



CESAREAN SECTION DELIVERIES IN OKLAHOMA

MATERNAL AND CHILD
HEALTH ASSESSMENT
OKLAHOMA STATE
DEPARTMENT OF HEALTH
MAY 2017



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C-SECTION RATE TRENDS

Figure 1: Trends in C-Section Rates, Oklahoma and US, 2000 - 2015

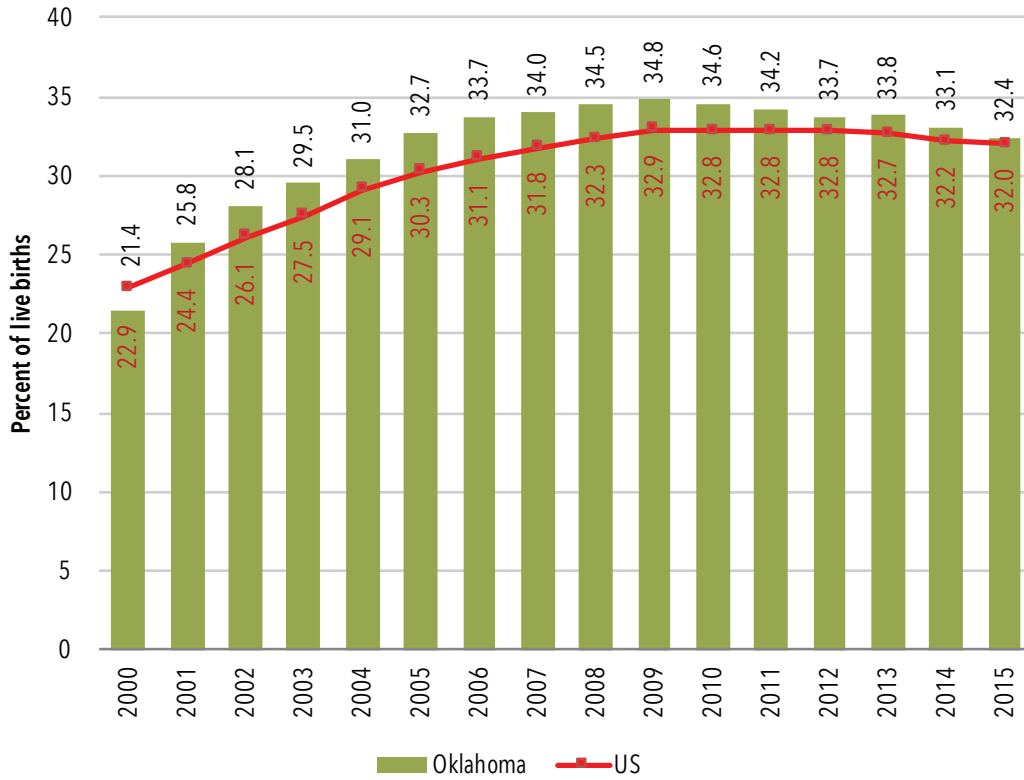


Table 1: Trends in C-Section Rates, Oklahoma and US, 2000 - 2015

Birth Year	Oklahoma	US
2000	21.4	22.9
2001	25.8	24.4
2002	28.1	26.1
2003	29.5	27.5
2004	31.0	29.1
2005	32.7	30.3
2006	33.7	31.1
2007	34.0	31.8
2008	34.5	32.3
2009	34.8	32.9
2010	34.6	32.8
2011	34.2	32.8
2012	33.7	32.8
2013	33.8	32.7
2014	33.1	32.2
2015	32.4	32.0

C-SECTION RATE TRENDS

Figure 2: Primary and Repeat C-Sections, Oklahoma, 2000-2015

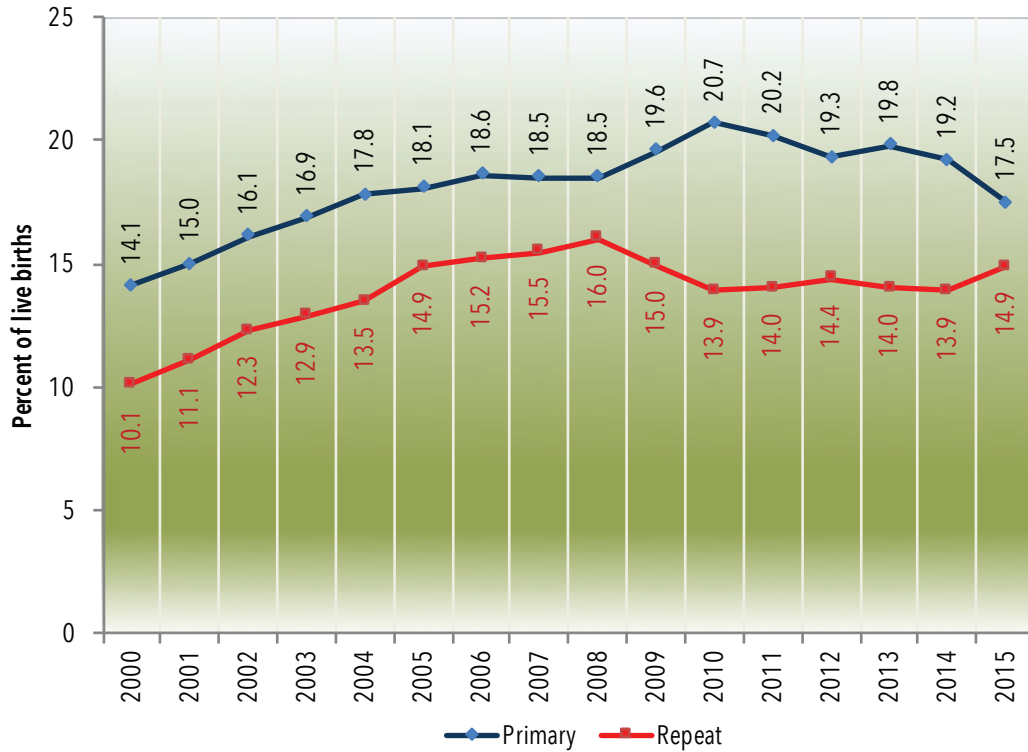


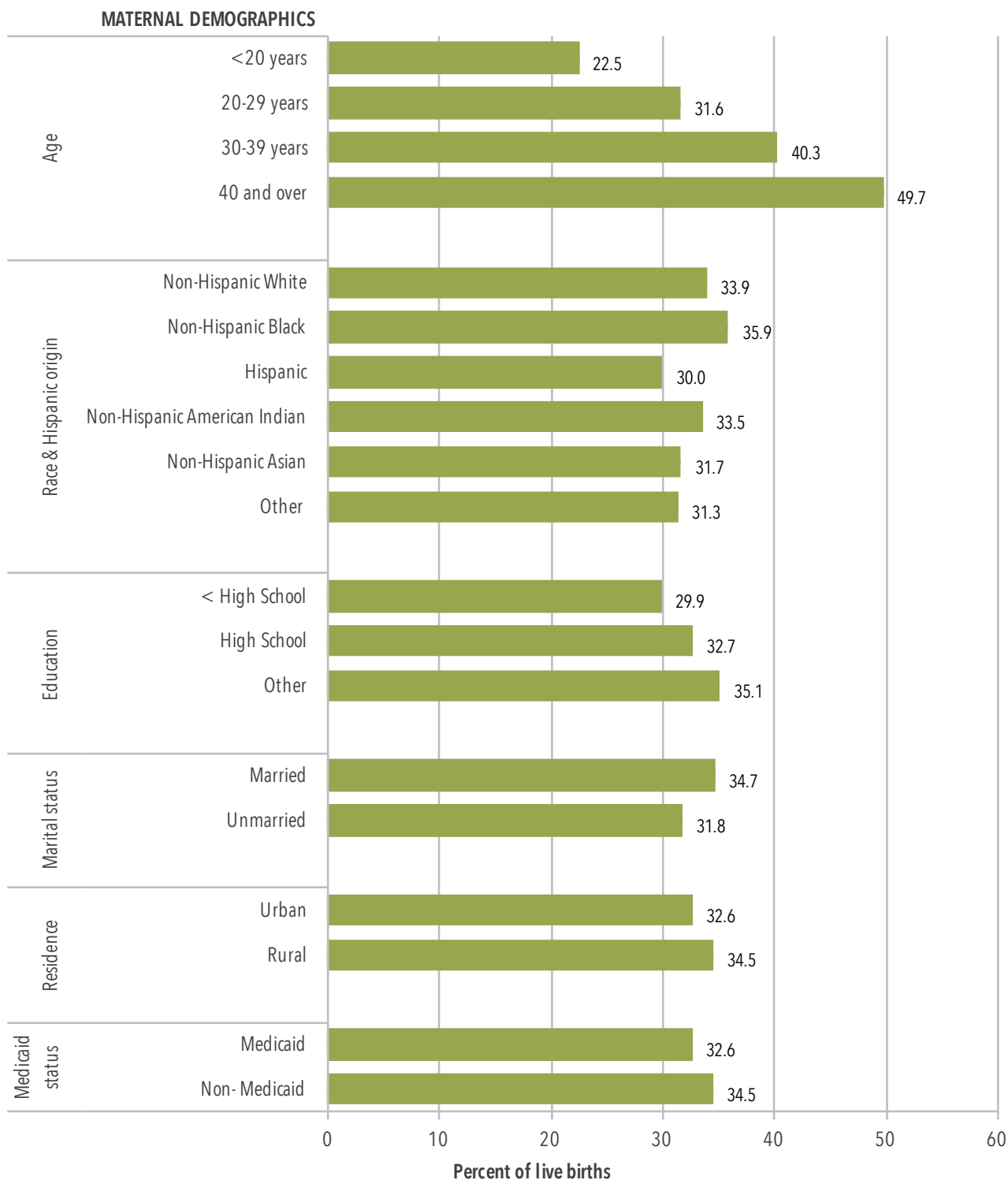
Table 2: Primary and Repeat C-Sections, Oklahoma, 2000-2015

Birth Year	Primary C-Sections	Repeat C-Sections
2000	14.1	10.1
2001	15.0	11.1
2002	16.1	12.3
2003	16.9	12.9
2004	17.8	13.5
2005	18.1	14.9
2006	18.6	15.2
2007	18.5	15.5
2008	18.5	16.0
2009	19.6	15.0
2010	20.7	13.9
2011	20.2	14.0
2012	19.3	14.4
2013	19.8	14.0
2014	19.2	13.9
2015	17.5	14.9

MATERNAL DEMOGRAPHICS

FIVE YEAR OVERVIEW OF OKLAHOMA C-SECTION BIRTHS 2011 -2015

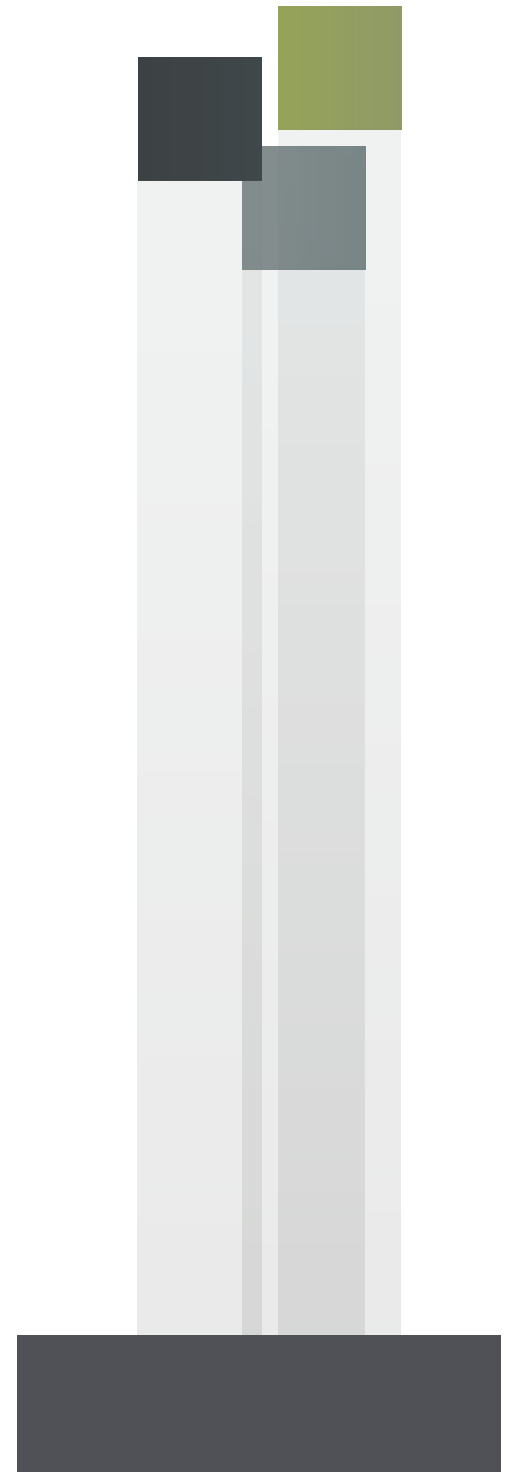
Figure 3: C-Section Rates by Select Maternal Demographics, Oklahoma, 2011 - 2015



MATERNAL DEMOGRAPHICS

Table 3: C-Section Rates by Select Maternal Demographics, Oklahoma, 2011 - 2015

Maternal Demographics		C-Section Rate (%)
Age	<20 years	22.5
	20-29 years	31.6
	30-39 years	40.3
	40 and over	49.7
Race & Hispanic Origin	Non-Hispanic White	33.9
	Non-Hispanic Black	35.9
	Hispanic	30.0
	Non-Hispanic American Indian	33.5
	Non-Hispanic Asian	31.7
	Other	31.3
Education	< High School	29.9
	High School	32.7
	Other	35.1
Marital Status	Married	34.7
	Unmarried	31.8
Residence	Urban	32.6
	Rural	34.5
Medicaid Status	Medicaid	32.6
	Non-Medicaid	34.5



MATERNAL DEMOGRAPHICS

Figure 4: C-Section Rates by Mother's Race and Age, Oklahoma, 2011 - 2015

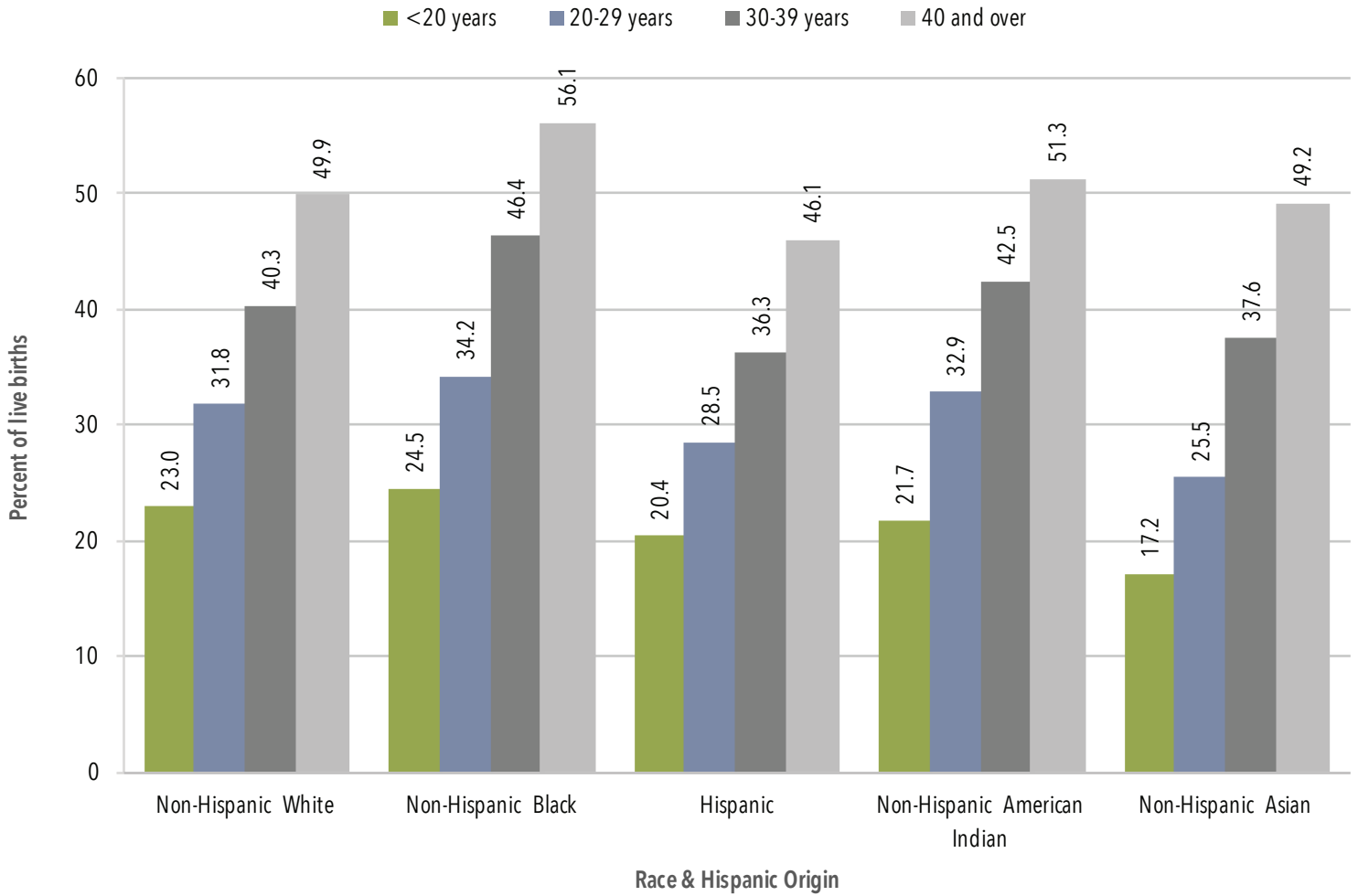


Table 4: C-Section Rates by Mother's Race and Age Oklahoma 2011 - 2015

Race and Hispanic Origin	Age (years)			
	<20 years	20-29 years	30-39 years	40 and over
Non-Hispanic White	23.0	31.8	40.3	49.9
Non-Hispanic Black	24.5	34.2	46.4	56.1
Hispanic	20.4	28.5	36.3	46.1
Non-Hispanic American Indian	21.7	32.9	42.5	51.3
Non-Hispanic Asian	17.2	25.5	37.6	49.2

MATERNAL DEMOGRAPHICS

Figure 5: C-Section Rates by Mother's Race, Age and Residence Status, Oklahoma, 2011 - 2015

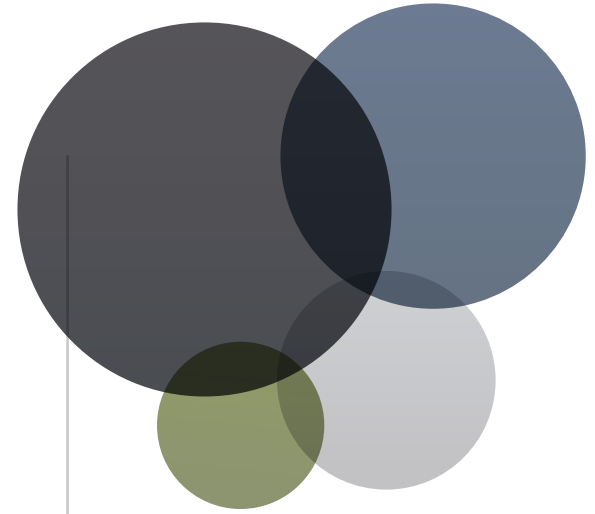
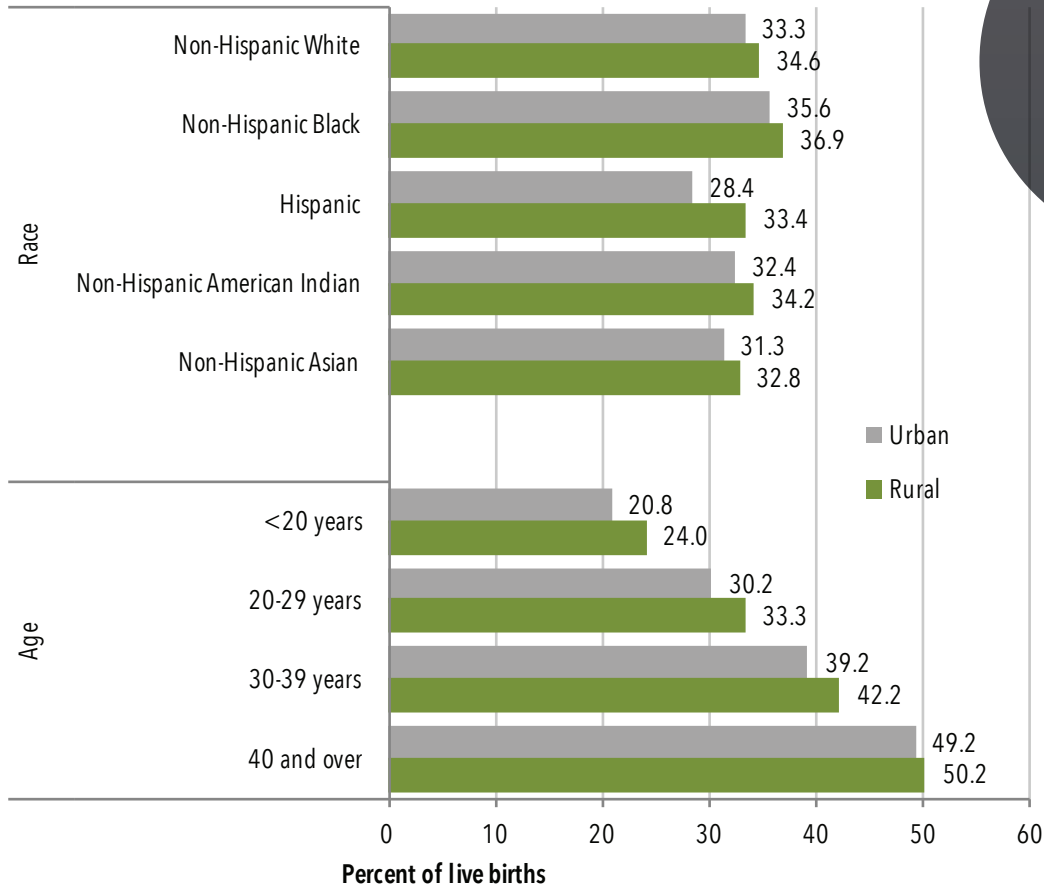


Table 5: C-Section Rates by Mother's Race, Age and Residence Status, Oklahoma, 2011 - 2015

		Residence Status	
		Urban	Rural
Race	Race and Hispanic Origin		
	Non-Hispanic White	33.3	34.6
	Non-Hispanic Black	35.6	36.9
	Hispanic	28.4	33.4
	Non-Hispanic American Indian	32.4	34.2
	Non-Hispanic Asian	31.3	32.8
Age	<20 years	20.8	24.0
	20-29 years	30.2	33.3
	30-39 years	39.2	42.2
	40 and over	49.2	50.2

PRE-PREGNANCY INDICATORS

Figure 6: C-Section Rates by Pre-Pregnancy Indicators Oklahoma, 2011 - 2015

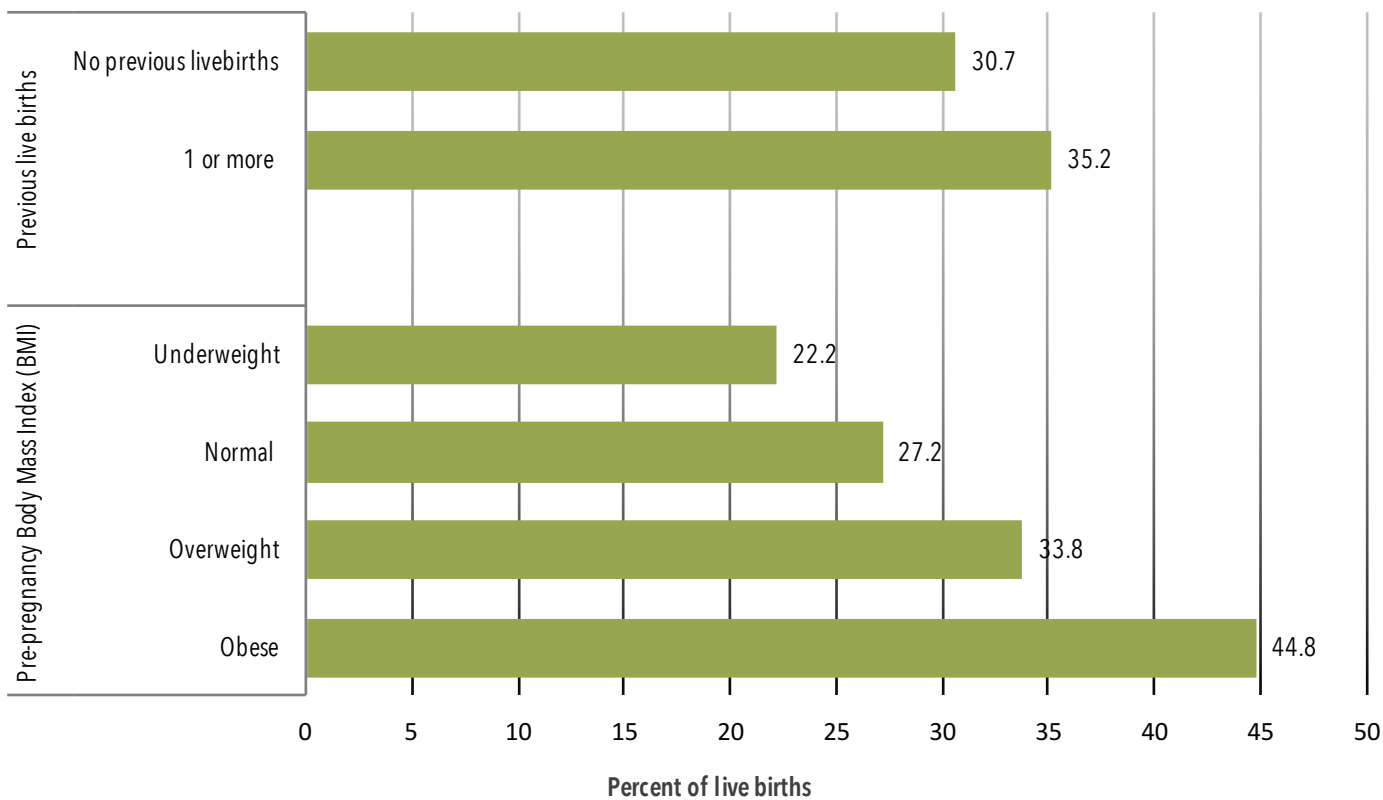


Table 6: C-Section Rates by Pre-Pregnancy Indicators Oklahoma, 2011 - 2015

Pregnancy Associated Indicators		C-Section Rate (%)
Previous live births	No previous live births	30.7
	1 or more	35.2
Pre-pregnancy Body Mass Index (BMI)	Underweight	22.2
	Normal	27.2
	Overweight	33.8
	Obese	44.8



PRE-PREGNANCY INDICATORS

Figure 7: C-Section Rates by Mother's Age and Pre-Pregnancy Body Mass Index, Oklahoma, 2011 - 2015

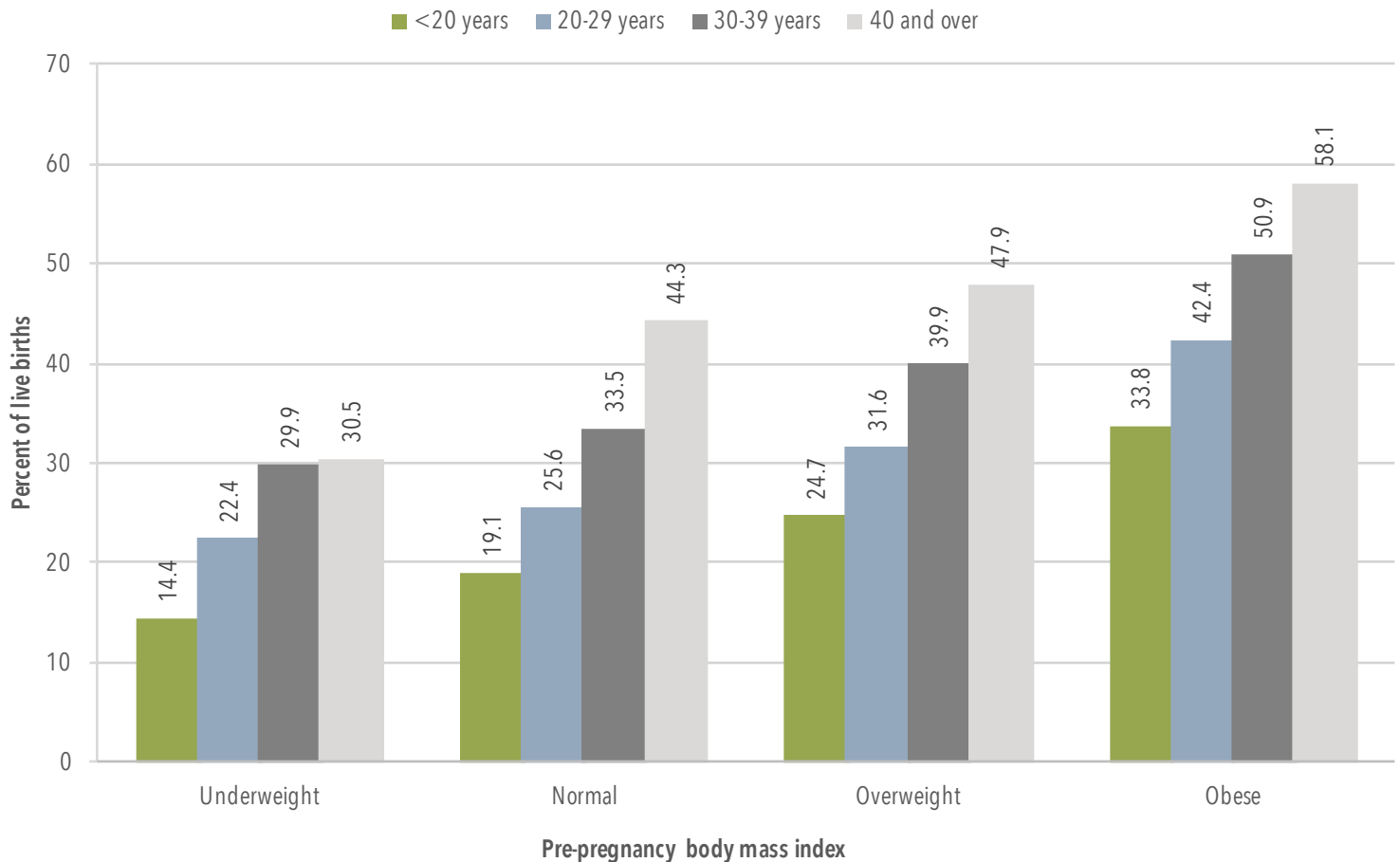


Table 7: C-Section Rates by Mother's Age and Pre-Pregnancy Body Mass Index, Oklahoma, 2011 - 2015

Age (years)	Pre-pregnancy Body Mass Index			
	Underweight	Normal	Overweight	Obese
<20 years	14.4	19.1	24.7	33.8
20-29 years	22.4	25.6	31.6	42.4
30-39 years	29.9	33.5	39.9	50.9
40 and over	30.5	44.3	47.9	58.1

PRE-PREGNANCY INDICATORS

Figure 8: C-Section Rates by Mother's Race and Pre-Pregnancy Body Mass Index, Oklahoma, 2011 - 2015

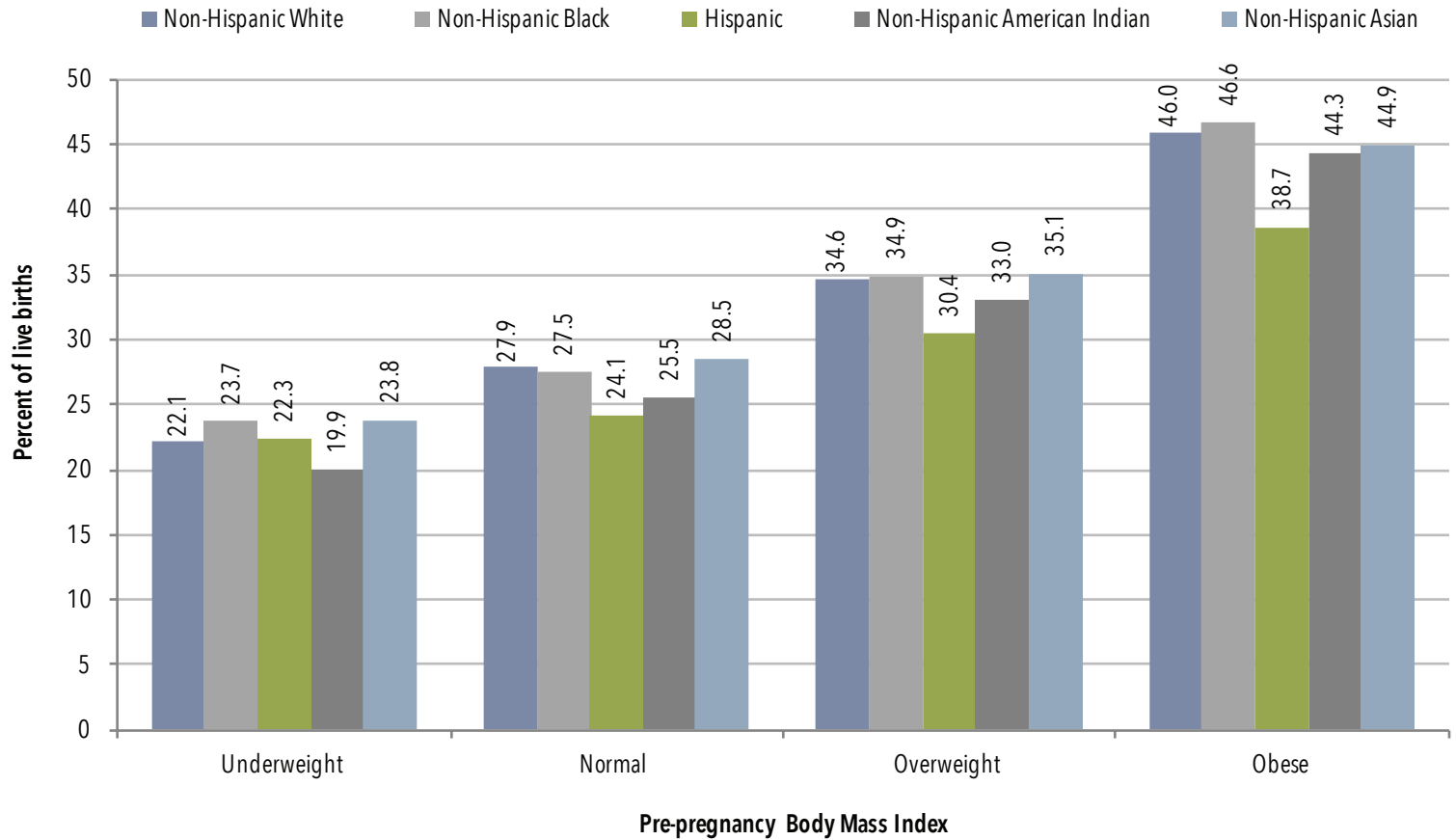
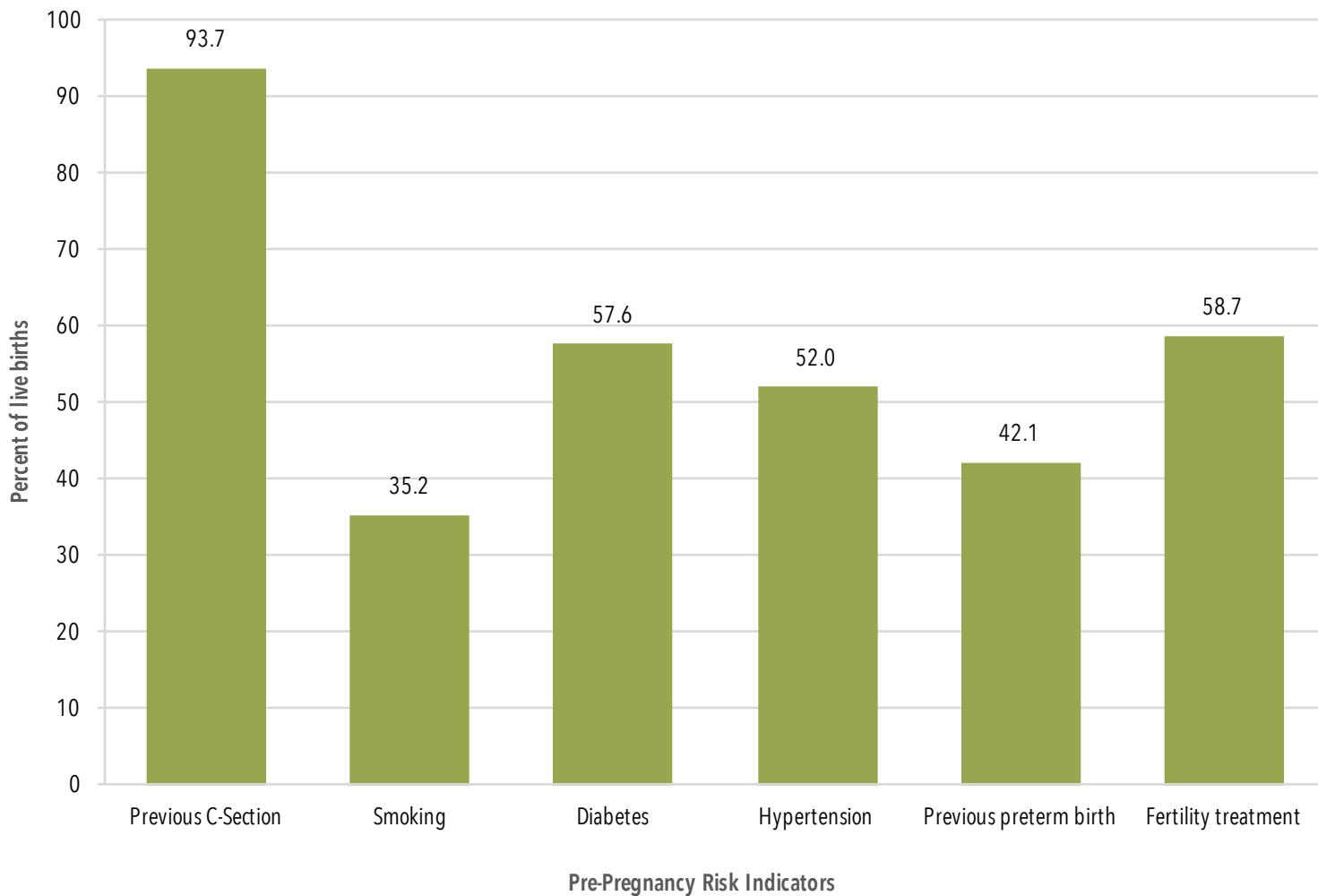


Table 8: C-Section Rates by Mother's Race and Pre-Pregnancy Body Mass Index, Oklahoma, 2011 - 2015

Race and Hispanic Origin	Pre-pregnancy Body Mass Index			
	Underweight	Normal	Overweight	Obese
Non-Hispanic White	22.1	27.9	34.6	46.0
Non-Hispanic Black	23.7	27.5	34.9	46.6
Hispanic	22.3	24.1	30.4	38.7
Non-Hispanic American Indian	19.9	25.5	33.0	44.3
Non-Hispanic Asian	23.8	28.5	35.1	44.9

PRE-PREGNANCY INDICATORS

Figure 9: C-Section Rates by Pre-Pregnancy Risk Indicators, Oklahoma, 2011 - 2015



Risk Indicators	C-Section Rate
Previous C-Section	93.7
Smoking	35.2
Diabetes	57.6
Hypertension	52.0
Previous preterm birth	42.1
Fertility treatment	58.7

Table 9: C-Section Rates by Pre-Pregnancy Risk Indicators, Oklahoma, 2011 - 2015

PRE-PREGNANCY INDICATORS

Table 10: C-Section Rates by Mother's Age and Select Pre-Pregnancy Risk Indicators, Oklahoma, 2011 - 2015

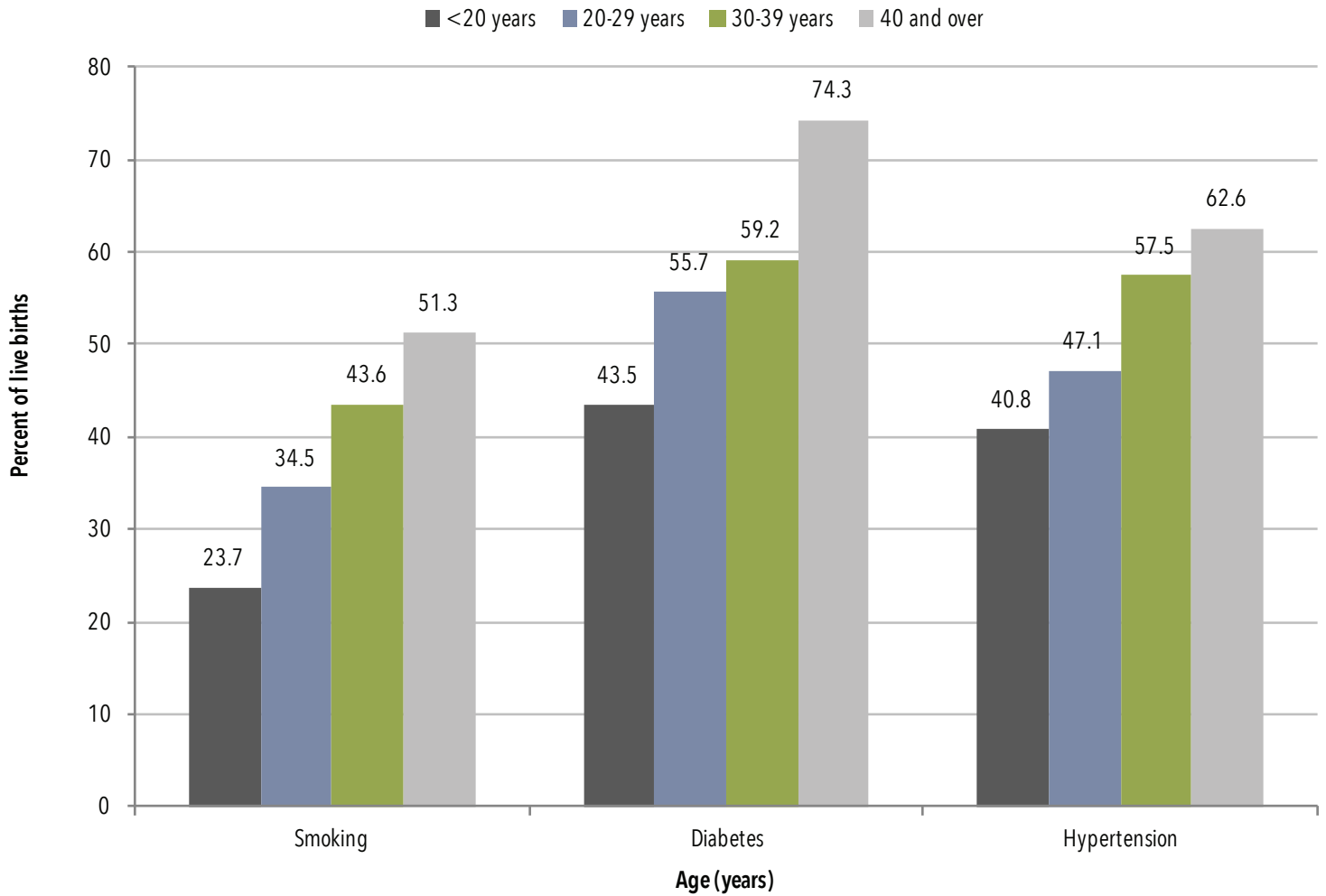


Figure 10: C-Section Rates by Mother's Age and Select Pre-Pregnancy Risk Indicators, Oklahoma, 2011 - 2015

Age	Risk Indicators		
	Smoking	Diabetes	Hypertension
<20 years	23.7	43.5	40.8
20-29 years	34.5	55.7	47.1
30-39 years	43.6	59.2	57.5
40 and over	51.3	74.3	62.6

PRE-PREGNANCY INDICATORS

Figure 11: C-Section Rates by Mother's Race and Pre-Pregnancy Risk Indicators, Oklahoma, 2011 - 2015

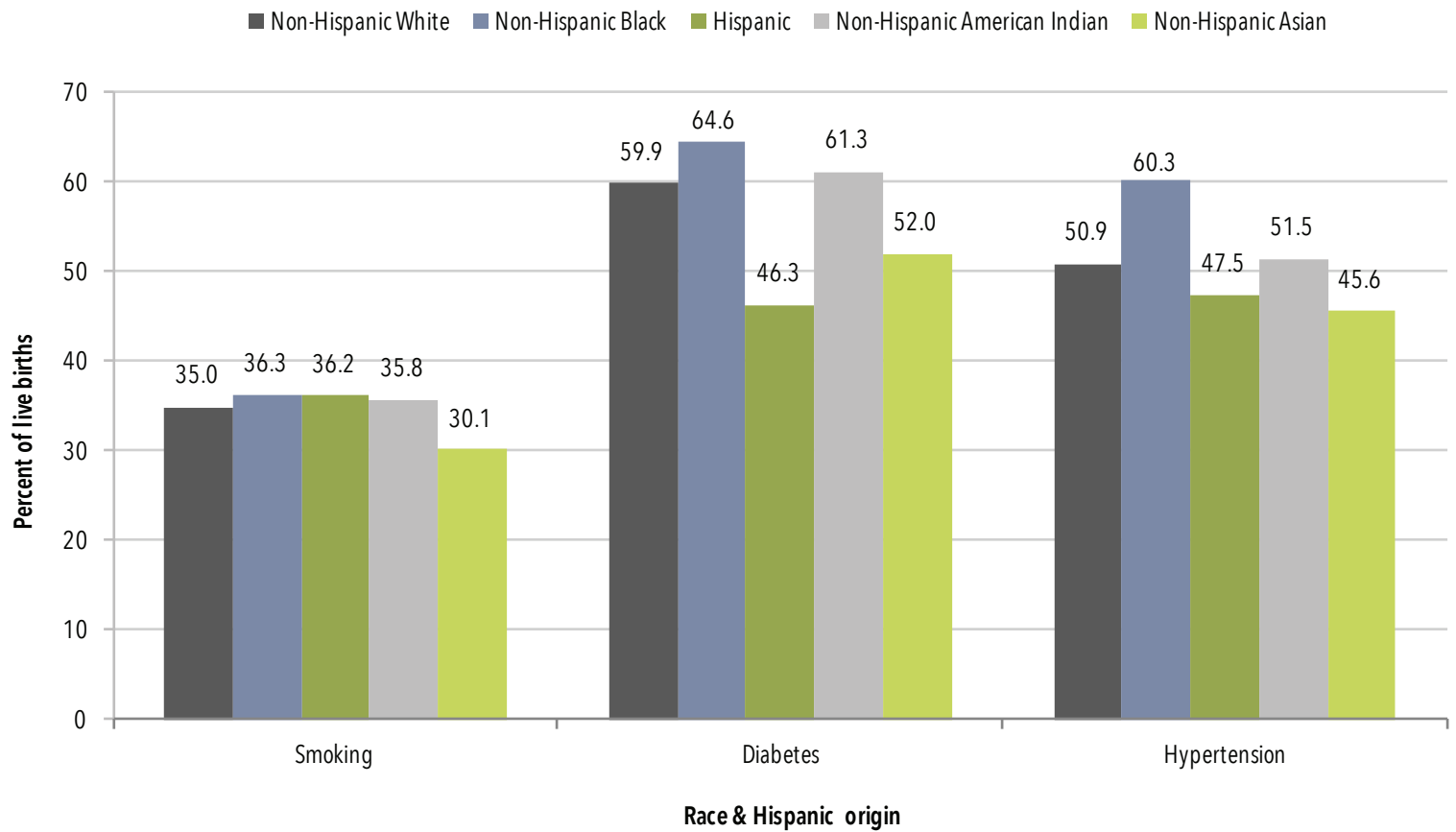


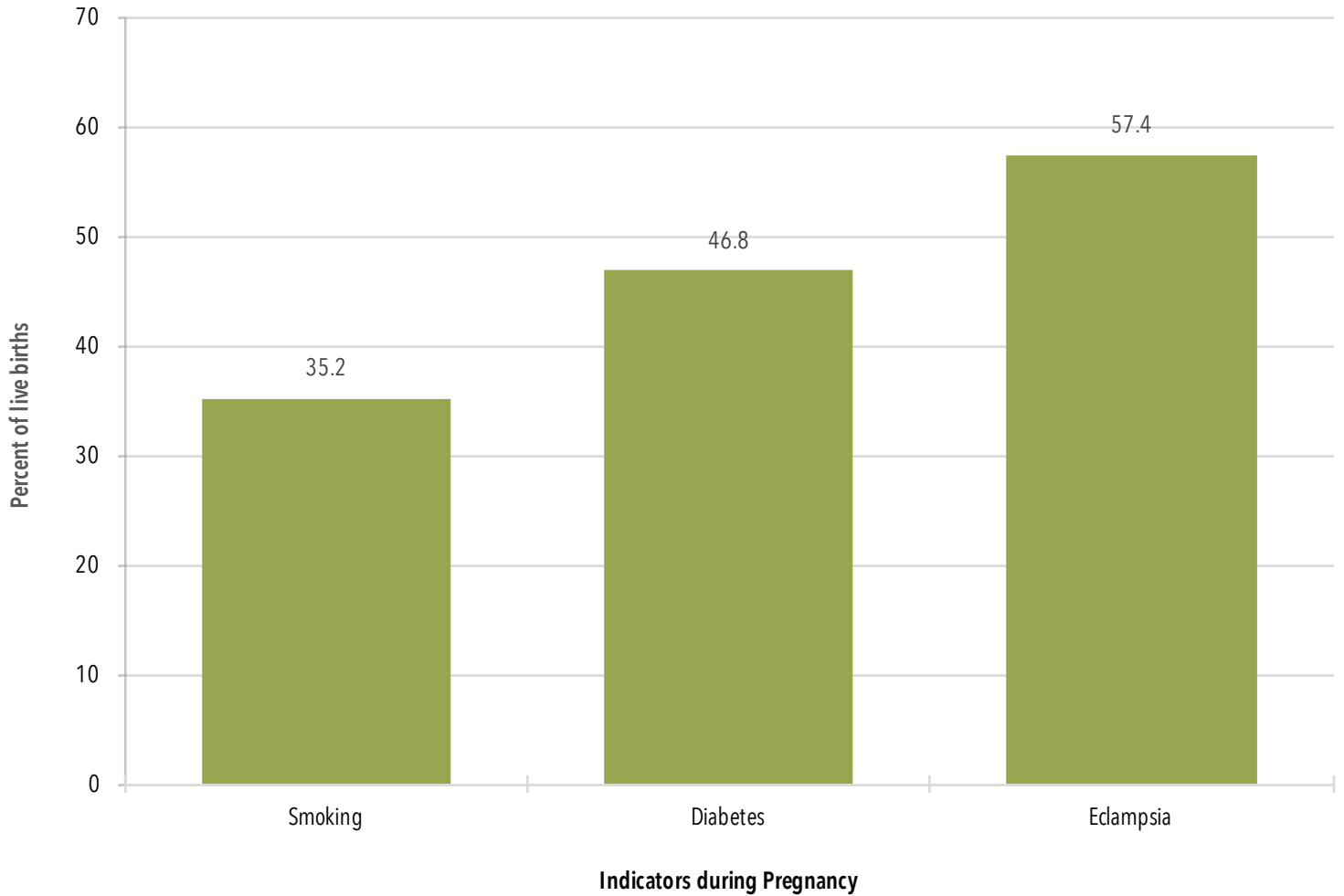
Table 11: C-Section Rates by Mother's Race and Pre-Pregnancy Risk Indicators, Oklahoma, 2011 - 2015

Race and Hispanic Origin	Risk Indicators		
	Smoking	Diabetes	Hypertension
Non-Hispanic White	35.0	59.9	50.9
Non-Hispanic Black	36.3	64.6	60.3
Hispanic	36.2	46.3	47.5
Non-Hispanic American Indian	35.8	61.3	51.5
Non-Hispanic Asian	30.1	52.0	45.6



PREGNANCY ASSOCIATED INDICATORS

Figure 12: C-Section Rates by Risk Indicators during Pregnancy, Oklahoma, 2011 - 2015



Risk Indicators	
Risk Indicators	C-Section Rate (%)
Smoking	35.2
Diabetes	46.8
Eclampsia	57.4

Table 12: C-Section Rates by Risk Indicators during Pregnancy, Oklahoma, 2011 - 2015

PREGNANCY ASSOCIATED INDICATORS

Figure 13: C-Section Rates by Mother's Age and Risk Indicators during Pregnancy, Oklahoma, 2011 - 2015

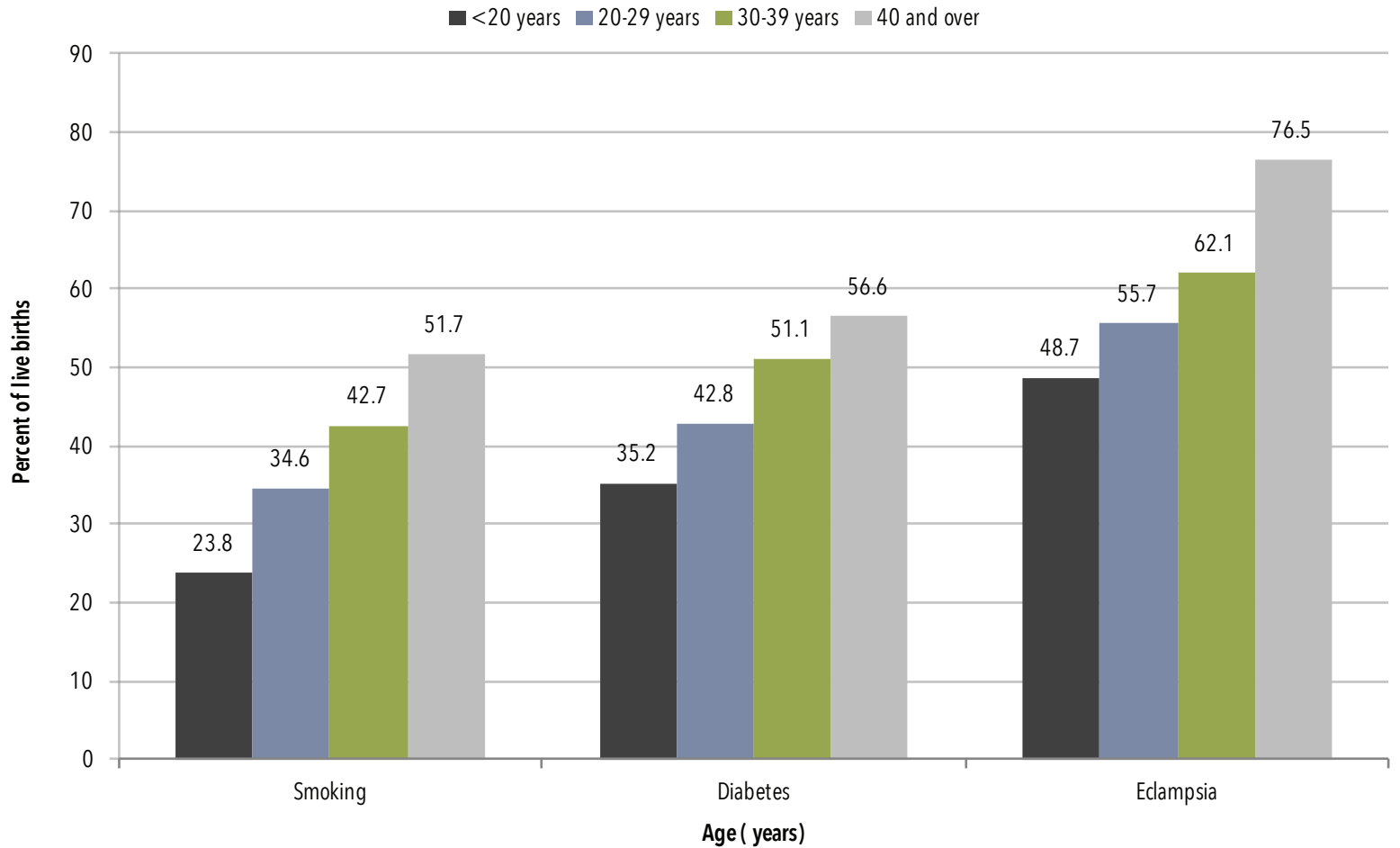


Table 13: C-Section Rates by Mother's Age and Risk Indicators during Pregnancy, Oklahoma, 2011 - 2015

Age (years)	Risk Indicators		
	Smoking	Diabetes	Eclampsia
<20 years	23.8	35.2	48.7
20-29 years	34.6	42.8	55.7
30-39 years	42.7	51.1	62.1
40 and over	51.7	56.6	76.5

PREGNANCY ASSOCIATED INDICATORS

Figure 14: C-Section Rates by Mother's Race and Risk Indicators during Pregnancy, Oklahoma, 2011 - 2015

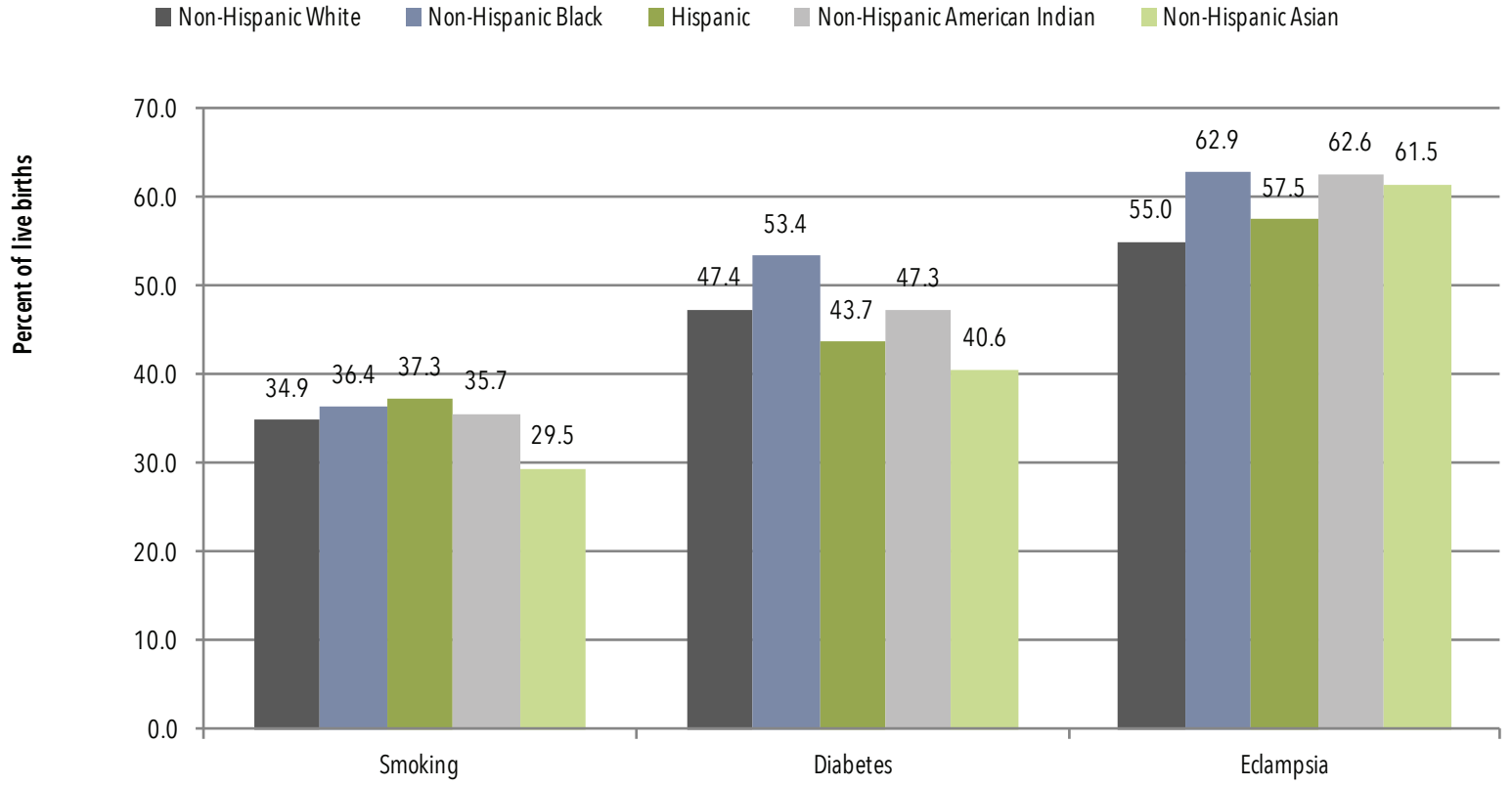


Table 14: C-Section Rates by Mother's Race and Risk Indicators during Pregnancy, Oklahoma, 2011 - 2015

	Smoking	Diabetes	Eclampsia
Non-Hispanic White	34.9	47.4	55.0
Non-Hispanic Black	36.4	53.4	62.9
Hispanic	37.3	43.7	57.5
Non-Hispanic American Indian	35.7	47.3	62.6
Non-Hispanic Asian	29.5	40.6	61.5

PREGNANCY ASSOCIATED INDICATORS

Figure 15: C-Section Rates by Infections Present During Pregnancy, Oklahoma, 2011 - 2015

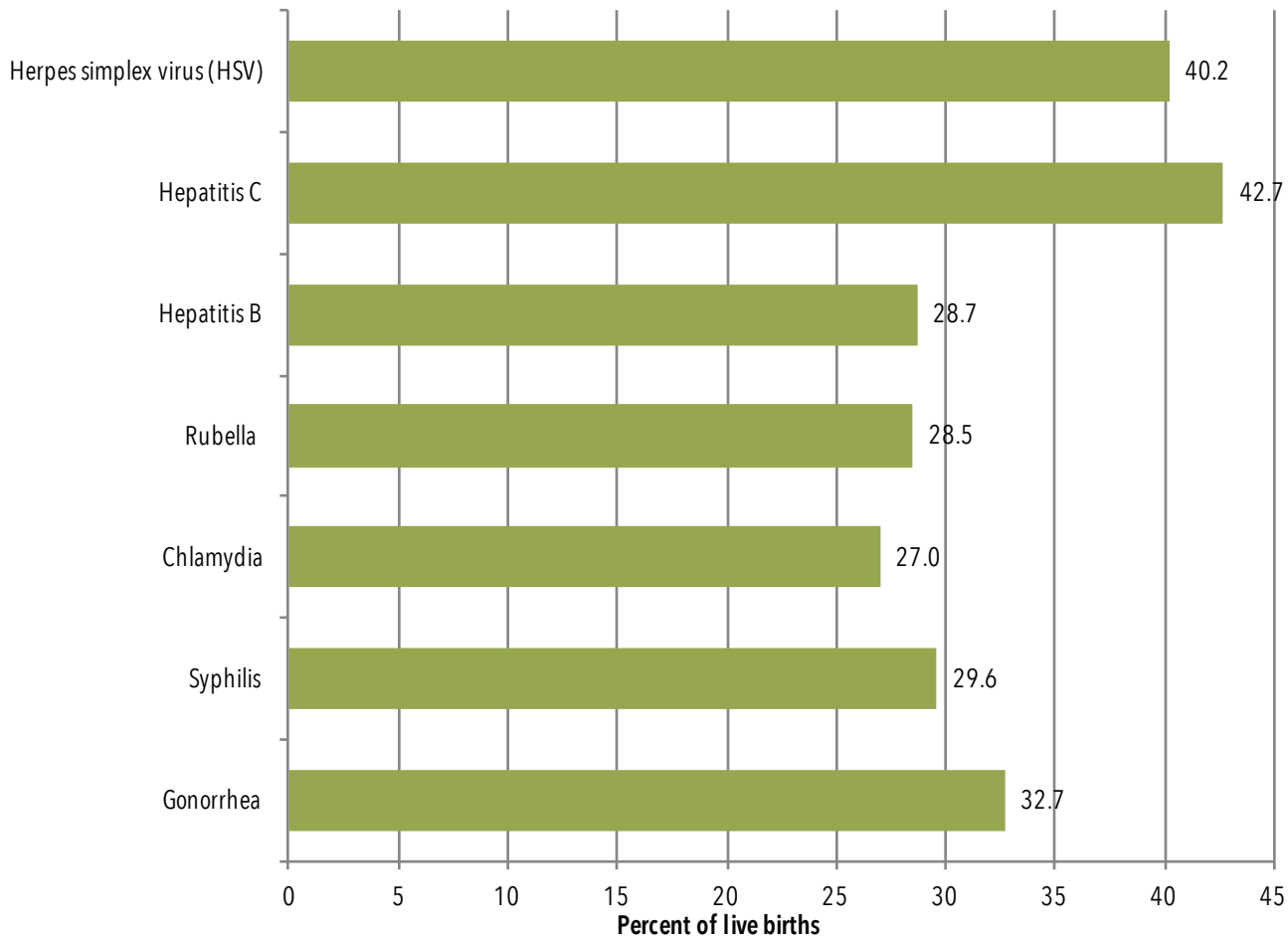


Table 15: C-Section Rates by Infections Present During Pregnancy, Oklahoma, 2011 - 2015

Infections	C-Section Rate (%)
Gonorrhea	32.7
Syphilis	29.6
Chlamydia	27.0
Rubella	28.5
Hepatitis B	28.7
Hepatitis C	42.7
Herpes simplex virus (HSV)	40.2

PREGNANCY ASSOCIATED INDICATORS

Figure 16: C-Section Rates by Mother's Age and Infections Present during Pregnancy, Oklahoma, 2011 - 2015

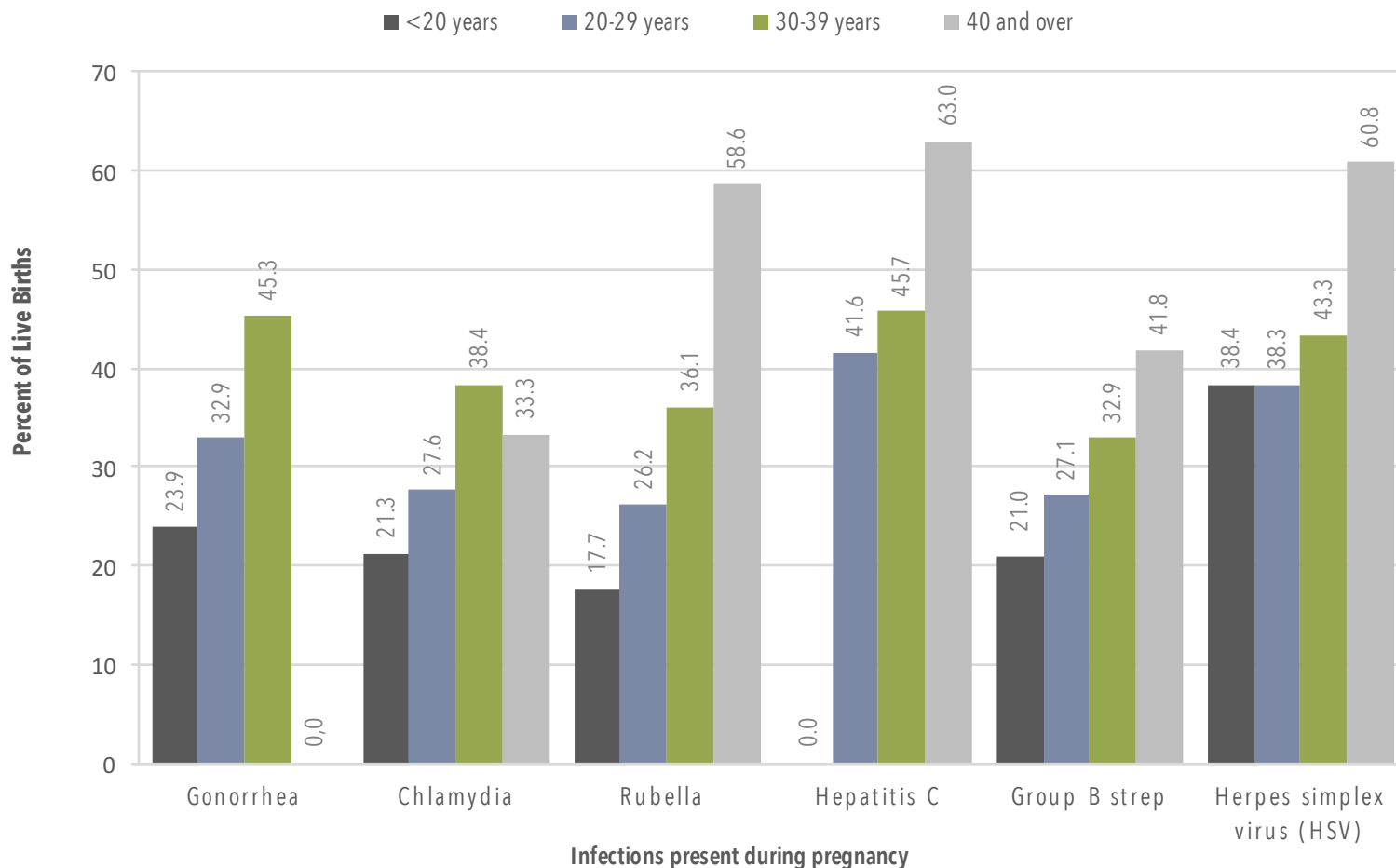


Table 16: C-Section Rates by Mother's Age and Infections Present during Pregnancy, Oklahoma, 2011 - 2015

Age (years)	Gonorrhea	Chlamydia	Rubella	Hepatitis C	Group B strep	Herpes simplex virus (HSV)
<20 years	23.9	21.3	17.7	-	21.0	38.4
20-29 years	32.9	27.6	26.2	41.6	27.1	38.3
30-39 years	45.3	38.4	36.1	45.7	32.9	43.3
40 and over	-	33.3	58.6	63.0	41.8	60.8

Note: Rates have been suppressed due to small cell sizes (< 5)

Source: Oklahoma State Department of Health (OSDH), Maternal and Child Health (MCH) standard birth file 2011 - 2015

PREGNANCY ASSOCIATED INDICATORS

Figure 17: C-Section Rates by Mother's Race and Infections Present during Pregnancy, Oklahoma, 2011 - 2015

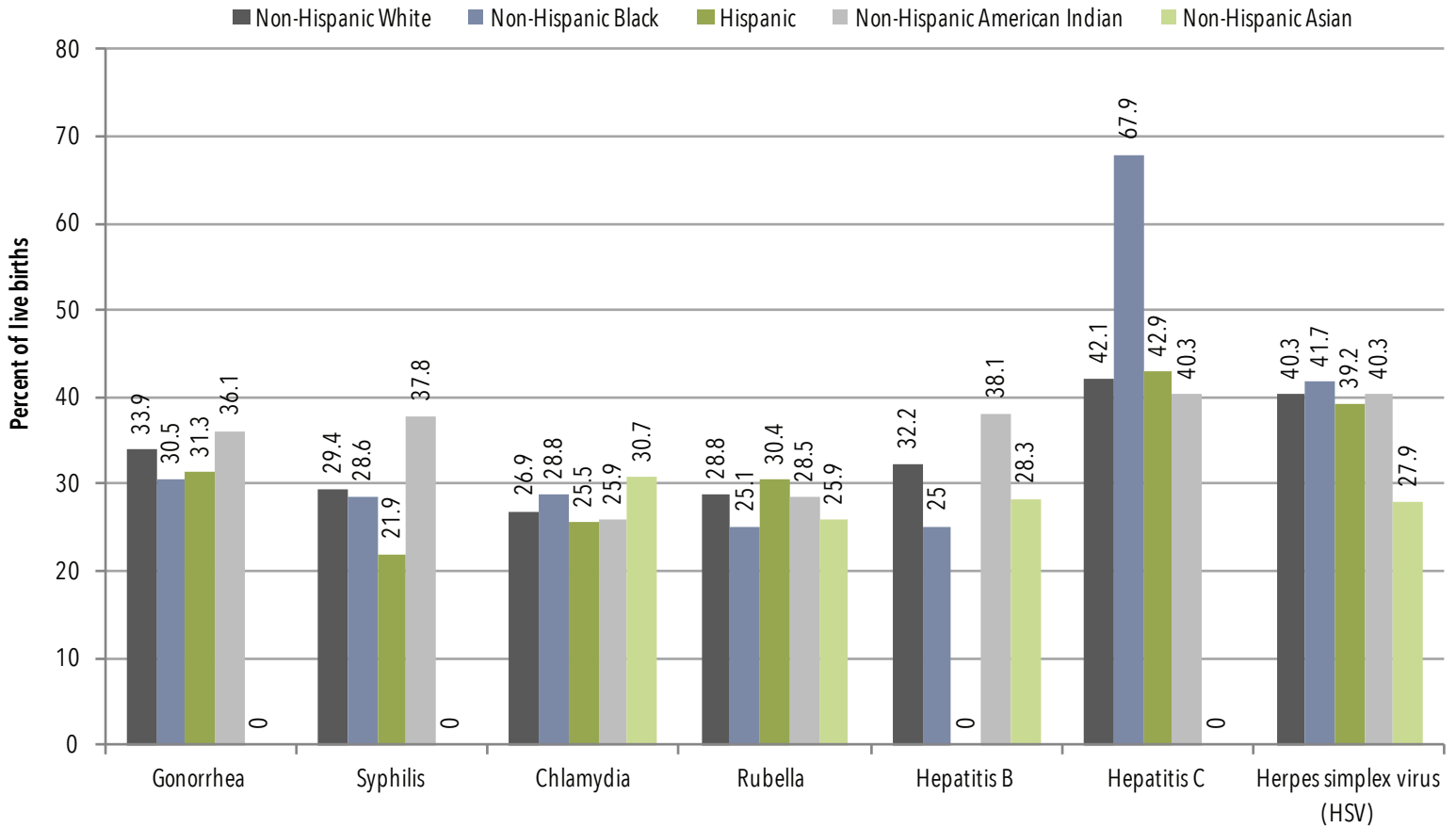


Table 17: C-Section Rates by Mother's Race and Infections Present during Pregnancy, Oklahoma, 2011 - 2015

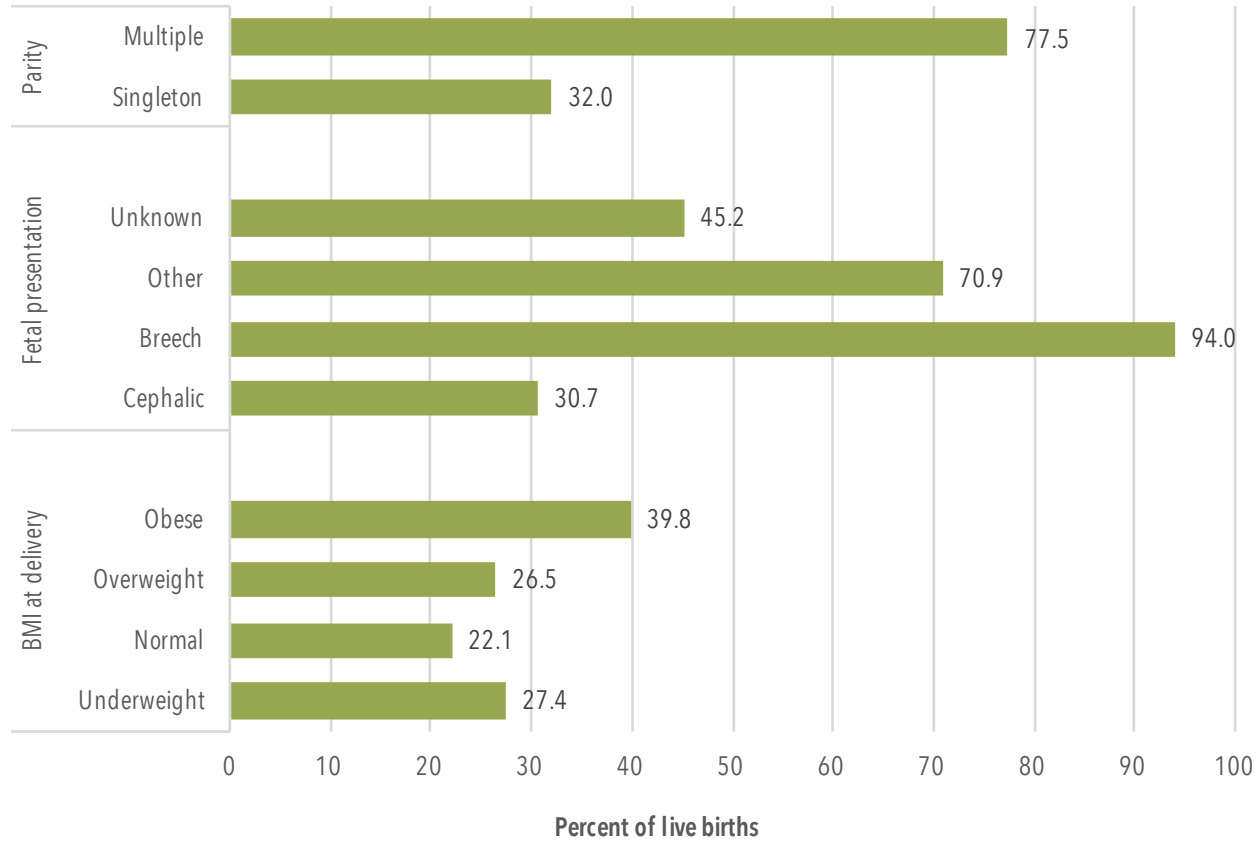
Race and Hispanic Origin	Gonorrhea	Syphilis	Chlamydia	Rubella	Hepatitis B	Hepatitis C	Herpes simplex virus (HSV)
Non-Hispanic White	33.9	29.4	26.9	28.8	32.2	42.1	40.3
Non-Hispanic Black	30.5	28.6	28.8	25.1	25	67.9	41.7
Hispanic	31.3	21.9	25.5	30.4	-	42.9	39.2
Non-Hispanic American Indian	36.1	37.8	25.9	28.5	38.1	40.3	40.3
Non-Hispanic Asian	-	-	30.7	25.9	28.3	-	27.9

Note: Rates have been suppressed due to small cell sizes (< 5)

Source: Oklahoma State Department of Health (OSDH), Maternal and Child Health (MCH) standard birth file 2011 - 2015

PREGNANCY ASSOCIATED INDICATORS

Table 18: C-Section Rates by Risk Indicators at Delivery, Oklahoma, 2011 - 2015



Indicators at delivery		C-Section Rate (%)
Parity	Multiple	77.5
	Singleton	32.0
Fetal presentation	Unknown	45.2
	Other	70.9
	Breech	94.0
	Cephalic	30.7
BMI at delivery	Obese	39.8
	Overweight	26.5
	Normal	22.1
	Underweight	27.4

Figure 18: C-Section Rates by Risk Indicators at Delivery, Oklahoma, 2011 - 2015

PREGNANCY ASSOCIATED INDICATORS

Figure 19: C-Section Rates by Mother's Age and Risk Indicators at Delivery, Oklahoma, 2011 - 2015

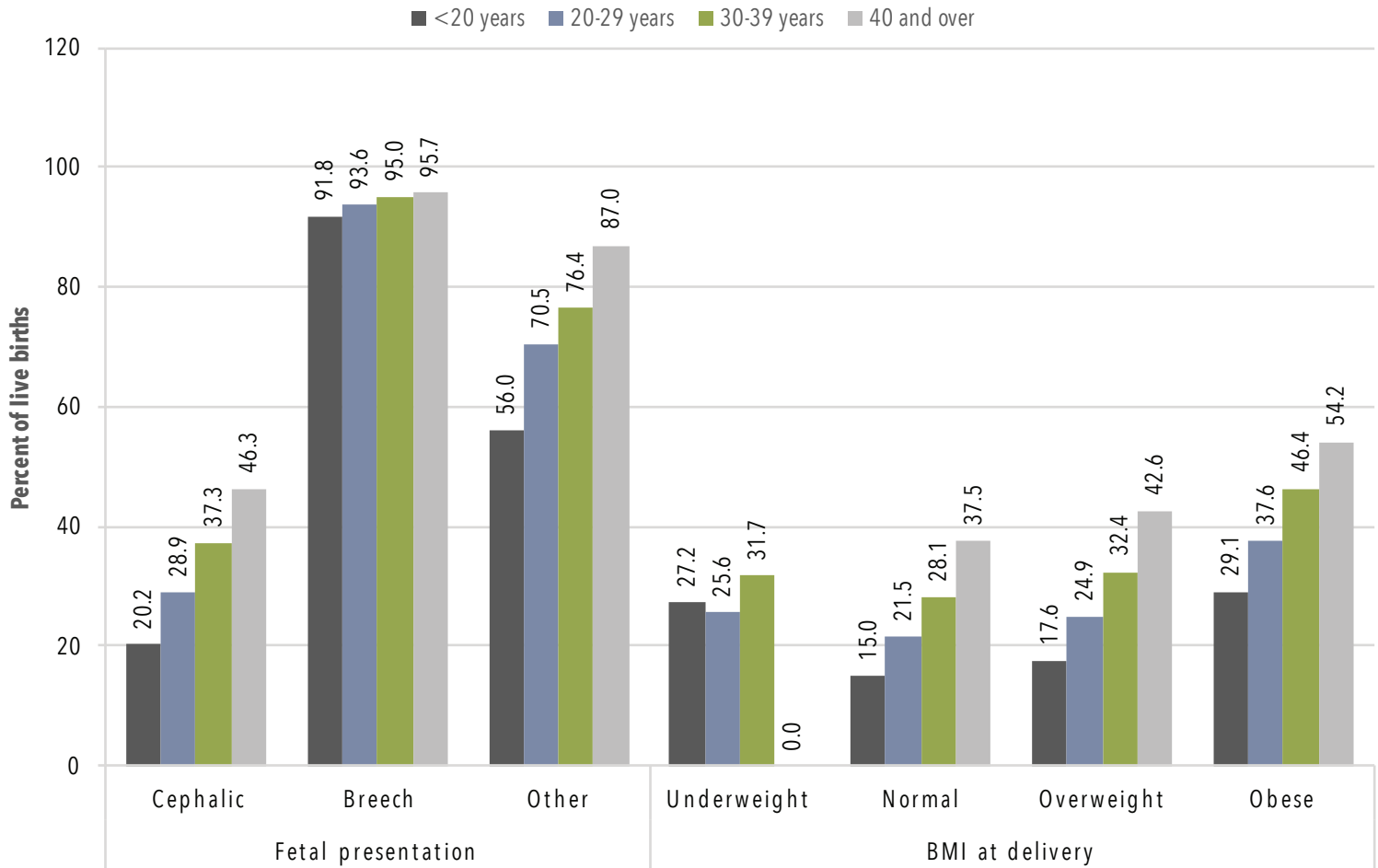


Table 19: C-Section Rates by Mother's Age and Risk Indicators at Delivery, Oklahoma, 2011 - 2015

Age (years)	Fetal presentation			BMI at delivery			
	Cephalic	Breech	Other	Underweight	Normal	Overweight	Obese
<20 years	20.2	91.8	56.0	27.2	15.0	17.6	29.1
20-29 years	28.9	93.6	70.5	25.6	21.5	24.9	37.6
30-39 years	37.3	95.0	76.4	31.7	28.1	32.4	46.4
40 and over	46.3	95.7	87.0	-	37.5	42.6	54.2

Note: Rates have been suppressed due to small cell sizes (< 5)

Source: Oklahoma State Department of Health (OSDH), Maternal and Child Health (MCH) standard birth file 2011 - 2015

PREGNANCY ASSOCIATED INDICATORS

Table 20: C-Section Rates by Mother's Race and Risk Indicators at Delivery, Oklahoma, 2011 - 2015

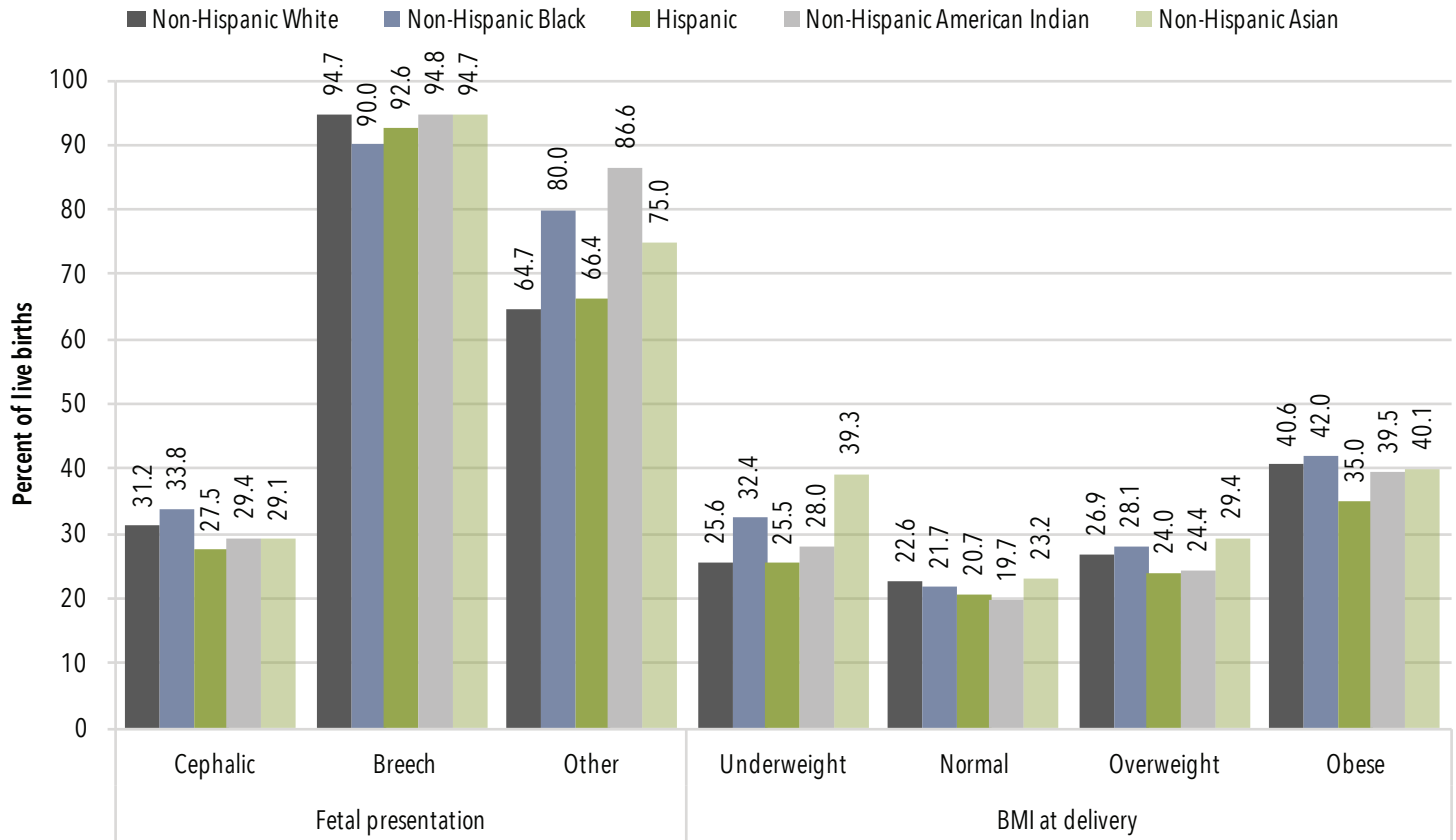


Table 20: C-Section Rates by Mother's Race and Risk Indicators at Delivery, Oklahoma, 2011 - 2015

Race and Hispanic Origin	Fetal presentation			BMI at delivery			
	Cephalic	Breech	Other	Underweight	Normal	Overweight	Obese
Non-Hispanic White	31.2	94.7	64.7	25.6	22.6	26.9	40.6
Non-Hispanic Black	33.8	90.0	80.0	32.4	21.7	28.1	42.0
Hispanic	27.5	92.6	66.4	25.5	20.7	24.0	35.0
Non-Hispanic American Indian	29.4	94.8	86.6	28.0	19.7	24.4	39.5
Non-Hispanic Asian	29.1	94.7	75.0	39.3	23.2	29.4	40.1

BIRTH INDICATORS

Figure 21: C-Section Rates by Completed Gestational Age, Oklahoma, 2011 - 2015

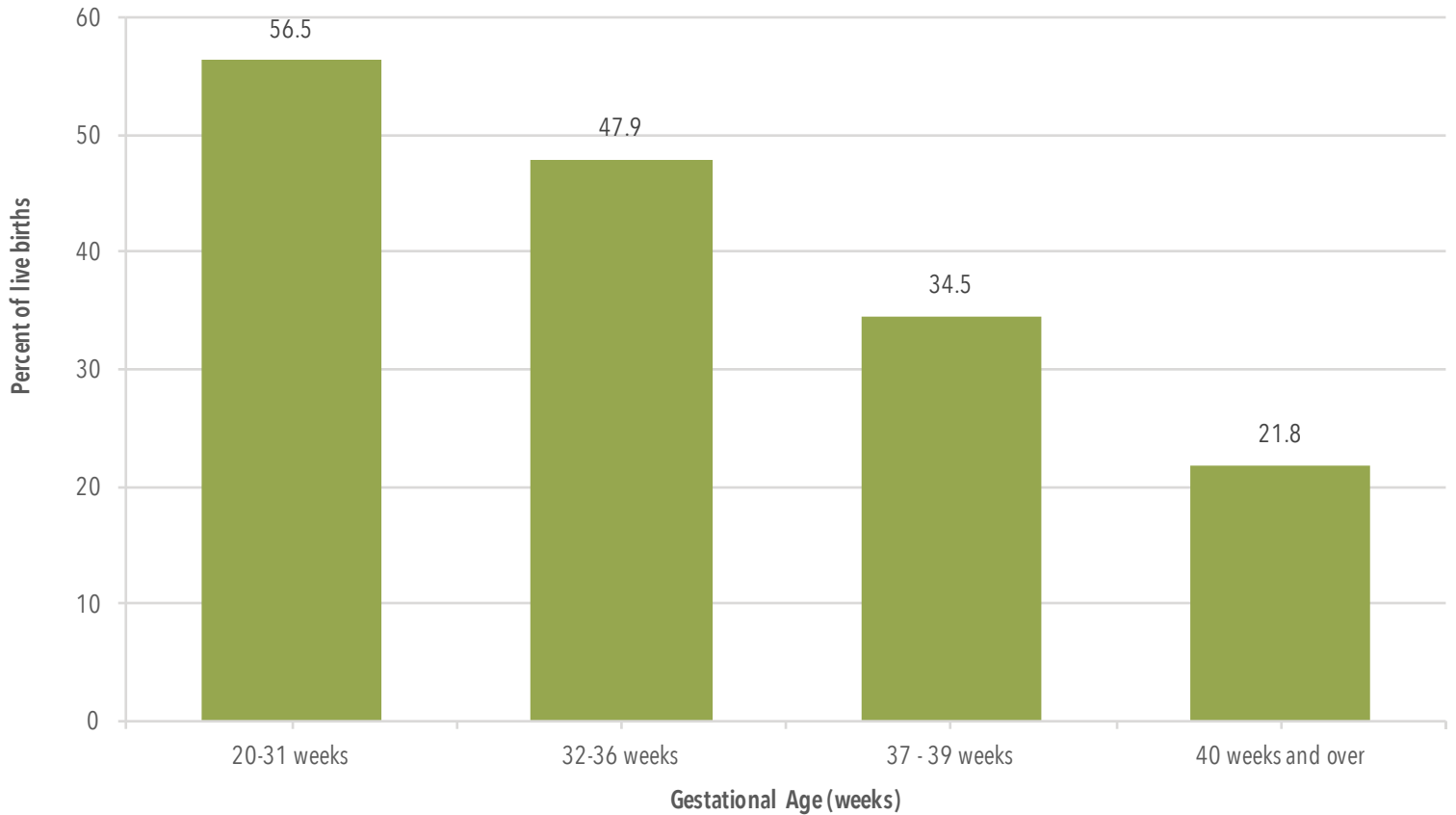


Table 21: C-Section Rates by Completed Gestational Age, Oklahoma, 2011 - 2015

Gestational Age (weeks)	C-Section Rate (%)
20-31 weeks	56.5
32-36 weeks	47.9
37 - 39 weeks	34.5
40 weeks and over	21.8

BIRTH INDICATORS

Figure 22: C-Section Rates by Mother's Age and Completed Gestational Age, Oklahoma, 2011 - 2015

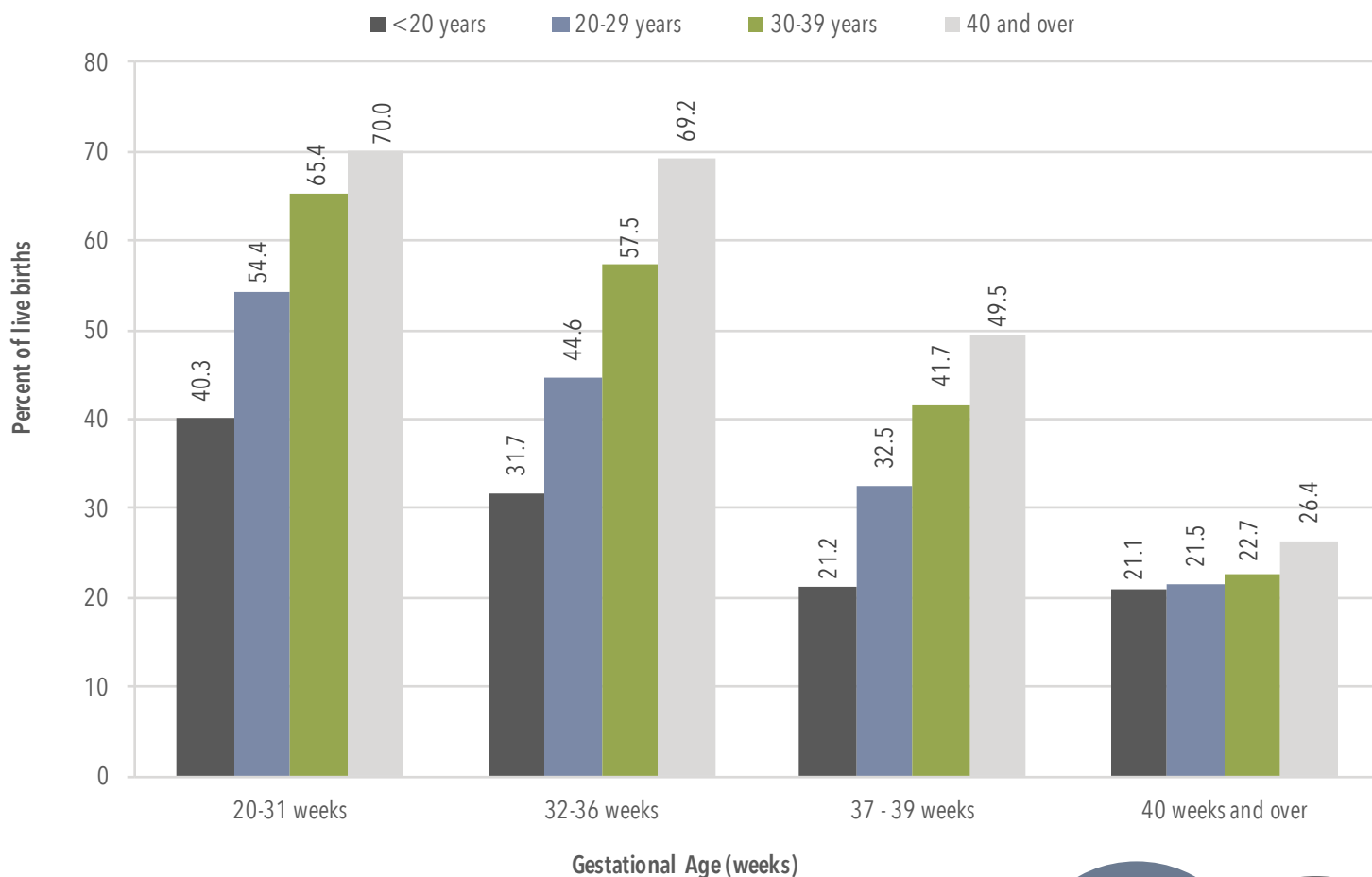


Table 22: C-Section Rates by Mother's Age and Completed Gestational Age, Oklahoma, 2011 - 2015

Age (years)	20-31 weeks	32-36 weeks	37 - 39 weeks	40 weeks and over
<20 years	40.3	31.7	21.2	21.1
20-29 years	54.4	44.6	32.5	21.5
30-39 years	65.4	57.5	41.7	22.7
40 and over	70.0	69.2	49.5	26.4

BIRTH INDICATORS

Figure 23: C-Section Rates by Mother's Race and Completed Gestational Age, Oklahoma, 2011 - 2015

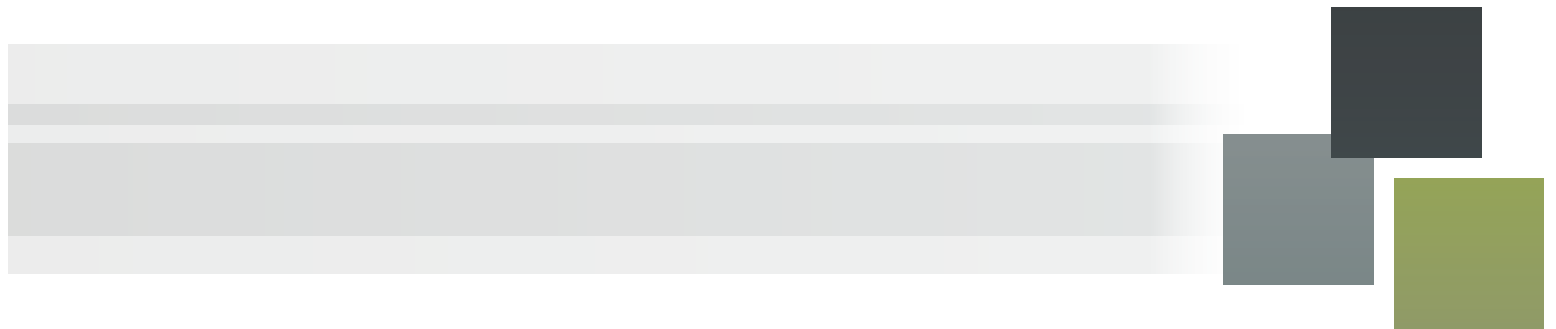
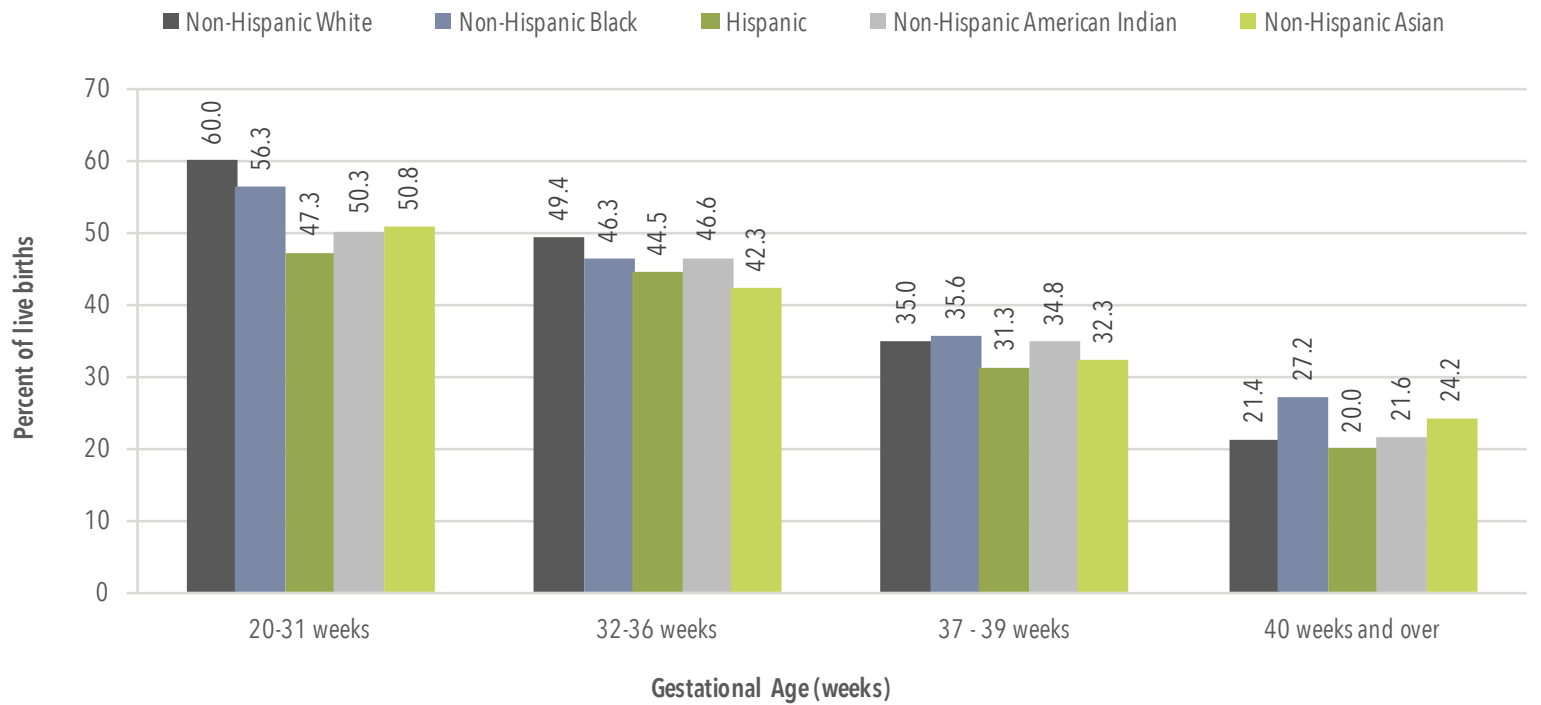


Table 23: C-Section Rates by Mother's Race and Completed Gestational Age, Oklahoma, 2011 - 2015

Race and Hispanic Origin	20-31 weeks	32-36 weeks	37 - 39 weeks	40 weeks and over
Non-Hispanic White	60.0	49.4	35.0	21.4
Non-Hispanic Black	56.3	46.3	35.6	27.2
Hispanic	47.3	44.5	31.3	20.0
Non-Hispanic American Indian	50.3	46.6	34.8	21.6
Non-Hispanic Asian	50.8	42.3	32.3	24.2

BIRTH INDICATORS

Figure 24: C-Section Rates by Birth Weight of Infant, Oklahoma, 2011 - 2015

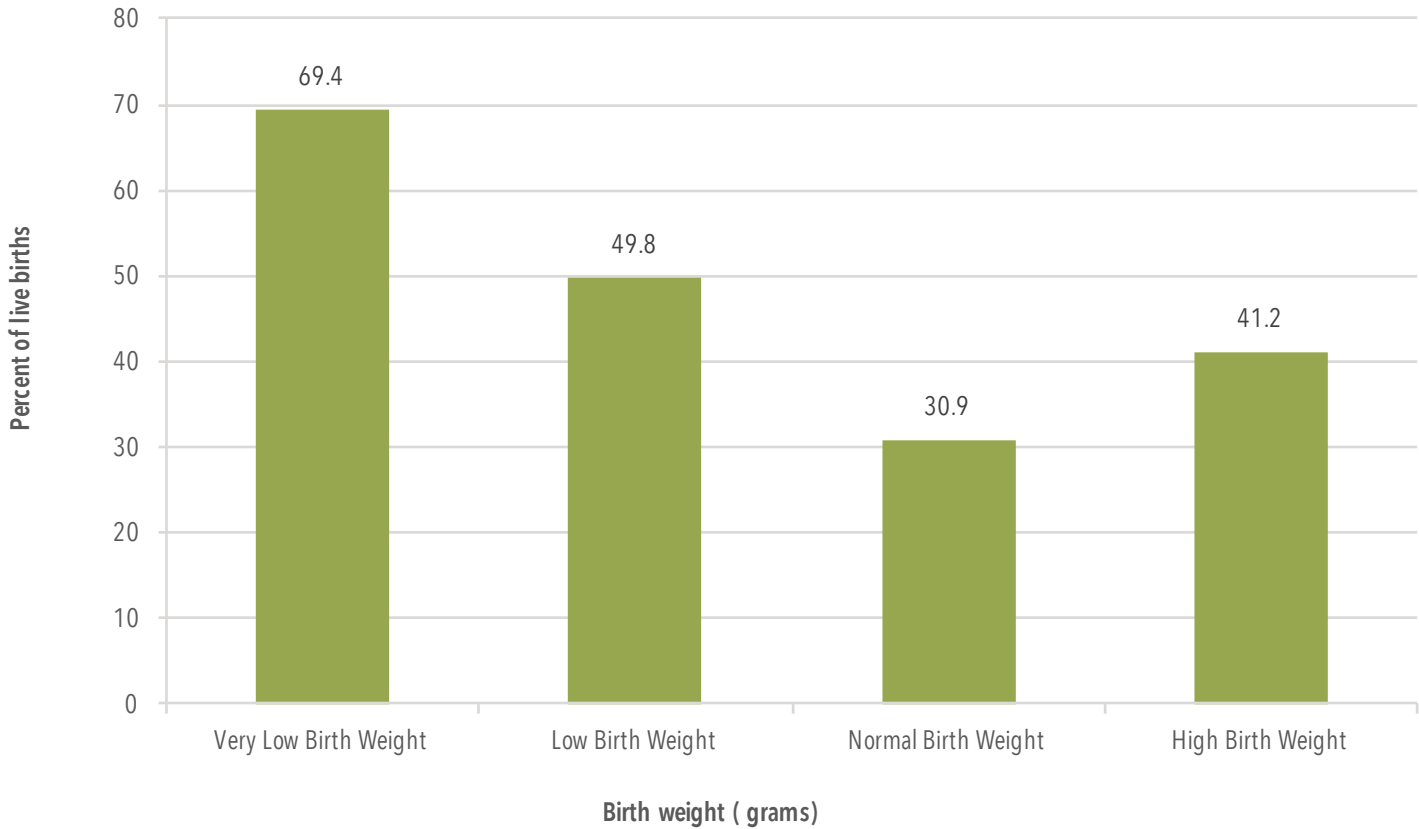


Table 24: C-Section Rates by Birth Weight of Infant, Oklahoma, 2011 - 2015

Birth Weight	C-Section Rate (%)
Very Low Birth Weight	69.4
Low Birth Weight	49.8
Normal Birth Weight	30.9
High Birth Weight	41.2



BIRTH INDICATORS

Figure 25: C-Section Rates by Mother's Age and Birth Weight of Infant, Oklahoma, 2011 - 2015

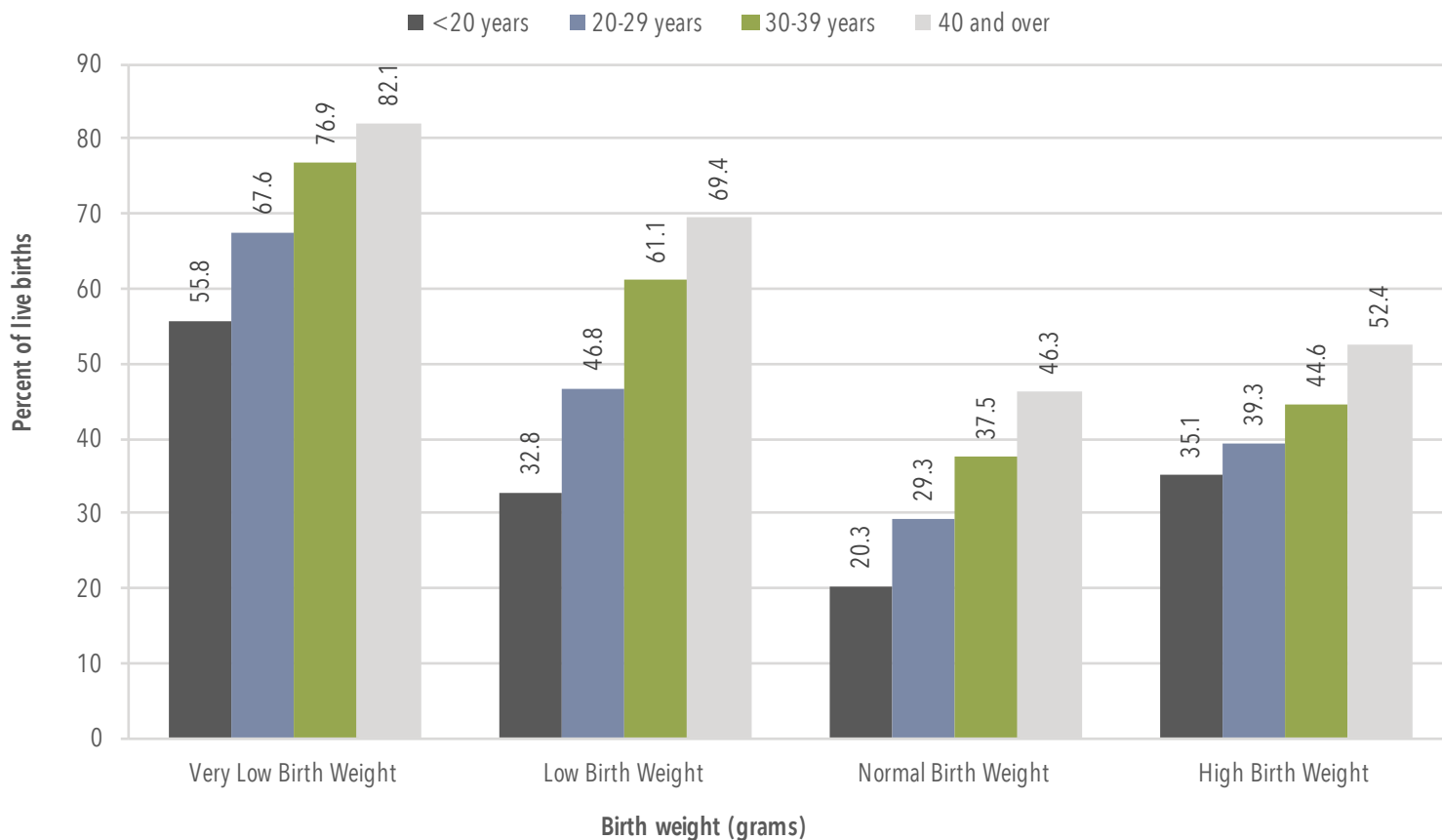


Table 25: C-Section Rates by Mother's Age and Birth Weight of Infant, Oklahoma, 2011 - 2015

Age (years)	Very Low Birth Weight	Low Birth Weight	Normal Birth Weight	High Birth Weight
<20 years	55.8	32.8	20.3	35.1
20-29 years	67.6	46.8	29.3	39.3
30-39 years	76.9	61.1	37.5	44.6
40 and over	82.1	69.4	46.3	52.4

BIRTH INDICATORS

Figure 26: C-Section Rates by Mother's Race and Birth Weight of Infant, Oklahoma, 2011 - 2015

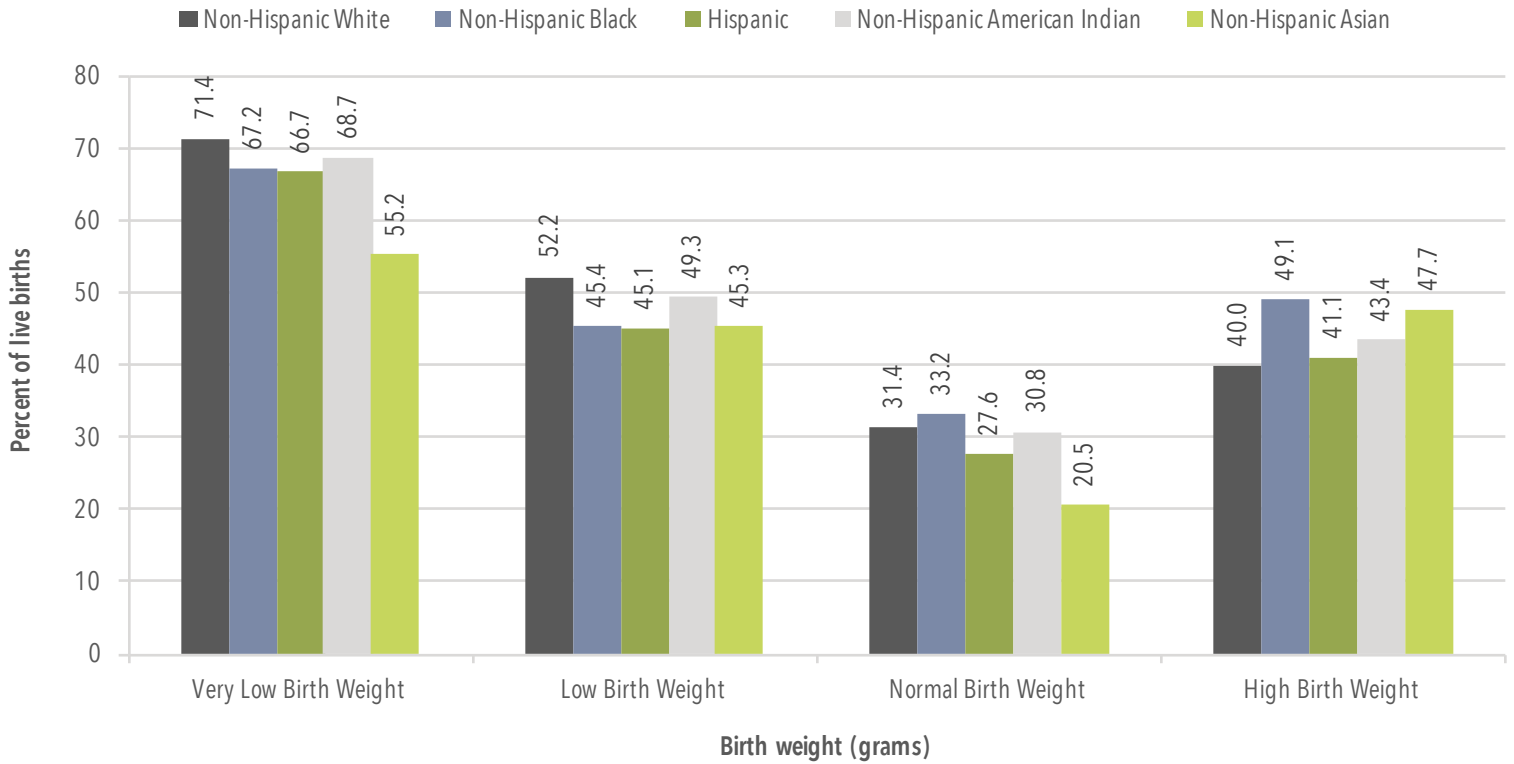
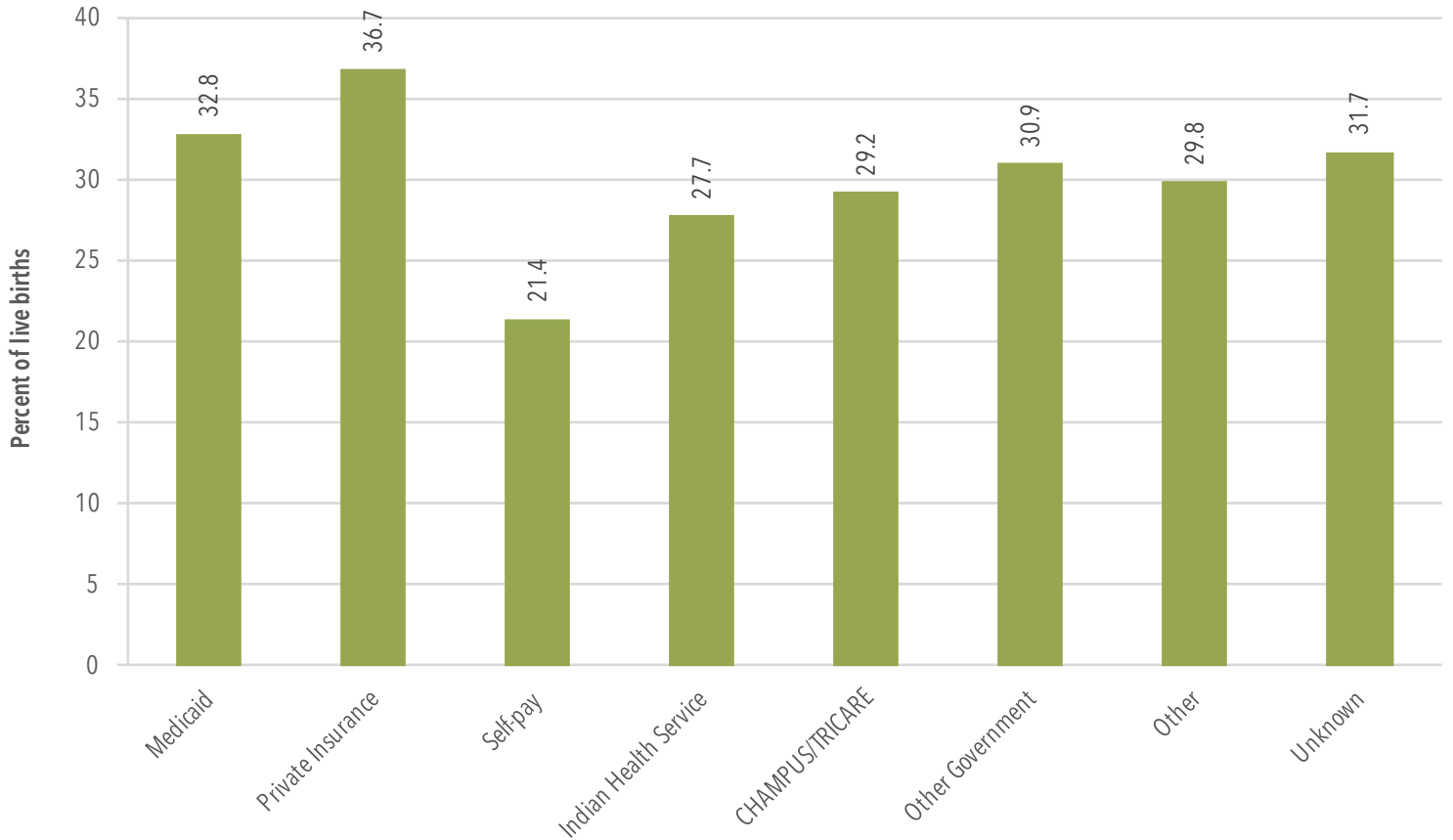


Table 26: C-Section Rates by Mother's Race and Birth Weight of Infant, Oklahoma, 2011 - 2015

Race and Hispanic Origin	Very Low Birth Weight	Low Birth Weight	Normal Birth Weight	High Birth Weight
Non-Hispanic White	71.4	52.2	31.4	40.0
Non-Hispanic Black	67.2	45.4	33.2	49.1
Hispanic	66.7	45.1	27.6	41.1
Non-Hispanic American Indian	68.7	49.3	30.8	43.4
Non-Hispanic Asian	55.2	45.3	20.5	47.7

BIRTH INDICATORS

Figure 27: C-Section Rates by Primary Source of Payment for Delivery, Oklahoma, 2011 - 2015



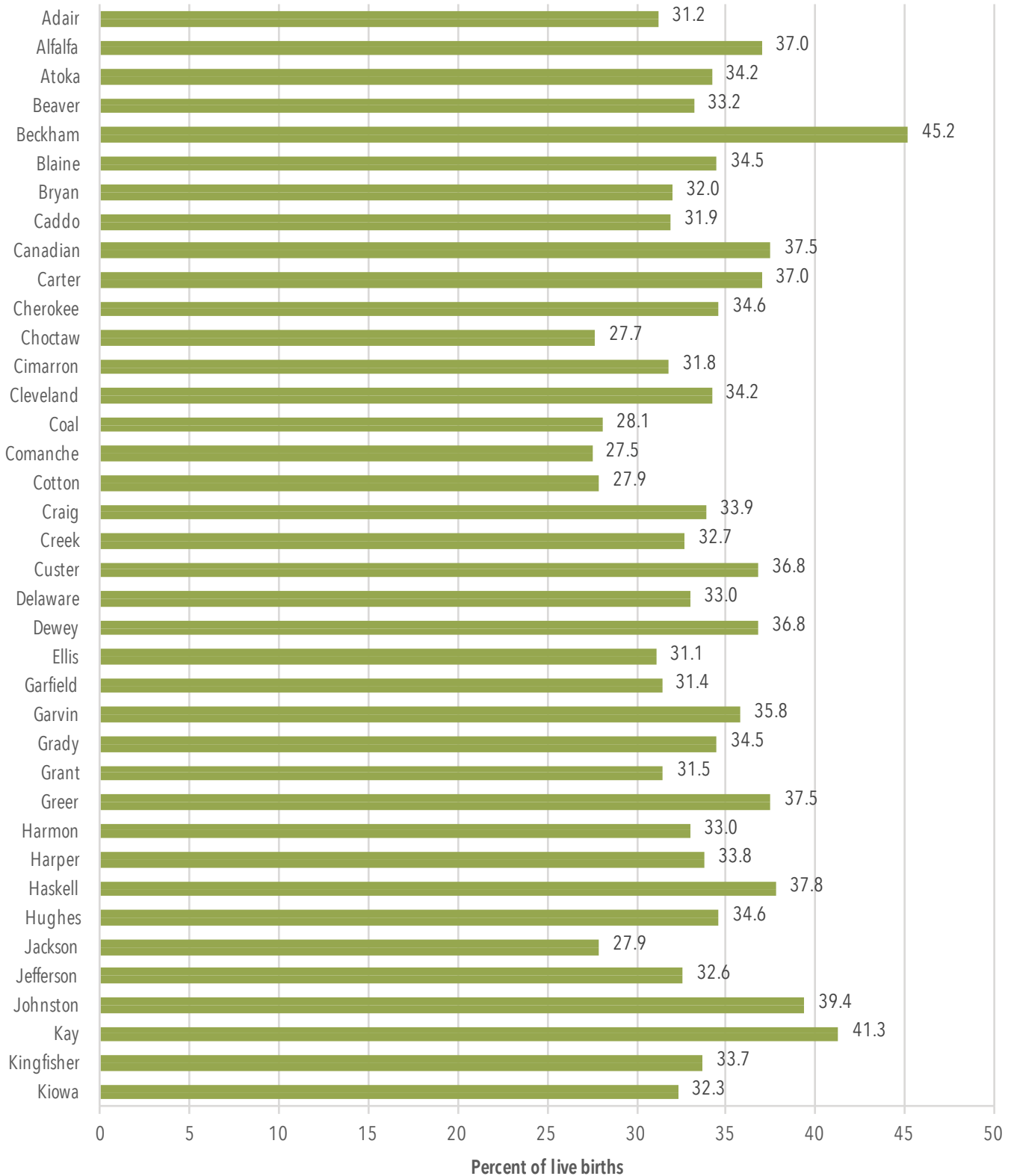
Principal source of payment	C-Section Rate (%)
Medicaid	32.8
Private Insurance	36.7
Self-pay	21.4
Indian Health Service	27.7
CHAMPUS/TRICARE	29.2
Other Government	30.9
Other	29.8
Unknown	31.7

Table 27: C-Section Rates by Primary Source of Payment for Delivery, Oklahoma, 2011 - 2015



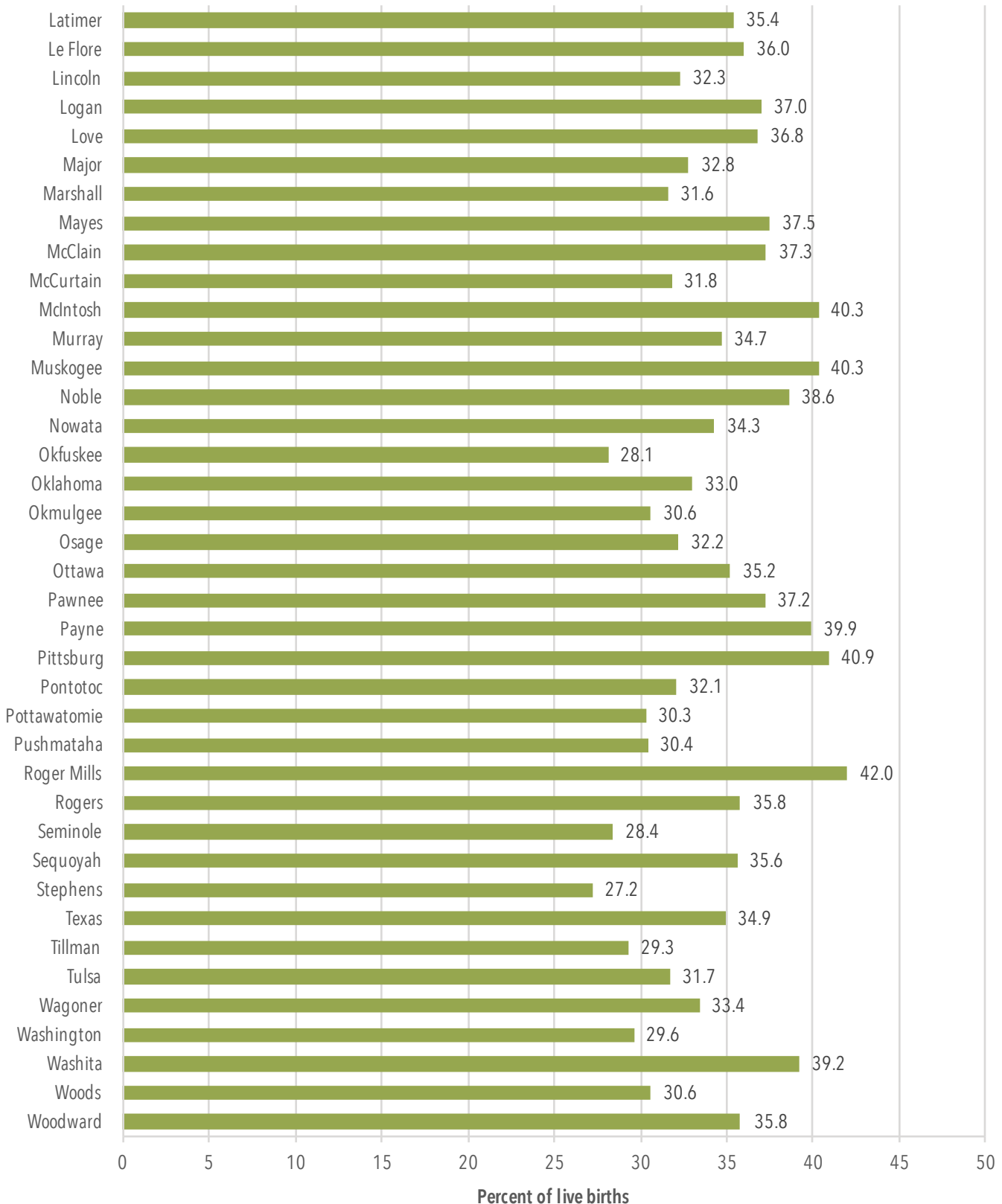
BIRTH INDICATORS - COUNTY OF RESIDENCE

Figure 28: C-Section Rates by Mother's County of Residence, Oklahoma, 2011 - 2015



BIRTH INDICATORS - COUNTY OF RESIDENCE

Figure 28: C-Section Rates by Mother's County of Residence, Oklahoma, 2011 - 2015



BIRTH INDICATORS - COUNTY OF RESIDENCE

Table 28: C-Section Rates by Mother's County of Residence , Oklahoma, 2011 – 2015

County of Residence	C-Section Rate (%)	County of Residence	C-Section Rate (%)	County of Residence	C-Section Rate (%)
Adair	31.2	Grant	31.5	Pottawatomie	30.3
Alfalfa	37.0	Greer	37.5	Pontotoc	32.1
Atoka	34.2	Harmon	33.0	Pittsburg	40.9
Beaver	33.2	Harper	33.8	Payne	39.9
Beckham	45.2	Haskell	37.8	Pawnee	37.2
Blaine	34.5	Hughes	34.6	Ottawa	35.2
Bryan	32.0	Jackson	27.9	Osage	32.2
Caddo	31.9	Jefferson	32.6	Okmulgee	30.6
Canadian	37.5	Johnston	39.4	Oklahoma	33.0
Carter	37.0	Kay	41.3	Okfuskee	28.1
Cherokee	34.6	Kingfisher	33.7	Nowata	34.3
Choctaw	27.7	Kiowa	32.3	Noble	38.6
Cimarron	31.8	Woodward	35.8	Muskogee	40.3
Cleveland	34.2	Woods	30.6	Murray	34.7
Coal	28.1	Washita	39.2	McIntosh	40.3
Comanche	27.5	Washington	29.6	McCurtain	31.8
Cotton	27.9	Wagoner	33.4	McClain	37.3
Craig	33.9	Tulsa	31.7	Mayes	37.5
Creek	32.7	Tillman	29.3	Marshall	31.6
Custer	36.8	Texas	34.9	Major	32.8
Delaware	33.0	Stephens	27.2	Love	36.8
Dewey	36.8	Sequoyah	35.6	Logan	37.0
Ellis	31.1	Seminole	28.4	Lincoln	32.3
Garfield	31.4	Rogers	35.8	Le Flore	36.0
Garvin	35.8	Roger Mills	42.0	Latimer	35.4
Grady	34.5	Pushmataha	30.4		

BIRTH INDICATORS - FACILITY OF BIRTH

Table 29: C-Section Rates by Birthing Facility, Oklahoma, 2011 - 2015

Birth Facility	C-Sections	All Births	C-Section Rate (%)
ALLIANCEHEALTH CLINTON	30	124	24.2
ALLIANCEHEALTH DEACONESS	99	299	33.1
ALLIANCEHEALTH DURANT	120	354	33.9
ALLIANCEHEALTH MIDWEST	70	251	27.9
ALLIANCEHEALTH PONCA CITY	87	238	36.6
ALLIANCEHEALTH WOODWARD	40	144	27.8
BAILEY MEDICAL CENTER	111	421	26.4
CHEROKEE NATION HASTINGS HOSP	172	839	20.5
CHICKASAW NATION MEDICAL CENTER	225	794	28.3
CHOCTAW NATION HEALTH CARE CENTER	114	469	24.3
CLAREMORE INDIAN HOSPITAL	86	291	29.6
COMANCHE COUNTY MEMORIAL HOSPITAL	330	1,209	27.3
CRAIG GENERAL HOSPITAL	13	54	24.1
DEACONESS HOSPITAL	142	471	30.2
DUNCAN REGIONAL HOSPITAL, INC.	153	593	25.8
EASTAR HEALTH SYSTEM	299	751	39.8
EASTERN OKLAHOMA MEDICAL CENTER	36	103	35.0
GRADY MEMORIAL HOSPITAL	47	169	27.8
GREAT PLAINS REGIONAL	152	359	42.3
GROVE GENERAL HOSPITAL	102	317	32.2
HILLCREST HOSPITAL CLAREMORE	244	645	37.8
HILLCREST HOSPITAL SOUTH	394	1,431	27.5
HILLCREST HOSPITAL/CUSHING	78	219	35.6

BIRTH INDICATORS - FACILITY OF BIRTH

Table 29: C-Section Rates by Birthing Facility, Oklahoma, 2011 – 2015

Birth Facility	C-Sections	All Births	C-Section Rate (%)
INTEGRIS BAPTIST MEDICAL INCORPORATED	1,072	2,799	38.3
INTEGRIS BAPTIST REGIONAL HEALTH CENTER	119	331	36.0
INTEGRIS BASS BAPTIST HEALTH CENTER	290	1,023	28.4
INTEGRIS CANADIAN VALLEY REGIONAL	267	844	31.6
INTEGRIS CLINTON REGIONAL HOSPITAL	65	164	39.6
INTEGRIS HEALTH EDMOND	154	534	28.8
INTEGRIS SOUTHWEST MEDICAL CENTER	54	140	38.6
JACKSON CO MEMORIAL HOSPITAL	109	431	25.3
JANE PHILLIPS MEDICAL CENTER	174	581	30.0
LAKESIDE WOMEN HOSPITAL	477	1,433	33.3
MCALESTER REGIONAL HOSP	194	425	45.7
MCCURTAIN MEMORIAL HOSPITAL	63	212	29.7
MEDICAL CTR. OF S.E. OKLA	161	587	27.4
MEMORIAL HOSPITAL (STILWELL)	21	42	50.0
MEMORIAL HOSPITAL OF TEXAS COUNTY	59	205	28.8
MERCY HEALTH CENTER	1,283	3,226	39.8
MERCY HOSPITAL ADA, INC.	163	531	30.7
MERCY HOSPITAL ARDMORE	294	868	33.9
MIDWEST REGIONAL MEDICAL CENTER	78	316	24.7
NEWMAN MEMORIAL HOSP	8	32	25.0
NORMAN REGIONAL HEALTH PLEX	878	2,670	32.9
NORTHEASTERN HEALTH SYSTEMS - TAHLEQUAH	111	275	40.4
OSU MEDICAL CENTER	123	398	30.9
OU CHILDREN'S HOSPITAL	1,544	4,685	33.0

BIRTH INDICATORS - FACILITY OF BIRTH

Table 29: C-Section Rates by Birthing Facility, Oklahoma, 2011 – 2015

Birth Facility	C-Sections	All Births	C-Section Rate (%)
OU MEDICAL CENTER EDMOND	82	290	28.3
PEGGY V HELMERICH WOMEN'S HEALTH CENTER	873	3,014	29.0
PONCA CITY MEDICAL CENTER	127	312	40.7
REYNOLDS ARMY HOSPITAL	119	432	27.6
SOUTHWEST MEDICAL CENTER	44	110	40.0
SOUTHWESTERN MEDICAL CENTER	143	403	35.5
ST ANTHONY HOSPITAL	329	1,252	26.3
ST ANTHONY SHAWNEE HOSPITAL	235	814	28.9
ST FRANCIS HOSPITAL	1,510	4,073	37.1
ST FRANCIS HOSPITAL SOUTH	361	1,187	30.4
ST JOHN - OWASSO	153	512	29.9
ST JOHN MEDICAL CENTER	806	2,307	34.9
ST MARYS REGIONAL MEDICAL CENTER	102	351	29.1
STILLWATER MEDICAL CENTER	322	912	35.3
SW MEDICAL CENTER OF OKLAHOMA	409	1,118	36.6
WEATHERFORD REGIONAL	52	160	32.5
WOODWARD REGIONAL HOSPITAL	65	193	33.7

BIRTH INDICATORS

RISK-ADJUSTED C-SECTION RATES OKLAHOMA HOSPITAL INPATIENT DATA 2010 - 2013

One of the commonly reported performance measures among maternity health care providers is the rate of C-Sections. Large variations observed in the C-Section rates among providers are due to variations in medical necessity of the patients or for reasons other than medical necessity. Risk-adjustment of the C-Section rates allow for explanation of the high percentage of the variation in the rates using patient demographics and risk factors. Risk adjusted C-Section rates allow users to compare quality and cost across providers as well as show differences in rankings and the inappropriate use of this procedure.

For this report, the hospital inpatient discharge data for years 2010 – 2013 were used. The inpatient discharge database includes all inpatient discharges from hospitals licensed by the state of Oklahoma. The following factors were adjusted:

Patient Demographics:

Age
Race
Marital Status

Patient Medical Risk Factors (ICD9):

Disorders of Placenta	641.0x, 641.1x, 641.2x
Mild Pre-Eclampsia	642.41-642.44
Severe Pre-Eclampsia	642.51-642.54
Previous C-Section	654.21
Fetal distress	656.31
Oligohydramnios	658.0x
Premature rupture of membrane	658.1x, 658.2x
Abnormal fetal heart beat	659.71
Cord abnormality	663.0x, 663.1x, 663.5x
Obstruction	660.01, 660.11
Malpresentation	652
LGA (Large for Gestational Age)	766

RISK-ADJUSTED C-SECTION RATES

Table 30: Risk-Adjusted C-Section Rates- Oklahoma Hospital Inpatient Discharge Data 2010-2013

Hospital	Actual C-Section Rate	Risk-Adjusted C-Section Rate
Arbuckle Memorial Hospital	0.0	11.0
Bailey Medical Center	22.3	29.2
Comanche County Memorial Hospital	28.8	35.0
Craig General Hospital	33.6	33.4
Deaconess Hospital	37.0	35.5
Duncan Regional Hospital	26.3	32.0
EASTAR Health System	42.2	35.7
EASTAR Health System East	72.5	61.5
Eastern Oklahoma Medical Center	40.5	42.7
Elkview General Hospital	16.7	24.8
EPIC Medical Center	0.0	10.5
Grady Memorial Hospital	30.6	30.9
Great Plains Regional Medical Center	49.4	41.3
Harper County Community Hospital	40.0	35.7
Hillcrest Hospital Claremore	38.9	31.3
Hillcrest Hospital Cushing	40.2	33.6
Hillcrest Hospital South	31.7	34.9
Hillcrest Medical Center	32.4	39.2
INTEGRIS Baptist Medical Center	38.0	33.4
INTEGRIS Baptist Regional Health Ctr.	32.7	31.9
INTEGRIS Bass Baptist Health Center	30.2	34.3
INTEGRIS Blackwell Regional Hospital	36.2	36.1
INTEGRIS Canadian Valley Regional Hospital	38.0	32.3
INTEGRIS Clinton Regional Hospital	30.9	31.9

RISK-ADJUSTED C-SECTION RATES

Table 30: Risk-Adjusted C-Section Rates- Oklahoma Hospital Inpatient Discharge Data 2010-2013

Hospital	Actual C-Section Rate	Risk-Adjusted C-Section Rate
INTEGRIS Grove General Hospital	37.5	33.7
INTEGRIS Health Edmond	34.5	31.8
INTEGRIS Mayes County Medical Center	35.8	38.5
INTEGRIS Southwest Medical Center	37.1	35.9
Jackson County Memorial Hospital	27.3	29.0
Jane Phillips Medical Center	28.9	36.5
Jefferson County Hospital	0.0	11.8
Lakeside Women's Hospital	36.9	34.0
McAlester Regional Health Center	46.8	38.2
McCurtain Memorial Hospital	31.2	28.6
Medical Center of Southeastern OK	31.3	35.4
Memorial Hospital & Physician Group	0.0	9.7
Memorial Hospital of Stilwell	34.5	30.3
Memorial Hospital of Texas County	35.6	33.3
Mercy Hospital Ada	35.3	35.6
Mercy Hospital Ardmore	35.7	34.8
Mercy Hospital El Reno	28.0	25.0
Mercy Hospital Kingfisher	38.0	31.3
Mercy Hospital Oklahoma City	43.5	37.1
Mercy Hospital Watonga	0.0	13.8
Midwest Regional Medical Center	27.2	29.6
Newman Memorial Hospital	29.2	31.7
NRHS Moore Medical Center	31.2	28.8

RISK-ADJUSTED C-SECTION RATES

Table 30: Risk-Adjusted C-Section Rates- Oklahoma Hospital Inpatient Discharge Data 2010-2013

Hospital	Actual C-Section Rate	Risk-Adjusted C-Section Rate
NRHS Norman Healthplex	36.2	31.7
NRHS Norman Regional Hospital	38.5	32.5
Oklahoma State University Medical Center	31.4	33.5
OU Medical Center	31.0	38.2
OU Medical Center Edmond	27.1	28.9
Pauls Valley General Hospital	36.4	31.2
Physicians Hospital in Anadarko	0.0	37.7
Ponca City Medical Center	42.4	38.9
Purcell Municipal Hospital	27.2	35.4
Saint Francis Hospital	34.4	34.0
Saint Francis Hospital South	28.5	31.2
Southwestern Medical Center	36.4	38.9
St Anthony Hospital	29.7	34.2
St Anthony Shawnee Hospital	25.7	26.2
St John Medical Center	39.2	37.2
St John Owasso	36.2	30.8
St Mary's Regional Medical Center	35.3	33.1
Stillwater Medical Center	39.7	32.6
Tahlequah City Hospital	39.1	34.5
Weatherford Regional Hospital	37.6	33.5
Woodward Regional Hospital	37.6	36.9

TECHNICAL NOTES

1. This report includes both primary and repeat Cesarean Sections (C-Section). Risk indicators included are those known risks identified either through literature review or program area consultation.
2. Cesarean Section (C-Section) rate = $\frac{\text{Total C-Sections} * 100}{\text{Total Live Births}}$
3. Repeat C-Section - Identified from the birth certificate risk indicator as mothers having previous cesarean delivery
4. Body Mass Index (BMI) - $\text{weight (kg)} / [\text{height (m)}]^2$
 - a. Underweight - < 18.5
 - b. Normal - 18.5 - 24.9
 - c. Overweight - 25.0 - 29.9
 - d. Obese - > 30
5. Trimester of Prenatal Care (PNC)
 - a. First Trimester - 1- 3 months
 - b. Second Trimester - 4 - 6 months
 - c. Third Trimester - 7 - 9 months
6. Gestational Age - Obstetric estimate of gestational age
7. Birth Weight
 - a. Very low birth weight - < 1500 grams
 - b. Low birth weight - 1500 - 2499 grams
 - c. Normal birth weight - 2500 - 3999 grams
 - d. High birth weight - > 4000 grams
8. C-Section rates by Facility include all Oklahoma facilities that delivered 30 or more live births in 2015. This table may include facilities that are not all currently licensed as birthing facilities.

DATA SOURCES:

1. Oklahoma Births - Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Vital Statistics 2000 to 2015.
2. OSDH Maternal and Child Health (MCH) standard birth file 2011 - 2015
3. US Vital Statistics data - NCHS Data Brief No. 175, December 2014
4. US Births: Births: Final Data for 2014 - Vol 64 , No 12.
5. US Births: Preliminary Data 2015 - National Vital Statistics data Vol 65 No 3.
6. Hospital Discharge Data - Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Hospital Inpatient Data 2010 - 2013



Maternal and
Child Health Service

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