have ventilator support or have been admitted to a newborn intensive care unit (NICU) (0.81% vs. 4.7%).

### Conclusion

Although home birth outcomes generally compared favorably with those of hospital deliveries, home births were associated with increased odds of prolonged labor, PROM, and a low Apgar score. These factors, along with the contradictory findings of previous national studies, all point toward the imperative for further study regarding the safety of home birth, particularly in light of higher rates of home birth in Utah.

### UDOH ANNOUNCEMENT:

The Indicator Based Information System for Public Health (IBIS) now has community snapshots available for the Utah Small Areas. The snapshots show data on key health indicators for the small area, including, where applicable, how that area compares to the state. These can be accessed at <http://ibis.health.utah.gov/community/snapshot/Builder.html>

## Maternal Outcomes Among Low-risk Women

Table 2. Assessment of maternal outcomes among low-risk women by birth setting, Utah, 2010–2013

Outcomes	Percentage of Planned Home Births (n=2,606)	Percentage of Hospital Births (n=146,625)	p-value
<b>INTERVENTIONS</b>			
Epidural	0.00	86.94	<.0001
Induction of labor	0.50	16.15	<.0001
Augmentation of labor	2.38	32.68	<.0001
<b>TYPE OF DELIVERY</b>			
Unassisted vaginal	99.96	80.46	<.0001
Operative/assisted vaginal	0.04*	5.92	<.0001
C-section (primary)	0.00	13.62	
<b>MORBIDITY</b>			
Premature rupture of membranes	2.15	0.39	<.0001
Precipitous labor	9.06	1.62	<.0001
Prolonged labor	1.50	0.66	<.0001
Abrupt placenta	0.08*	0.69	<.0001
Maternal transfusion	0.23	0.65	0.001
Perineal laceration	1.19	1.55	0.4359
Admission to ICU	0.12*	0.05	0.5004

\* unstable rate due to small numbers

## Neonatal Outcomes Among Low-risk Women

Table 3. Assessment of neonatal outcomes among low-risk women by birth setting, Utah, 2010–2013

Outcomes	Percentage of Planned Home Births	Percentage of Hospital Births	Adjusted Odds Ratio** (95% CI)
<b>5-MINUTE APGAR SCORE</b>			
<4	0.24	0.13	4.00 (1.56, 10.28)
<7	1.53	0.78	3.39 (2.38, 4.84)
<b>VENTILATOR SUPPORT</b>			
First 30 minutes	1.23	2.58	0.71 (0.49, 1.03)
>6 hours	0.15*	0.81	0.32 (0.12, 0.86)
Admission to ICU	0.81	4.66	0.25 (0.16, 0.38)
Deceased status	0.15*	0.09	1.66 (0.49, 5.55)

\* unstable rate due to small numbers

\*\* controlled for all significant maternal characteristics

The Out-of-Hospital (OOH) Birth Committee, a subcommittee on the Utah Women and Newborn Quality Collaborative (UWNQC) was created in 2013 with the goal of reducing adverse maternal and neonatal outcomes associated with OOH births. The OOH Subcommittee is close to publishing their second biannual report on OOH births in the state (2013–2015). Analyzing current and longitudinal data on these births will allow better identification of maternal and neonatal safety issues related to OOH births and to address these safety issues through standardized statewide initiatives.

For additional information about this topic, contact Shaheen Hossain, Ph.D., 801-273-2855, [shossain@utah.gov](mailto:shossain@utah.gov); or the Office of Public Health Assessment, Utah Department of Health, (801) 538-9191, email: [chdata@utah.gov](mailto:chdata@utah.gov).

## Breaking News, July 2017

### Critical Congenital Heart Defect (CCHD) Newborn Screening in Utah

Congenital heart defects (CHDs) are problems with the heart's structure that are present at birth and change the normal flow of blood through the heart. In the U.S., CHDs are the most common cause of infant death due to birth defects. One of every 100 newborns is born with a CHD. The most severe types, critical congenital heart defects (CCHDs), affect about one in every four babies with a heart defect.

While some forms of CHD result in few problems with an infant's long-term health, CCHD can lead to significant morbidity and mortality if not identified and treated within the first few days of life. An approximate 100 to 200 deaths are due to unrecognized heart disease in newborns each year in the U.S. (These numbers exclude those dying before diagnosis.)

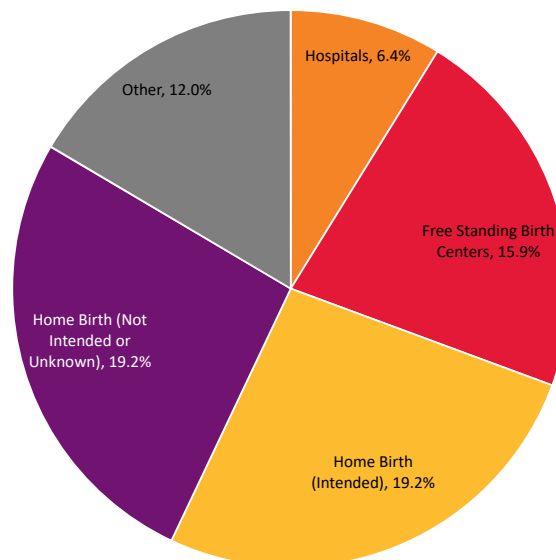
Newborn heart screening by pulse-oximetry is recommended as a method to identify infants with CCHD within the first two days of life. CCHD screening was implemented in Utah on October 1, 2014 per Utah Code 26-10-6.

Although most newborns are screened for CCHD, improvement is needed. Babies born outside of hospitals have a higher incidence of a "Not Screened" result.

The Utah Birth Defect Network (UBDN) is committed to improving CCHD screening. Through education and outreach, the UBDN assists hospitals, birthing centers, and midwives to make screening for CCHD available to all newborns in Utah.

For additional information about screening for CCHD, visit [health.utah.gov/cchd](http://health.utah.gov/cchd) or call the UBDN at (866) 818-7096.

**Percentage of Live Born Infants with "Not Screened" CCHD Screening Result by Birth Location, Utah, 2016**



Note: Not screened refers to no screening by pulse oximetry.

## Community Health Spotlight, July 2017

### Utilizing Commodity Supplemental Food Program (CSFP) Participant Feedback to Drive Nutrition Education Messaging and Communication

The Commodity Supplemental Food Program is a free monthly food box and nutrition education program for low-income seniors developed at the federal level and run by individual states. States are allowed to develop the nutrition education component of the program. In 2015, a survey of Utah CSFP participants was conducted to measure the effectiveness of the nutrition education. The survey and self-addressed stamped envelope were included in each CSFP client's food box during the month of May through July. Of 2,544 surveys distributed, 1,080 were completed and returned. The median age of respondents was 71. Most were female (70.0%), White (85.5%), non-Hispanic (80.3%), spoke English as their primary language (81.0%), and indicated they had some type of special diet (61.4%).

Survey results suggested that participants were interested in nutrition education, as well as highlighted barriers to practicing balanced nutrition and behavior themes. The most significant behavior themes highlighted that participants use tools to open packages (89%), prefer snacks (88.3%), use the stove to prepare meals (83.4%), and cook an average of 37 minutes per meal. Some of the barriers identified in the survey included participants were bored with the options included in the food box, participants could not prepare items, and participants could not eat the items due to special dietary restrictions. However, some participants with special dietary needs continued to eat all of the items in the food boxes because they had no other food options.

CSFP used these findings to develop nutrition educational newsletters on topics shown to negatively impact nutrition in older adults such as special diets, oral care and difficulty chewing, the impact of hearing loss, portion control, and chronic inflammation. A brochure was created with information on cooking for one; different and quick ways to prepare shelf stable foods and turn them into meals; common food safety risk factors for seniors; the difference between canned, frozen, and fresh foods; and how to read expiration dates. The survey showed a positive relationship between aging and the ability/desire to prepare full meals, which has spurred the creation of a special cookbook for smaller meals based on the USDA Choose MyPlate nutrition standards. Finally, the survey highlighted the need to expand the languages available for program materials to include Bosnian and Russian, in addition to English and Spanish.

For more information, visit <http://www.utahfoodbank.org/CSFP>.

# Monthly Health Indicators Report

(Data Through May 2017)

Monthly Report of Notifiable Diseases, May 2017	Current Month # Cases	Current Month # Expected Cases (5-yr average)	# Cases YTD	# Expected YTD (5-yr average)	YTD Standard Morbidity Ratio (obs/exp)
Campylobacteriosis ( <i>Campylobacter</i> )	41	53	195	165	1.3
Shiga toxin-producing <i>Escherichia coli</i> ( <i>E. coli</i> )	3	5	17	18	0.9
Hepatitis A (infectious hepatitis)	1	1	5	4	1.5
Hepatitis B, acute infections (serum hepatitis)	0	0	4	3	1.8
Influenza*	Weekly updates at <a href="http://health.utah.gov/epi/diseases/influenza">http://health.utah.gov/epi/diseases/influenza</a>				
Meningococcal Disease	0	0	1	2	0.7
Pertussis (Whooping Cough)	14	89	152	395	0.4
Salmonellosis ( <i>Salmonella</i> )	41	31	138	131	1.1
Shigellosis ( <i>Shigella</i> )	1	3	13	15	1.0
Varicella (Chickenpox)	15	22	100	133	0.5
Quarterly Report of Notifiable Diseases, 1st Qtr 2017	Current Quarter # Cases	Current Quarter # Expected Cases (5-yr average)	# Cases YTD	# Expected YTD (5-yr average)	YTD Standard Morbidity Ratio (obs/exp)
HIV/AIDS†	44	41	44	41	1.1
Chlamydia	2,623	2,124	2,623	2,124	1.2
Gonorrhea	556	290	556	290	1.9
Syphilis	25	16	25	16	1.6
Tuberculosis	12	6	12	6	2.0
Medicaid Expenditures (in Millions) for the Month of May 2017	Current Month	Expected/Budgeted for Month	Fiscal YTD	Budgeted Fiscal YTD	Variance - over (under) budget
Capitated Mental Health	\$ 20.5	\$ 20.1	\$ 144.8	\$ 146.6	\$ (1.8)
Inpatient Hospital	\$ 9.4	\$ 12.2	\$ 100.5	\$ 103.5	\$ (2.9)
Outpatient Hospital	\$ 6.2	\$ 4.6	\$ 45.6	\$ 45.7	\$ (0.1)
Long Term Care	\$ 37.3	\$ 35.7	\$ 235.0	\$ 235.9	\$ (1.0)
Pharmacy	\$ 9.5	\$ 9.0	\$ 85.7	\$ 87.6	\$ (2.0)
Physician/Osteo Services	\$ 3.5	\$ 3.8	\$ 38.5	\$ 42.5	\$ (4.0)
<b>TOTAL MEDICAID</b>	<b>\$ 251.0</b>	<b>\$ 253.5</b>	<b>\$ 2,347.4</b>	<b>\$ 2,351.2</b>	<b>\$ (3.8)</b>

Program Enrollment for the Month of May 2017	Current Month	Previous Month	% Change‡ From Previous Month	1 Year Ago	% Change‡ From 1 Year Ago
Medicaid	285,526	286,350	-0.3%	293,949	-2.9%
PCN (Primary Care Network)	13,608	13,803	-1.4%	17,592	-22.6%
CHIP (Children's Health Ins. Plan)	19,333	19,375	-0.2%	17,979	+7.5%
Health Care System Measures	Annual Visits			Annual Charges	
	Number of Events	Rate per 100 Population	% Change‡ From Previous Year	Total Charges in Millions	% Change‡ From Previous Year
Overall Hospitalizations (2014)	281,302	8.9%	-0.8%	\$ 7,281.6	+11.8%
Non-maternity Hospitalizations (2014)	177,881	5.5%	-1.1%	\$ 6,200.8	+11.6%
Emergency Department Encounters (2014)	710,266	22.9%	+2.6%	\$ 1,760.5	+13.2%
Outpatient Surgery (2013)	404,303	13.1%	+7.3%	\$ 2,167.9	+11.5%
Annual Community Health Measures	Current Data Year	Number Affected	Percent/Rate	% Change‡ From Previous Year	State Rank§ (1 is best)
Obesity (Adults 18+)	2015	510,400	24.5%	-4.7%	8 (2015)
Cigarette Smoking (Adults 18+)	2015	189,600	9.1%	-6.2%	1 (2015)
Influenza Immunization (Adults 65+)	2015	181,600	59.0%	+1.9%	36 (2015)
Health Insurance Coverage (Uninsured)	2015	263,600	8.8%	-14.6%	n/a
Motor Vehicle Traffic Crash Injury Deaths	2015	247	8.2 / 100,000	+3.7%	19 (2015)
Poisoning Deaths	2015	697	23.3 / 100,000	+6.8%	43 (2015)
Suicide Deaths	2015	609	20.3 / 100,000	+7.8%	47 (2015)
Diabetes Prevalence (Adults 18+)	2015	145,800	7.0%	-1.4%	10 (2015)
Poor Mental Health (Adults 18+)	2015	333,300	16.0%	+0.6%	18 (2015)
Coronary Heart Disease Deaths	2015	1,619	54.0 / 100,000	+1.0%	2 (2015)
All Cancer Deaths	2015	3,091	103.2 / 100,000	+0.1%	1 (2015)
Stroke Deaths	2015	887	29.6 / 100,000	+2.0%	18 (2015)
Births to Adolescents (Ages 15-17)	2015	489	6.9 / 1,000	-11.7%	13 (2015)
Early Prenatal Care	2015	38,803	76.4%	+0.2%	n/a
Infant Mortality	2015	257	5.1 / 1,000	+3.2%	13 (2014)
Childhood Immunization (4:3:1:3:3:1)	2015	37,400	73.6%	-1.3%	35 (2015)

\* Influenza-like illness activity is minimal in Utah. As of May 20, 2017, 1,404 influenza-associated hospitalizations have been reported to UDOH since the start of the influenza season on October 2, 2016. More information can be found at <http://health.utah.gov/epi/diseases/influenza/surveillance/index.html>.

† Diagnosed HIV infections, regardless of AIDS diagnosis.

‡ Relative percent change. Percent change could be due to random variation.

§ State rank based on age-adjusted rates where applicable.

Notes: Data for notifiable diseases are preliminary and subject to change upon the completion of ongoing disease investigations. Active surveillance for West Nile Virus will start in June for the 2017 season.