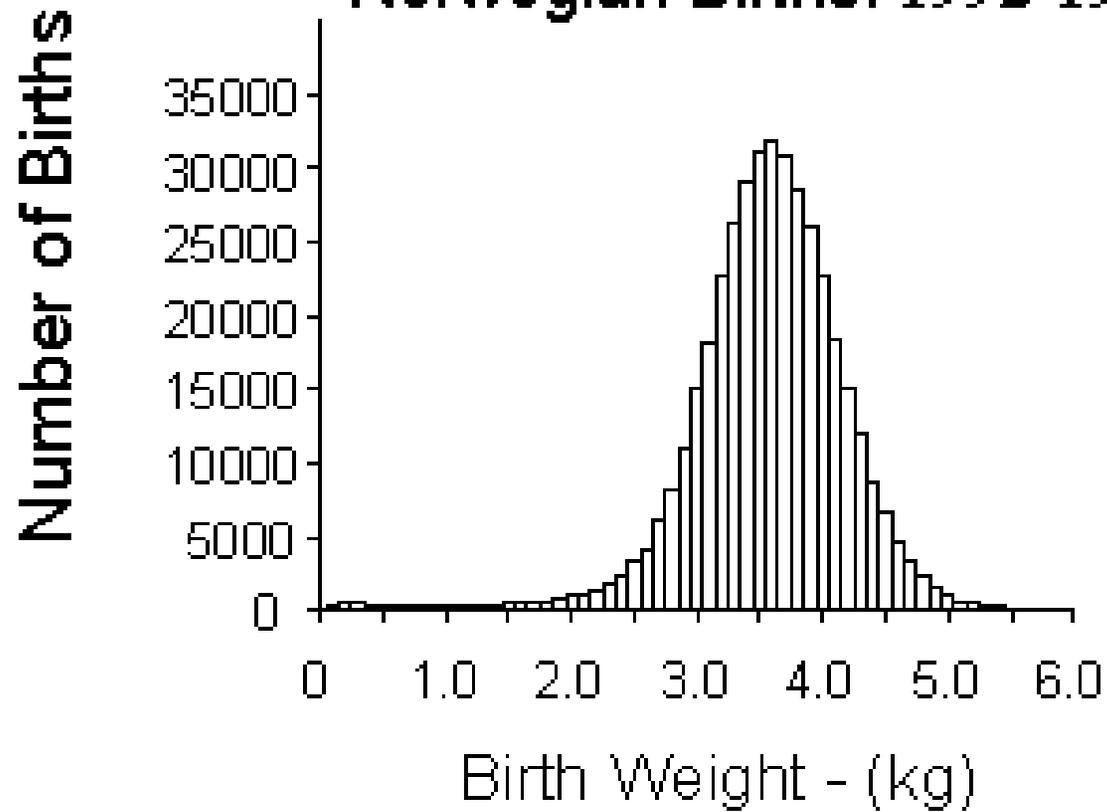


HUMAN BIRTH WEIGHT

1. Variation in birth weight
2. Sources of variation in birth weight
3. Implications of variation in birth wieght

Norwegian Births: 1992-1998



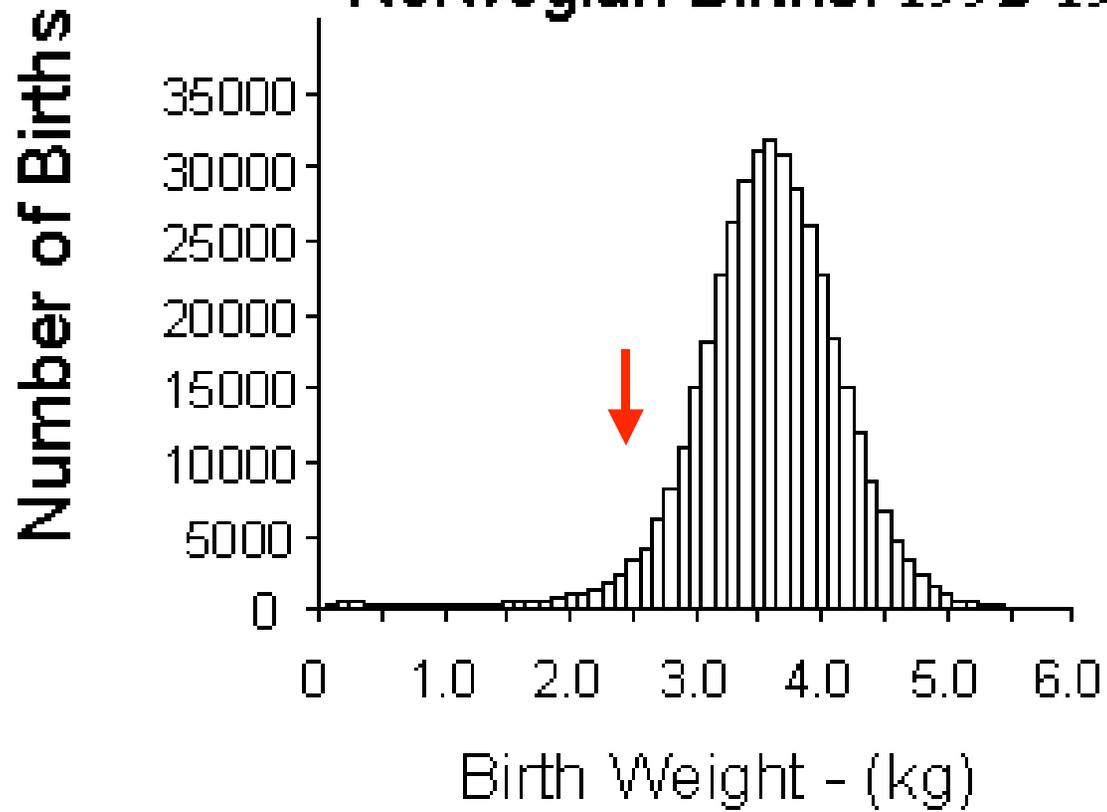
Males: 3625 gms 7lbs 10oz
Females: 3472 gms 7lbs 6oz

Categorizing birth weight

Before 1960s

1. Low Birth Weight or LBW less than 2500gms
= Prematurity
2. All other babies 2500 gms and over
3. Focus was on low birth weight babies because of their increased mortality

Norwegian Births: 1992-1998



Problems with this classification:

- 1. Not all small babies are premature**
- 2. Not all premature babies are small**

World Health Organization 1961 promoted use of "preterm" rather than "premature"

Gestation: time from fertilization to delivery normally 38 weeks (266 days).

Epidemiological studies revealed that full-term babies with low birth weight had higher mortality than full term-babies of normal weight.

New terminology:

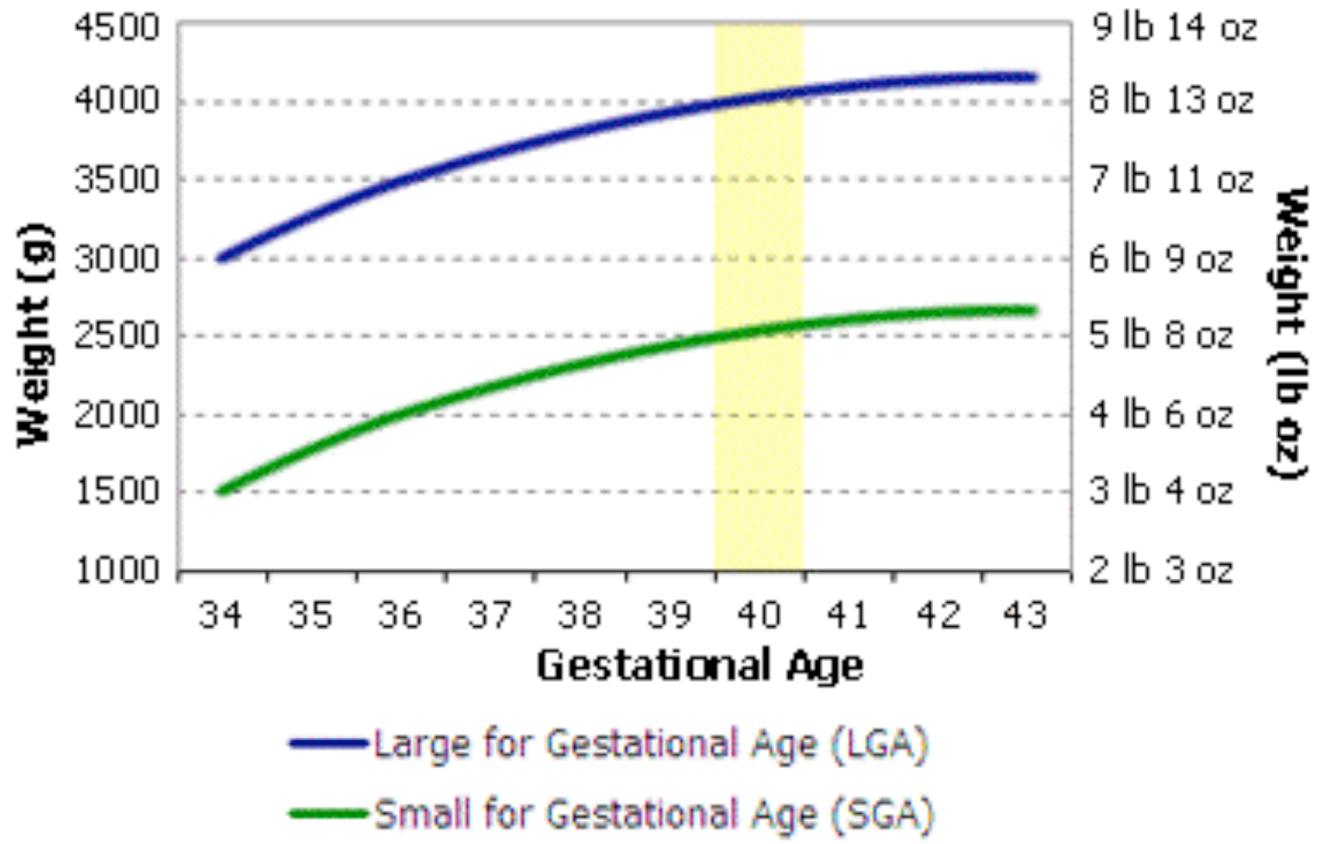
Small for Gestational Age (SGA) (small babies who are not preterm, just below the 10 percentile for GA)

Intrauterine Growth Retardation (IUGR)

_Large for gestational age: Weight is above the 90th percentile at gestational age (**LGA**) > 8lbs 3oz (4000gm)

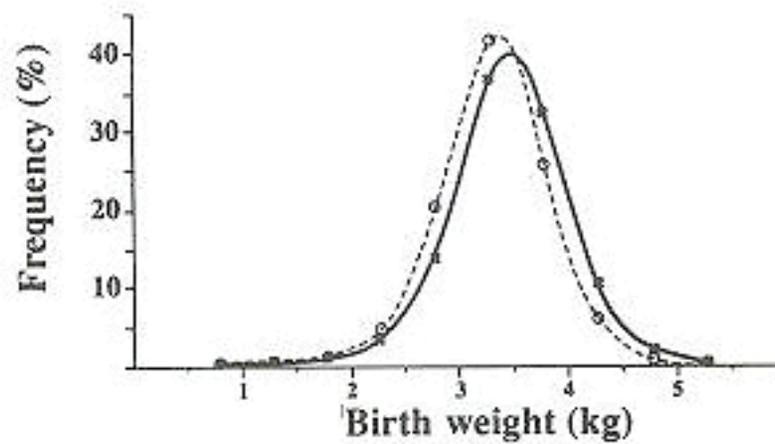
_Appropriate for gestational age: Normal birth weight (**AGA**)

_Small for gestational age: Weight is below the 10th percentile at gestational age (**SGA**) < 5lbs 7oz (2600gm)

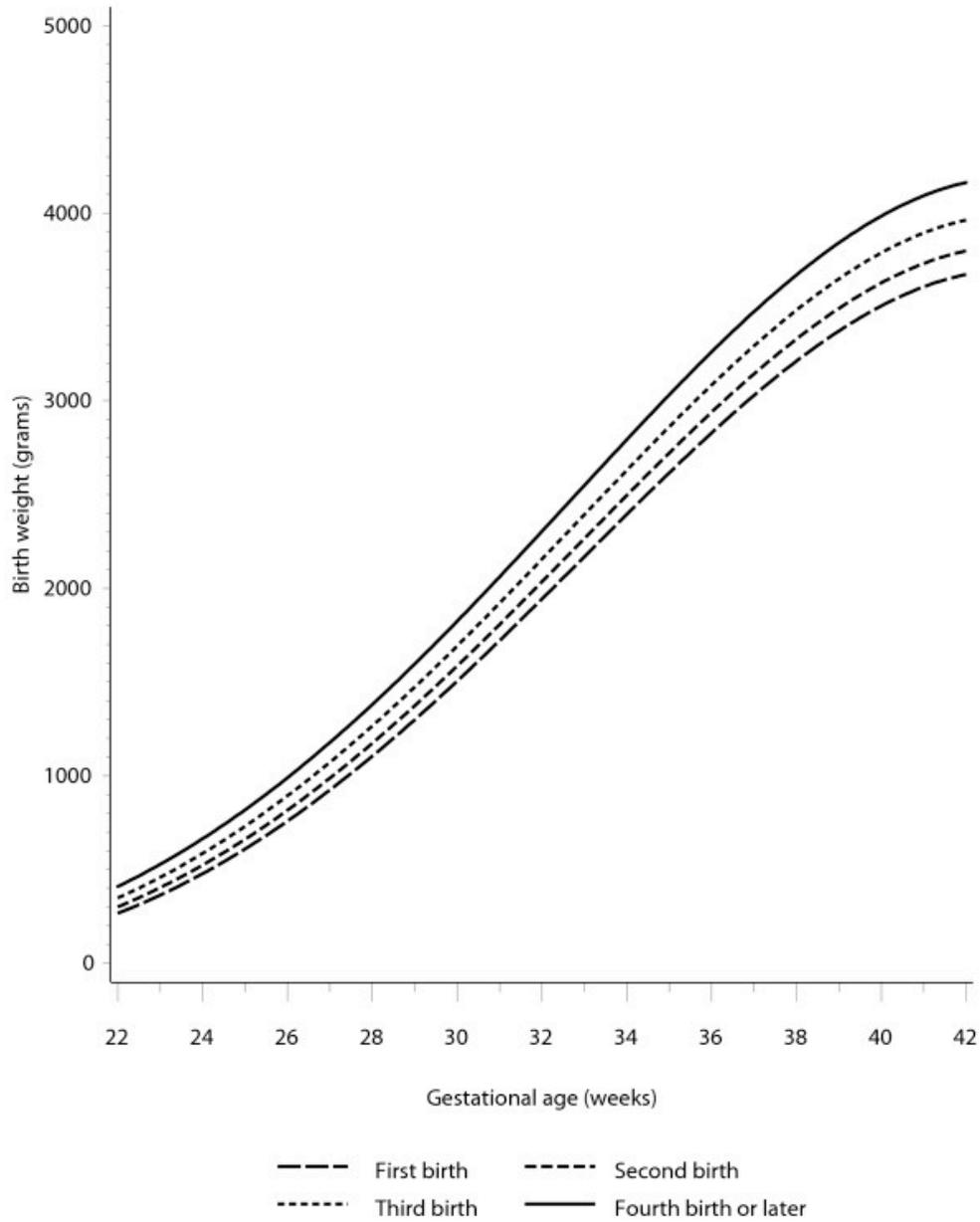


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- 2. Sources of variation in birth weight**
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Influence of altitude on birth weight: Colorado



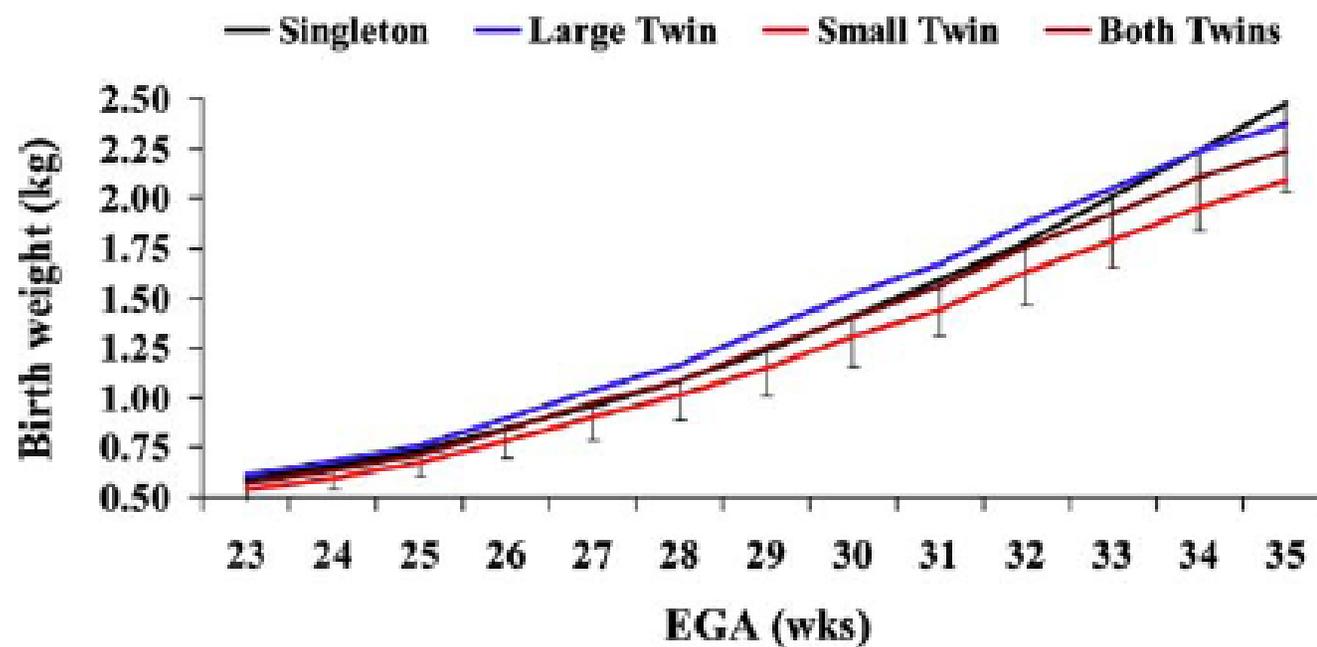
**Increase in
birth weight
with increased
parity**

Plurality (Multiple births)

Singleton birth weight	7lbs 6oz (3356gm)
Twin birth weight	5lbs 10oz (2585gm)
Triplet birth weight	4lbs 4oz (1911gm)

(LBW 5lb8oz (2494gm))

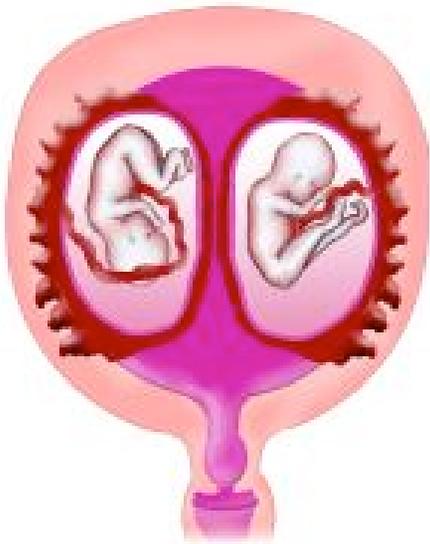
Average Birth Weight Larger Vs Smaller Twin *



Zygoty and placentation

Zygoty: MZ or DZ

Placentation: Features of the placenta



Dizygotic twins with
two amnions, two chorions
or

Monozygotic twins with
Two amnions, two chorions



Monozygotic twins with
Two amnions, one chorion



Monozygotic twins with
One amnion, one chorion

Higher > Lower

Sex of the twins

Same sex: Higher concordance in birth weight

Opposite sex: Higher discordance in birth weight

DZ twins

MM

MF Female twins larger on average than FF twins

FF

Sex of the twins

Same sex: Higher concordance in birth weight

**Opposite sex: Higher discordance in birth weight
Higher prenatal mortality**

Associated with discordance for weight?

Whites	3549
African American	3330
Hispanic	3452
Native American	3523

Heritability of birth weight 74%

Adjusted for sex and term

Effect of environment: First generation of immigrants

Asian immigrant study

Born in Asia: 2946g

First generation UK: 3196g

Gestational diabetes (GDM) in the mother increases

- 1. The risk of a high birth weight baby (LGA)**
- 2. The risk of GDM in subsequent pregnancies**

Factors that can influence birth weight:

Altitude

Sex

Parity

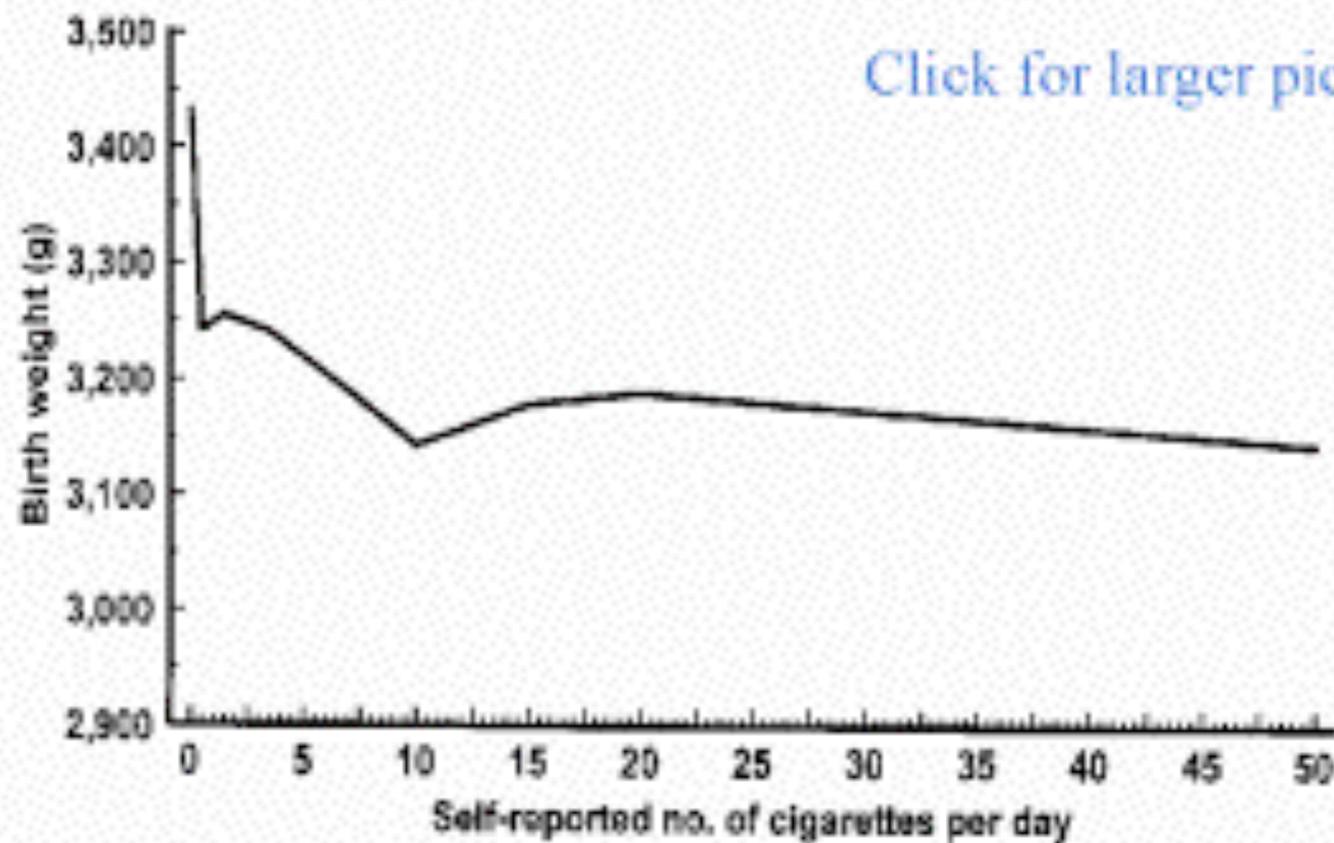
Multiple or single birth

Genetics

Maternal health (GDM)

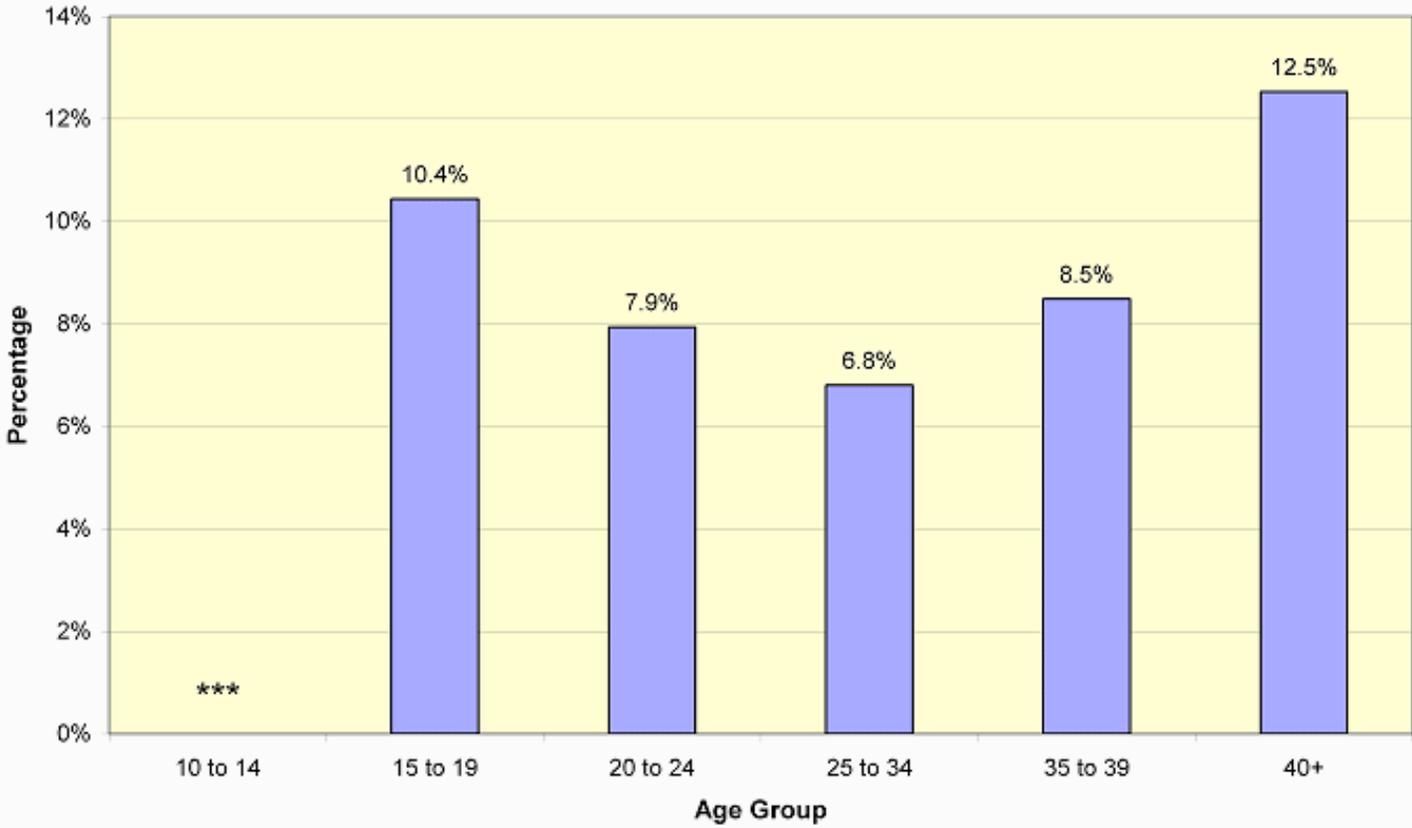
Maternal nutrition (excessive or insufficient weight gain)

Figure 2. Mean adjusted infant birth weight by 3rd trimester smoking



Percentage of Low Birth Weight Babies by Maternal Age

Larimer County, 2000-2004 (Total)



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