

# ASSESSING AND IMPROVING THE QUALITY OF BIRTH CERTIFICATE DATA

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**NCHS'S  
DATA ACQUISITION,  
CLASSIFICATION AND  
EVALUATION BRANCH  
(DACEB) (RTP, NC)**

# ROLE OF DACEB IN EVALUATING BIRTH DATA QUALITY

- Data Acquisition, Classification and Evaluation Branch
  - Vital Statistics Specialists
  - Statisticians
- VSCP – Vital Statistics Cooperative Program (57 areas)
- 2014 Birth Records to be submitted within 15 days of registration date
- 2015-2016 Birth Records to be submitted within 10 days of registration date
- Current 2013 completeness = almost 97%

# BASIC PROCESSING OF BIRTH DATA

- Merged with prior data
- New records added
- Update records already received
  
- Routine reports generated and sent electronically to States by DACEB Specialists
- Other reports generated for internal review by Statisticians
  
- Preliminary file release (target 75% completeness per state)
- Final file release

# QUALITY CONTROL – V.S. SPECIALISTS

- Record level reports for use by Specialists
- Routinely sent to states upon receipt of each data shipment
- Should be minimized with EBRs, EDRs
  
- Checklist Report – sequence check of state file numbers
- “Validation” errors – out of range values
- “Verification” errors – inconsistencies across items

# QUALITY CONTROL - STATISTICIANS

- Internal summary reports/tables
- Reviewed by DACEB statistician team
- Update Reports
- Time Series Reports

	US Pct 2012	Pct Diff 13/12	2013 Pct	2012 Pct	2011 Pct	2010 Pct	2009 Pct	2008 Pct	2013 Cnt	2012 Cnt	2011 Cnt	2010 Cnt	2009 Cnt	2008 Cnt
<b>Number of Cigarettes Smoked in 2nd 3 months</b>														
None (00)	92.29	9	78.60	72.44	78.01	96.54	96.80	96.87	97,312	95,568	104,396	130,728	138,125	143,174
01-05	2.70	36	2.38	1.75	1.76	3.08	3.18	3.11	2,952	2,314	2,361	4,174	4,538	4,598
<b>06-10</b>	<b>3.09</b>	<b>398</b>	<b>11.40</b>	<b>2.29</b>	<b>2.28</b>	<b>0.38</b>	<b>0.01</b>	<b>0.02</b>	<b>14,111</b>	<b>3,021</b>	<b>3,047</b>	<b>509</b>	<b>20</b>	<b>27</b>
11-15	0.25	-59	0.05	0.13	0.13	0.00	0.00	0.00	65	167	168	0	0	0
16-20	1.00	-49	0.40	0.79	0.87	0.00	<0.01	0.00	500	1,038	1,162	0	1	0
21-30	0.05	-60	0.01	0.02	0.02	0.00	0.00	0.00	11	29	24	0	0	0
31-40	0.04	-69	0.01	0.04	0.04	0.00	0.00	0.00	15	51	47	0	0	0
41 or more (41 - 98)	0.03	-44	0.01	0.03	0.01	0.00	0.00	0.00	18	34	18	0	0	0
Not Classifiable (99)	0.56	-68	7.12	22.51	16.89	0.00	<0.01	0.00	8,820	29,699	22,605	0	2	0
<b>Total</b>	<b>100.00</b>		<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>123,804</b>	<b>131,921</b>	<b>133,828</b>	<b>135,411</b>	<b>142,686</b>	<b>147,799</b>

# QUALITY CONTROL – STATISTICIANS

- Internal summary reports/tables
- Reviewed by DACEB statistician team
  
- Update reports
- Time series reports
- Data Analysis tools
- Tolerance reports for unknown/not stated levels

# DACEB STATISTICIAN INTERACTION WITH STATES

- Summary of quality problems communicated by statistician
- Email with attachments illustrating problems
- State analyst and field staff resources
- Relationships with hospitals and different associations

**NCHS'S  
REPRODUCTIVE  
STATISTICS BRANCH  
(RSB) (HYATTSVILLE, MD)**



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# ASSESSING AND IMPROVING BIRTH DATA

- ✓ RSB Birth team role in producing, evaluating and improving vital statistics birth data
- ✓ The 2003 birth certificate revision – goals and challenges
- ✓ Recent efforts to assess and improve data quality

# RSB BIRTH TEAM ROLE



- Collaborate with DACEB to adjudicate data issues
- Collaborate with IT branch to develop national perinatal files
  - Birth, Linked birth/infant death, Fetal death
  - Includes development of data edits (e.g. range), re-codes, file layouts
- Conduct detailed data review
- Document specific data quality issues by item and state
  - Published annually in User Guide to birth file

# RSB BIRTH TEAM ROLE

- Produce standard annual preliminary and final reports



- Special reports

- Annual public use data files
  - Micro- data files and *VitalStats*



# RSB BIRTH TEAM ROLE

- **Develop resource materials for states and hospitals**
  - e.g., Detailed edit specifications electronic birth registration systems, Facility Guidebook – detailed instructions for birth data reporting
- **Provide technical and subject matter guidance to colleagues**
- **Conduct special studies and collaborations to evaluate and improve data quality**



# **THE 2003 BIRTH CERTIFICATE REVISION**

# PRIMARY GOAL OF THE 2003 REVISION

## IMPROVE BIRTH DATA QUALITY

- New and modified data items believed to be collectable with reasonable completeness and accuracy
- Standardization of data collection processes across jurisdictions

# STANDARDIZED WORKSHEETS

To encourage collection from the best sources, two standard worksheets were developed and tested.

- Mother's Worksheet (MWS)
- Facility Worksheet (FWS)

The image displays two standardized worksheets. The top worksheet is the 'Mother's Worksheet for Child's Birth Certificate' (DRAFT 2/6/02). It includes a header for 'Mother's Medical Record #' and 'Mother's Name'. The main title is 'Mother's Worksheet for Child's Birth Certificate'. A paragraph explains that the information provided will be used to create the child's birth certificate and that the document will be used for legal purposes. It also states that state laws provide protection against the unauthorized release of identifying information. A section titled 'PLEASE PRINT CLEARLY' contains questions about the mother's current legal name, her baby's legal name, and the household/residence location. The bottom worksheet is the 'Facility Worksheet for the Live Birth Certificate' (DRAFT 2/6/02). It includes a header for 'Mother's medical record #' and 'Mother's name'. The main title is 'FACILITY WORKSHEET FOR THE LIVE BIRTH CERTIFICATE'. A paragraph explains that the information provided will be used to create the child's birth certificate and that the document will be used for legal purposes. It also states that state laws provide protection against the unauthorized release of identifying information. A section titled 'PLEASE PRINT CLEARLY' contains questions about the facility name, facility ID, city/town/location, county, place of birth, and whether the household is inside city limits.

# DETAILED SPECIFICATION FOR ELECTRONIC SYSTEMS

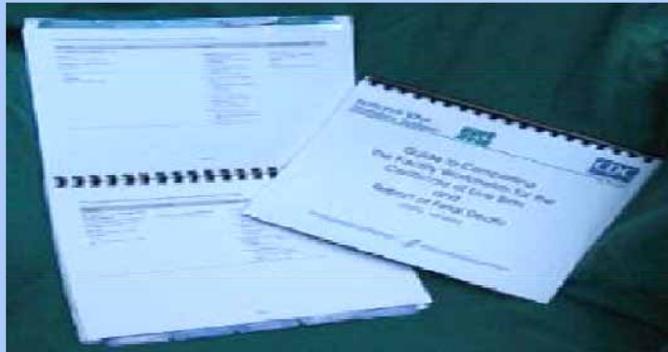
Because almost all births are registered electronically, detailed specifications for each data item on the birth certificate were developed.

- Suggested electronic screens
- Response categories
- Drop-down menus
- Edits
- Help screens
- Ability to edit and query at data entry; resolution of data issues at the source



# GUIDE TO COMPLETING FACILITY WORKSHEET

The Facility Guidebook was developed to assist hospital staff in completing the medical and health birth information for the birth certificate. It includes:



- Definitions
- Preferred sources within the medical record (e.g., prenatal care record, labor and delivery record)
- Key words and common abbreviations
- Convenient availability (electronically and hard copy)
- Regular updates

**WHAT HAS BEEN THE  
IMPACT OF THESE  
EFFORTS? HAS THE  
QUALITY OF BIRTH DATA  
IMPROVED?**

# INITIAL CHALLENGES

Two factors effected our ability to assess impact of changes;

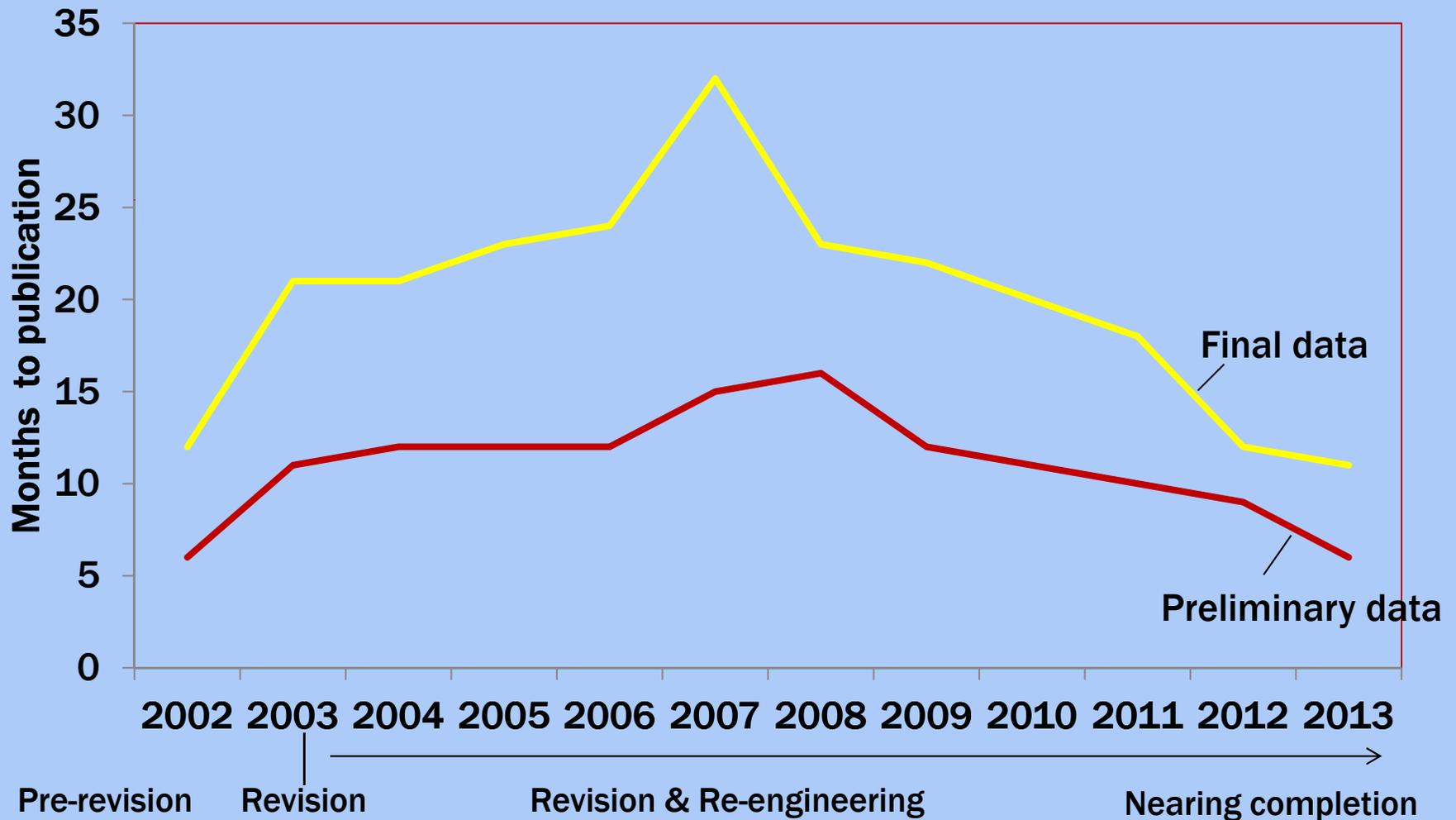
1) The delayed and staggered implementation of new certificates/systems across the country

- Overwhelmed DACEB, ITB and RSB staff/resources
  - Challenges of processing/reviewing both revised and unrevised data
  - Lack of national data for many items
    - Non-representative of U.S.
    - Difficult to compare with other data sources

2) The re-engineering of Division of Vital Statistics internal systems

- DACEB, ITB, RSB
- Initially adversely effected workload and timeliness but investment is paying off

# IMPACT OF REVISION AND RE-ENGINEERING ON TIMELINESS





**RECENT EFFORTS TO  
ASSESS AND IMPROVE  
DATA QUALITY**

# INTERVIEWS WITH BIRTH INFORMATION SPECIALIST

- In 2009-2010 NCHS collaborated with 4 revised states to conduct interviews with birth information specialists (BIS), i.e., non-clinical hospital staff often responsible for reporting birth certificate data
  - Assess the collection process for the birth health data
    - Are data being gathered from the best sources?
  - Issues with specific health data items
  - Experts from NCHS's cognitive research lab conducted cognitive interviews with birth information specialists (BIS)
  - 54 BIS representing 54 hospitals interviewed

# BIRTH INFORMATION SPECIALISTS INTERVIEWS - SUMMARY

😊 Separate worksheets were mostly used by hospitals per recommendations

😊 BIS used medical records to complete most of the medical and health data items

**Exception** - pregnancy history data (e.g., prenatal care info, previous live births); still often reported by mom

😊 Clinicians, usually the labor and delivery nurse, were responsible for reporting medical/health information in about 1/2 of hospitals

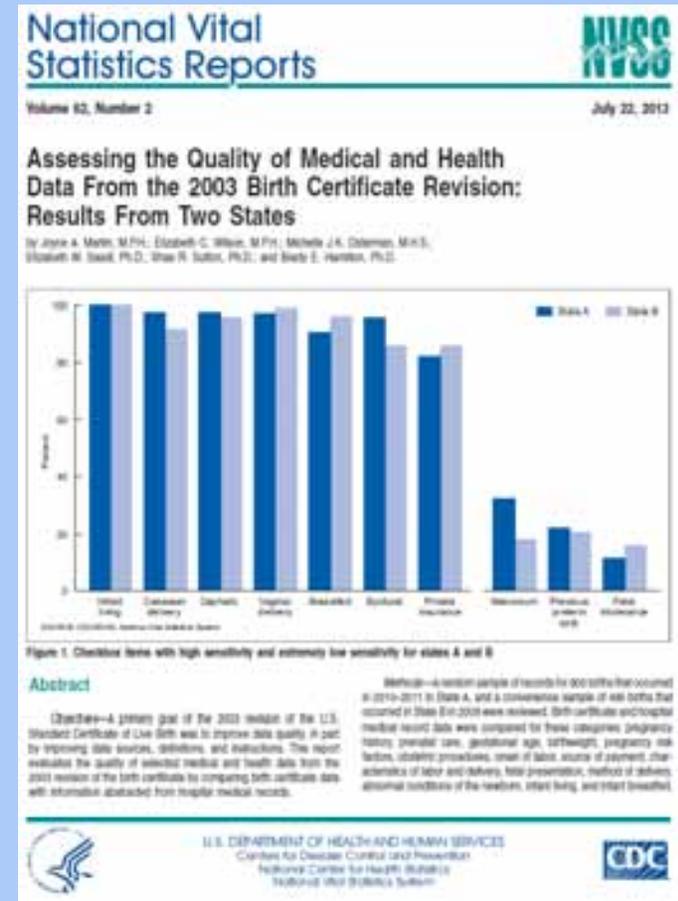
😞 Issues with number of specific items: Prenatal care items, infertility therapy

😞 BIS rarely formally trained in data collection

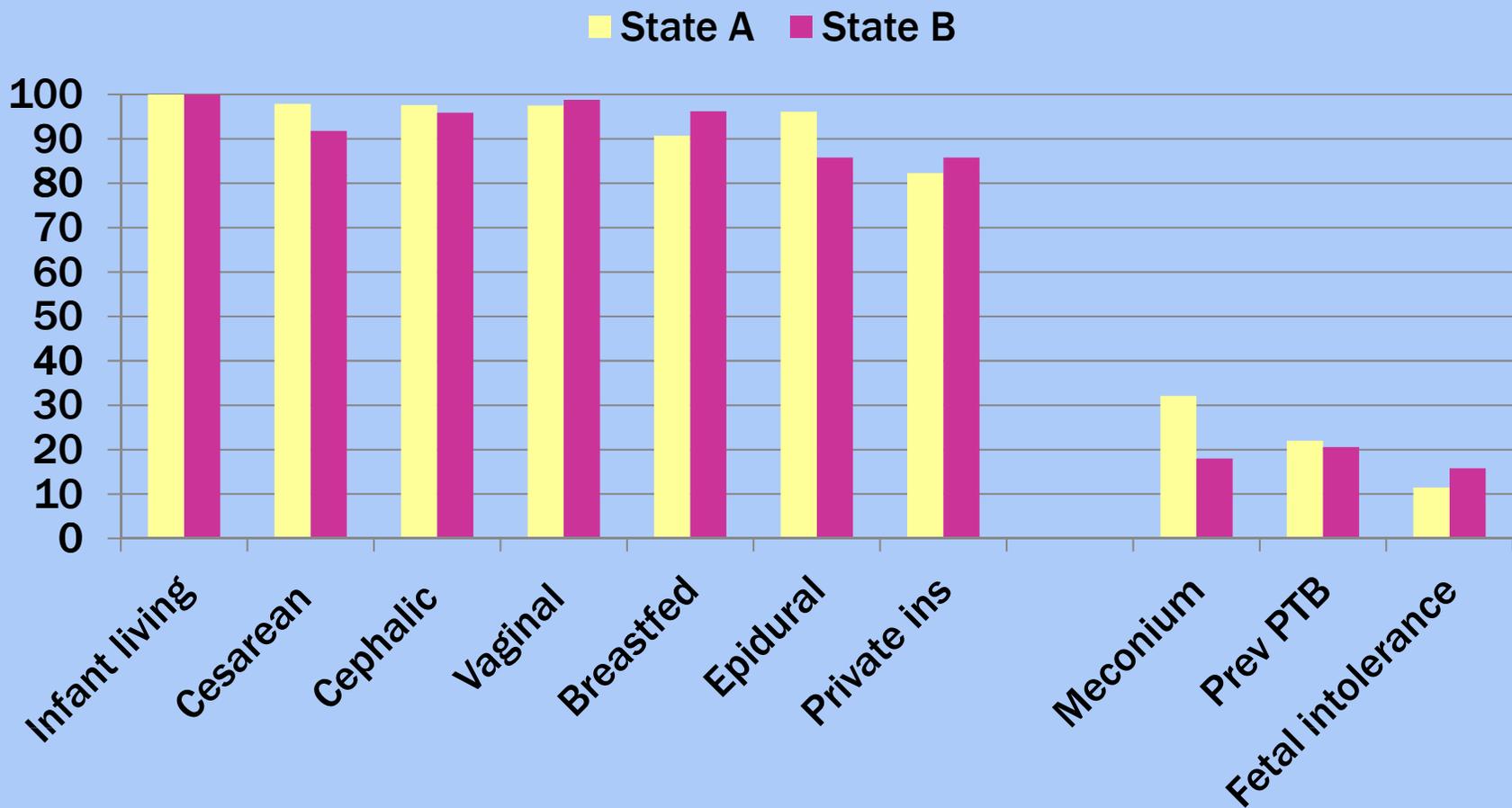
😞 Guidebook developed for the BIS was not used (most had not heard of it)

# VALIDITY STUDIES

- NCHS collaborated with 2 states to compare birth certificate medical/health data with hospital medical record data
- Total of 995 records reviewed from 8 hospitals
- Random sample of births in one state; convenience sample in other
- Report “Assessing the Quality of Medical and Health Data From the 2003 Birth Certificate Revision: Results From Two States” published July, 2013

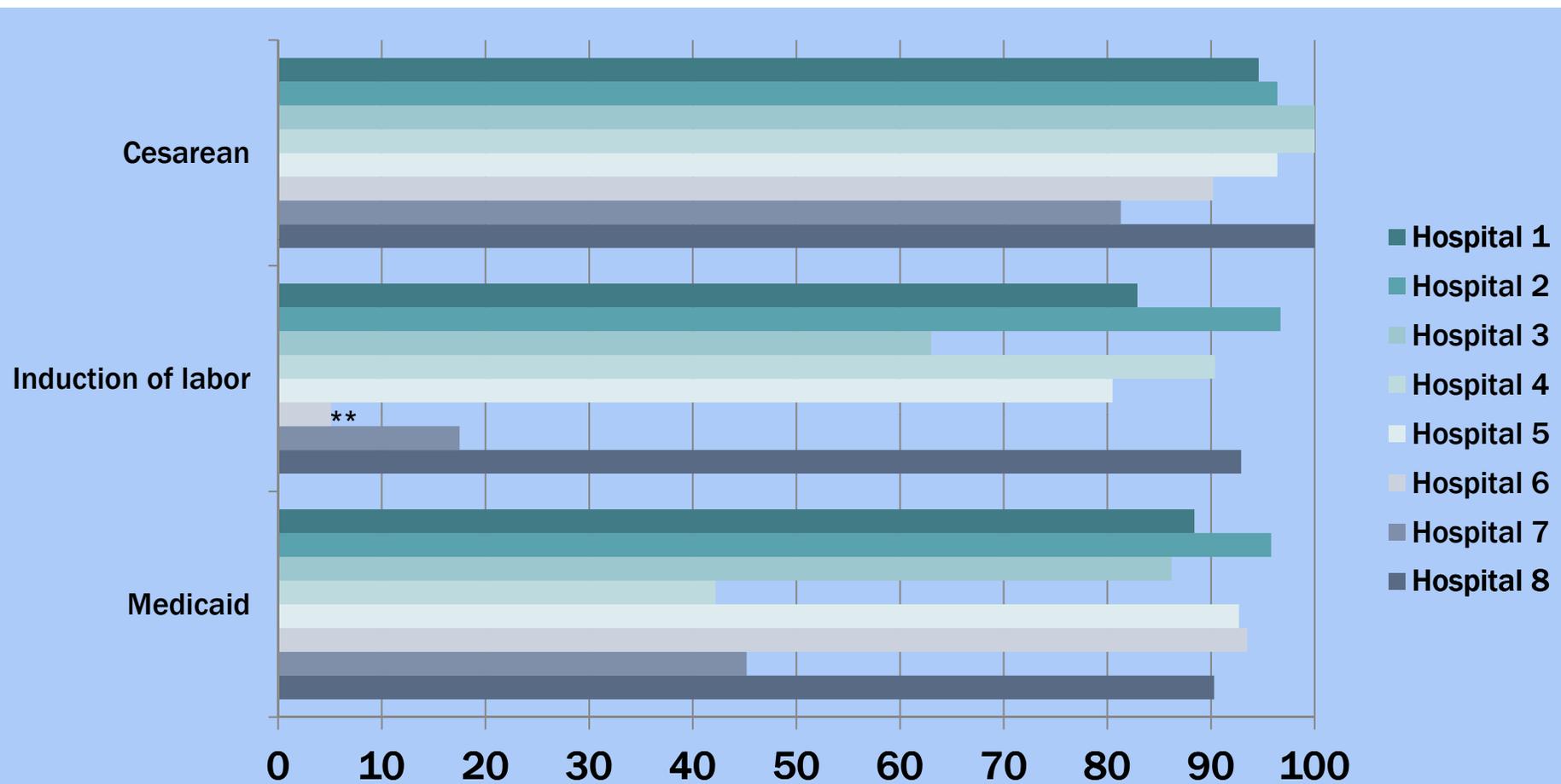


# CHECKBOX ITEMS WITH HIGH SENSITIVITY AND ITEMS WITH EXTREMELY LOW SENSITIVITY FOR BOTH STATES: STATE A AND STATE B



Source: Table 5.

# SENSITIVITY FOR SELECTED CHECKBOX ITEMS BY HOSPITAL



Source: Table 8.

\*\* Figure may not be reliable; numerator = 5 or less.

# TWO NEW VALIDITY STUDIES



- Currently collaborating with NYC and Florida to field two similar but larger studies comparing birth certificate medical/health data with hospital medical records data
  - Should allow for comparisons of more robust data and more data items than available from previous study,
  - Assess data quality by hospital data collection process
  - Results available by Fall, 2014



# OTHER EFFORTS TO EVALUATE DATA QUALITY

- Comparison of birth certificate data with other sources, especially newer data items
  - “Source of payment” for delivery data compared with the National Hospital Discharge Survey
  - ART data compared with National ART Surveillance System
  - Birth certificate pregnancy interval compared with National Survey of Family Growth
- Also evaluating state-based linkage studies
  - E.g., ART, Medicaid
- Use of EHRs as source of medical and health birth certificate data

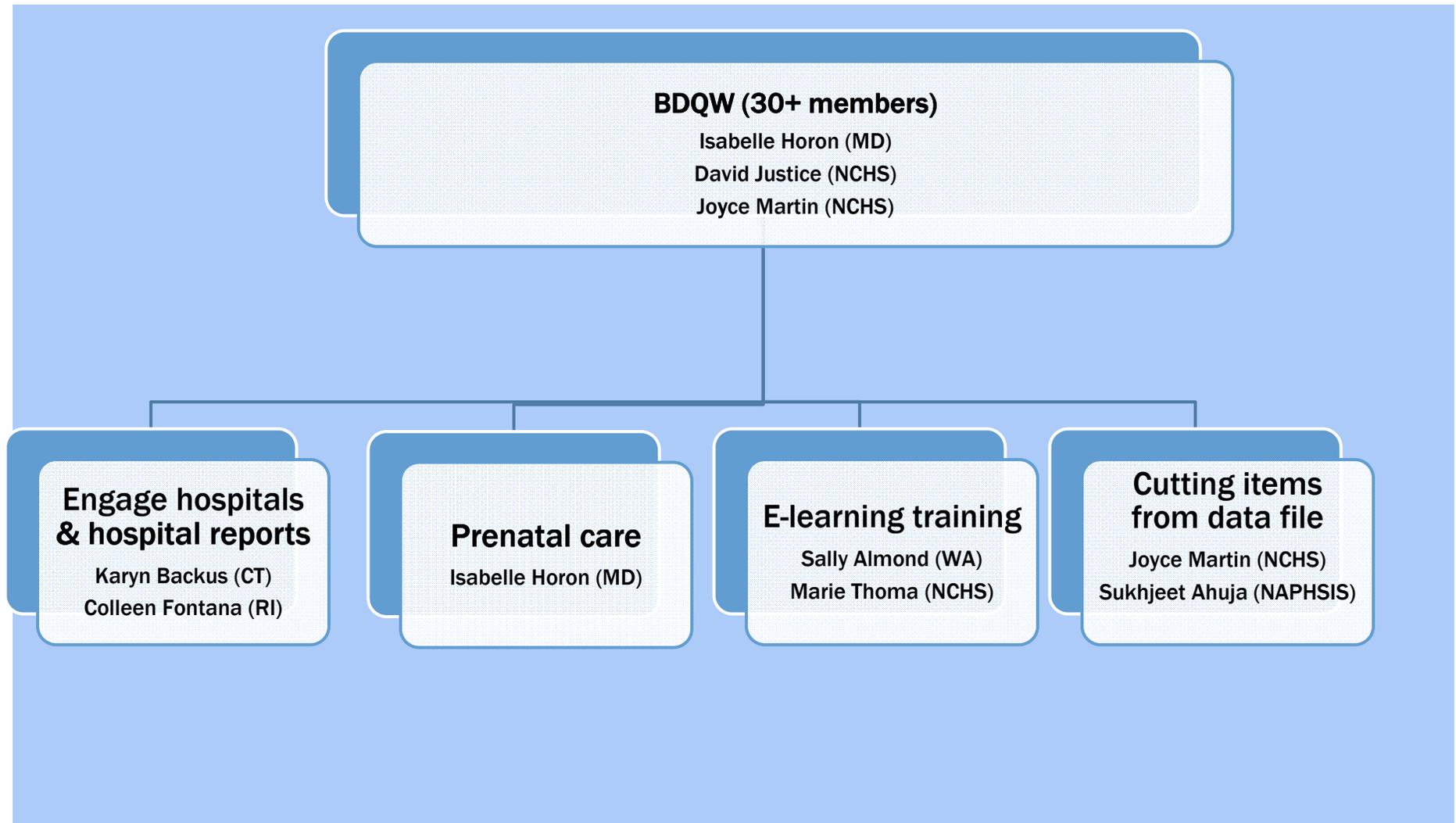
# BIRTH DATA QUALITY WORKGROUP

- Collaboration among NCHS, NAPHSIS and individual state vital statistics representatives



- Charge -- Assess and improve the quality of vital statistics birth and fetal death data
  - Focus on improving data at the source, i.e., ***at the hospital***

# BIRTH DATA QUALITY WORKGROUP AND SUBGROUPS



# SUMMARY

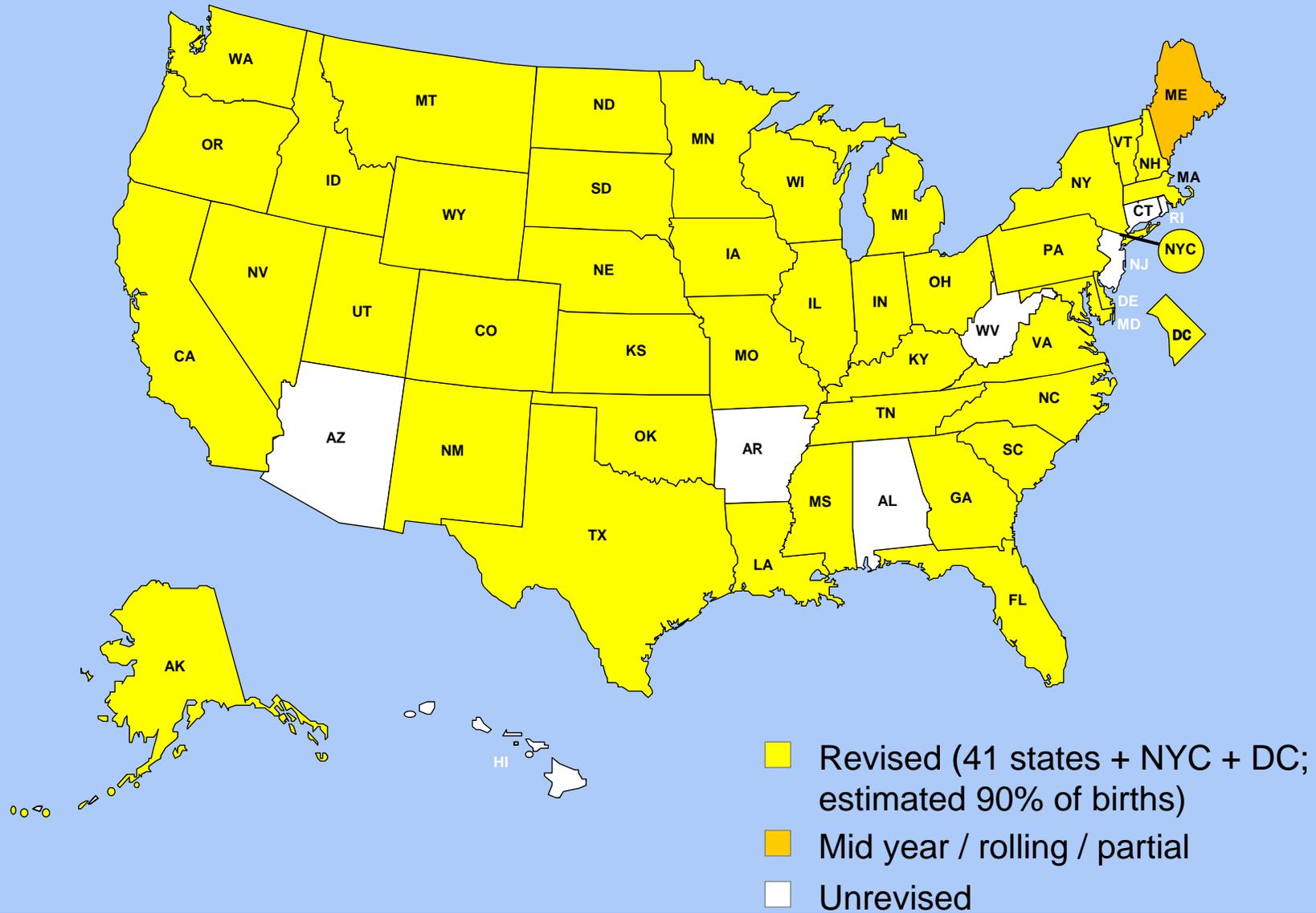
- ➡ Many partners and much effort (and \$) involved in producing, evaluating and improving national birth data
- ➡ Quality of specific data items continues to vary widely
  - ➡ Evidence that quality of a number of items is high
- ➡ On-going multi-faceted collaborative efforts to:
  - ➡ Assess data quality
  - ➡ Improve data quality via
    - ➡ Increase/improve Hospital outreach and training
    - ➡ Drop poor quality items from the national standard

# (VERY NEAR) FUTURE

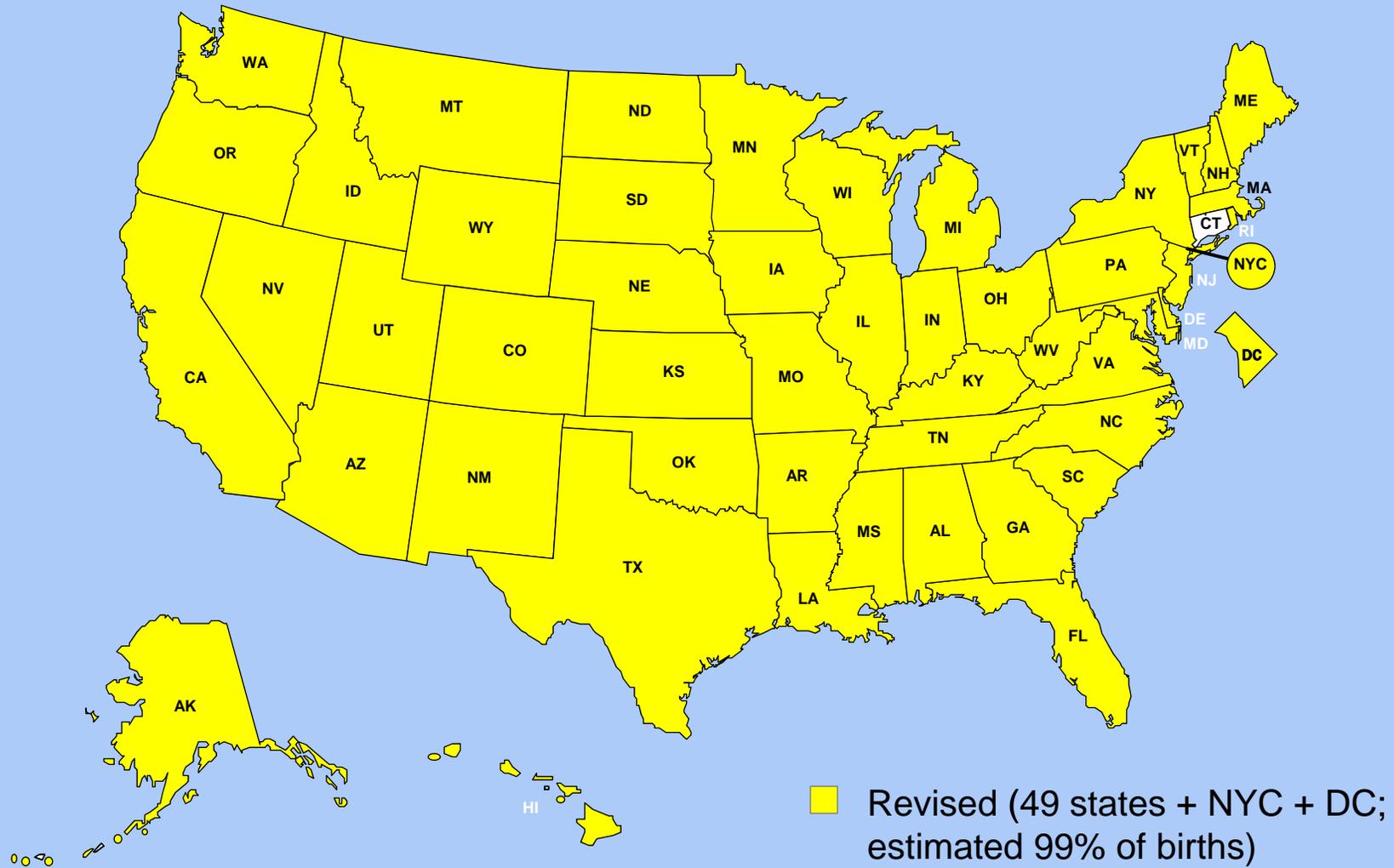
- **E-learning training available at all birthing hospitals**
  - Facility Guidebook available and used
- **Better information on quality of data items**
  - Results of new validity study; national data allowing for comparison with other data sources
- **Poor quality data items dropped from national standard**
  - Approaches to improving quality of other data items identified and implemented
- **Standardized, improved approaches to assessing hospital-specific data issues incorporated into jurisdictional processes**
- **All jurisdictions on the 2003 birth certificate revision**



# 2013 Revised States



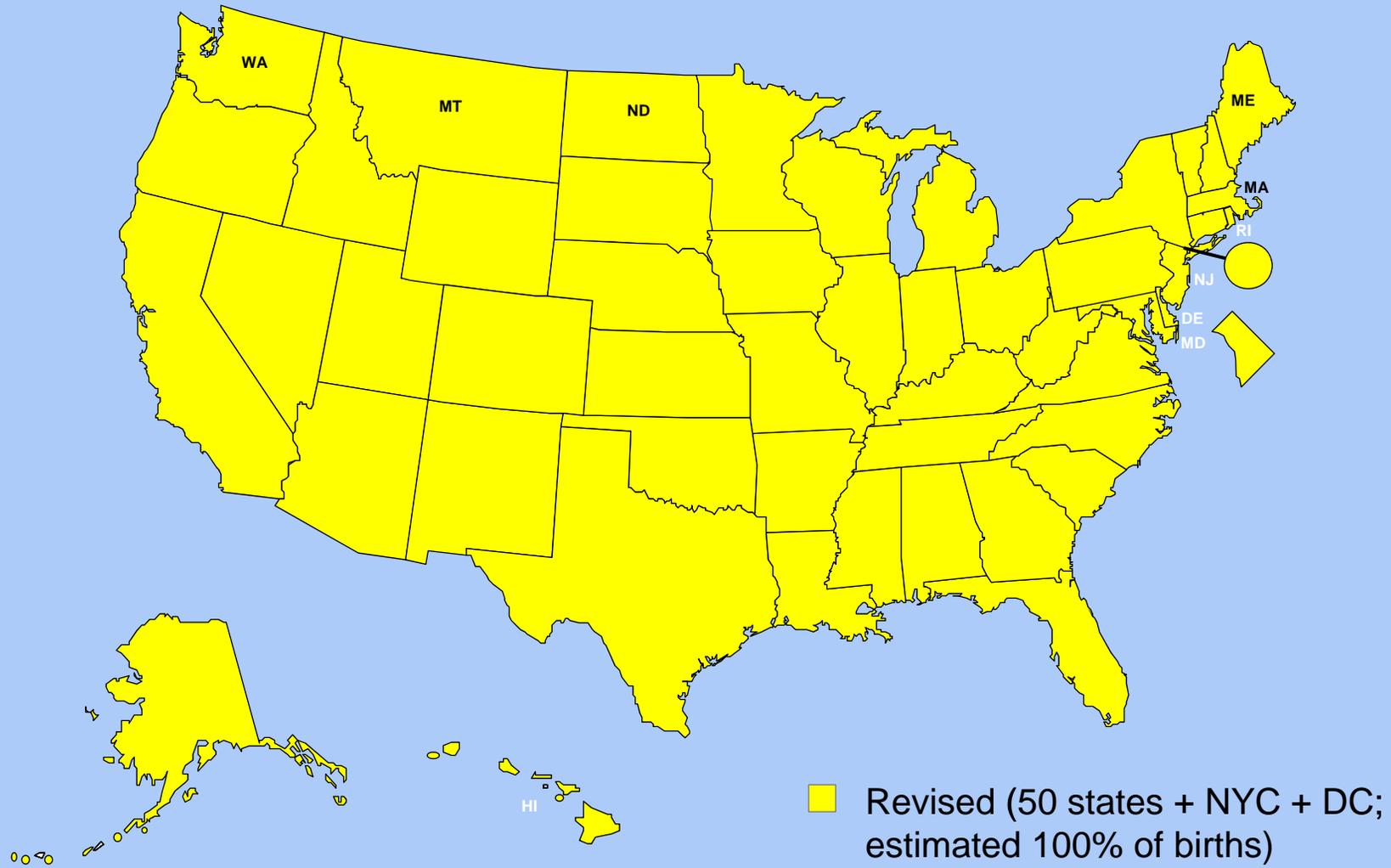
# 2014 Revised States



■ Revised (49 states + NYC + DC; estimated 99% of births)

□ Unrevised

# 2015 Revised States



**Thank you!**