Reproductive Health Surveillance

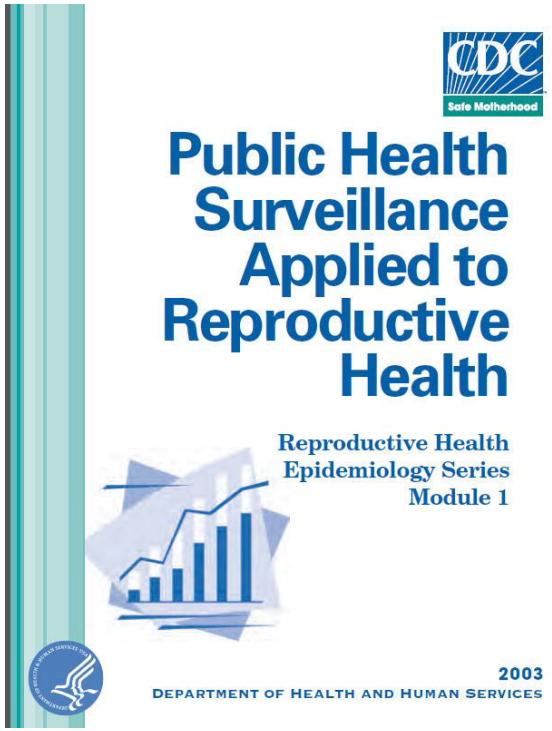
AMY M. BRANUM, CHIEF
REPRODUCTIVE STATISTICS BRANCH/DIVISION OF VITAL STATISTICS
BOARD OF SCIENTIFIC COUNSELORS MEETING
SEPTEMBER 15, 2016

Reproductive health surveillance within RSB

"WHAT DO WE HAVE THAT OTHER'S DON'T… BUT WANT?"

Reproductive health surveillance

- "a component of the health information system that permits the *identification*, *notification*, *quantification* and *determination* of events of reproductive health significance for a *defined period of time* and *specified geographic location*(s) with the goal of orienting appropriate public health measures for disease prevention and health promotion"



A most current example

TIME

LATEST MAGAZINE VIDEOS

7 New Zika Cases Identified in South Florida

HEALTH ZIKA

7 New Zika Cases Identified in South Florida

Sarah Begley @SCBegley | Sept. 6, 2016

One of the cases has sparked concern about a potential new transmission site

Officials identified seven new Zika cases transmitted in South Florida, six of them in the Miami Beach area.

The seventh case has sparked concern about a potential new Zika

Reproductive health events

- Mortality and morbidity related to pregnancy
- Infant mortality and morbidity
- Sexually transmitted and other infections
- Risk behaviors
- Contraceptive practices
- Pregnancy intentions
- Indicators of reproductive health services

Reproductive health events

- Mortality and morbidity related to pregnancy ☑
- Infant mortality and morbidity ☑
- Sexually transmitted and other infections ☑
- Risk behaviors ☑
- Contraceptive practices ☑
- Pregnancy intentions ☑
- Indicators of reproductive health services ☑

Sources of data

- Vital statistics ☑
  - Monitor long-term trends and progress towards public health goals
  - Identify differences in characteristics and outcomes by demographics
  - Assess differences by geography
- Surveys ☑
  - Collect targeted data on disease, behaviors, risk factors, health service

RSB data

- **National Vital Statistics System (birth, linked infant birth and death, fetal death)**
  - Produce annual data files for all vital events reported by jurisdictions
  - 2003 certificate revision allowed expansion of information collected to examine factors such as WIC receipt, infertility treatment use and breastfeeding initiation
- **National Survey of Family Growth (NSFG)**
  - Addresses Sec 306 of Public Health Act ""NCHS shall collect statistics on…family formation, growth, & dissolution."
  - Explain variation in birth rates, monitor risk of HIV and STDs, describe relationships and families
  - Continuous interviewing since 2006 and release bi-annual files

RSB analysis, interpretation, evaluation

- Data analysis and interpretation
  - Produce NCHS reports and journal articles analyzing data in terms of person, place and time
  - Provide user's guides, technical notes and documentation, tables for benchmarking, etc.
- Periodic evaluation
  - For both systems, make changes periodically to content based on stakeholder feedback and needs – a collaborative effort!
  - Getting more expensive to administer and maintain systems – have to be flexible and innovative in adapting to change


National Vital Statistics Reports

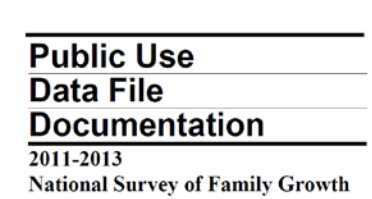
Volume 64, Number 12 December 23, 2015

Births: Final Data for 2014

by Brady E. Hamilton, Ph.D.; Joyce A. Martin, M.P.H.; Michelle J.K. Osterman, M.H.S.; Sally C. Curtin, M.A.; and T.J. Matthews, M.S., Division of Vital Statistics

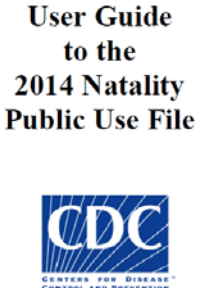
Abstract

Objectives—This report presents 2014 data on U.S. births according to a wide variety of characteristics. Data are presented for maternal age, live-birth order, race and Hispanic origin, marital status, attendant at birth, method of delivery, period of gestation, birthweight, and plurality. Birth and fertility rates are presented by age, live-birth order, race and Hispanic origin, and marital status. Selected data by mother's state of residence and birth rates by age and race of father also are shown. Trends in fertility patterns and maternal and infant characteristics are described and interpreted.


Public Use Data File Documentation

2011-2013

National Survey of Family Growth


User Guide to the 2014 Natality Public Use File

CDC


National Health Statistics Reports

Number 92 ■ March 17, 2016

Trends in Attitudes About Marriage, Childbearing, and Sexual Behavior: United States, 2002, 2006–2010, and 2011–2013

by Jill Daugherty, Ph.D., and Casey Copen, Ph.D., Division of Vital Statistics

Future of reproductive health surveillance in RSB

- Continue our long tradition of providing high-quality timely data and analysis
- Continuing to evaluate and improve
  - Birth data quality workgroup
  - E Learning training
  - Evaluation of next iteration of the NSFG
- Innovate and expand
  - Quarterly provisional birth estimates
  - Statistical methodology, e.g. small-area estimation
  - Continuing to find ways to combine NVSS and NSFG data

NVSS Vital Statistics Rapid Release

Quarterly Provisional Estimates

Quarterly Provisional Estimates for Selected Birth Indicators, 2014–Quarter 1, 2016

Lauren M. Rossen, PhD, MS

September 15th, 2016

National Center for Health Statistics

Division of Vital Statistics

The Vital Statistics Rapid Release Program

MORTALITY

Provisional estimates of death rates for 2015 and the first quarter of 2016. Estimates are presented for each of the 15 leading causes of death plus estimates for deaths attributed to drug overdose, falls (for persons aged 65 and over), human immunodeficiency virus (HIV) disease, homicide, and firearms-related deaths.

NATALITY

Provisional estimates of selected reproductive indicators from birth data for 2014 through the first quarter of 2016. Estimates are presented for: general fertility rates, age-specific birth rates, total and low risk cesarean delivery rates, preterm birth rates and other gestational age categories.

http://www.cdc.gov/nchs/products/vsrr.htm

The Vital Statistics Rapid Release Program

- The goal is to provide access to timely vital statistics for public health surveillance
  - Quarterly Provisional Estimates
    - Mortality –published quarterly since August, 2015
    - Natality – **first release August 9, 2016**
  - Special Reports

Natality Dashboard

- Indicators from the birth data
  - General fertility rates
  - Age-specific birth rates
    - Teen birth rates
  - Cesarean and low-risk cesarean delivery rates
  - Preterm birth rates and term birth rates
- Choose between 12 month-ending or quarterly estimates
- Select various subgroups to chart

http://www.cdc.gov/nchs/products/vsrr/natality-dashboard.htm

Teen Birth Rates

Options

Indicator:

- ○ General Fertility Rates
- ○ Age-specific Birth Rates
  - ◉ Teen Birth Rates
- ○ Cesarean Delivery Rates
- ○ Preterm Birth Rates
- ○ Term Birth Rates

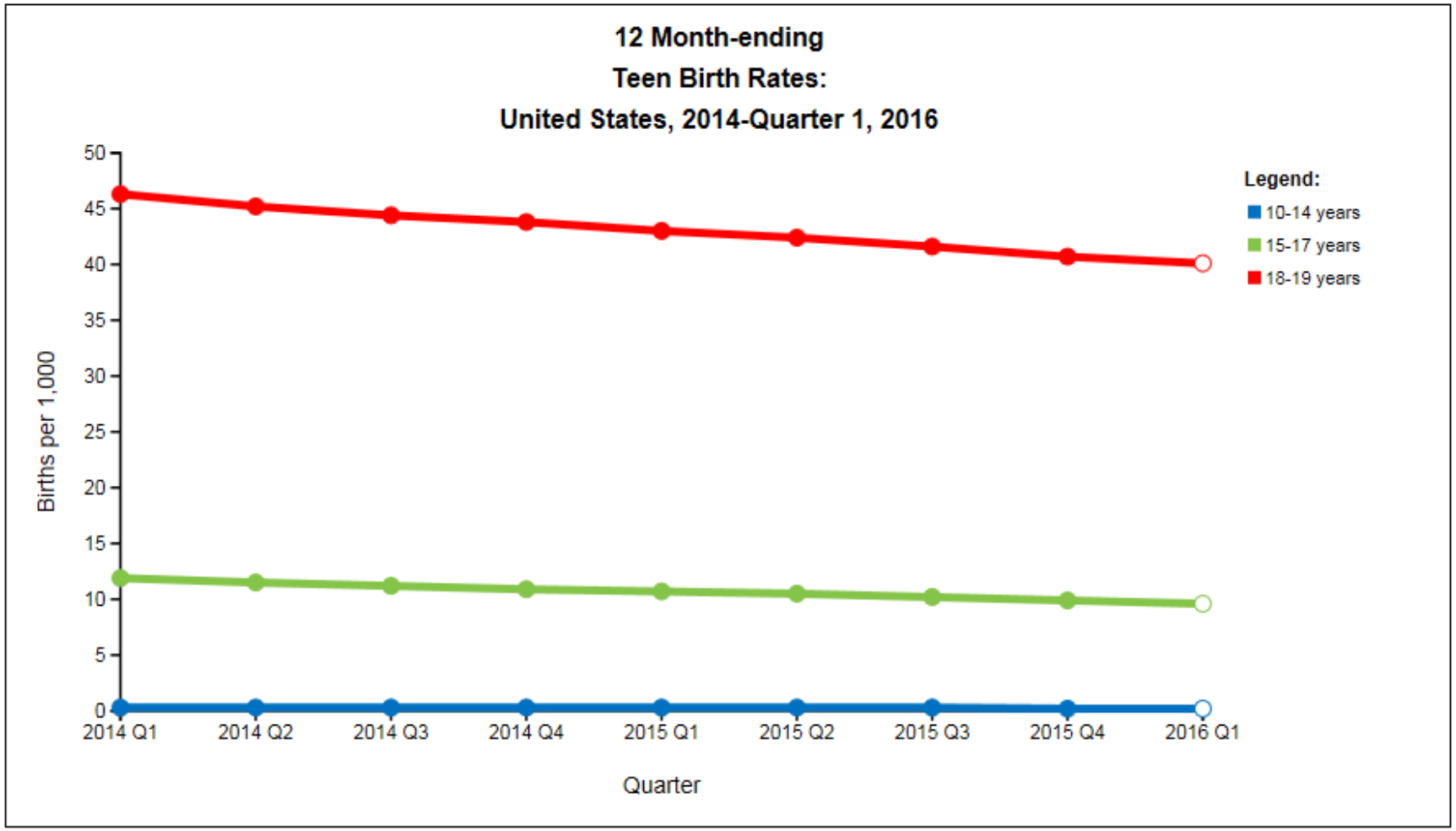
Time Period:

- ◉ 12 Month-ending
- ○ Quarterly

Groups:

- ☑ 10-14 years
- ☑ 15-17 years
- ☑ 18-19 years

Generate Chart ›



SOURCE: Rossen LM, Osterman MJK, Hamilton BE, Martin JA. Quarterly provisional estimates for selected birth indicators, 2014–Quarter 1, 2016. National Center for Health Statistics. National Vital Statistics System, Vital Statistics Rapid Release Program. 2016.

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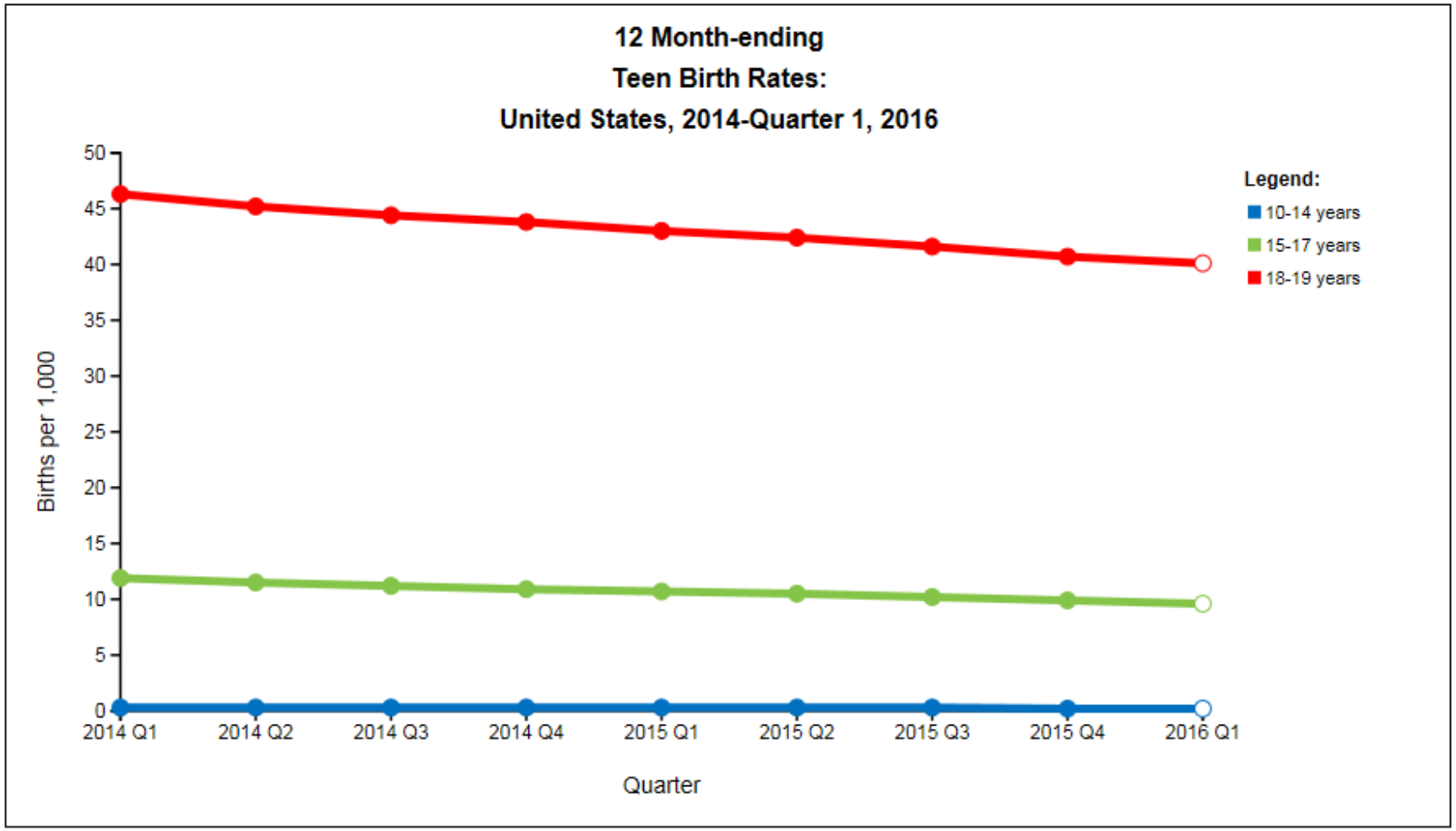

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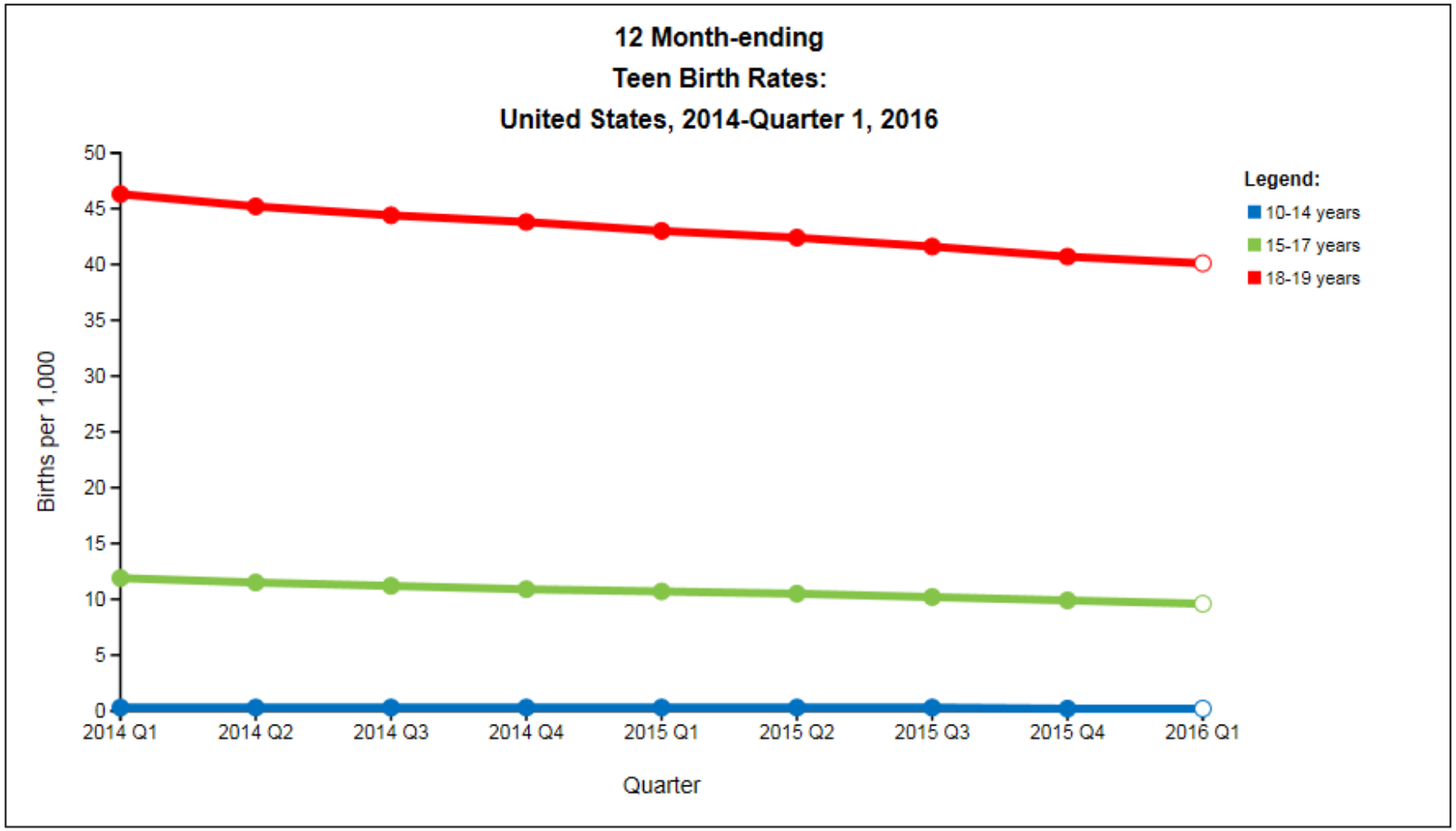

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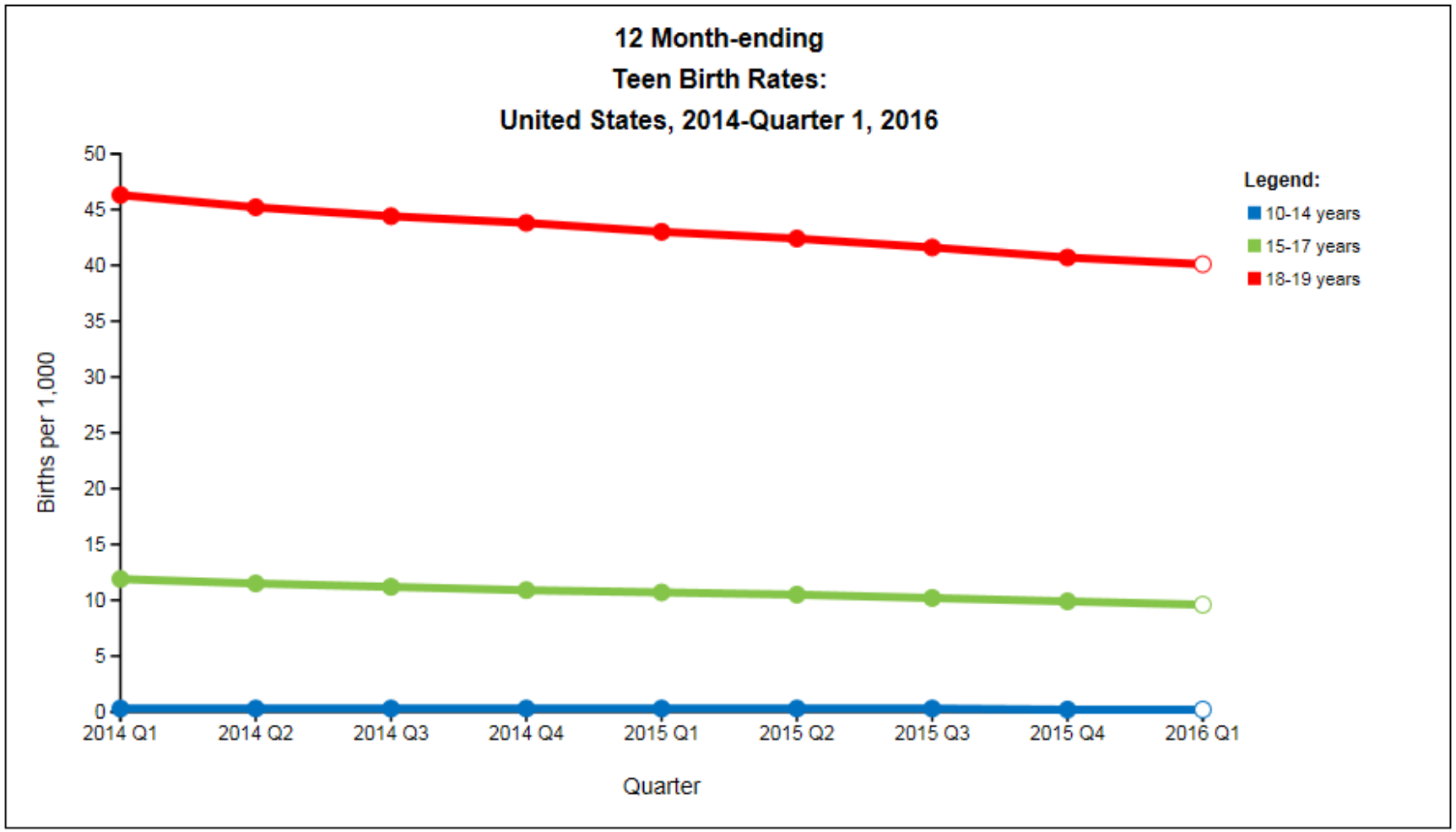

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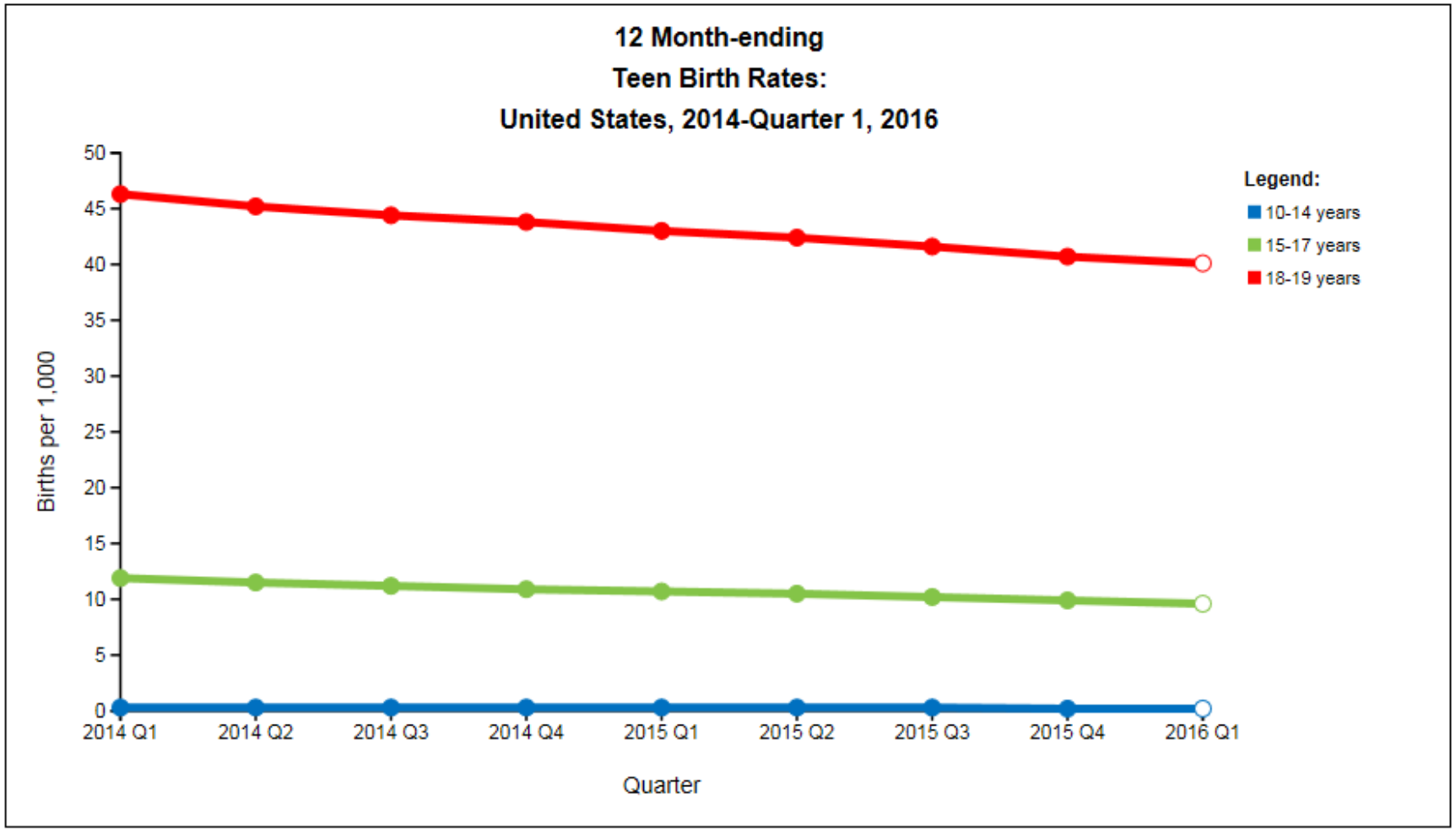

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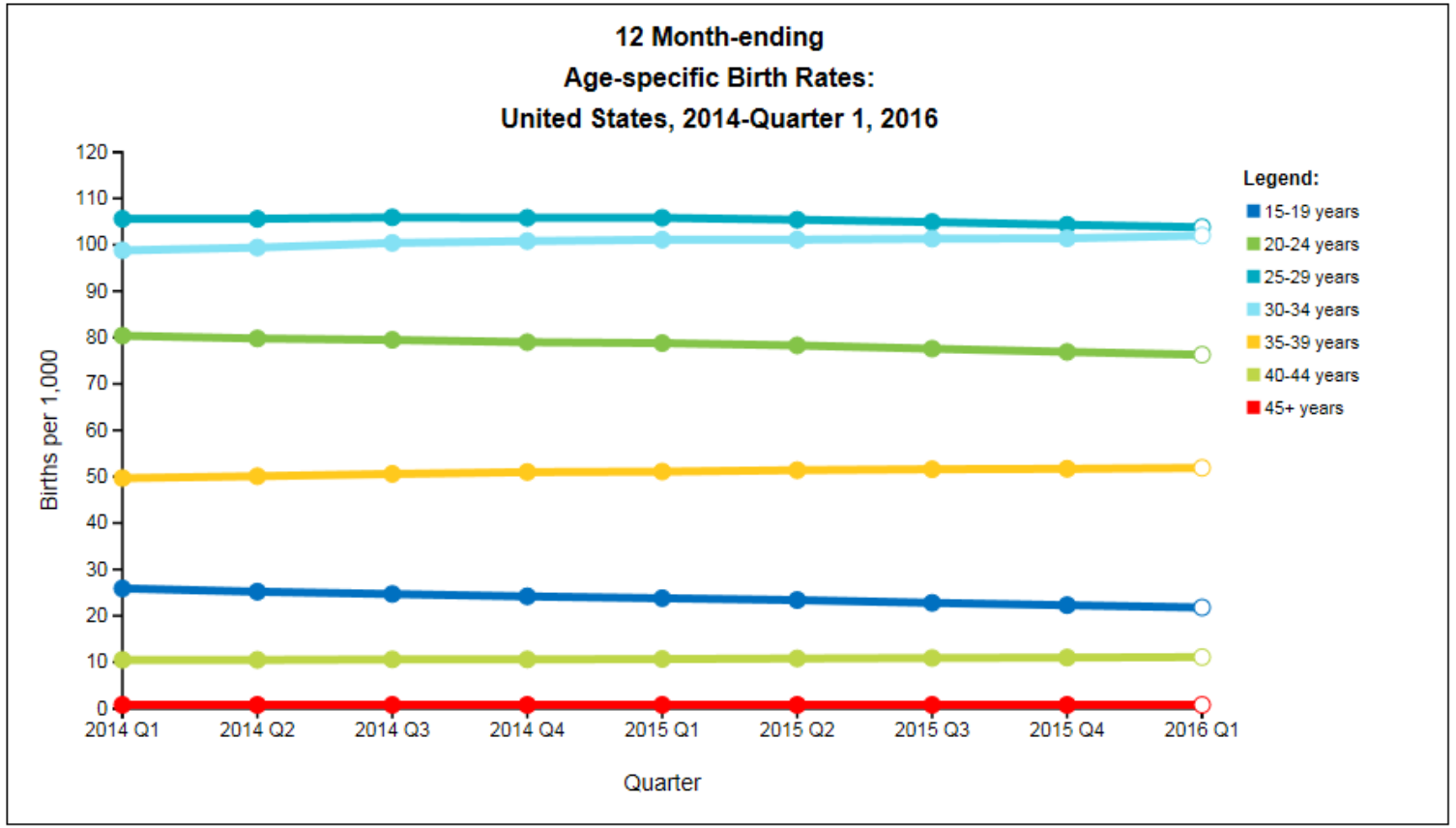
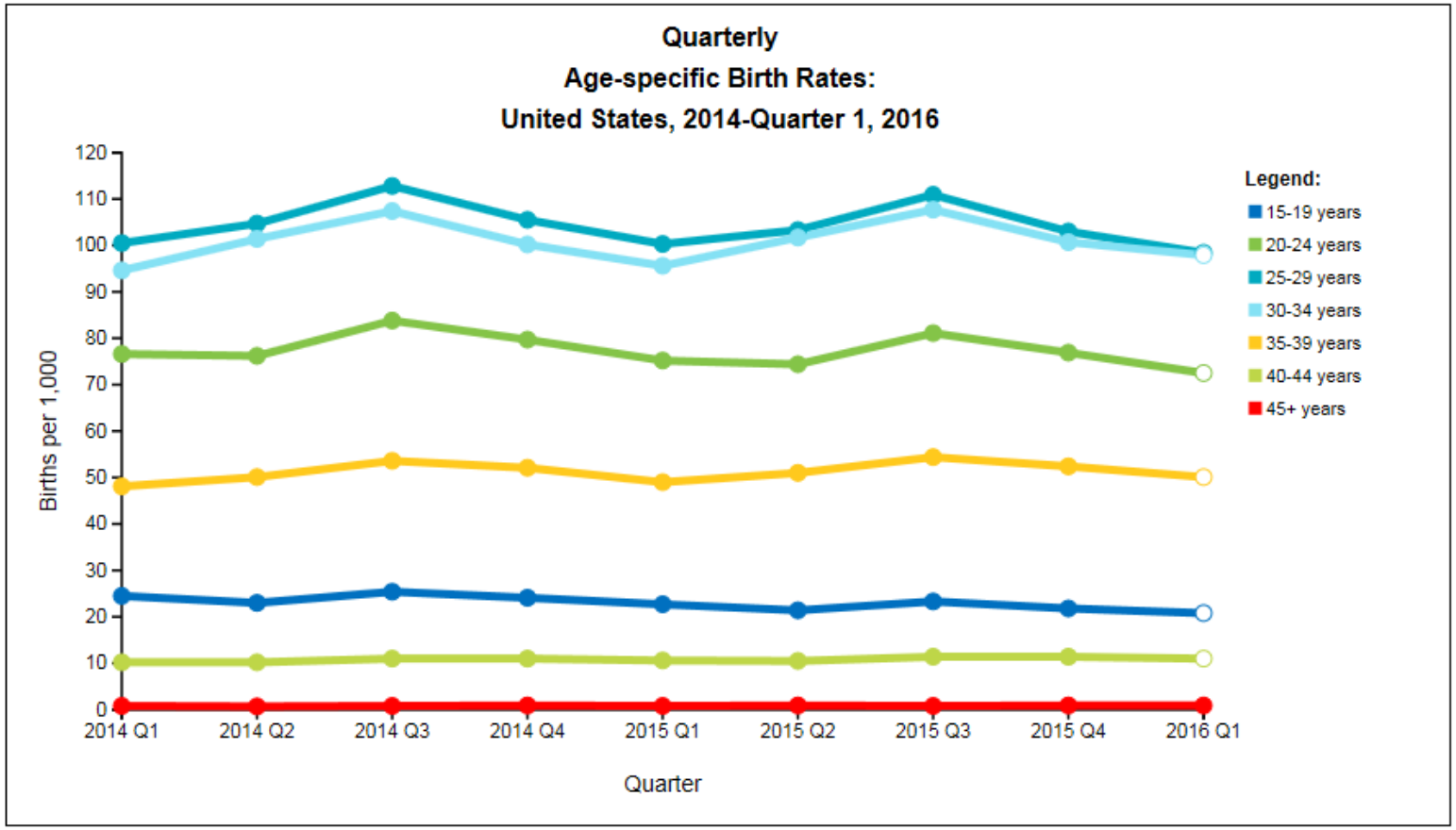


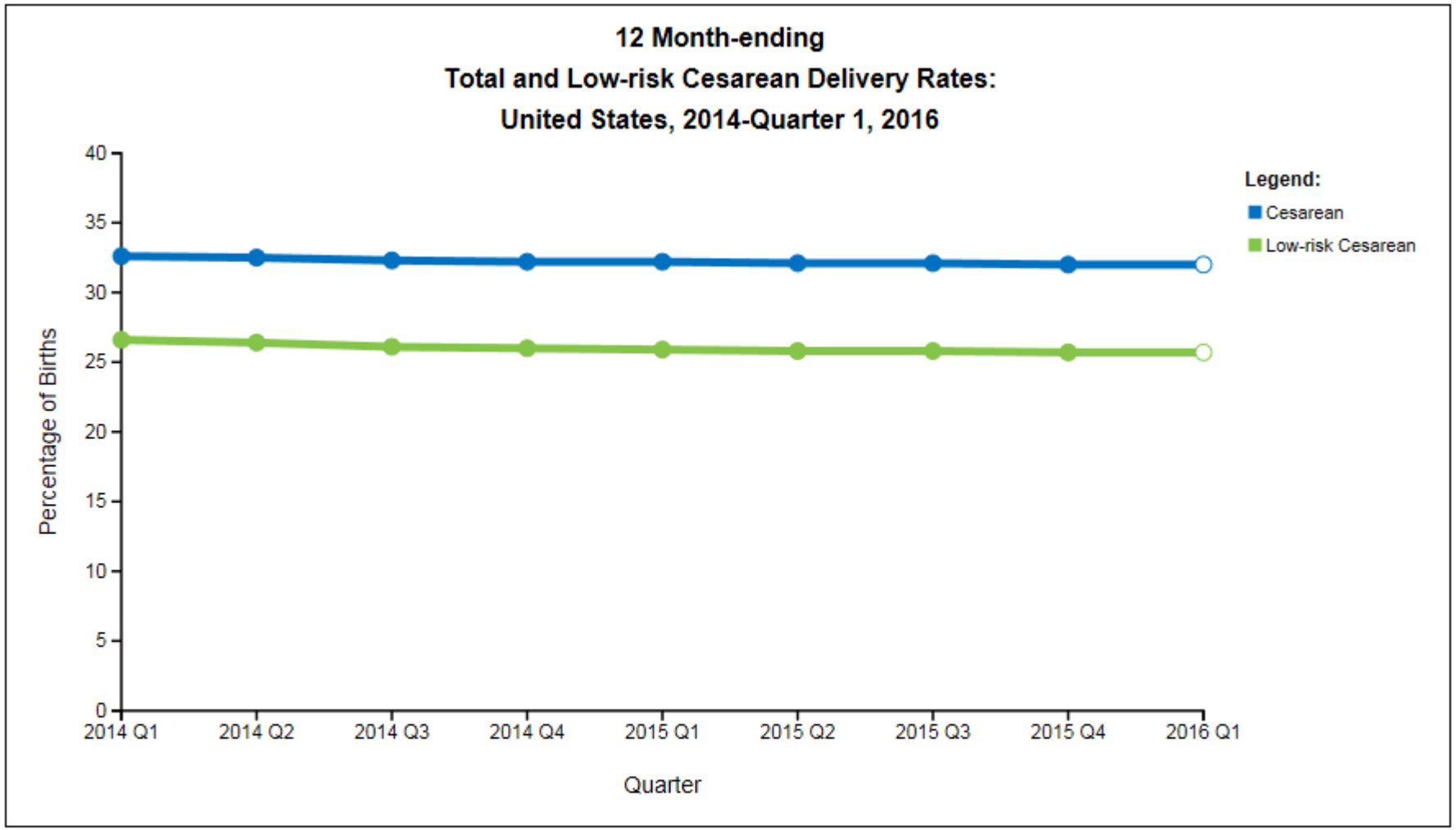
Age Group	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1
15-19 years	25.9	25.2	24.7	24.2	23.8	23.4	22.8	22.3	21.8*
20-24 years	80.4	79.8	79.5	79.0	78.8	78.3	77.6	76.9	76.3*
25-29 years	105.6	105.6	105.9	105.8	105.8	105.4	104.9	104.3	103.8*
30-34 years	98.8	99.4	100.4	100.8	101.1	101.1	101.3	101.4	102.0*
35-39 years	49.7	50.1	50.6	51.0	51.1	51.4	51.6	51.7	51.9*
40-44 years	10.5	10.5	10.6	10.6	10.7	10.8	10.9	11.0	11.1*
45+ years	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8*

- 12 month-ending estimates account for seasonality
- A hollow circle indicates that estimates for the most recent quarter are significantly different from the same quarter of the previous year
- These estimates are also flagged in the data table with *



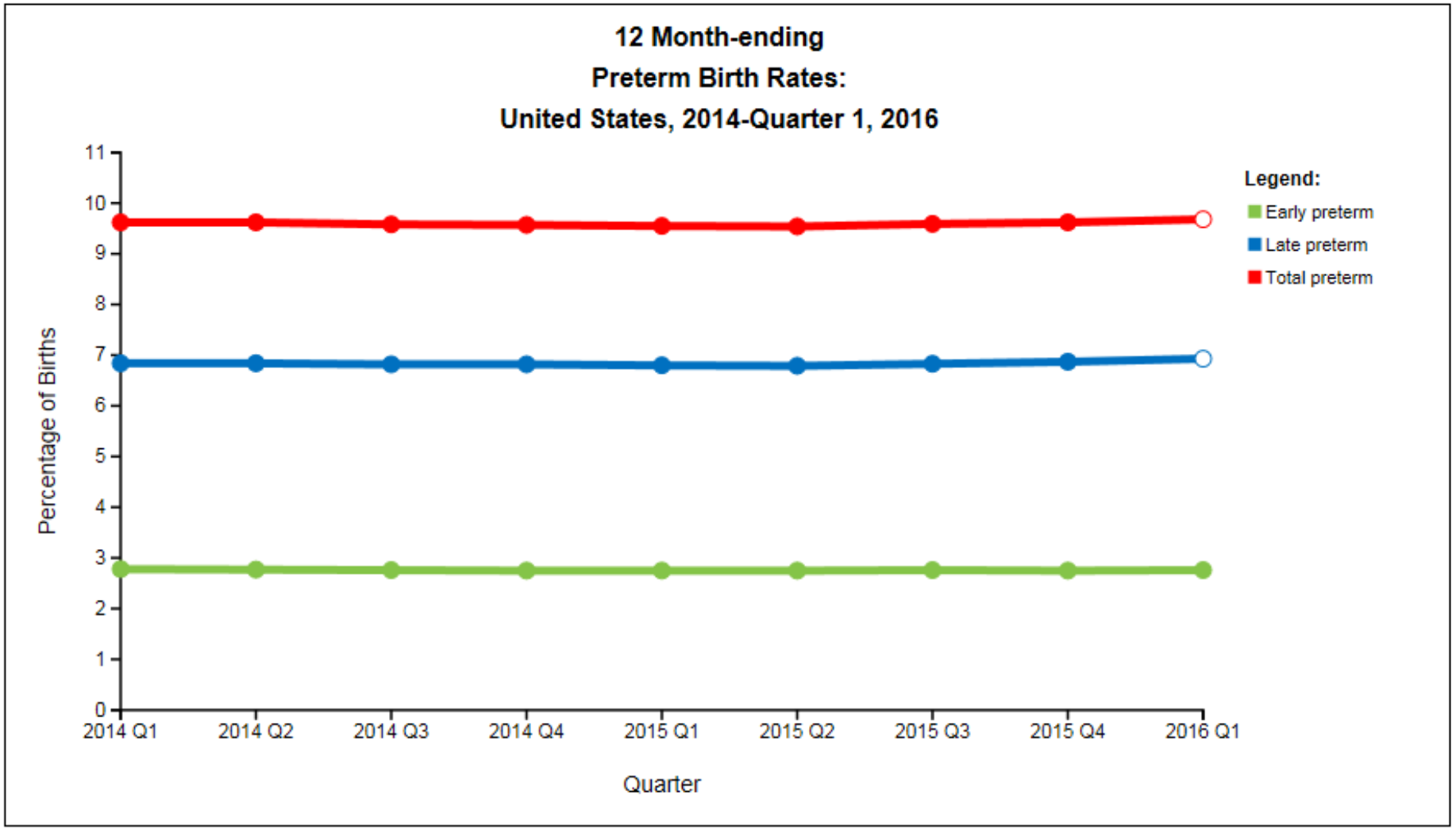
Age Group	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1
15-19 years	24.5	23.0	25.4	24.1	22.7	21.4	23.3	21.8	20.8*
20-24 years	76.6	76.2	83.8	79.7	75.2	74.4	81.1	76.9	72.5*
25-29 years	100.5	104.7	112.8	105.5	100.3	103.3	110.9	103.0	98.4*
30-34 years	94.6	101.4	107.4	100.2	95.6	101.7	107.7	100.7	97.9*
35-39 years	48.1	50.1	53.6	52.1	49.0	51.0	54.4	52.4	50.1*
40-44 years	10.2	10.2	11.0	11.0	10.6	10.5	11.4	11.4	11.0*
45+ years	0.8	0.7	0.8	0.9	0.8	0.9	0.8	0.9	0.9

- An example of seasonality – birth rates highest in the 3rd quarter, lowest in the 1st quarter
- Quarterly (3-month) estimates have been annualized to be comparable to 12 month-ending

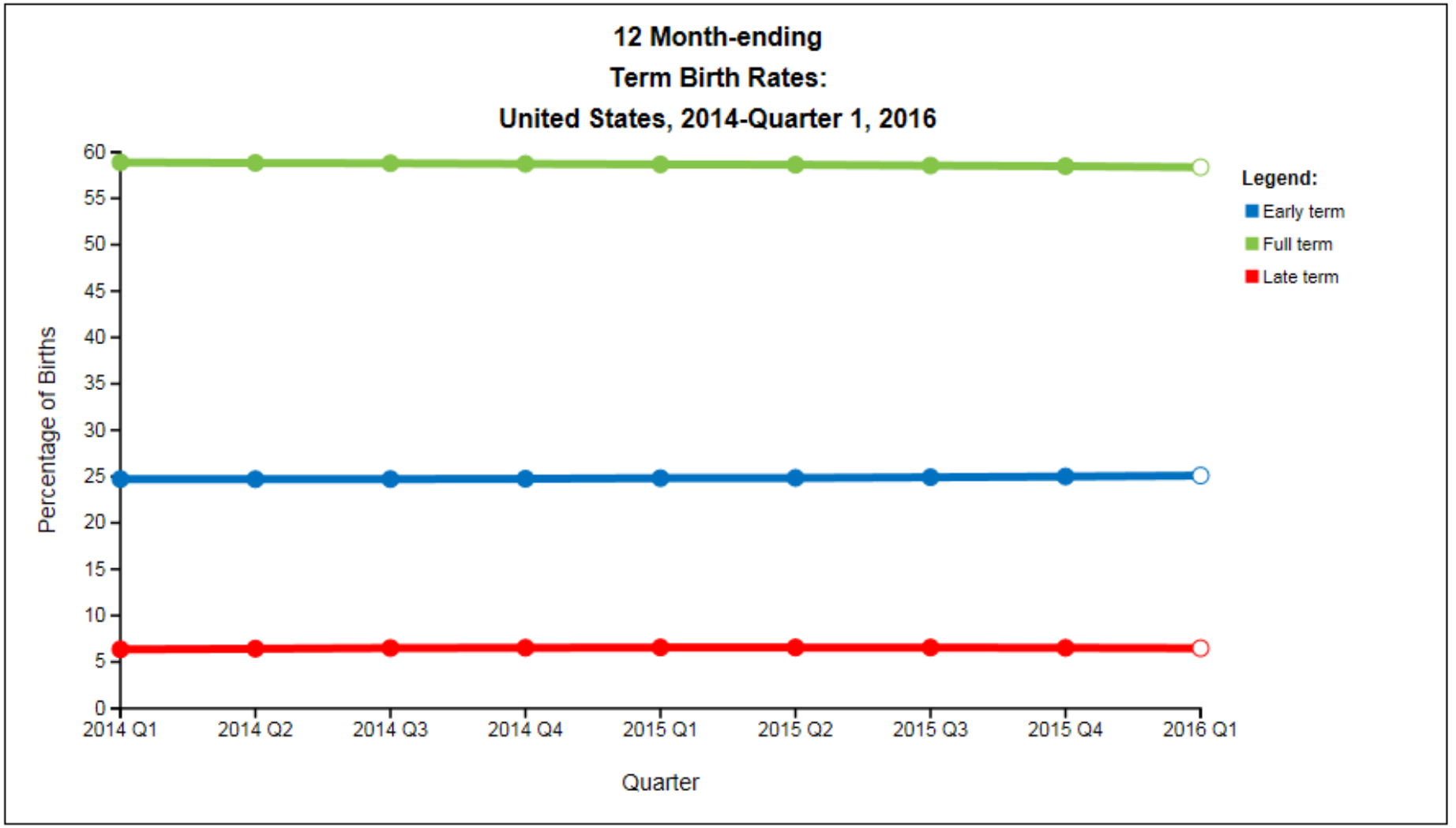


Indicator	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1
Cesarean	32.6	32.5	32.3	32.2	32.2	32.1	32.1	32.0	32.0*
Low-risk Cesarean	26.6	26.4	26.1	26.0	25.9	25.8	25.8	25.7	25.7*

Note: Low-risk cesarean delivery rate refers to cesarean deliveries among singleton, nulliparous (first birth), term (37 completed weeks of gestation or more), nonbreech births.



Gestational Age	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1
Early preterm (<34 weeks)	2.78	2.77	2.76	2.75	2.75	2.75	2.76	2.75	2.76
Late preterm (34-36 weeks)	6.84	6.84	6.82	6.82	6.80	6.79	6.83	6.87	6.93*
Total preterm (<37 weeks)	9.62	9.62	9.58	9.57	9.55	9.54	9.59	9.62	9.68*



Gestational Age	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1
Early term (37-38 weeks)	24.72	24.71	24.72	24.76	24.82	24.85	24.92	25.00	25.10*
Full term (39-40 weeks)	58.88	58.82	58.78	58.72	58.66	58.63	58.54	58.47	58.36*
Late term (41 weeks)	6.36	6.43	6.50	6.53	6.56	6.56	6.55	6.52	6.48*

Data Completeness – 2016, Quarter 1

Natality data completeness as a percentage of monthly provisional count:

Area	2016		
	Jan	Feb	Mar
Total U.S.	100	100	100
Alabama	100	100	100
Alaska	100	100	100
Arizona	99	99	99
Arkansas	100	100	100
California	100	100	100
Colorado	100	100	100
Connecticut	100	100	100

http://www.cdc.gov/nchs/products/vsrr/natality-technical-notes.htm

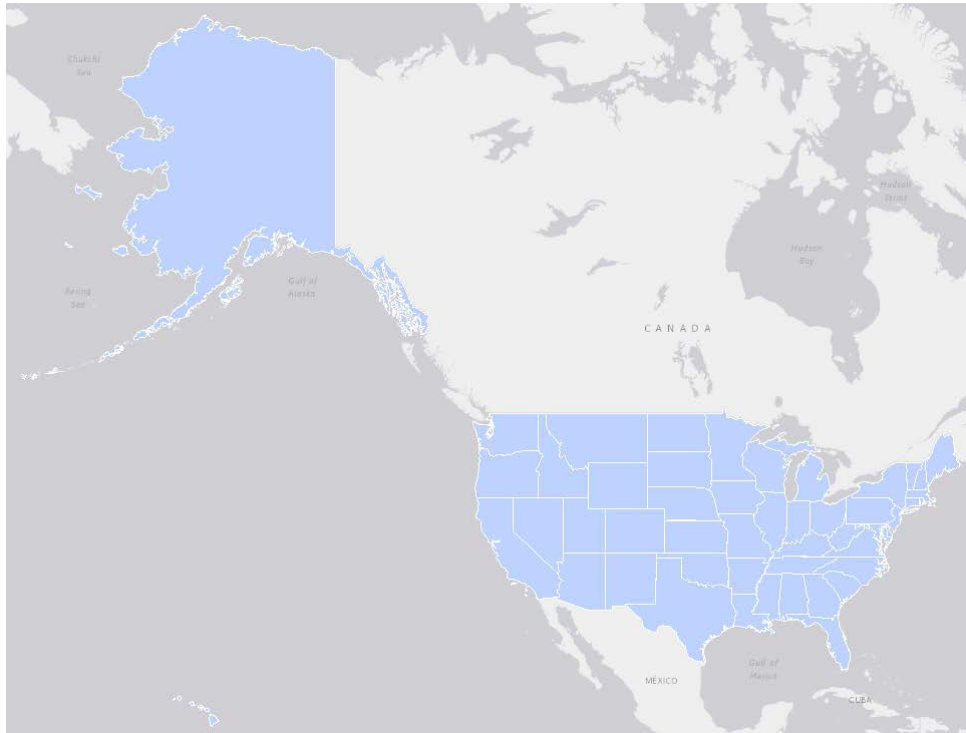
Accuracy of Estimates

- Estimates based on incomplete data are generally within 1% of estimates based on final data
  - Larger % differences for estimates that are small
    - Birth rates among females aged 10-14 or 45 and over (generally within 0.1 of final estimate)

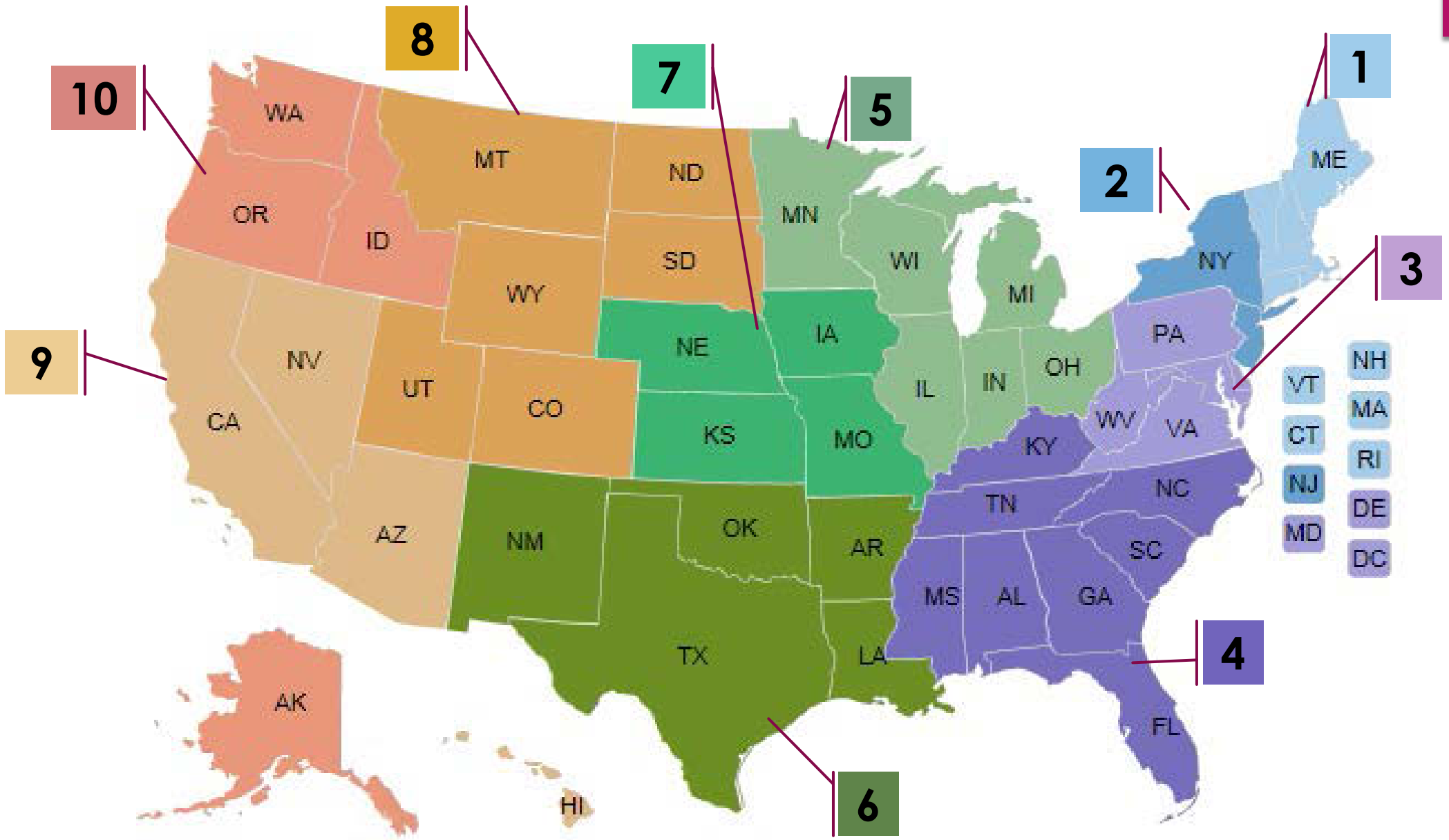
- Conducted simulations of different levels of 'missing' data
  - Will continue to evaluate accuracy as final data becomes available

Next Steps:

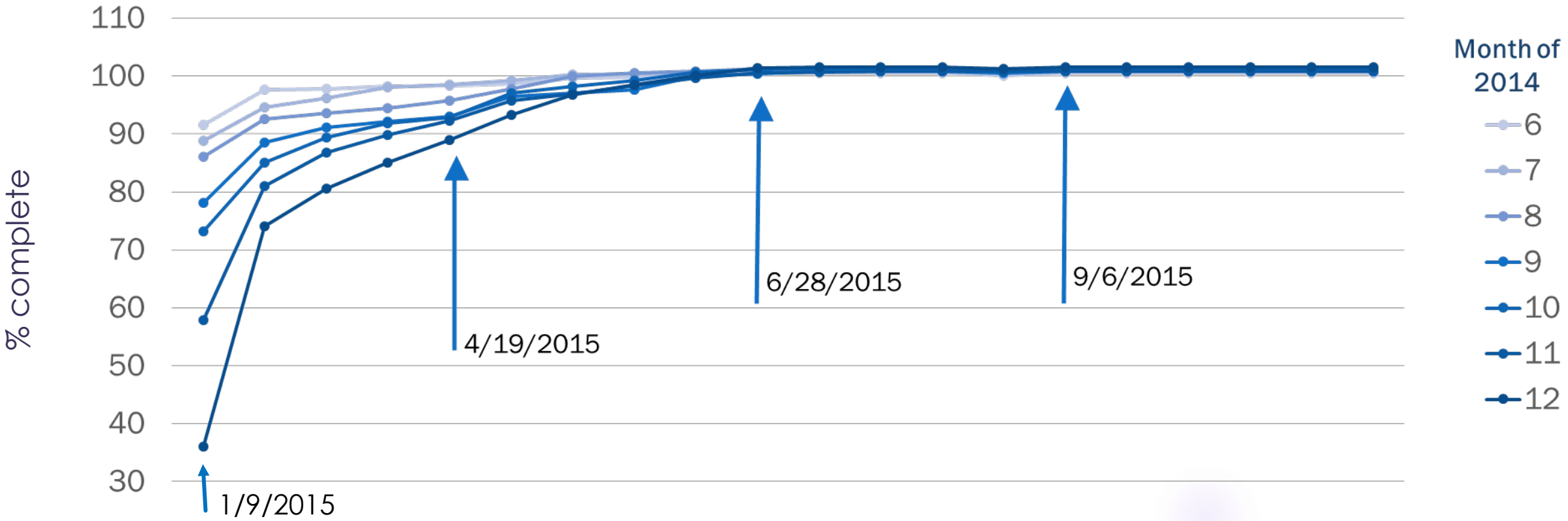
- Add indicators (e.g., NICU admission)
  - 2016 → items from the 2003 birth certificate will be national
- Add demographic information
  - Estimates by maternal race/ethnicity, etc.
- Add geography
  - Estimates by 10 public health regions
- Add infant mortality rate estimates
  - By age (neonatal and postneonatal)
  - By cause of death



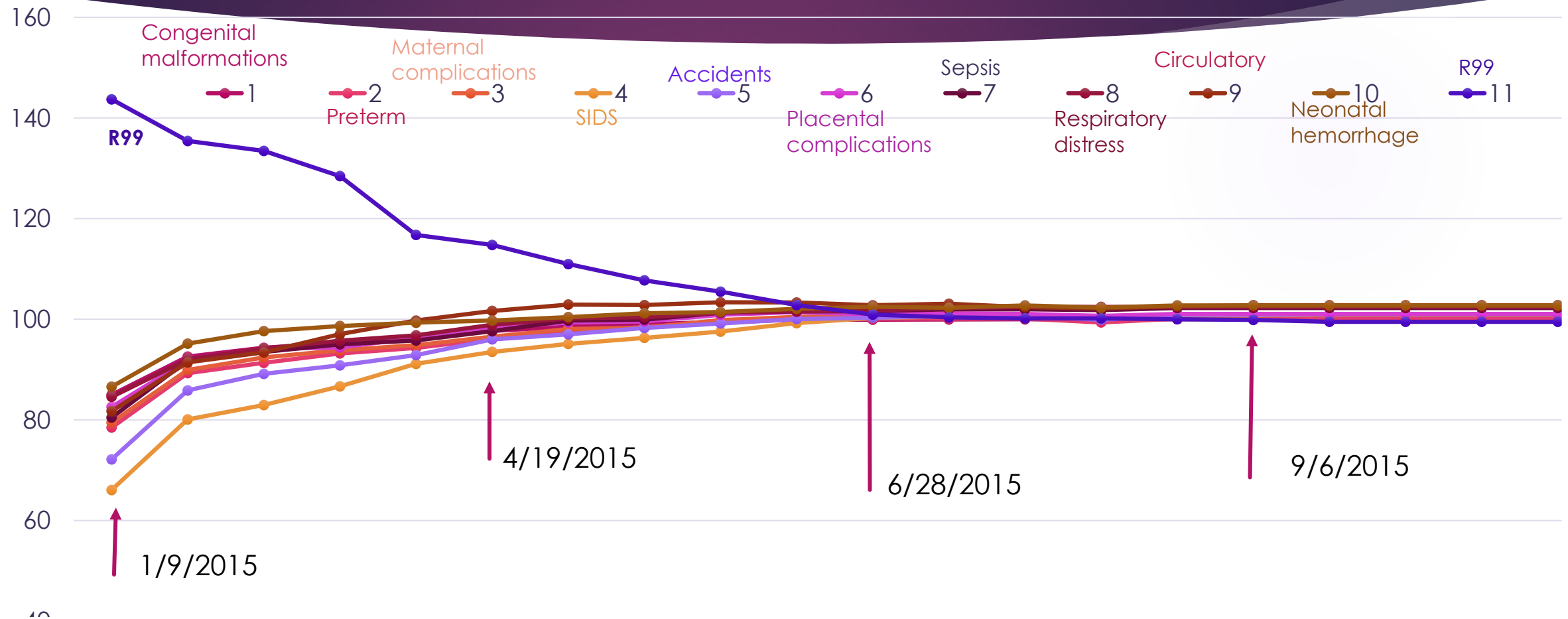
10 Public Health Regions



Timeliness: Infant Deaths



Timeliness: Infant Deaths by Cause of Death



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  - Farida Ahmed
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  - Hanyu Ni
- States!

NVSS Vital Statistics Rapid Release

Quarterly Provisional Estimates

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Questions?