

Inter Tribal Council of Arizona, Inc.



Maternal and Child Health Assessment for American Indians and Alaska Natives Using a Women, Infants, and Children Program in Utah

September 2019

Tribal Epidemiology Center

Maternal and Child Health Assessment for American Indians and Alaska Natives Using a Women, Infants, and Children Program in Utah

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September 26th, 2019

TO: Tribal Leader and Tribal Health Directors

FROM: Inter Tribal Council of Arizona, Inc.
Maria Dadgar, MBA, Executive Director

RE: *Maternal and Child Health Assessment for American Indians and Alaska Natives Using a Women, Infants, and Children Program in Utah*

On behalf of the Inter Tribal Council of Arizona, Inc. (ITCA) Tribal Epidemiology Center (TEC), ITCA TEC is pleased to present the *Maternal and Child Health Assessment for American Indians and Alaska Natives Using a Women, Infants, and Children Program in Utah* Report.

This report was created to supplement the ITCA 2018 maternal and child health surveillance report *Maternal and Child Health Assessment for American Indians and Alaska Natives in Arizona, Nevada, and Utah* at the request of the Tribes in Utah. The TEC utilized data from the Utah Department of Health's (UDOH) Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

This surveillance report highlights maternal, infant, and child health indicators among the American Indian and Alaska Native population within Utah.

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Executive Summary

The purpose of the *Maternal and Child Health Assessment for American Indians and Alaska Natives Using a Women, Infants, and Children Program in Utah* report is to provide maternal and child health information for the Phoenix Indian Health Service (IHS) Area from 2014-2018. This report focuses on the health indicators of pregnant and postpartum mothers, infants, and children.

Mothers in the analysis fit into either one of the three categories: pregnant, postpartum, or breastfeeding. Most of the mothers in the report were between the ages of 18 and 34 years old, had at least one child, took vitamins throughout their pregnancy, lived in a household where no one smokes, and had an interest in breastfeeding. A common challenge for the group of women was establishing a healthy body weight before and after pregnancy.

The infant age group included infants up to the age of two years old. The majority of the infants were one year old. The results of the analysis showed that it was common for infants to be enrolled in WIC by the age of two months old, have a healthy birthweight, and be breastfed. Of the Infants who had a low birthweight, most were categorized as moderately low.

The children's section included ages one to five years old. Children participants were consistently reaching their expected growth measurements in stature, maintaining healthy levels of hemoglobin, and were at less risk of being exposed to secondhand smoke. Two subjects that stood out in the analysis were the increase into overweight body weight categories after the age of two years old and the lack of dental visits by the age of one year old. Majority of the children in the less than two years old category had a healthy body weight. However, in the two years old and older age category, a higher proportion of children were categorized as overweight or obese. As for dental visits, most children had not seen a dentist in each of the data years nor by the age of one year old.

Purpose

The purpose of the *Maternal and Child Health Assessment for American Indians and Alaska Natives Using a Women, Infants, and Children Program in Utah* is to identify health disparities present in the state of Utah, one of the three states within the Phoenix Indian Health Service (IHS) Area. The target audience for this report includes: Tribal Health Directors, public health professionals, tribal leadership, and health researchers. This report focuses on the health indicators of pregnant and postpartum mothers, infants, and children among American Indian and Alaska Native (AI/AN) communities.

Introduction

This is the first publication of the report, *Maternal and Child Health Assessment for American Indians and Alaska Natives Using a Women, Infants, and Children Program in Utah* by the ITCA TEC. This report was created as a supplement to ITCA's 2018 maternal and child health surveillance report *Maternal and Child Health Assessment for American Indians and Alaska Natives in Arizona, Nevada, and Utah*, available on ITCA's website (<http://itcaonline.com/>). Using data from the UDOH WIC program, this maternal and child health report reveals current trends in maternal and child health topics among AI/AN in Utah.

The UDOH provided the ITCA TEC with WIC datasets comprised of participants who identified as AI/AN. Participants include mothers, infants, and children during pregnancy, postpartum, postnatal, and up to the age of 5 years old. Previous ITCA reports included ITCA WIC data only, which was comprised of Arizona participants.

The report is organized into eleven main sections:

- Executive Summary
- Purpose
- Introduction
- Maternal Indicators
- Infant Indicators
- Children Indicators
- Technical Notes
- Definitions of Variables
- Statistical Notes Table
- Data Barriers
- Action Items

The analyses in this report highlight health indicators among Utah WIC AI/AN mothers, infants, and children. Only AI/AN Utah WIC participants were included in this report. Additional analysis may be provided to ITCA TEC Tribal partners upon request.

For inquiries, please contact us at tecinfo@itcaonline.com.

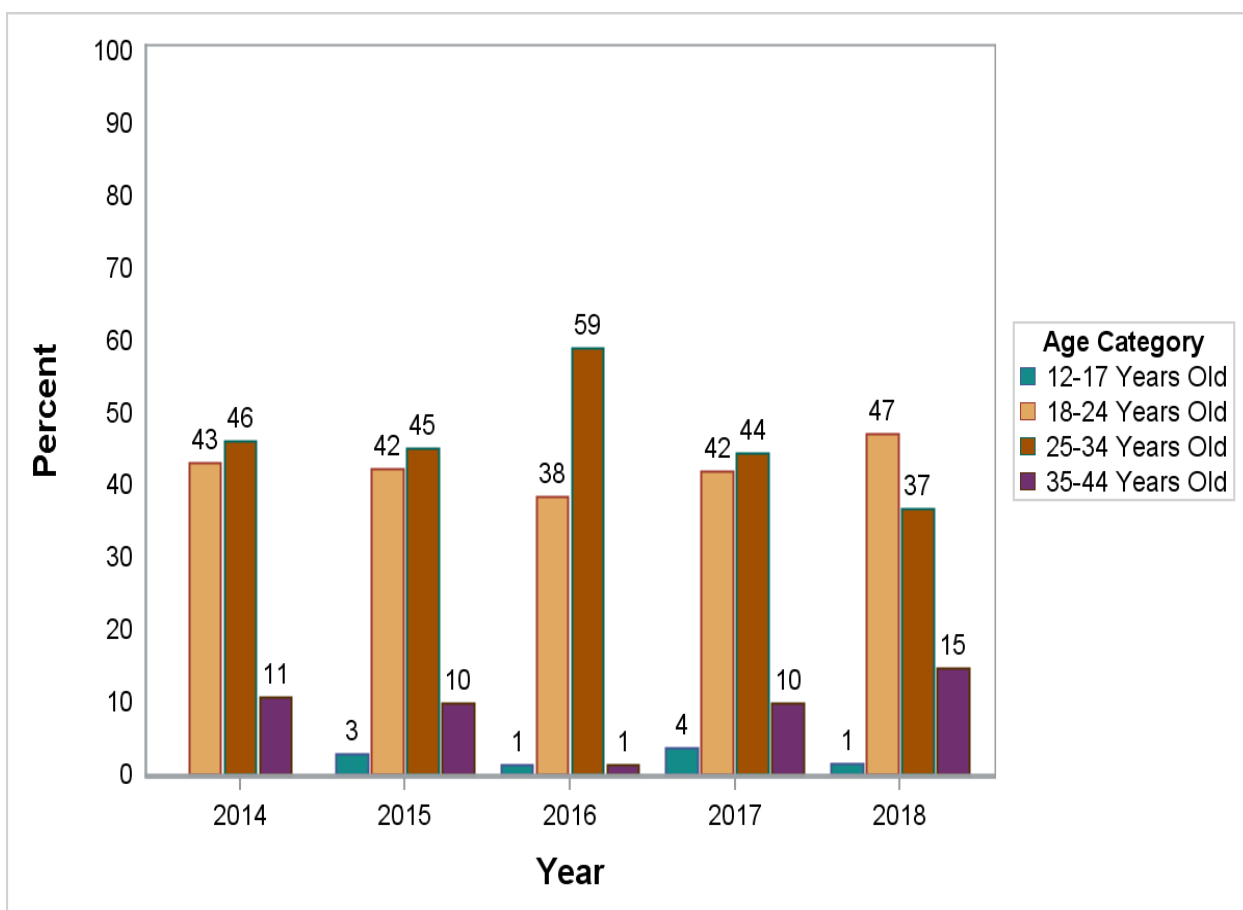
Maternal Indicators

Maternal Age of Participants

Background Information: Pregnancy in adolescent aged women is associated with higher risks of adverse outcomes including low birthweight and preterm delivery¹. Women who become pregnant after 35 years of age are at a greater risk for gestational diabetes, pregnancy complications, low birthweight, and premature delivery².

How Data Were Collected: This summary used the mother's age at time of pregnancy. The ages were then grouped into 4 categories: 12-17 year olds, 18-24 year olds, 25-34 year olds, and 35-44 year olds.

Age Group	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
12-17 years old	0	0.0	*	2.8	*	1.3	*	3.7	*	1.5
18-24 years old	28	43.1	30	42.3	30	38.5	34	42.0	32	47.1
25-34 years old	30	46.2	32	45.1	46	59.0	36	44.4	25	36.8
35-44 years old	7	10.8	7	9.9	*	1.3	8	9.9	10	14.7
Total (n)	65		*		*		*		*	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

- ❖ Throughout 2014-2018, the majority of the AI/AN pregnancies occurred in the 18-24 and 25-34 age groups.

- ❖ The 35-44 age groups comprised 15% or less of the Utah WIC participants in each year from 2014 to 2018.
- ❖ From 2014-2018, teen pregnancy occurred in 4% or less of each year in the WIC program.

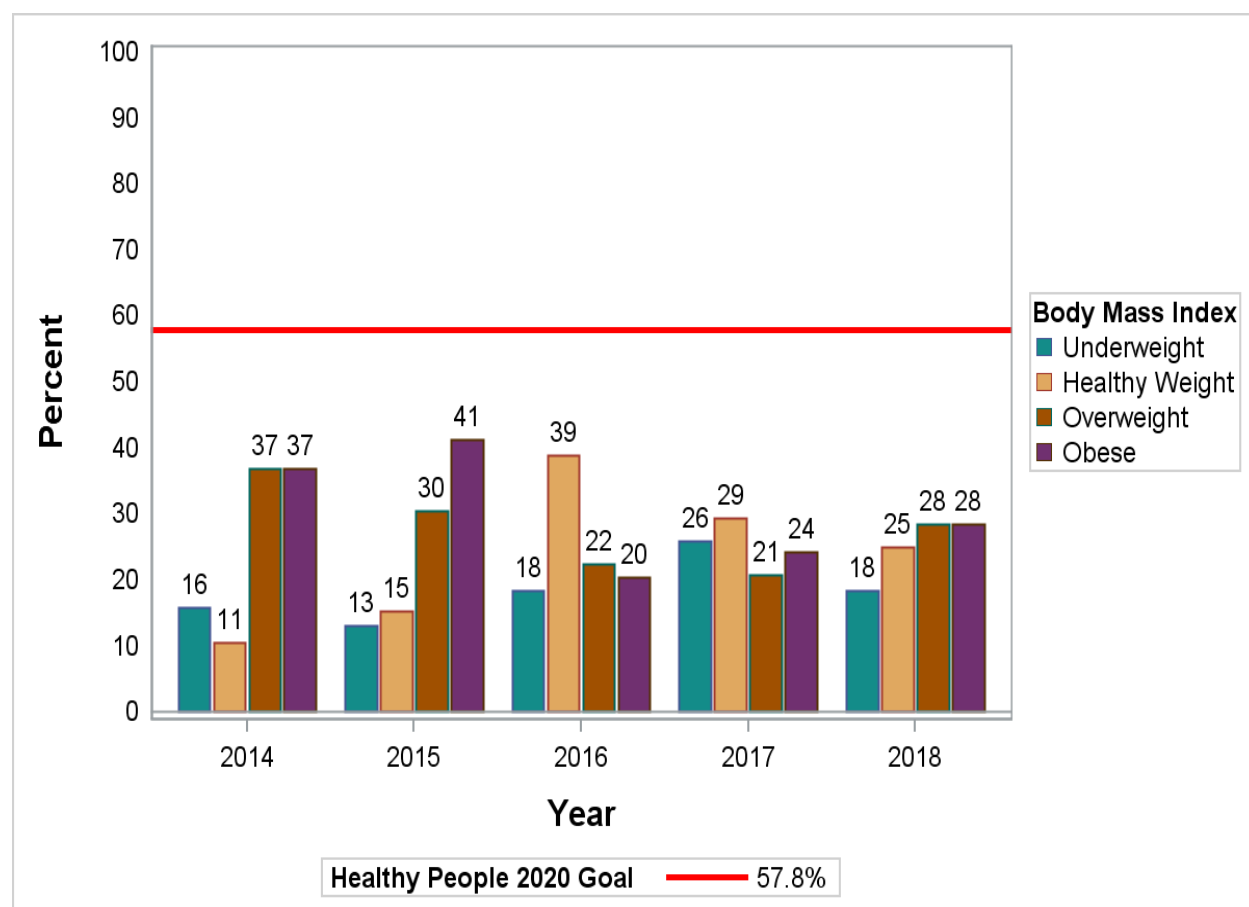
Maternal Pre-Pregnancy Body Mass Index

Background Information: Body Mass Index (BMI) is a tool used to calculate weight status in adults with the use of height and weight measurements. Low pre-pregnancy weight is associated with low birthweight, preterm delivery, and birth defects³. Increased BMI measures are associated with a number of negative pregnancy and birth outcomes such as preeclampsia, hypertension, gestational diabetes, and a difficult vaginal delivery or need of a cesarean section (C-section)⁴.

How Data Were Collected: To calculate maternal pre-pregnancy BMI, maternal height was measured and pre-pregnancy weight was self-reported. BMI categories are in accordance with the groupings used by the Centers for Disease Control and Prevention (CDC)⁶.

Healthy People 2020 Goal: Maternal, Infant and Child Health (MICH)-16.5 states to “increase the proportion of women of child bearing age who have a healthy pre-pregnancy weight. Target: 57.8%”⁷.

BMI	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Underweight	6	15.8	6	13.0	9	18.4	15	25.9	11	18.3
Healthy Weight	*	10.5	7	15.2	19	38.8	17	29.3	15	25.0
Overweight	14	36.8	14	30.4	11	22.4	12	20.7	17	28.3
Obese	14	36.8	19	41.3	10	20.4	14	24.1	17	28.3
Total (n)	*		46		49		58		60	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

- ❖ Majority of the AI/AN mothers in the Utah WIC population through 2014-2018 are in the overweight or obese category. Years 2014 and 2015 had the highest percentages of overweight and obese BMI's 37%, 30% and 37%, 41% respectively.
- ❖ The AI/AN Utah WIC population does not meet the Healthy People 2020 target (57.8%) for a healthy pre-pregnancy weight in any of the years from 2014 to 2018.

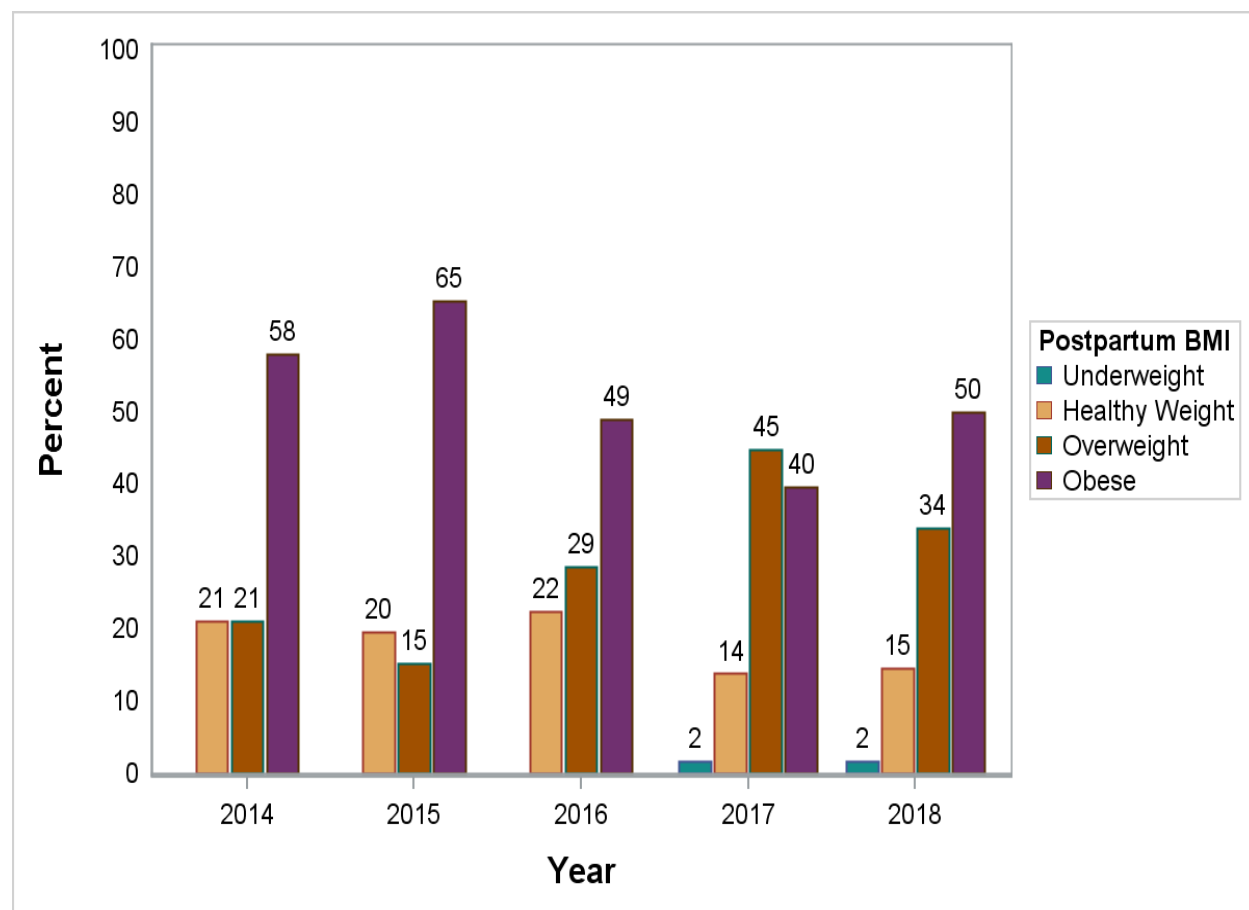
Institute of Medicine Recommendation: Prior to conceiving, women should have a BMI within the healthy BMI range ($18.5 \text{ kg/m}^2 - 24.9 \text{ kg/m}^2$)⁸.

Maternal Postpartum Body Mass Index

Background Information: BMI is a tool used to calculate weight status in adults. Postpartum physical activity along with a healthy diet can help mothers reach a healthy weight and is believed to not effect breast milk volume or composition⁵.

How Data Were Collected: BMI is calculated with the height and weight of an individual. To calculate maternal postpartum BMI, maternal height was measured and postpartum weight was recorded. BMI categories are in accordance with the groupings used by the Centers for Disease Control and Prevention (CDC)⁶.

BMI	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Underweight	0	0.0	0	0.0	0	0.0	*	1.7	*	1.6
Healthy Weight	8	21.1	9	19.6	11	22.4	8	13.8	9	14.5
Overweight	8	21.1	7	15.2	14	28.6	26	44.8	21	33.9
Obese	22	57.9	30	65.2	24	49.0	23	39.7	31	50.0
Total (n)	38		46		49		*		*	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

- ❖ From 2014-2018, women in the obese BMI category ranged from 40-65%, overweight BMI category ranged from 15-45%, and the healthy weight BMI category ranged from 14-22%.

- ❖ A consistent finding throughout 2014 to 2018 was postpartum BMI being categorized as either overweight or obese.

The American College of Obstetricians and Gynecologists Recommendation: Postpartum women should follow 150 minutes of moderate exercise each week including walking, jogging, and strength training once they feel well and able⁵. Reducing postpartum weight retention is recommended to reduce the risk of chronic obesity and improve upon the woman's health during the interpregnancy period⁵.

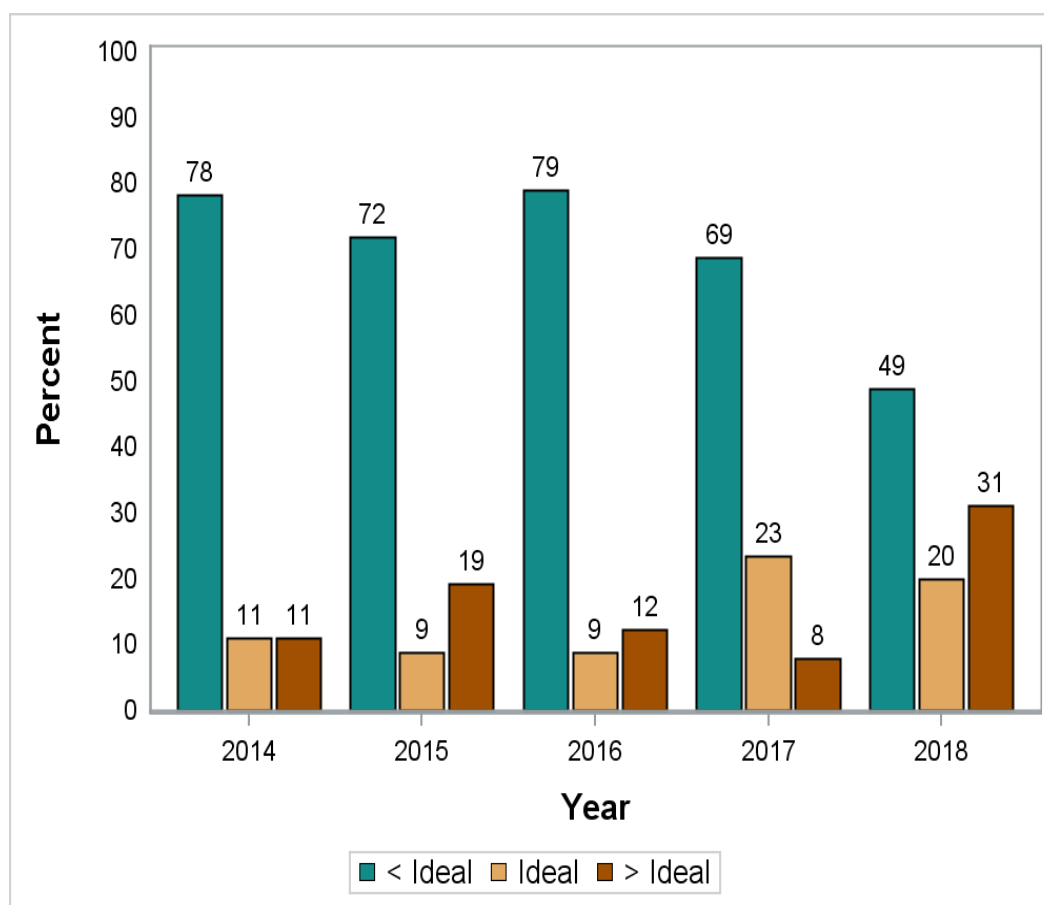
Maternal Weight Gain

Background Information: Less than ideal weight gain in underweight or healthy weight women is associated with premature delivery, low birthweight, and infant mortality⁸. Weight gain exceeding the recommended amount increases the mother's risks for developing gestational diabetes, hypertension, and requiring a C-section⁸. High weight gain risks for infants include high birthweight, complications during delivery, and infant mortality⁸.

How Data Were Collected: Pre-pregnancy BMI categories were determined using measured height and self-reported pre-pregnancy weight. Weight gain was measured during the mother's certification visit while pregnant. See **Definitions of Variables** for definitions of the weight gain categories.

Healthy People 2020 Goal: Maternal, Infant and Child Health (MICH)-13 states to "increase the proportion of mothers who achieve a recommended weight gain during their pregnancies. Target not stated"⁷.

Weight Gain	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Less than Ideal	43	78.2	41	71.9	45	78.9	44	68.8	22	48.9
Ideal	6	10.9	*	8.8	*	8.8	15	23.4	9	20.0
Greater than Ideal	6	10.9	11	19.3	7	12.3	*	7.8	14	31.1
Total (n)	55		*		*		*		45	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

- ❖ The majority (49-79%) of the pregnant women who enrolled in Utah WIC from 2014-2018 had a less than ideal weight gain.
- ❖ Women who lost weight during their pregnancy were not excluded.
- ❖ The pregnant mother's weight measurement was collected during her certification visit. Calculating weight gain during pregnancy was preferred over calculating postpartum weight gain to avoid pregnancy weight loss.
- ❖ It is possible that the less than ideal weight gain category was influenced by early pregnancy weight measurements if the mother enrolled into WIC early during her pregnancy.
- ❖ The percentage of women that gained an ideal amount of weight during their pregnancy ranged from 9%-23% from 2014-2018.

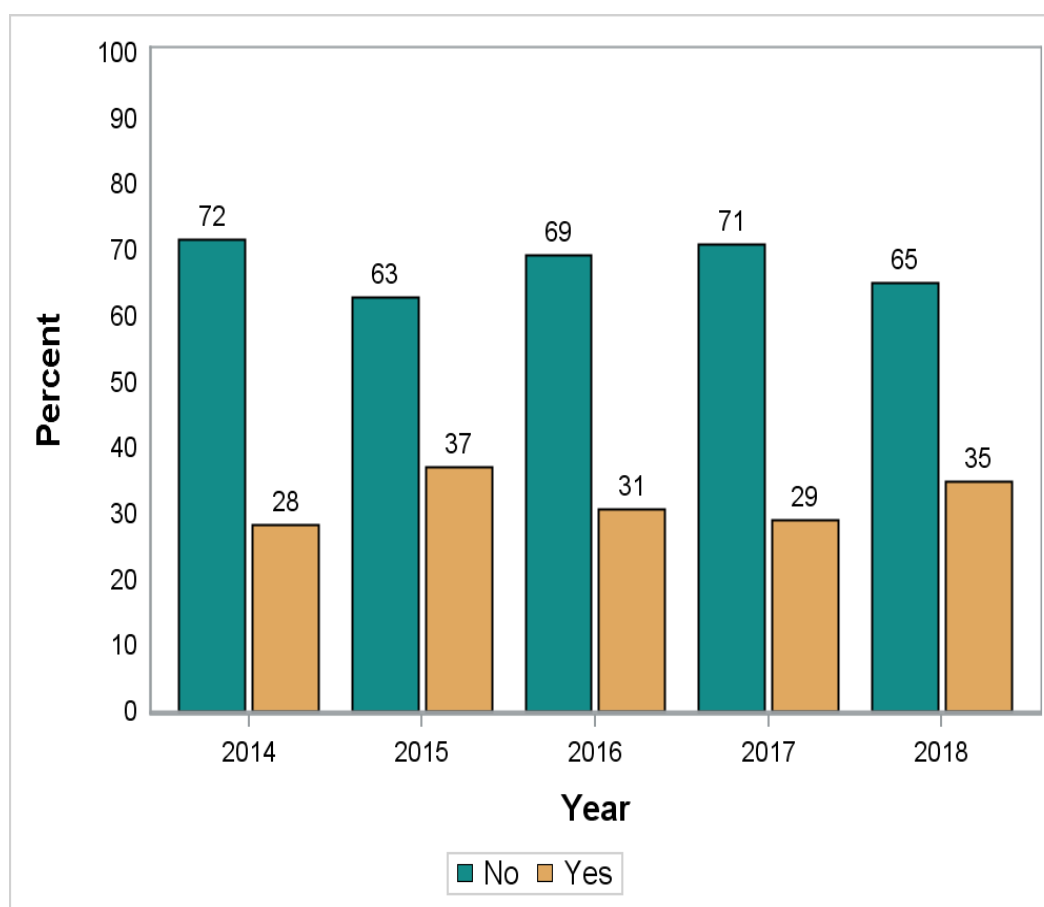
Institute of Medicine Recommendation: Women with a healthy weight BMI classification should gain about 25 – 35 pounds⁸. Women with an overweight BMI classification should aim to gain around 15 – 25 pounds⁸. Women with an obese BMI classification are recommended to gain 11 – 20 pounds⁸. Regardless of BMI category, a healthy diet, exercise, and abstaining from active weight loss is recommended for all pregnant woman⁸.

First Pregnancy

Background Information: The CDC recommends that women reach or maintain a healthy lifestyle since half of all pregnancies in the United States are unexpected⁹. Healthy decisions include seeing your primary physician at least once a year, taking folic acid supplements, and abstaining from smoking, alcohol intake, and street drugs⁹. Additional recommendations from the CDC include maintaining a healthy weight and learning about your family history before becoming pregnant⁹.

How Data Were Collected: Maternal participants were asked whether this was their first pregnancy or not.

First Pregnancy	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
No	43	71.7	44	62.9	54	69.2	56	70.9	43	65.2
Yes	17	28.3	26	37.1	24	30.8	23	29.1	23	34.8
Total (n)	60		70		78		79		66	



Key points:

- ❖ During 2014 to 2018, majority of the AI/AN WIC participants stated that this was not their first pregnancy.

Parity

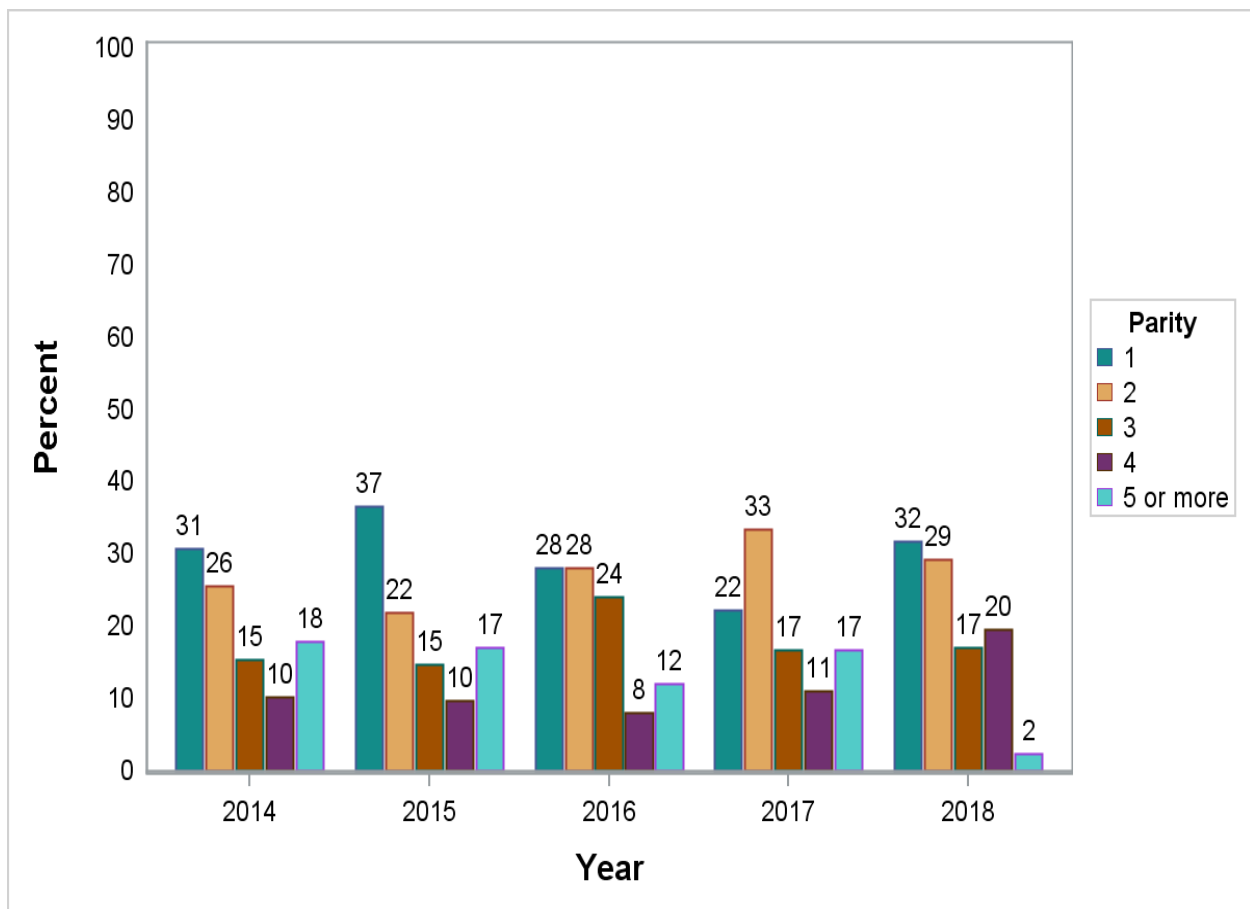
Background Information: Utah's WIC program provided information on parity, otherwise known as the number of previous live births.

How Data Were Collected: Mothers who responded that this was not their first pregnancy were asked the number of previous pregnancies that resulted in live births. The number of live births were then categorized into five groups: 1, 2, 3, 4, and 5 or more.

Healthy People 2020 Goal: Family Planning (FP)-5 states to "reduce the proportion of pregnancies conceived within 18 months of a previous birth. Target 29.8%"⁷.

Parity	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
1	12	30.8	15	36.6	14	28.0	12	22.2	13	31.7
2	10	25.6	9	22.0	14	28.0	18	33.3	12	29.3
3	6	15.4	6	14.6	12	24.0	9	16.7	7	17.1
4	*	10.3	*	9.8	*	8.0	6	11.1	8	19.5
5 or More	7	17.9	7	17.1	6	12.0	9	16.7	*	2.4
Total (n)	*		*		*		54		*	

* = counts and totals with less than 6 participants in a category are suppressed for confidentiality



Key points:

- ❖ Of the mothers who stated that they had a previous live birth, the majority had at least 1. The percentages from 2014 to 2018 ranged from 37% (2015) to 22% (2017).
- ❖ The percentages of women with a parity of 5 or more decreased from 18% in 2014 to 2% in 2018.

Mayo Clinic: To reduce pregnancy complications, the Mayo Clinic recommends that pregnancies be spaced from 18 to 24 months since shorter spacing of pregnancies may not give the mother enough time to recover from the previous pregnancy¹⁰. However, for women older than 35 who are concerned about infertility, the Mayo Clinic recommends waiting at least a year before becoming pregnant¹⁰.

Prenatal Care

Background Information: Prenatal care visits monitor the expecting mother and baby's health throughout pregnancy by recording fetal growth, maternal weight gain, testing for infections, and providing relevant vaccinations¹¹. Physicians can also bring awareness to any behavioral, environmental, or workplace exposures that can be detrimental to the health of the expecting mother or developing baby¹¹. Prenatal care visits are a resource for expecting mothers to be informed of risk factors that can affect her and her infants' health to help ensure a healthy pregnancy and birth outcome.

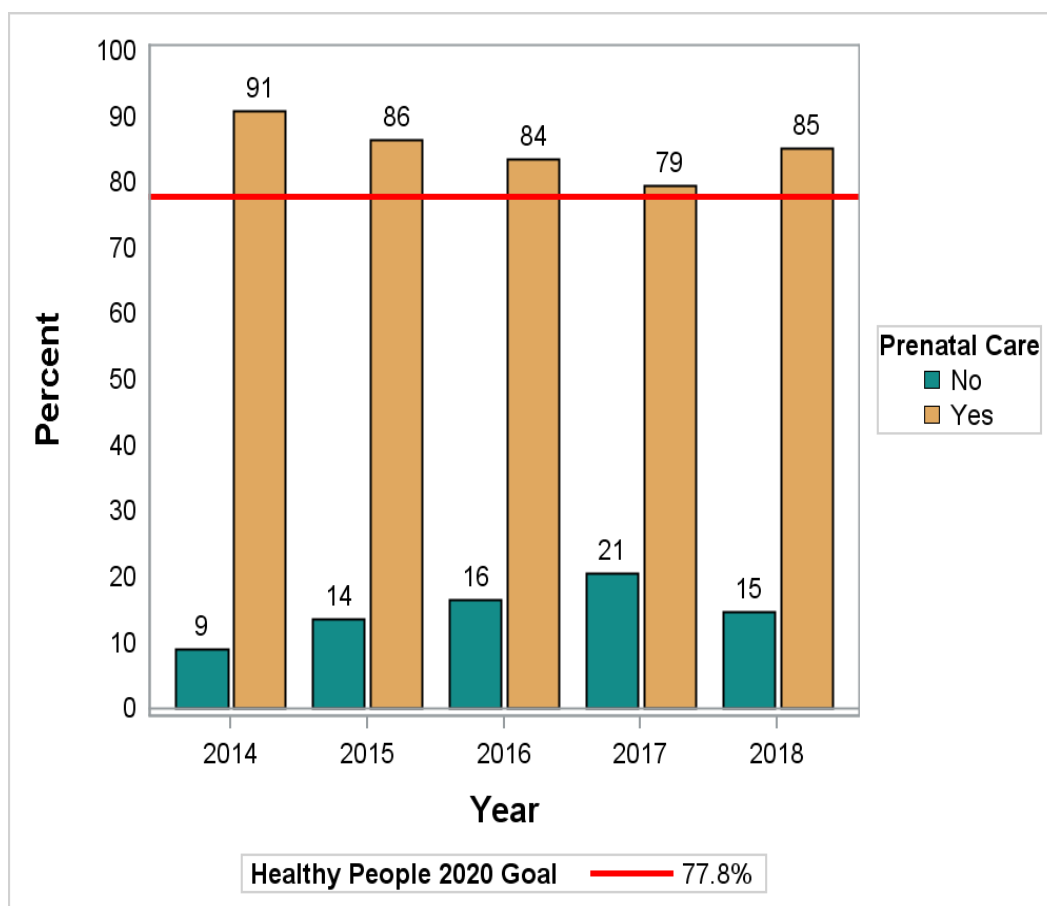
Healthy People 2020 Goal: MICH-10.2 states to "increase the proportion of women who receive early and adequate prenatal care. Target: 77.6%"⁶.

Prenatal Care by Year

How Data Were Collected: Mothers self-reported if they received prenatal care at their certification visit.

Prenatal Care	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
No	*	9.1	9	13.6	12	16.4	15	20.5	9	14.8
Yes	50	90.9	57	86.4	61	83.6	58	79.5	52	85.2
Total (n)	*		66		73		73		61	

* = counts and totals with less than 6 participants in a category are suppressed for confidentiality



Key points:

- ❖ From 2014-2018, the majority of the mothers self-reported that they received prenatal care during their pregnancy.
- ❖ From 2014-2018, the AI/AN participants of Utah WIC's program exceeded the Healthy People 2020 goal of 77.6% percent receiving prenatal care with the lowest year being 2017 at 79% and the highest percentage year being 2014 with 91%.

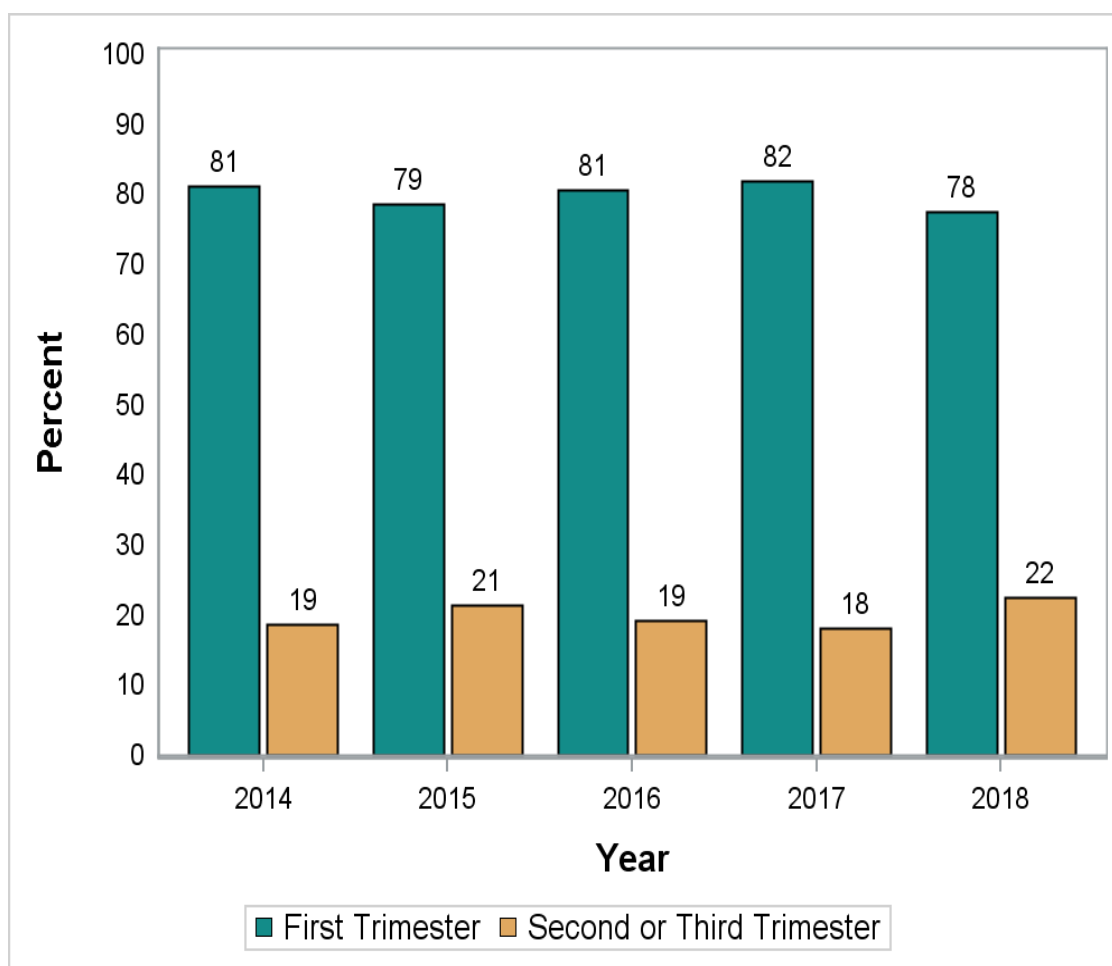
CDC Recommendation: Due to the known health benefits to both mother and child, women who want to become pregnant should consider preconception healthcare visits and early prenatal care to prevent health problems during pregnancy¹¹.

When Did Prenatal Care Visits Begin?

Background Information: Women who do not receive early or adequate prenatal care are more likely to deliver low birthweight infants¹¹. Early prenatal care can inform expectant mothers of the nutrition and behavioral risk factors that can affect her and her infants' health¹¹.

How Data Were Collected: Mothers who self-reported receiving prenatal care were asked if prenatal care visits began after their first trimester.

Utah WIC	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
First Trimester	39	81.3	44	78.6	46	80.7	45	81.8	38	77.6
Second or Third Trimester	9	18.8	12	21.4	11	19.3	10	18.2	11	22.4
Total (n)	48		56		57		55		49	



Key points:

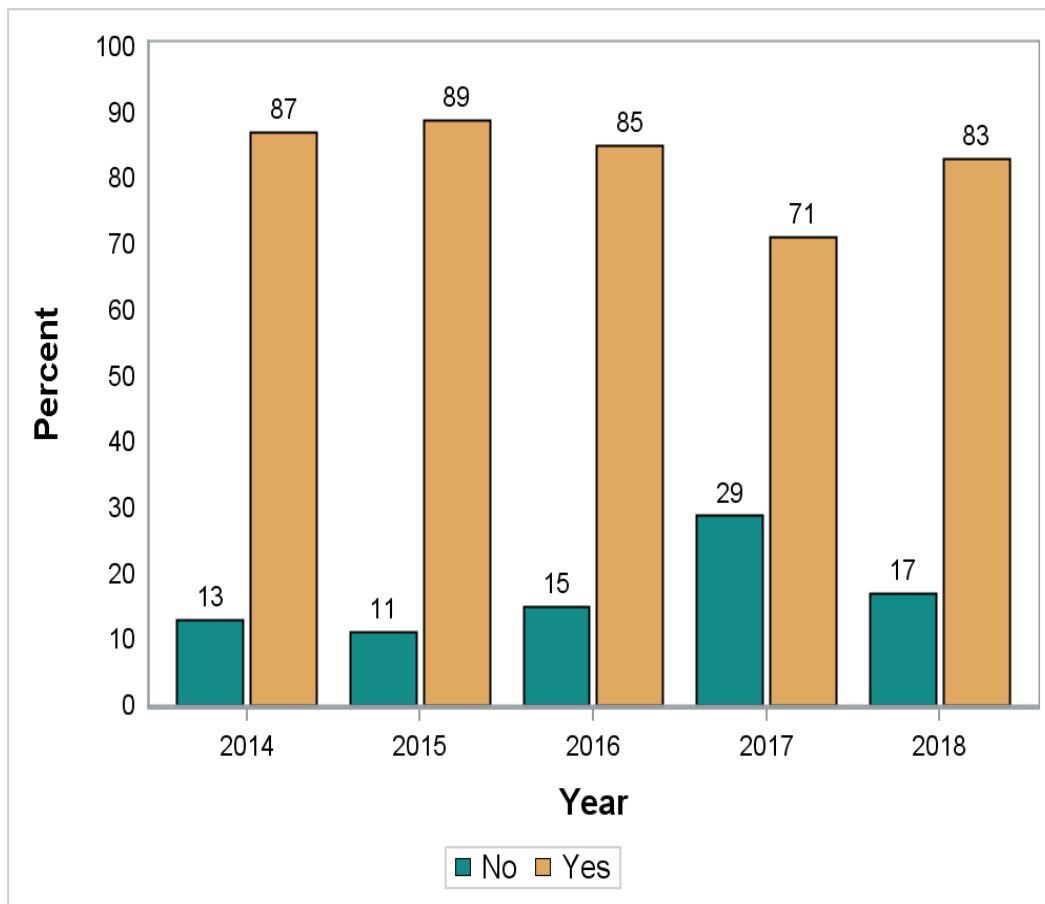
- ❖ From 2014-2018, majority of participants who stated they had received prenatal care started prenatal care visits in their first trimester.

Vitamins During Pregnancy

Background Information: During pregnancy the fetus receives all of its nutrients from their mother. In return, mothers may need more nutrients than they did prior to pregnancy¹². While pregnant, key nutrients include: folic acid, iron, calcium, vitamin D, and iodine¹². If taken before and during the first weeks of pregnancy, folic acid can help prevent neural tube defects¹².

How Data Were Collected: Mothers self-reported if they were taking vitamins during their pregnancy at their certification visit.

Vitamins During Pregnancy	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
No	6	13.0	6	11.1	9	15.0	17	28.8	9	17.0
Yes	40	87.0	48	88.9	51	85.0	42	71.2	44	83.0
Total (n)	46		54		60		59		53	



Key points:

- ❖ Majority of the maternal participants from 2014-2018 disclosed that they were taking vitamins during their pregnancy.
- ❖ The specific information regarding what vitamins, dosages, and frequencies was not available in the dataset.

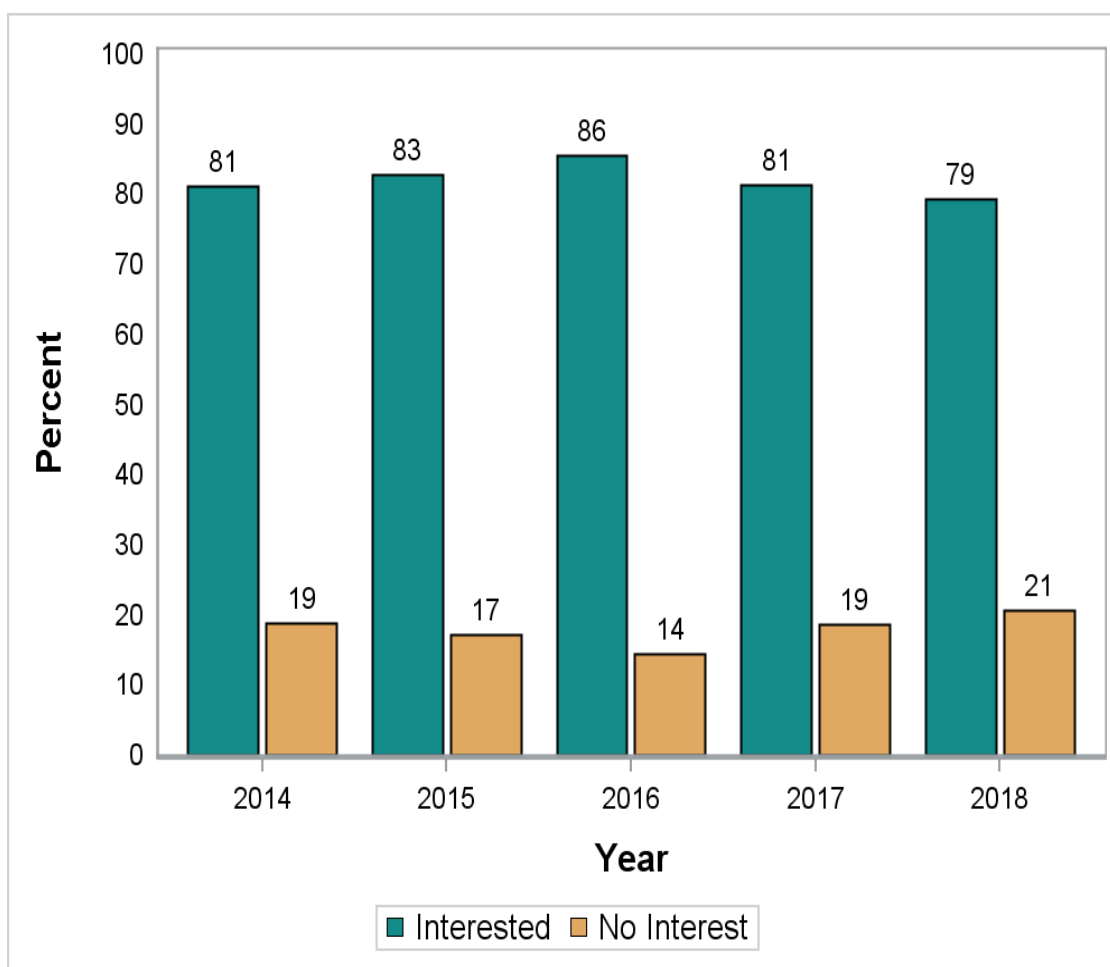
CDC Recommendation: Folic acid can prevent certain birth defects. A daily dose of 400 micrograms of folic acid is recommended for women before and during pregnancy¹¹. All women of reproductive age are recommended to take vitamins since half of all pregnancies are unexpected⁹.

Interest in Breastfeeding

Background Information: Breastfeeding has benefits for both mother and infant. Breast milk is known as the best source of nutrition for babies since it can adapt to meet the babies' nutritional needs as the baby grows¹³. Babies that are breastfed are at a lower risk of developing asthma, type 2 diabetes, gastrointestinal infections, obesity, and sudden infant death syndrome (SIDS)¹⁴. Mothers who breastfeed are at a lower risk of high blood pressure, type 2 diabetes, breast and ovarian cancers¹³.

How Data Were Collected: While pregnant, mothers were asked if they had interest in breastfeeding after their pregnancy.

Interest in Breastfeeding	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Interested	43	81.1	53	82.8	65	85.5	61	81.3	50	79.4
No Interest	10	18.9	11	17.2	11	14.5	14	18.7	13	20.6
Total (n)	53		64		76		75		63	



Key points:

- ❖ Overall, majority of the pregnant mothers were interested in breastfeeding their babies.

- ❖ From 2014-2018, the highest year of interest in breastfeeding was 2016 with 86% and the lowest year was 2018 with 79% interest.

The American Academy of Pediatrics Recommendation: It is recommended that mothers exclusively breastfeed infants for 6 months and then continue breastfeeding while introducing foods¹⁴.

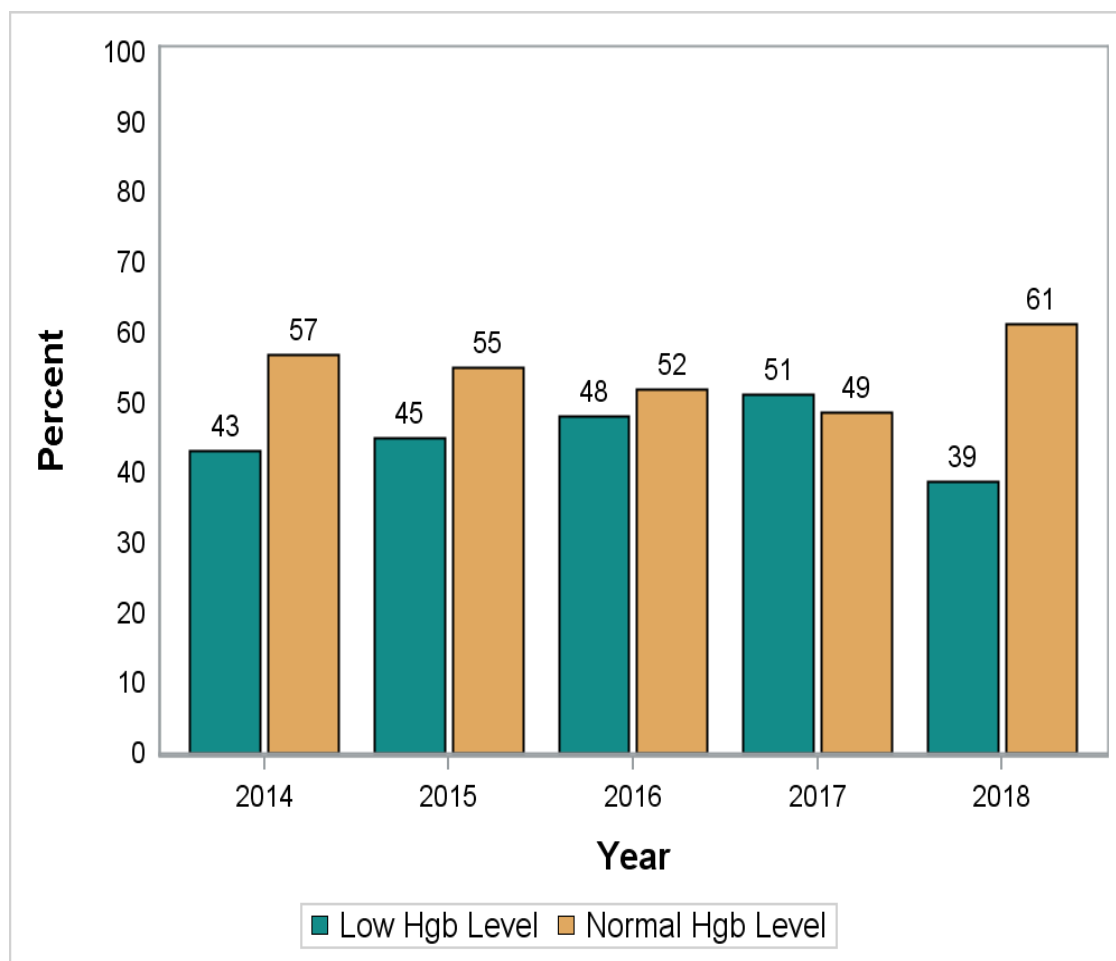
Gestational Hemoglobin

Background Information: Low hemoglobin (Hgb) suggests iron deficiency in the body. On average, iron-deficiency anemia affects one in six pregnant women¹⁵. Pregnancy requires more iron to support the baby's development which puts pregnant women at a higher risk of developing iron-deficiency anemia¹⁵. Insufficient iron during pregnancy increases the infants' risk of a premature birth, low birthweight, and developmental delays¹⁵.

How Data Were Collected: Maternal hemoglobin values were measured at the WIC clinic using a finger stick for blood draws and a HemoCue® Hgb 201+ Analyzer. Refer to **Definitions of Variables** in the for a description of how low Hgb was determined.

Note: The term low Hgb used in this report meets the CDC definition for diagnosis of anemia by a health care provider. However, WIC cannot medically diagnose its participants. For this reason, the term low Hgb is used instead of anemia.

Gestational	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Low Hgb	28	43.1	31	44.9	37	48.1	40	51.3	26	38.8
Normal Hgb	37	56.9	38	55.1	40	51.9	38	48.7	41	61.2
Total (n)	65		69		77		78		67	



Key points:

- ❖ The highest percentage of women with normal Hgb levels was in 2018 with 61%.
- ❖ The highest percentage of women with low Hgb levels was in 2017 with 51%.

CDC Recommendation: The CDC recommends periodic screening for low Hgb among pregnant women to ensure that the recommended iron levels are being met¹⁶.

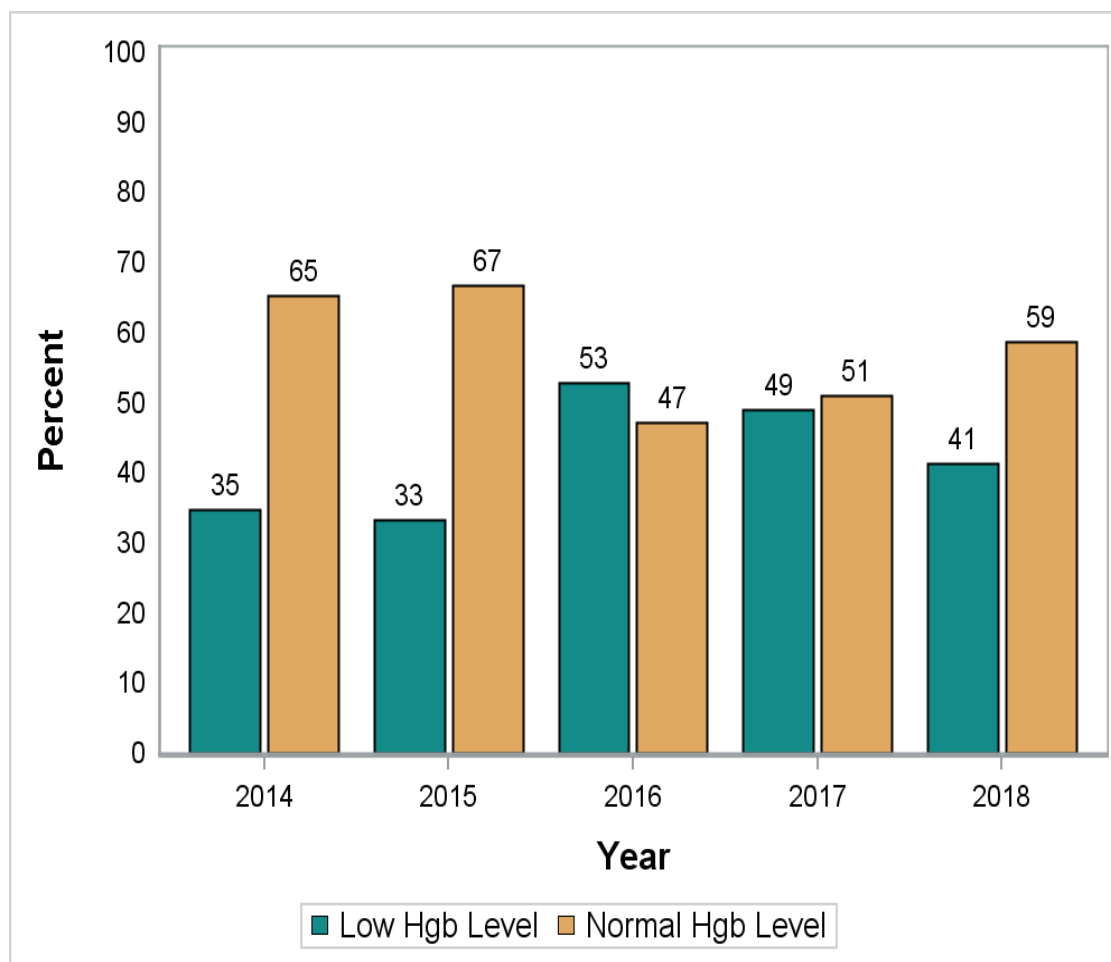
Postpartum Hemoglobin

Background Information: Postpartum anemia is the presence of anemia, or low Hgb levels, after childbirth. Maternal levels of Hgb can be influenced by infections, the loss of blood during childbirth, and low iron dietary intake¹⁷. Postpartum anemia symptoms include tiredness, breathlessness, and palpitations¹⁷.

How Data Were Collected: Postpartum maternal Hgb values were measured at the WIC clinic at least 4 weeks after delivery using a finger stick for blood draws and a HemoCue® Hgb 201+ Analyzer. Refer to **Definitions of Variables** for a description of how low Hgb was determined.

Note: The term low Hgb used in this report meets the CDC definition for diagnosis of anemia by a health care provider. However, WIC cannot medically diagnose its participants. For this reason, the term low Hgb is used instead of anemia.

Postpartum	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Low Hgb	16	35.0	16	33.0	28	53.0	24	49.0	24	41.0
Normal Hgb	30	65.0	32	67.0	25	47.0	25	51.0	34	59.0
Total (n)	46		48		53		49		58	



Key points:

- ❖ Most of the postpartum Hgb levels were normal between 2014 and 2018. The only exception was in 2016 where low levels of Hgb outnumbered the normal Hgb level category by 6%.

CDC Recommendation: The CDC recommends periodic screening for low Hgb among postpartum women to ensure that the recommended iron levels are being met¹⁶.

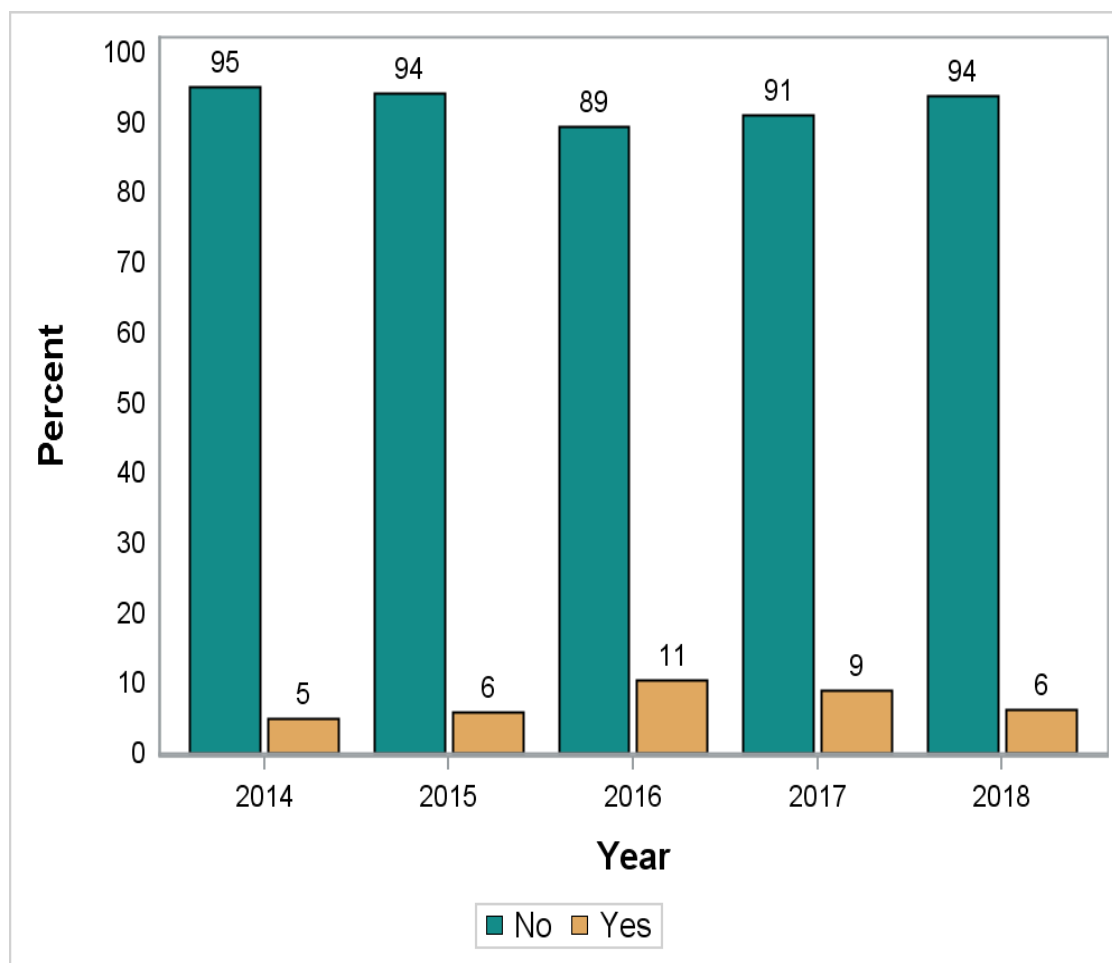
Smoker in Household

Background Information: Being a smoker or being exposed to secondhand smoke has consequences during preconception, pregnancy, and postpartum. Women who smoke tend to have difficulty becoming pregnant compared to those who do not smoke¹⁸. Expecting mothers who smoke increase their risk for pregnancy complications, including birth defects¹⁸. Exposure to secondhand smoke during pregnancy increases the chance of delivering a baby with a low birthweight, weak lung development, and possible miscarriage¹⁸. Babies who are exposed to secondhand smoke are at an increased risk of dying from SIDS¹⁸.

How Data Were Collected: Participants were asked if anyone in the household smokes.

Note: The question did not ask if the mother is the smoker nor if smoking is allowed inside the household. The purpose of the analysis is to account for possible secondhand smoke exposure.

Smoker in Household	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
No	58	95.1	65	94.2	68	89.5	71	91.0	60	93.8
Yes	*	4.9	*	5.8	8	10.5	7	9.0	*	6.3
Total (n)	*		*		76		78		*	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

- ❖ Majority of the expecting mothers lived in a household where it was self-reported that no one smokes.

CDC Recommendation: Smoking in a household may expose expecting mothers to secondhand smoke. Women and families are advised to maintain a smoke free home, choose smoke-free environments, and teach children to avoid smoke¹⁹.

Infant Indicators

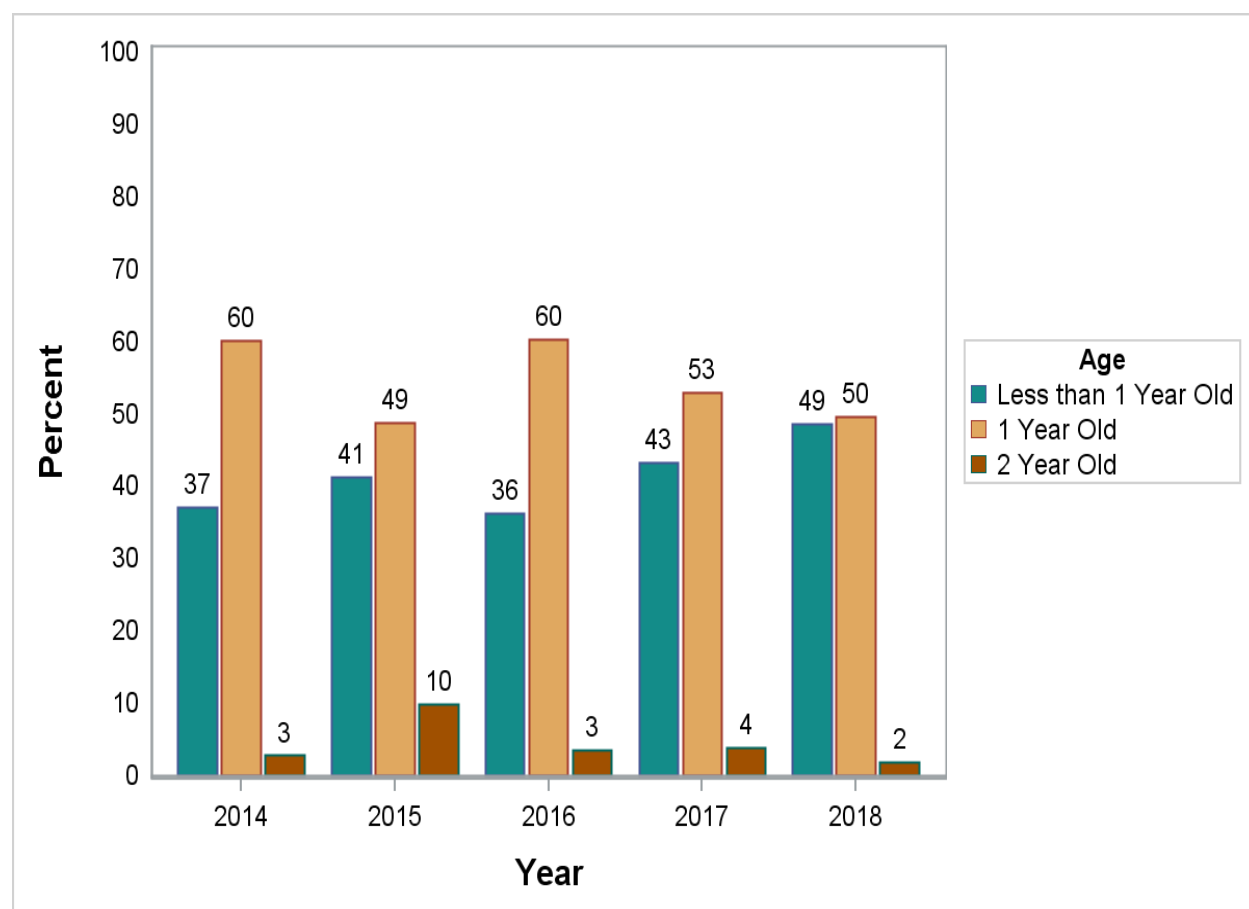
Age Distribution

Background Information: WIC serves infants and children up to their 5th birthday. The **Infant Indicators** section has an age distribution as follows.

How Data Were Collected: Age was calculated based on the date of birth of the child and the date of data collection.

Note: Utah WIC separates infants and children into different datasets. At the time of data collection, the infant participants were 2 years old. However, in the following analysis, **Age at Enrollment**, it was found that all infants in the infant dataset were enrolled in WIC before the age of one. For this reason, the two year olds were not excluded from the analysis in the **Infant Indicators** section of this report.

Age	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Less than 1 Year Old	40	37.0	50	41.0	42	36.0	45	43.0	54	49.0
1 Year Old	65	60.0	59	49.0	70	60.0	55	53.0	55	50.0
2 Year Old	*	2.8	12	9.9	*	3.4	*	3.8	*	1.8
Total (n)	*		121		*		*		*	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

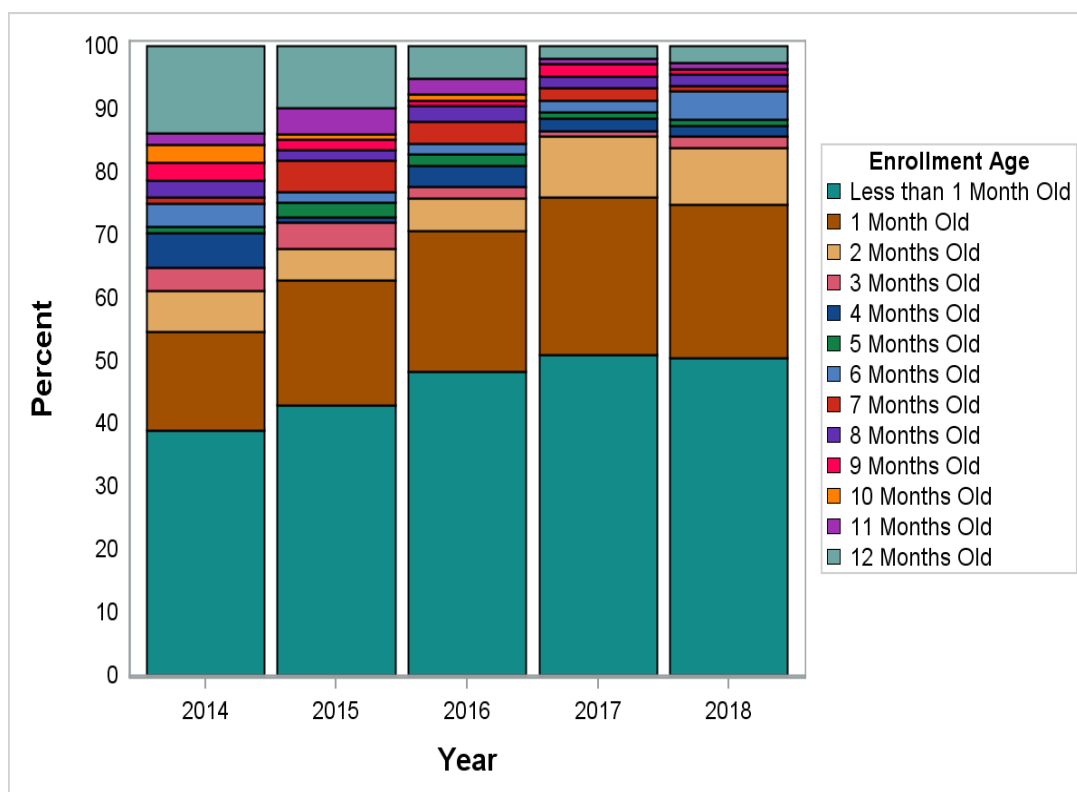
- ❖ Between the years of 2014 to 2018, majority of the infant dataset included one year olds. The lowest percentage of one year olds was in 2015 with 49%.
- ❖ The second majority of participants were under the age of one and ranged from 36% to 49% between 2014 and 2018.

Age at Enrollment

Background Information: In order for an infant to be enrolled in WIC, their family needs to meet the income guidelines and be at a nutritional risk as deemed by a healthcare professional²⁰. Early enrollment is important to increase the participant's opportunity to access resources provided by WIC.

How Data Were Collected: Age of enrollment was calculated based on the date of birth of the child and the date of enrollment.

	2014		2015		2016		2017		2018	
Age at Enrollment	n	%	n	%	n	%	n	%	n	%
Less than 1 Month	42	39.0	52	43.0	56	48.0	53	51.0	56	50.0
1 Month	17	16.0	24	20.0	26	22.0	26	25.0	27	24.0
2 Months	7	6.5	6	5.0	6	5.2	10	9.6	10	9.0
3 Months	*	3.7	*	4.1	*	1.7	*	1.0	*	1.8
4 Months	6	5.6	*	0.8	*	3.4	*	1.9	*	1.8
5 Months	*	0.9	*	2.5	*	1.7	*	1.0	*	0.9
6 Months	*	3.7	*	1.7	*	1.7	*	1.9	*	4.5
7 Months	*	0.9	6	5.0	*	3.4	*	1.9	*	0.9
8 Months	*	2.8	*	1.7	*	2.6	*	1.9	*	1.8
9 Months	*	2.8	*	1.7	*	0.9	*	1.9	*	0.9
10 Months	*	2.8	*	0.8	*	0.9	0	0.0	0	0.0
11 Months	*	1.9	*	4.1	*	2.6	*	1.0	*	0.9
12 Months	15	14.0	12	9.9	6	5.2	*	1.9	*	2.7
Total (n)	*		*		*		*		*	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

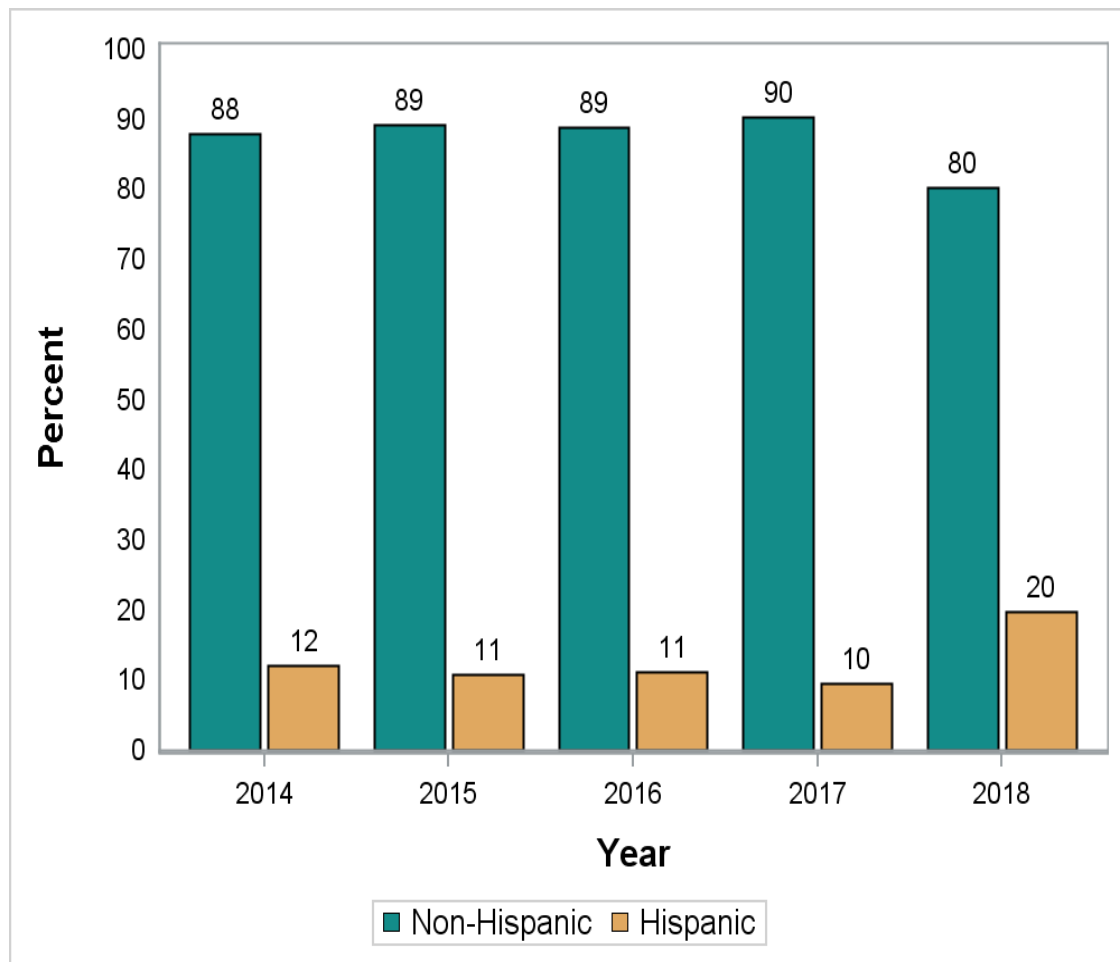
- ❖ Over half of all infant participants from 2014-2018 are enrolled in WIC before they reach the age of 2 months old.
- ❖ Having a mother enrolled during her pregnancy can facilitate an early enrollment for her infant.

Hispanic

Background Information: The analysis provided in this report is comprised of American Indian or Alaska Native participants. Including information on Hispanic or non-Hispanic classification of the participants is meant to further describe the population. Keep in mind, Hispanics can be classified as any race and is defined as a person that comes from a Spanish culture²¹.

How Data Were Collected: Mothers were asked whether or not they consider their child to be Hispanic or non-Hispanic at time of enrollment.

Hispanic	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Non-Hispanic	95	88.0	108	89.0	103	89.0	94	90.0	89	80.0
Hispanic	13	12.0	13	11.0	13	11.0	10	9.6	22	20.0
Total (n)	108		121		116		104		111	



Key points:

- ❖ Throughout 2014 to 2018, majority of the infants are classified as non-Hispanic.

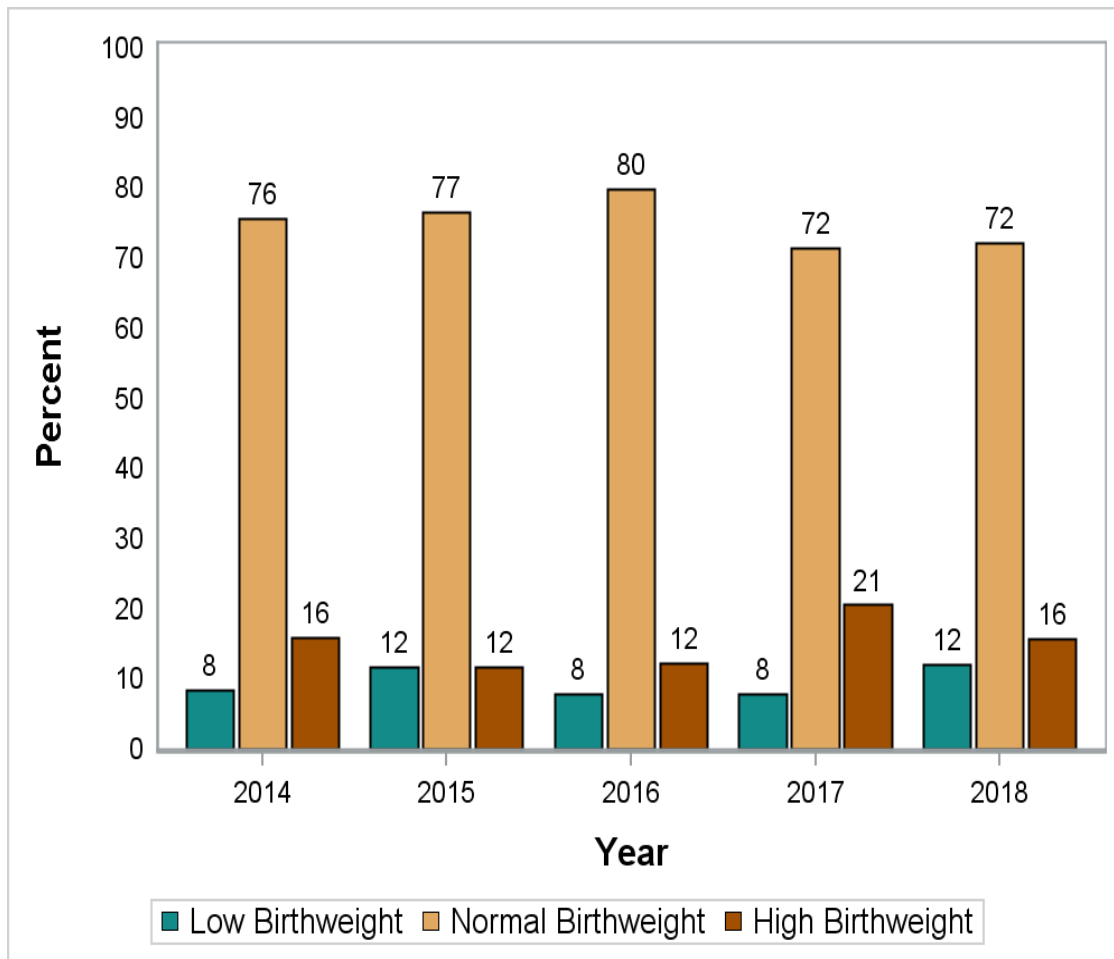
Birthweight

Background Information: Infants with a low birthweight have a higher risk of health problems compared to normal birthweight infants²². Health conditions such as diabetes, heart disease, high blood pressure, and intellectual and developmental disabilities are more likely to develop in infants who had a low birthweight²². Increased risk of delivery complications and childhood obesity are associated with high birthweight infants²³.

How Data Were Collected: Birthweight was self-reported by each client at the certification visit. Refer to **Definitions of Variables** for a description of how birthweight was categorized.

Healthy People 2020 Goal: MICH-8.1 states to “reduce low birthweight. Target: 7.8%”⁷.

Birthweight	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Low Birthweight	9	8.4	14	12.0	9	7.9	8	7.8	13	12.0
Normal Birthweight	81	76.0	92	77.0	91	80.0	73	72.0	78	72.0
High Birthweight	17	16.0	14	12.0	14	12.0	21	21.0	17	16.0
Total (n)	107		120		114		102		108	



Key points:

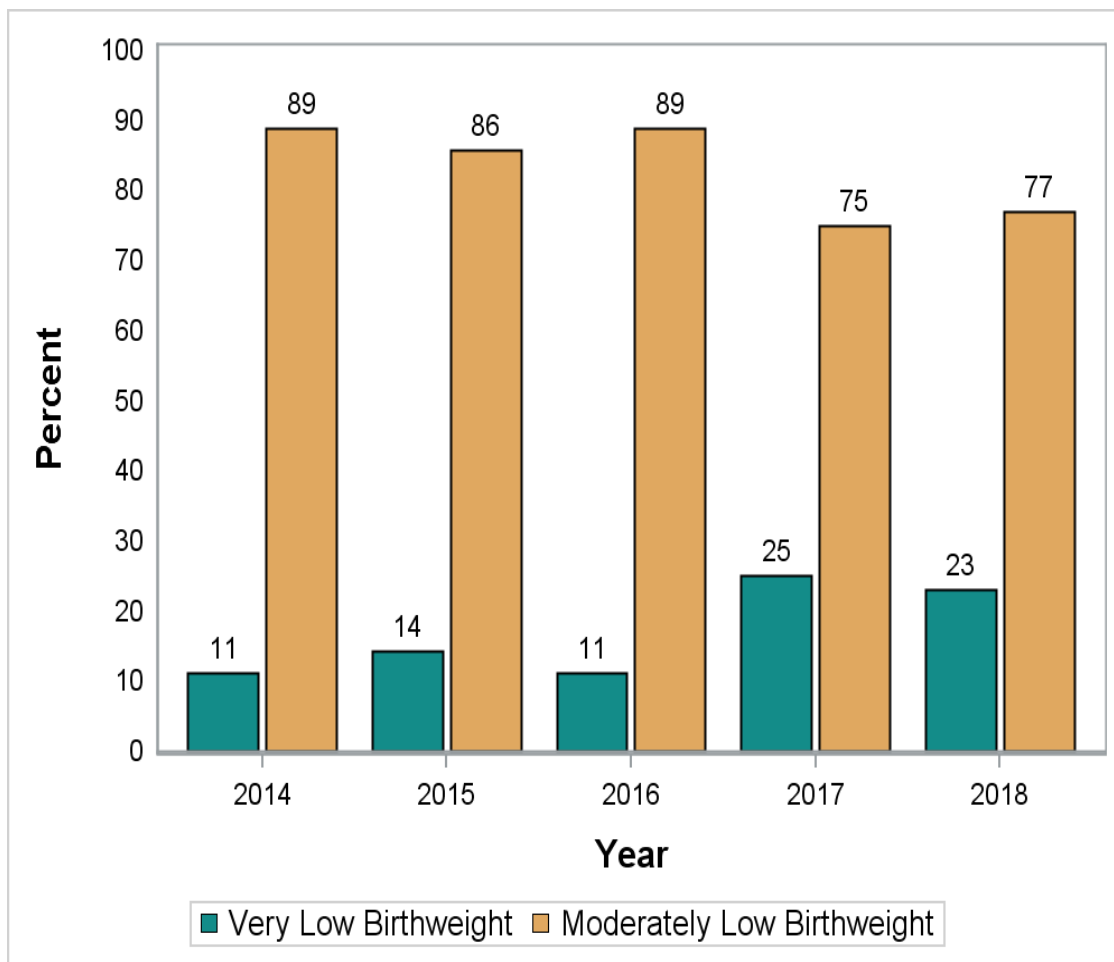
- ❖ From 2014-2018, majority of infants in the Utah WIC program were in the normal birthweight category with percentages ranging from 72-80% each year.
- ❖ The next highest category was high birthweight which ranged from 12-21% throughout 2014-2018.

Low Birthweight

Background Information: Infants with a birthweight considered as very low face greater risks of infant mortality, long-term disability, and delayed motor and social development when compared to normal or moderately low birthweight infants²⁴.

How Data Were Collected: Birthweight was self-reported by each client at the certification visit. Refer to **Definitions of Variables** for a description of how low birthweight was categorized.

	2014		2015		2016		2017		2018	
Low Birthweight	n	%	n	%	n	%	n	%	n	%
Very Low	1	11.0	2	14.0	1	11.0	2	25.0	3	23.0
Moderately Low	8	89.0	12	86.0	8	89.0	6	75.0	10	77.0
Total (n)	9		14		9		8		13	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

- ❖ Majority of the infants with low birthweights were classified as moderately low birthweights.
- ❖ There was an increase in frequency of very low birthweights between the years 2014-2018.
- ❖ Consider the results with caution due to the small numbers.

CDC Recommendations: It is recommended that mothers seek prenatal care to be informed on nutrition and behavioral risk factors that may influence the health of the baby, including risk factors for low birthweight¹¹.

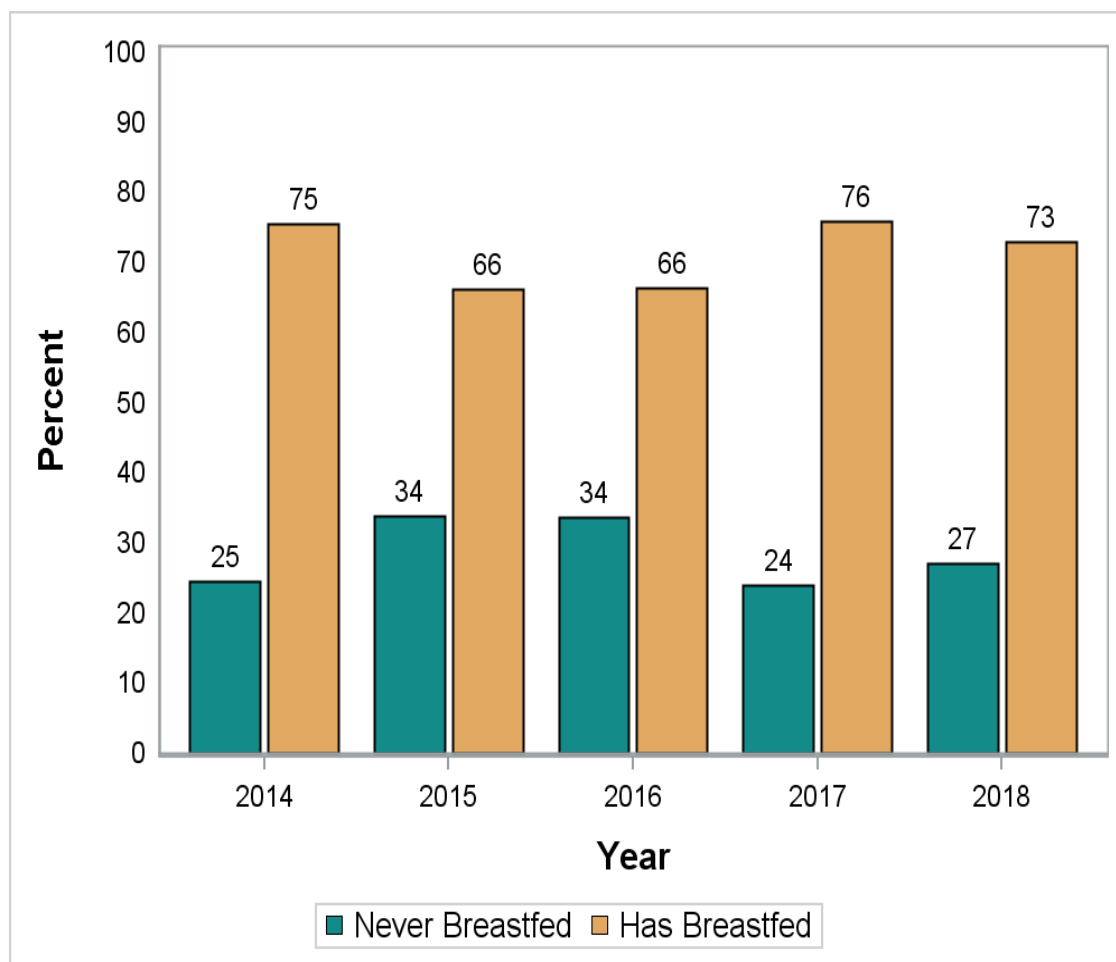
Ever Breastfed

Background Information: The benefits of breastfeeding an infant include a decreased risk of developing asthma, diabetes, gastrointestinal infections, and SIDS¹³. Mothers also benefit from breastfeeding and by doing so can decrease their risks for diabetes, high blood pressure, and breast and ovarian cancers¹³.

How Data Were Collected: Breastfeeding information was self-reported by the client at each clinic visit. If the woman reported breastfeeding the infant at least once per day they were classified as breastfeeding.

Healthy People 2020 Goal: MICH-21.1 states to “increase the proportion of infants who are ever breastfed. Target: 81.9%”⁷.

Breastfeed	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Never Breastfed	26	25.0	40	34.0	39	34.0	25	24.0	30	27.0
Has Breastfed	80	75.0	78	66.0	77	66.0	79	76.0	81	73.0
Total (n)	106		118		116		104		111	



Key points:

- ❖ Throughout 2014-2018, majority of the infant participants were breastfed at some point. The lowest percentage of having ever breastfed was 66% in 2015 and 2016.

- ❖ The highest percentage of breastfeeding was in 2017 with 76%.
- ❖ Please note that the data does not show the duration that the infant was breastfed for or if breastfeeding was supplemented with formula.

The American Academy of Pediatrics Recommendation: It is recommended that mothers exclusively breastfeed infants for 6 months and then continue breastfeeding while introducing foods¹⁴.

Children Indicators

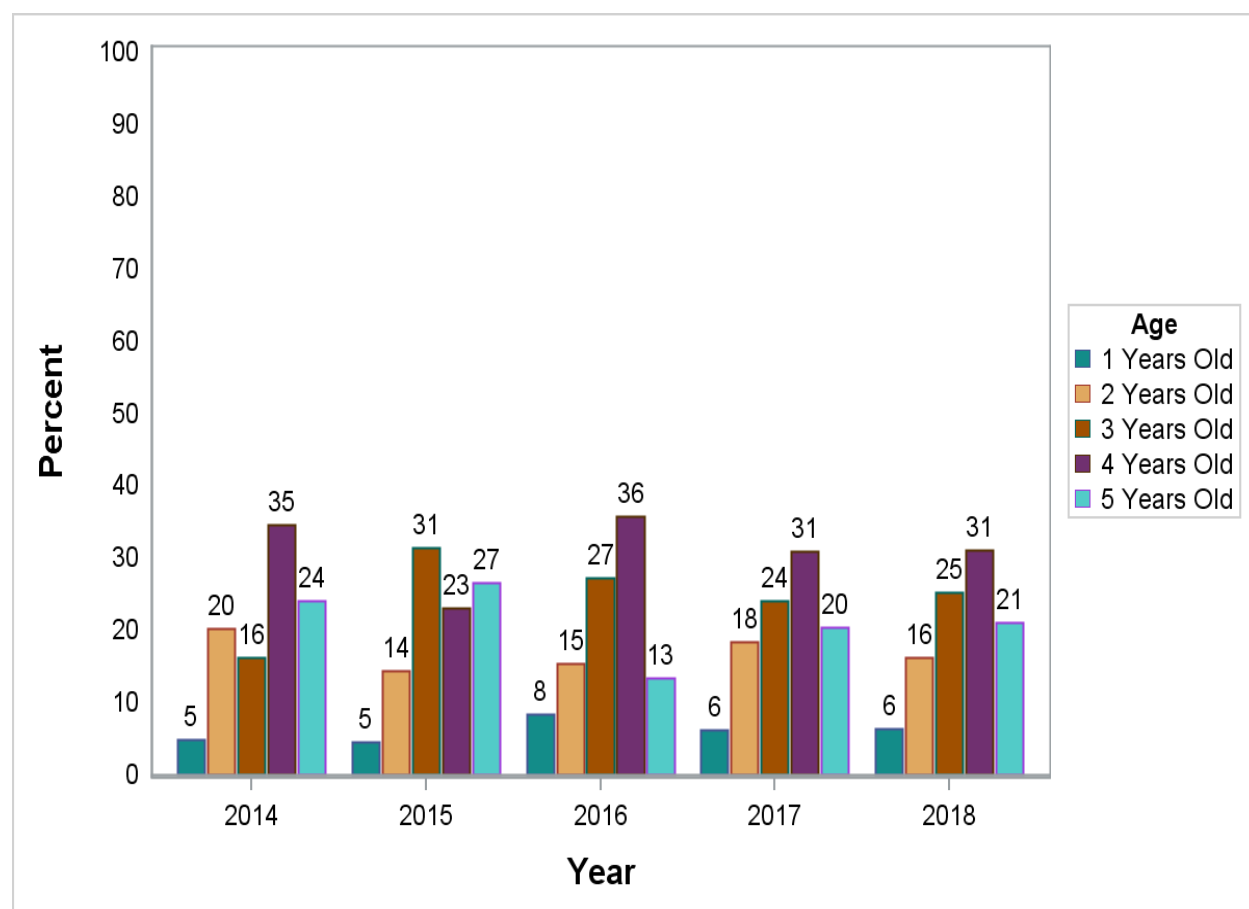
Age Distribution

Background Information: WIC serves infants and children up to their 5th birthday. The **Children Indicators** section has an age distribution as follows for data years 2014 to 2018.

How Data Were Collected: Age was calculated based on the date of birth of the child and the date of data collection.

Note: Utah WIC separates infants and children into different datasets. However, the children dataset provided included a few one year olds. The information that was recorded in the children dataset differs from the infant dataset. For this reason, the one year olds were included in the **Children Indicators** section.

Age	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
1 Year Old	19	4.9	18	4.6	33	8.3	28	6.3	28	6.4
2 Year Old	79	20.3	57	14.4	61	15.4	82	18.4	71	16.1
3 Year Old	63	16.2	124	31.4	108	27.2	107	24.0	111	25.2
4 Year Old	135	34.6	91	23.0	142	35.8	138	30.9	137	31.1
5 Year Old	94	24.1	105	26.6	53	13.4	91	20.4	93	21.1
Total (n)	390		395		397		446		440	



Key points:

- ❖ Utah WIC had similar age distributions throughout 2014-2018.
- ❖ The largest age group in each year, aside from 2015, was 4 year olds with a max of 36% and a minimum of 23%.

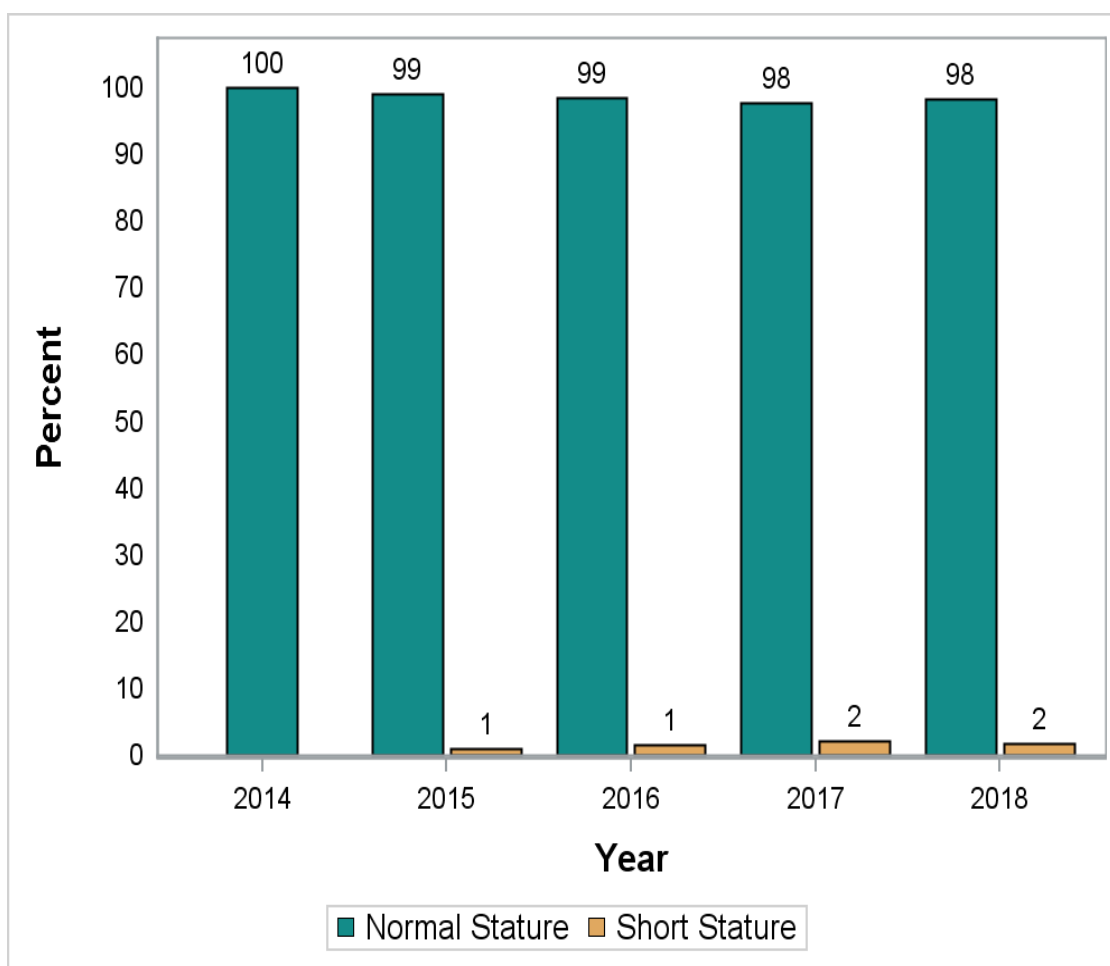
Short Stature in Children, Under 2

Background Information: The CDC recommends using the World Health Organization (WHO) growth standards to monitor growth from infancy to 2 years old²⁵. Abnormal growth patterns may be the result of inadequate nutrition, disease, or a genetic disorder²⁶.

How Data Were Collected: Infants and children were measured at certification visits by trained WIC Program staff. Refer to **Definitions of Variables** for a description of how short stature was determined.

Children Under 2 Stature	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Normal	169	100.0	194	99.0	200	98.5	219	97.8	218	98.2
Short	0	0.0	*	1.0	*	1.5	*	2.2	*	1.8
Total (n)	169		*		*		*		*	

* = counts and totals with less than 6 participants in a category are suppressed for confidentiality



Key points:

- ❖ Throughout 2014 to 2018 the majority of participants, 98% or more, were classified as having a normal height.

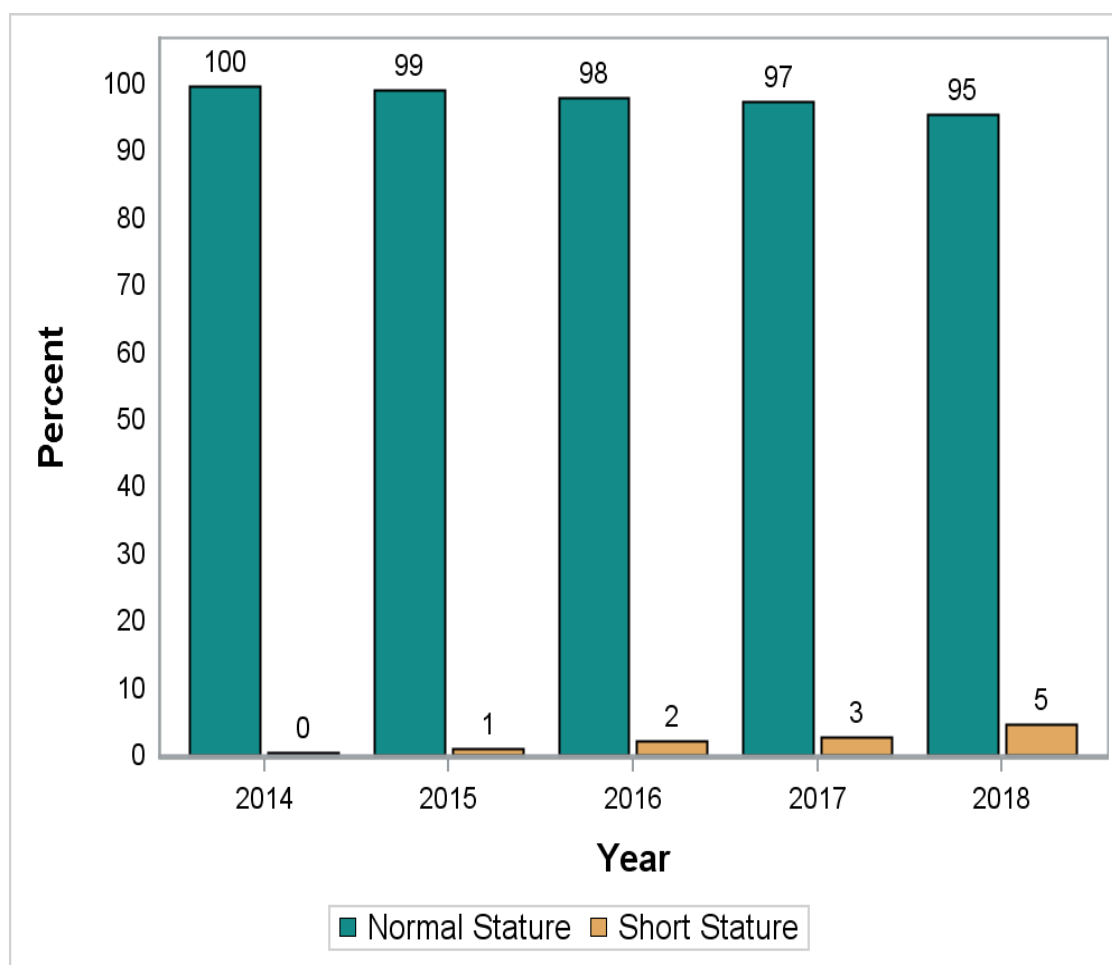
Short Stature in Children, Over 2

Background Information: For children in the United States, the CDC recommends using its growth chart for children 2 years old and older²⁵. It may be easier for parents to notice abnormal short stature as a child gets older. In cases where a short statured child is underweight, the underlying cause might be illness or malnutrition²⁶. As for short statured children who are overweight, the cause might be related to an endocrine disorder such as growth hormone deficiency, hypothyroidism, or excess glucocorticoids²⁶.

How Data Were Collected: Infants and children were measured at certification visits by trained WIC Program staff. Refer to **Definitions of Variables** for a description of how short stature was determined.

Children Over 2 Stature	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Normal	220	99.5	197	99.0	190	97.9	216	97.3	208	95.4
Short	*	0.5	*	1.0	*	2.1	6	2.7	10	4.6
Total (n)	*		*		*		222		218	

* = counts and totals with less than 6 participants in a category are suppressed for confidentiality



Key points:

- ❖ From 2014-2018, majority of the Utah WIC participants over the age of two had a normal stature.
- ❖ The year 2018 had the highest amount of short statured participants over the age of two years old with 5%.

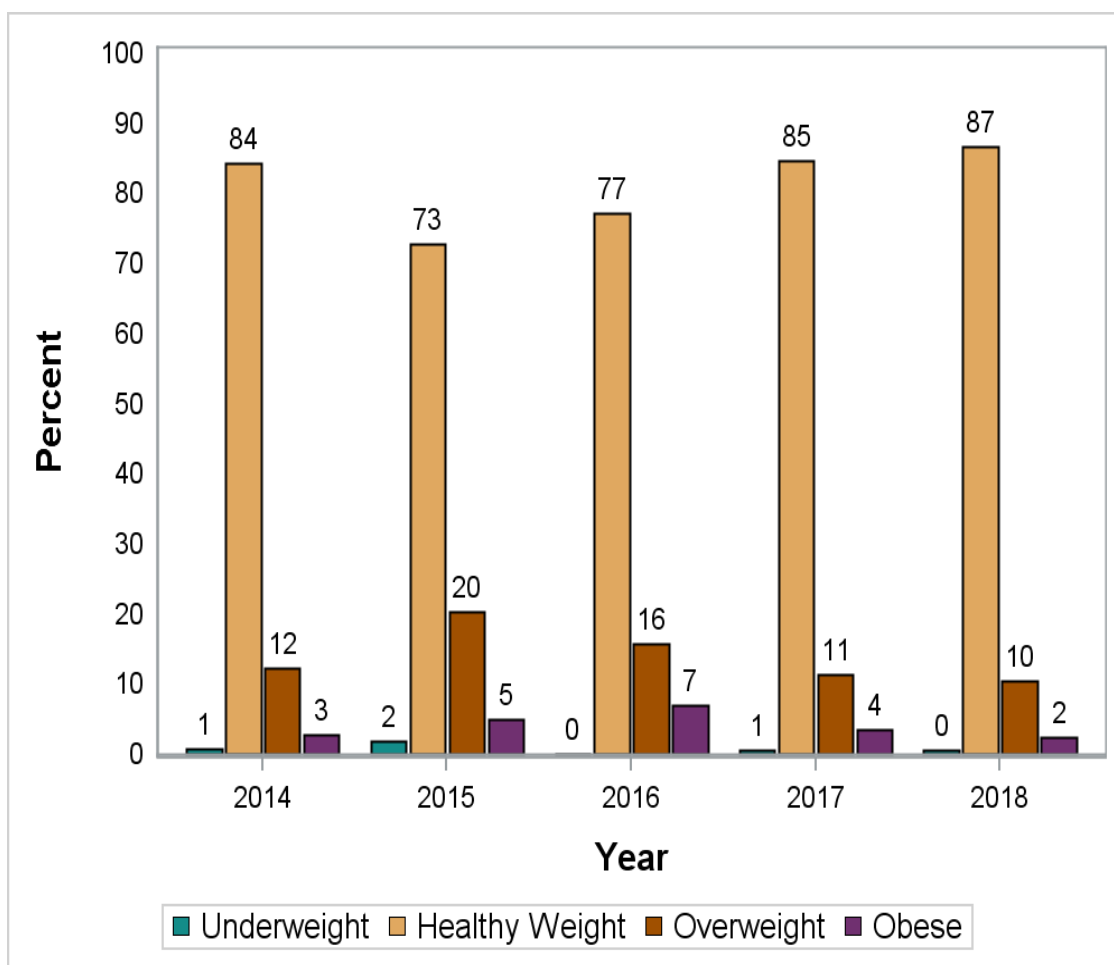
American Association of Family Physician Recommendations: To determine growth velocity, it is recommended that height measurements be taken at least three to six months apart and if possible, six to twelve months apart²⁶.

Weight-For-Height in Children, Under 2

Background Information: The CDC recommends following the WHO growth charts for children ages 0 to 24 months²⁷. The WHO growth chart uses weight-for-height to determine weight status²⁷. Infants who have a high weight to length ratio have an increased risk of obesity in childhood²⁸.

How Data Were Collected: Children were measured and weighed by trained WIC Program staff in the clinic at certification visits. Refer to **Definitions of Variables** for a description of how weight status was determined.

Children Under 2 Weight-for-Height	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Underweight	*	0.7	*	1.9	0	0.0	*	0.5	*	0.5
Healthy Weight	124	84.4	118	72.8	132	77.2	165	84.6	174	86.6
Overweight	18	12.2	33	20.4	27	15.8	22	11.3	21	10.4
Obese	*	2.7	8	4.9	12	7.0	7	3.6	*	2.5
Total (n)	*		*		171		*		*	
* = counts and totals with less than 6 participants in a category are suppressed for confidentiality										



Key points:

- ❖ Majority of Utah WIC children under the age of 2 were in the healthy weight category from 2014-2018.
- ❖ The overweight category declined from 2015 (20%) to 2018 (10%).
- ❖ The obese category decreased from 2016 (7%) to 2018 (2%).

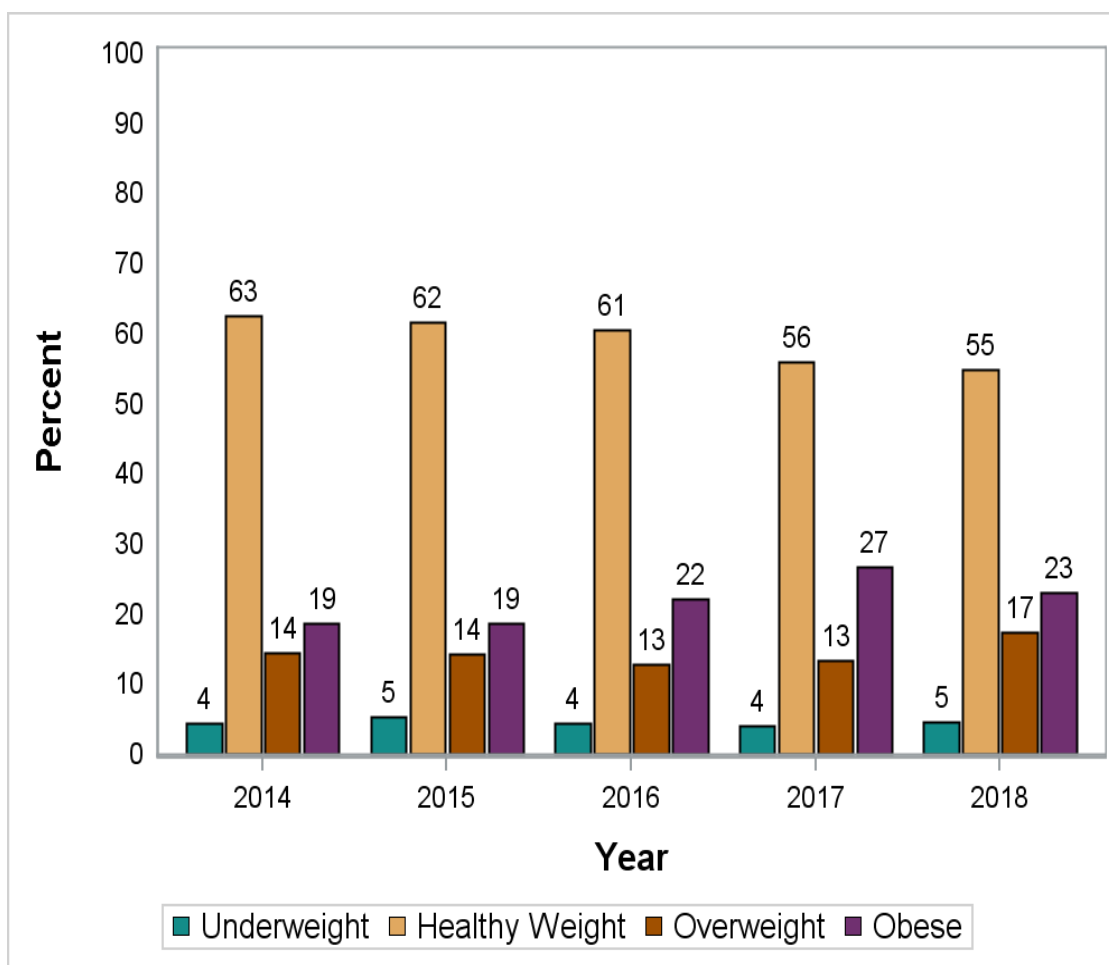
CDC Recommendation: It is recommended that families develop healthy eating habits that include portioned vegetables, fruits, and whole grains and limits the consumption of sugar and saturated fats to maintain a healthy diet and body weight²⁸.

BMI in Children, Over 2

Background Information: Factors that can increase excess weight gain in children include eating low-nutrient food, lack of physical exercise, and genetic predisposition²⁹. Health risks related to childhood obesity include high blood pressure, glucose intolerance, low self-esteem, and depression²⁹. Overweight children are more likely to be overweight or obese in adulthood²⁹. It is in the best interest of the child to establish healthy habits in childhood that can carry on into adulthood.

How Data Were Collected: Children were measured and weighed by trained WIC Program staff in the clinic at certification visits. Refer to **Definitions of Variables** for a description of how weight status was determined.

Children Over 2 Body Mass Index	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Underweight	9	4.3	10	5.3	8	4.4	8	4.0	9	4.6
Healthy Weight	130	62.5	116	61.7	109	60.6	113	55.9	107	54.9
Overweight	30	14.4	27	14.4	23	12.8	27	13.4	34	17.4
Obese	39	18.8	35	18.6	40	22.2	54	26.7	45	23.1
Total (n)	208		188		180		202		195	



Key points:

- ❖ Over 50% of children over the age of 2 in the Utah WIC program from 2014-2018 were in the healthy weight category. However, the following majority throughout 2014-2018 was often in the obese category with a range of percentages being 19% (2014, 2015) to a high of 27% (2017).

CDC Recommendation: It is recommended that families develop healthy eating habits that include portioned vegetables, fruits, and whole grains and limits the consumption of sugar and saturated fats²⁸. In addition, sedentary activities such as watching television and screen time should be limited, physical activity encouraged, and sleep routines established²⁸.

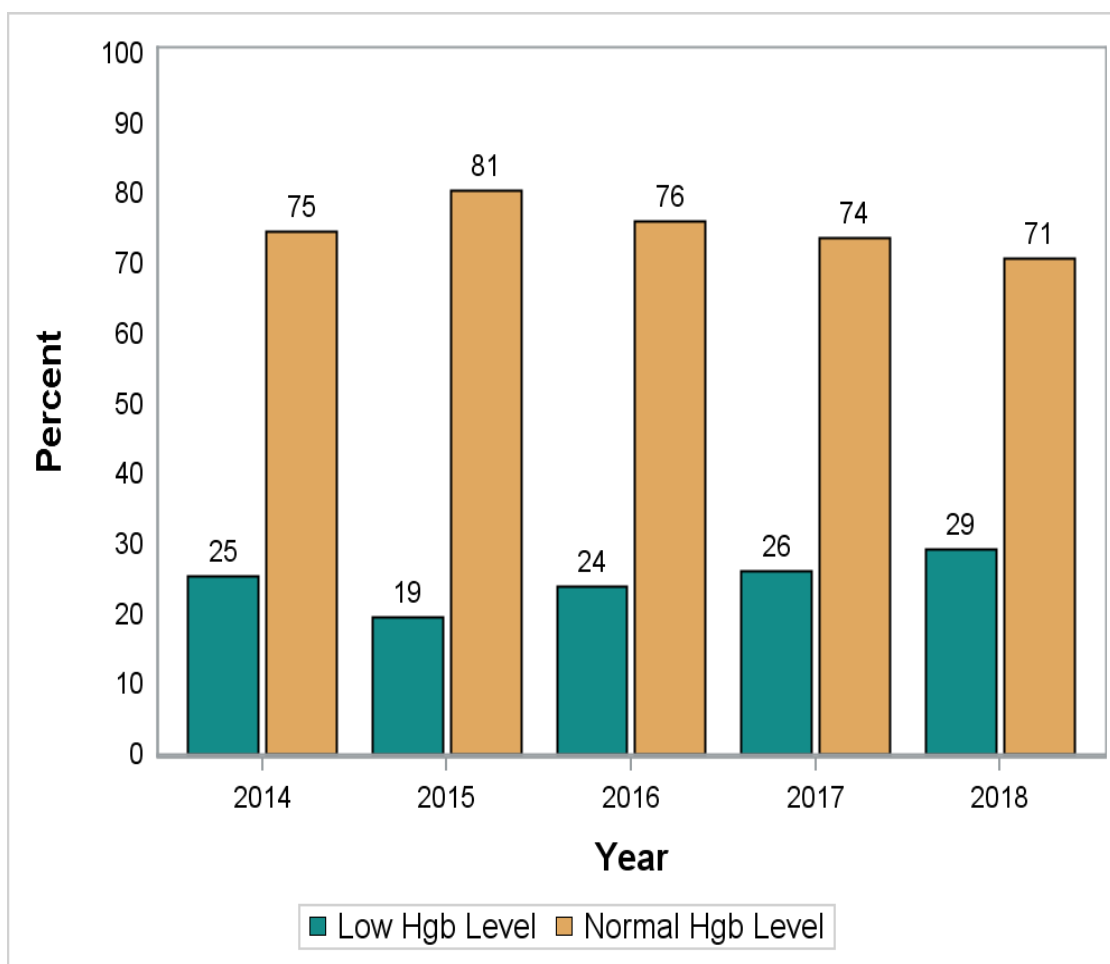
Low Hemoglobin in Children

Background Information: Low Hgb or iron levels are an indicator of iron deficiency anemia, a common result of nutritional deficiency in children³⁰. Symptoms of iron deficiency anemia include delayed growth and development, fatigue, rapid breathing, and frequent infections³¹.

How Data Were Collected: The Hgb values were measured in the WIC clinic using a finger stick procedure for blood draws and a HemoCue® Hgbg 201+ Analyzer to measure the level of hemoglobin in the blood. Refer to **Definitions of Variables** for a description of cut-off values for low Hgb status.

Note: The term low Hgb value used in this report meets the CDC definition for diagnosis of anemia by a health care provider; however, since the WIC program does not make medical diagnoses, the term low Hgb is used.

Hemoglobin Level	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
Normal	291	74.6	318	80.5	302	76.1	329	73.8	311	70.7
Low	99	25.4	77	19.5	95	23.9	117	26.2	129	29.3
Total (n)	390		395		397		446		440	



Key points:

- ❖ Majority of the children experienced normal Hgb levels from 2014 to 2018.

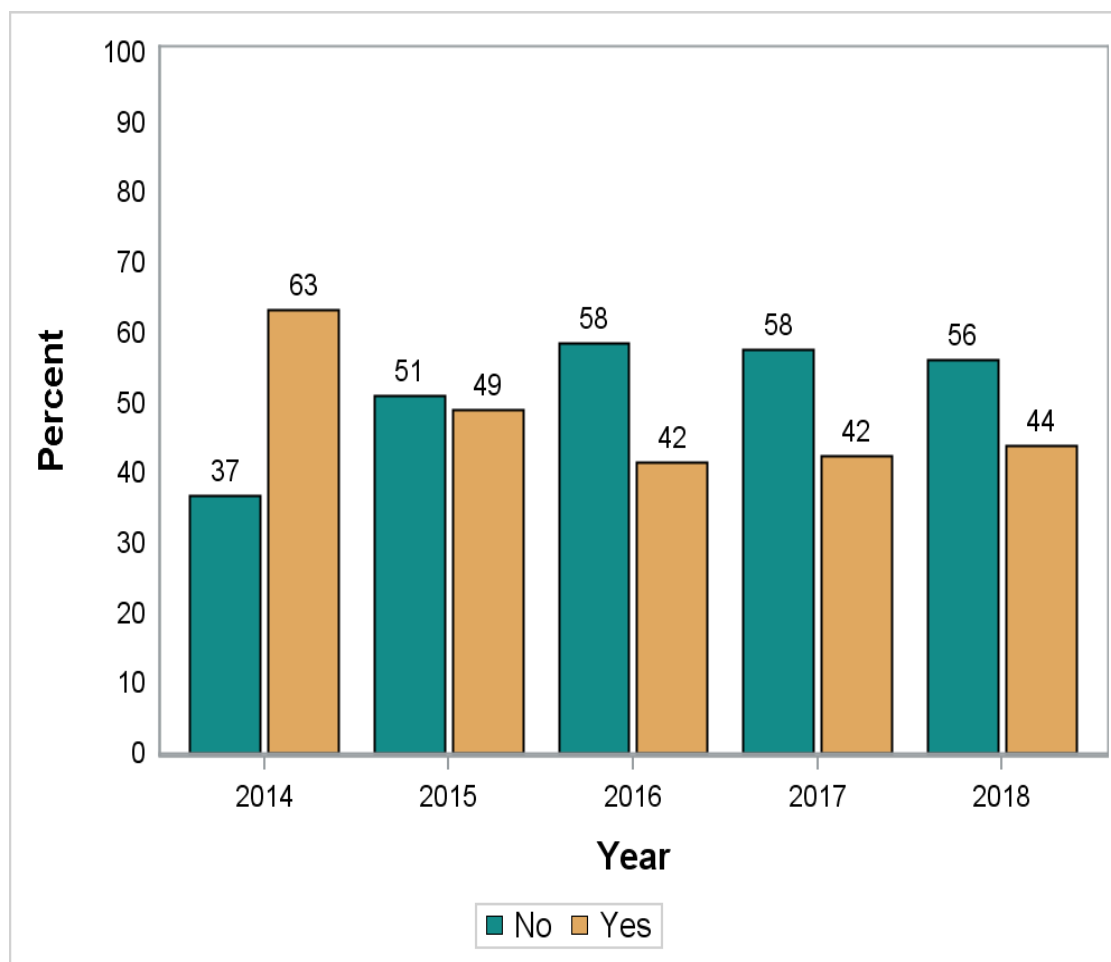
Dentist Visit

Background Information: Baby teeth help children speak clearly, chew naturally, and form a pathway for permanent teeth to follow³². Unfortunately, baby teeth are vulnerable to tooth decay as a result of inadequate brushing and habits such as going to sleep with a bottle or sippy cup³². It is important to take care of baby teeth for the healthy development of adult teeth.

How Data Were Collected: Dentist visit was self-reported by the participant's guardian during certification visits. Age values were calculated by WIC.

Dentist Visit by Year

	2014		2015		2016		2017		2018	
Dentist Visit	n	%	n	%	n	%	n	%	n	%
No	47	36.7	97	51.1	155	58.5	199	57.5	213	56.1
Yes	81	63.3	93	48.9	110	41.5	147	42.5	167	43.9
Total (n)	128		190		265		346		380	



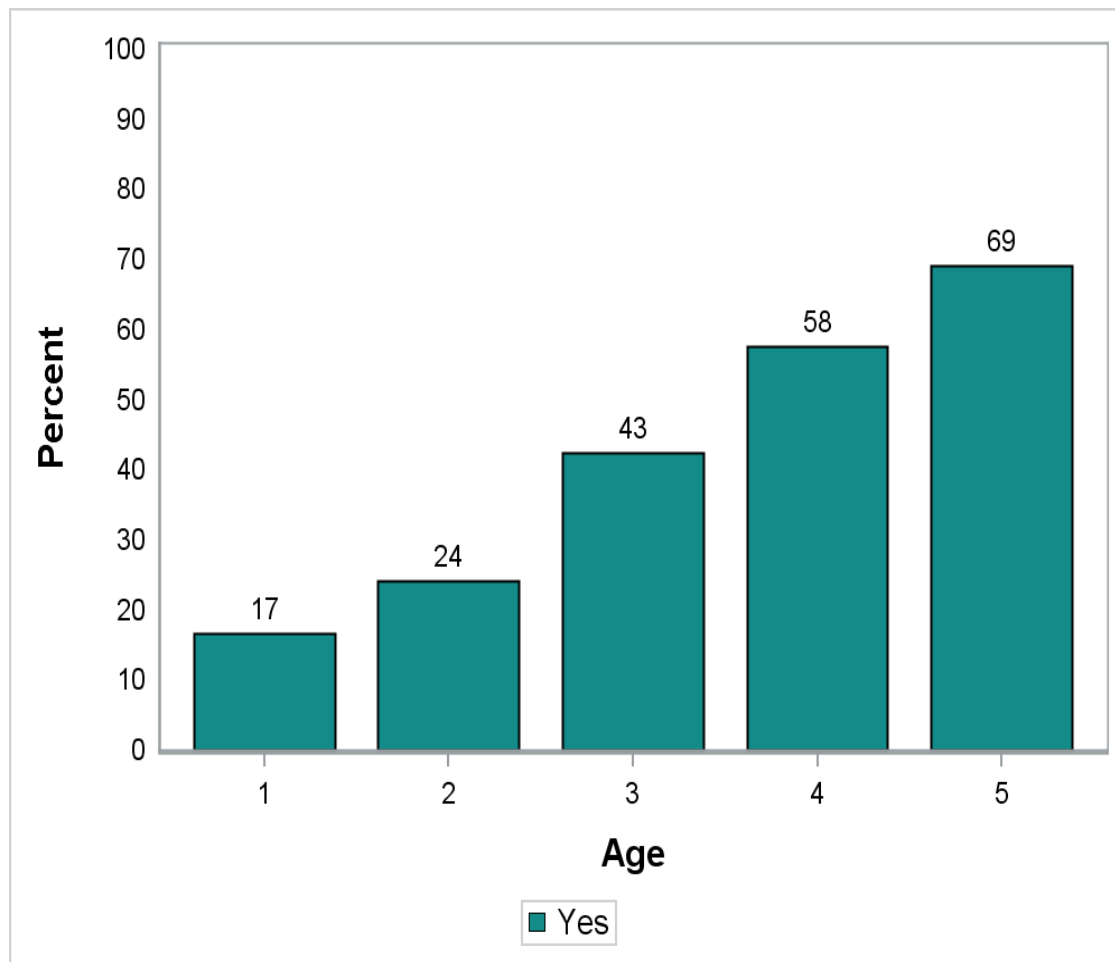
Key points:

- ❖ In 2014, the majority of participants visited a dentist.
- ❖ From 2015-2018, the majority of the children in the Utah WIC program have not seen a dentist.

Dentist Visit by Age

Background Information: Instead of showing dentist visits by year, the following bar chart displays dentist visits by age. It is recommended that children see a pediatric dentist by the age of one year old³².

Dentist Visit	1 Year Old		2 Year Old		3 Year Old		4 Year Old		5 Year Old	
	n	%	n	%	n	%	n	%	n	%
No	80	83.3	194	75.8	211	57.5	161	42.5	65	30.8
Yes	16	16.7	62	24.2	156	42.5	218	57.5	146	69.2
Total (n)	96		256		367		379		211	



Key points:

- ❖ Only 17% of one year olds between the years 2014-2018 have seen a dentist.
- ❖ Whereas, 69% of the five year olds during 2014-2018 have seen a dentist.
- ❖ From age one to five, there is an increase in children who have seen a dentist.
- ❖ The data does not capture the frequency of dentist visits per year.

The American Academy of Pediatric Dentistry Recommendation: It is recommended that children see a pediatric dentist when their first tooth appears or no later than their first birthday. Afterwards, it is recommended that children see a pediatric dentist every six months³².

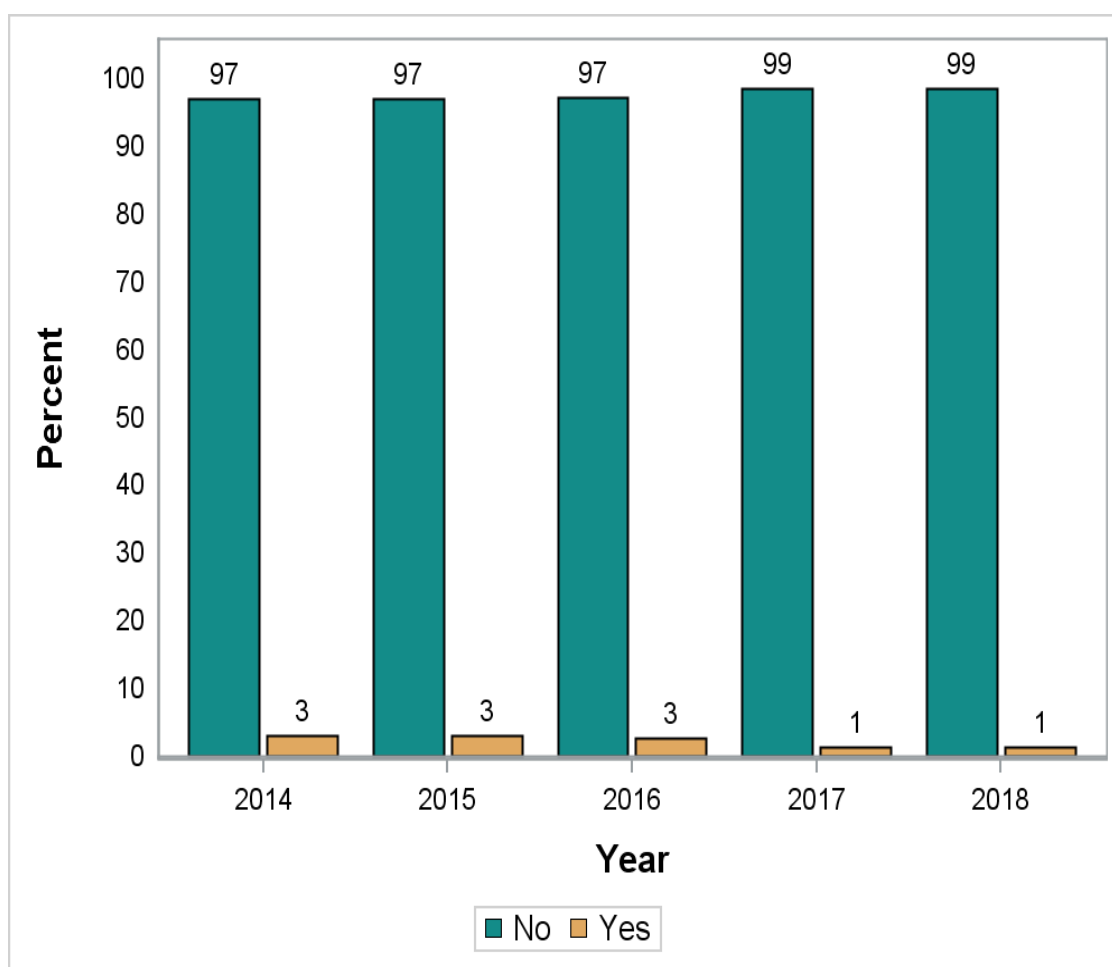
Smoker in Household

Background Information: Children who are exposed to secondhand smoke are at an increased risk of developing ear infections, having asthma attacks, and respiratory infections³³. Smoking in a household also increases a child's risk of developing asthma¹⁶. There is not a risk-free level of secondhand smoke that is safe for a child to be exposed to³³.

How Data Were Collected: The participant's guardian was asked if anyone in the household smokes.

Note: The question did not ask if smoking is allowed inside the household. The purpose of the analysis is to account for possible secondhand smoke exposure.

Smoker in Household	2014		2015		2016		2017		2018	
	n	%	n	%	n	%	n	%	n	%
No	311	96.9	325	97.0	353	97.2	410	98.6	411	98.6
Yes	10	3.1	10	3.0	10	2.8	6	1.4	6	1.4
Total (n)	321		335		363		416		417	



Key points:

- ❖ The majority of the children lived in a household where no one smokes.

CDC Recommendation: Having a smoker in the household may expose a child to secondhand smoke. Women and families are advised to maintain a smoke free home, choose smoke-free environments, and teach children to avoid smoke³³.

Technical Notes

Utah WIC

The Utah Special Supplemental Nutrition Program for Women, Infants, and Children serves low to moderate-income women, infants, and children. The population includes 5 groups: pregnant women, breastfeeding women, non-breastfeeding postpartum women, infants, and children up to their 5th birthday. Each of the five groups have their own respective dataset that was provided to ITCA TEC.

Utah WIC eligibility criteria requires clients to live within the Utah county served by the WIC clinic, have an income less than 185 percent of the federal poverty guidelines, and have a nutrition risk as deemed by a healthcare professional³⁴. WIC participants who are women have to be either pregnant, up to 6 months postpartum, or breastfeeding up to the infant's first birthday³⁴. Infants and children are eligible up to their fifth birthday³⁴. WIC is a non-discriminatory program where as long as applicants meet the eligibility criteria, clients are served.

The analyses of Utah's WIC database included the years 2014-2018. Participants who did not identify as being Native American or Alaska Native were excluded from the analysis.

Data collected by WIC helps feed into two surveillance systems: the Pregnancy Nutritional Surveillance System (PNSS) and the Pediatric Nutrition Surveillance System (PedNSS). PNSS is a program-based public health surveillance system that monitors risk factors associated with infant mortality and poor birth outcomes among low-income pregnant women who participate in federally funded public health programs including WIC³⁵. PedNSS is a child-based public health surveillance system that describes the nutritional status of low-income U.S. children who participate in federally-funded maternal and child health and nutrition programs including WIC³⁶. PedNSS provides data on the prevalence and trends of nutrition-related indicators³⁶. Majority of the information provided to PNSS and PedNSS is collected by WIC^{35,36}.

Definitions of Variables

Low Hemoglobin/Hematocrit (Hgb/Hct) in Women³⁷	
<u>By Trimester</u>	<u>Hemoglobin concentration (<g/dL)</u>
1 st	11.0
2 nd	10.5
3 rd	11.0
<u>Postpartum (By Age Group)</u>	
12 to <15 years	11.8
15 to <18 years	12.0
18+ years	12.0
Low Hemoglobin/Hematocrit (Hgb/Hct) in Children³⁷	
<u>Children (age, in years)</u>	<u>Hemoglobin concentration (<g/dL)</u>
0.5 to <2	11.0
2 to <5	11.1
Maternal Weight Gain⁸	
<u>Pre-pregnancy Weight Status</u>	<u>Ideal Weight Gain (lbs)</u>
Underweight	28-40
Normal Weight	25-35
Overweight	15-25
Obese	11-20
Pre-pregnancy Body Mass Index (BMI)⁶	
Underweight = BMI <18.5	Normal weight = BMI 18.5-24.9
Overweight = BMI >25.0-29.9	Obese = BMI >29.0
Birthweight Categories^{22, 23, 24}	
	<u>Birthweight (lbs)</u>
Low birthweight	< 5.5
Moderately low birthweight	3.3 – 5.5
Very low birthweight	< 3.3
Normal birthweight	5.5 – 8.8
High birthweight	> 8.8
Short Stature²⁶	
<u>Children over 2 years of age:</u>	
Stature ≤ 5th percentile on the CDC age- and gender-specific stature reference	
<u>Children under 2 years of age:</u>	
Defined as length ≤ 2.3rd percentile	

Underweight and Overweight

Children over 2 years of age³⁸

<u>BMI Category</u>	<u>Percentile:</u>
Obesity:	$\geq 95^{\text{th}}$
Overweight:	$85^{\text{th}} \geq x < 95^{\text{th}}$
Healthy Weight:	$5^{\text{th}} \geq x < 85^{\text{th}}$
Underweight:	$\leq 4^{\text{th}}$

Children under 2 years old³⁹

<u>Weight-for-height</u>	<u>Z-Score:</u>
Obese:	$x \geq 3$
Overweight:	$2 \geq x < 3$
Healthy Weight:	$-1 \geq x < 2$
Underweight:	$x < -2$

Statistical Notes Table

Measurement	Definition	Formula
Counts	The number of observations	Total number of participants in category
Percent	One part per hundred	$\left(\frac{\text{Number of participants in one category}}{\text{Total number of participants with valid data for the category}} \right) \times 100$

Data Barriers

- ❖ The Utah WIC dataset may have race/ethnicity coded incorrectly. There were duplicates among participants labeled as other than American Indian or Alaska Native. All duplicates were removed and the information provided by those labeled as American Indian or Alaska Native were used to complete this report.
- ❖ The WIC programs serve those under the federal poverty level. Low socioeconomic status has been tied to poor health outcomes for both mothers and children⁴⁰.

Action Items

Below are points of action specifically geared to individuals, tribal communities, tribal health care providers, tribal leaders working in tribal communities in an effort to improve upon maternal and child health. These action items are specific to AI/AN in Utah.

Individuals

- ❖ Promote healthy eating and exercising habits prior to pregnancy
- ❖ Seek prenatal care once a pregnancy is known
- ❖ Seek resources to support a healthy pregnancy and postnatal health
- ❖ Seek resources to help your family instill sustainable healthy habits

Tribal Communities

- ❖ Support breastfeeding friendly policies in tribal offices
- ❖ Advertise resources for prenatal and postnatal services to the community
- ❖ Show support for programs that give prenatal and postnatal services to your community
- ❖ Provide and maintain areas for families to exercise outdoors such as playgrounds and walking paths
- ❖ Consider implementing healthy eating options, such as traditional foods, at events and meetings to support healthy eating habits

Tribal Health Care Providers

- ❖ Support healthy eating and exercising habits for women before and after pregnancy
- ❖ Support breastfeeding in communities and provide resources to help women continue to breastfeed
- ❖ Provide a welcoming environment to encourage women and their families to continue to seek medical attention

Tribal Leaders

- ❖ Support health promotion activities within the tribal community including healthy eating, exercising, and breastfeeding policies
- ❖ Consider a memorandum of agreement or data sharing agreement with state health departments to ensure more complete data where possible

Non-Tribal Public Health

- ❖ Participate in data sharing
- ❖ Be a resource to tribal communities
- ❖ Work to improve AI/AN surveillance data with tribes, IHS, state registries and Tribal Epidemiology Centers

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