

# Cesarean Delivery: State Surveillance Overview

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## Cesarean delivery (CD) is a public health issue because...

Choice of CD reflects social norms that public health tries to shape.

Utilization of CD depends on capacities and incentives in the larger healthcare system.

Consequences of CD falls within states' responsibilities for surveillance.

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## State Surveillance Objectives

- Trends in cesarean rates
- Population shifts in risk factors
- Compare hospitals using risk adjustment
- Complications attributable to cesarean
- Contribution to prematurity (CD and labor induction)

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## Perinatal Surveillance System

- Electronic Birth Certificate Program
  - 400 field extract of PNC and L&D record
  - Direct data entry at 50 maternity hospitals
- Hospital Discharge Files
  - Universal Billing format
  - ICD-9 coding
- Pregnancy Risk Assessment Monitoring System (PRAMS)

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## Key Methodological Issues

Clinical issue: Imprecise standards on indications for cesarean.

Data issue: “Elective” status is not recorded.

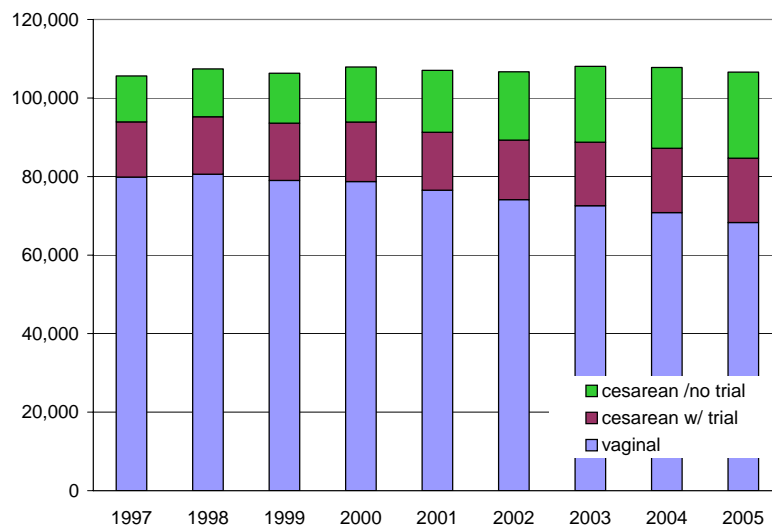
Statistical issue: Methodologies for evaluation of “medically unnecessary” or “potentially preventable” are underdeveloped.

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Live Births by Method of delivery

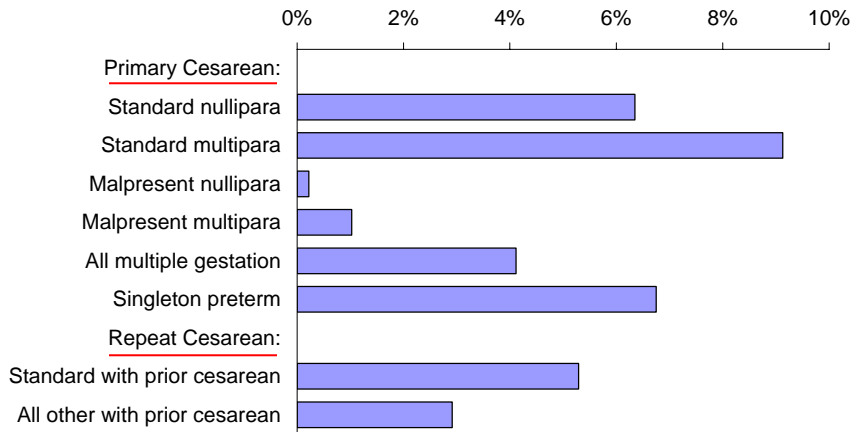


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## Annual Growth in Cesarean Rates 1999-2004



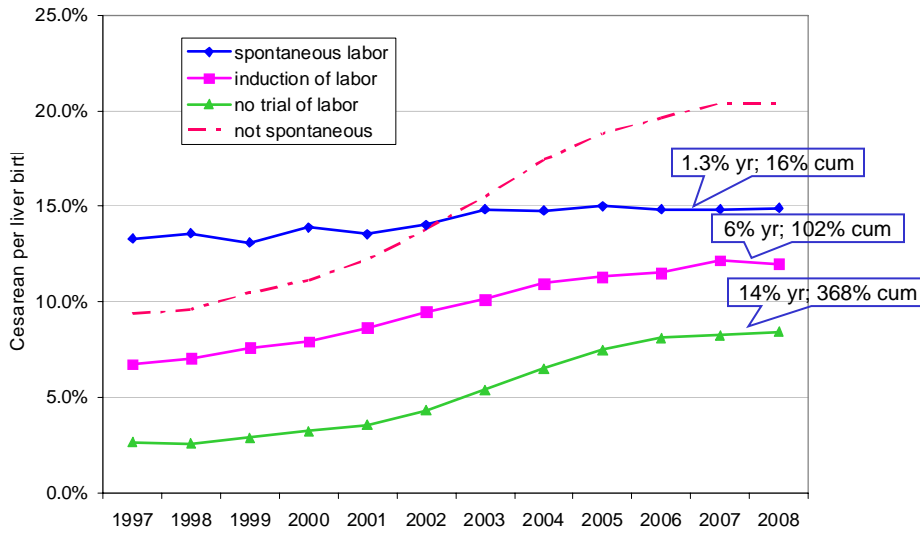
\* **Standard presentation = singleton, full term, head down.**

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## Primary Cesareans, Standard Delivery, Nullipara by Circumstances of Labor

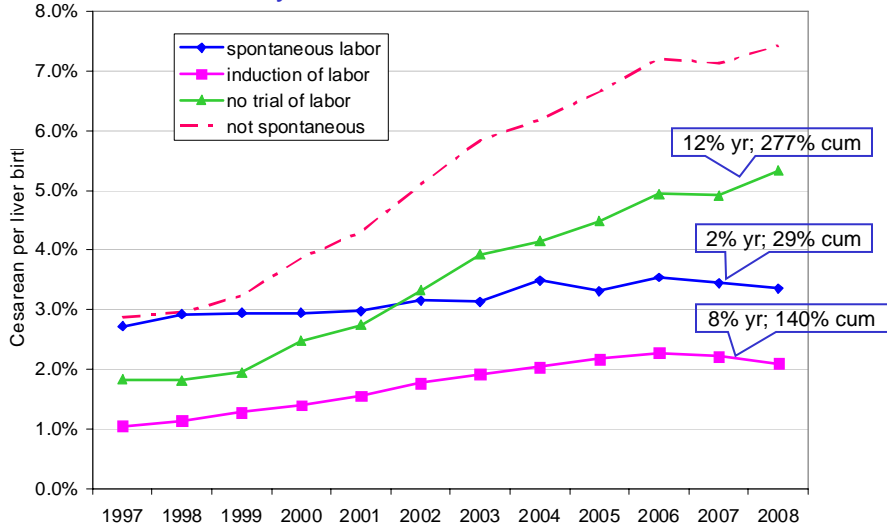


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### Primary Cesareans, Standard Delivery, Multipara by Circumstances of Labor

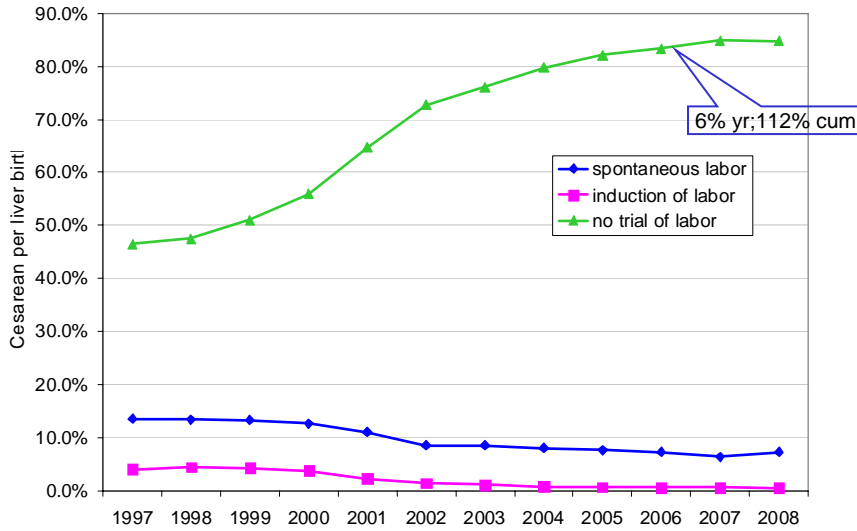


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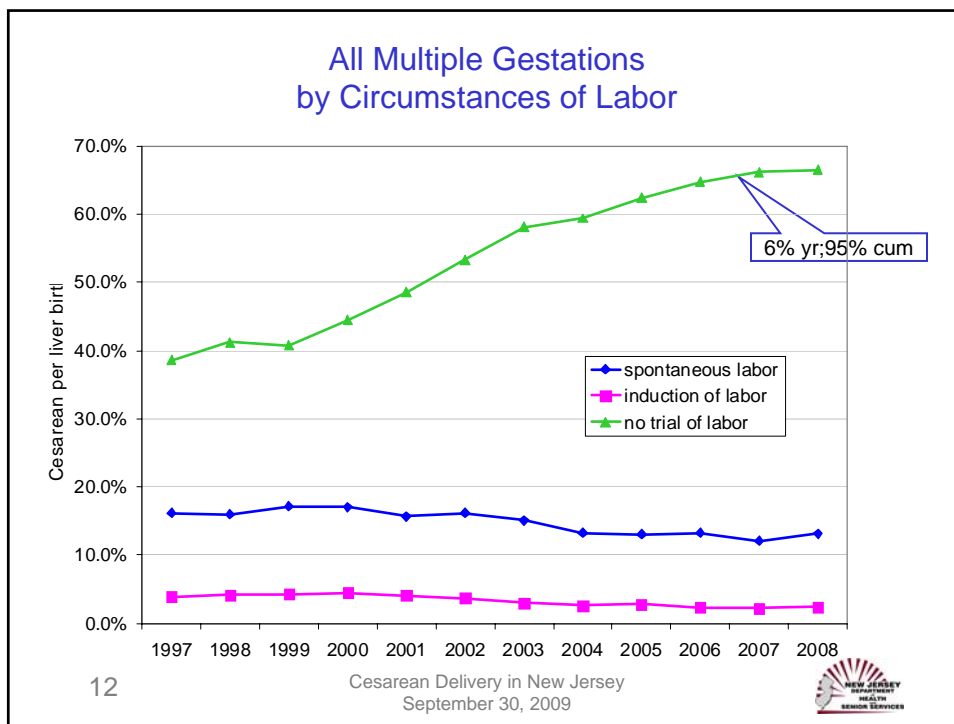
### Repeat Cesareans, Standard Delivery by Circumstances of Labor



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### Drilling Down

Standard operating procedure:  
Identify high-risk or high-growth groups  
and quantify population impacts

- Socioeconomic differences
- Maternal request
- Advanced maternal age, other obstetric factors

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Oh, sure ...

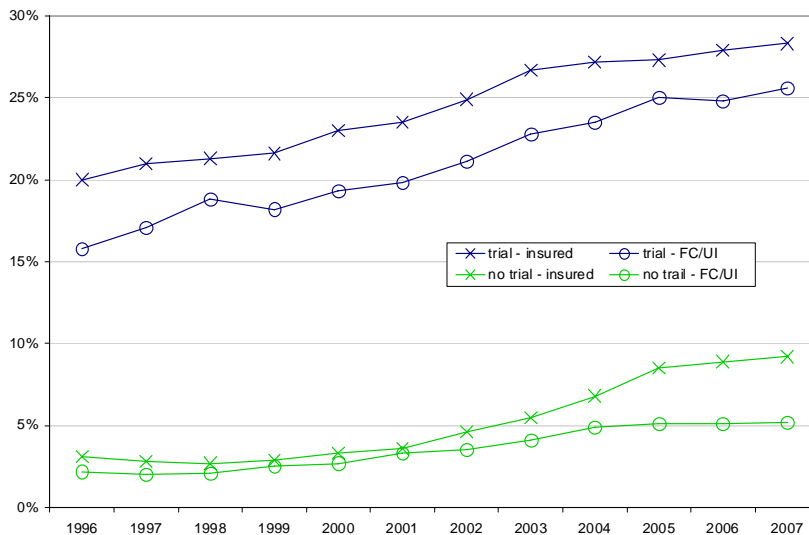
“It’s the Medicaid population.”

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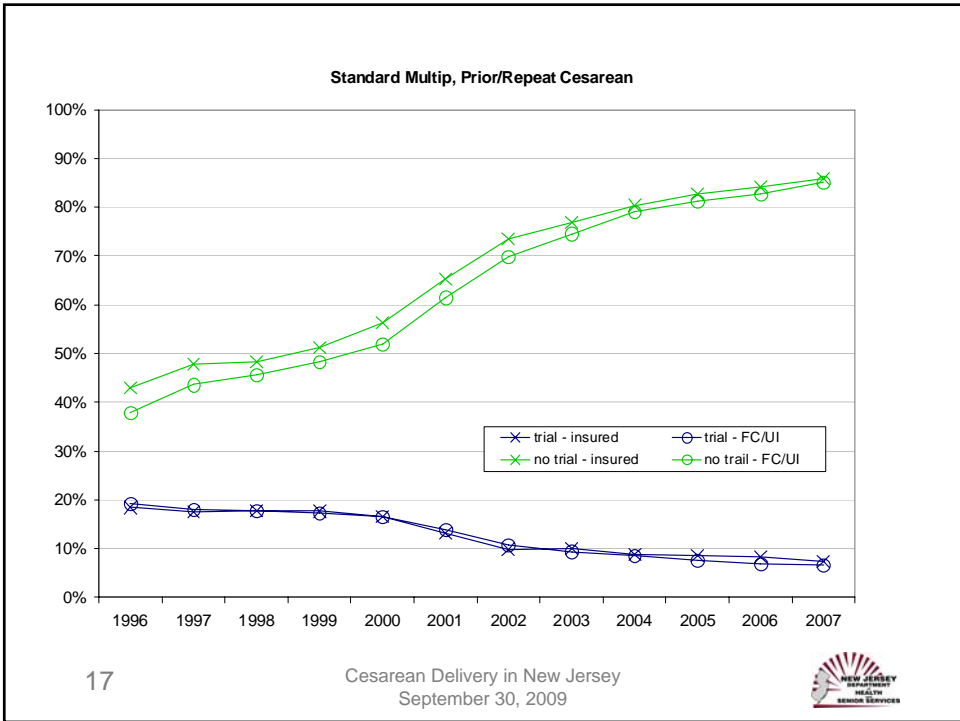
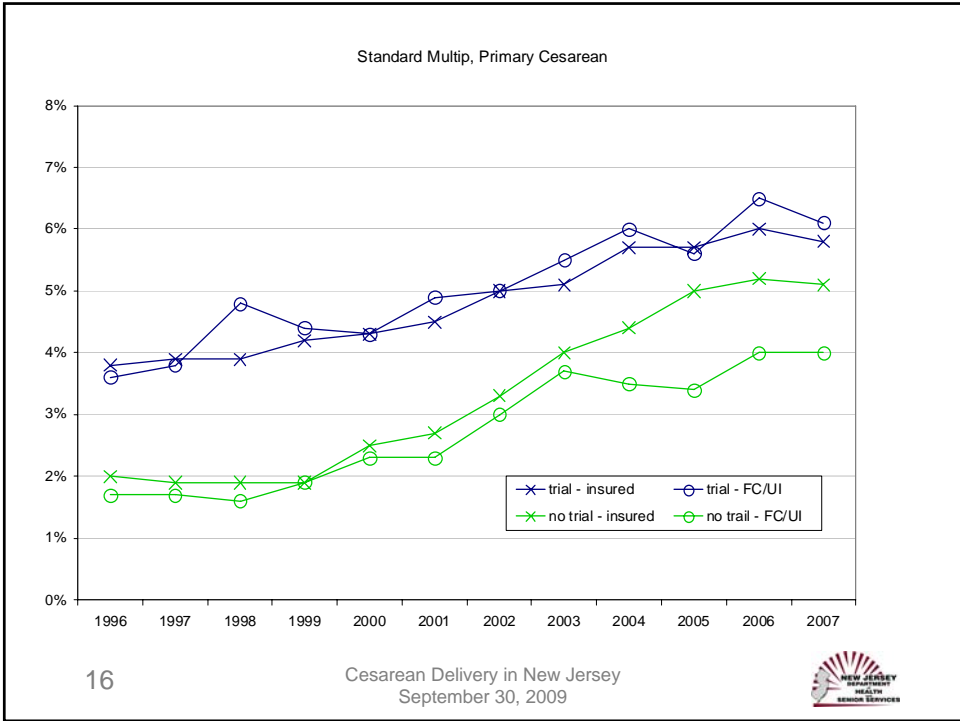
Standard Nullip, Primary Cesarean

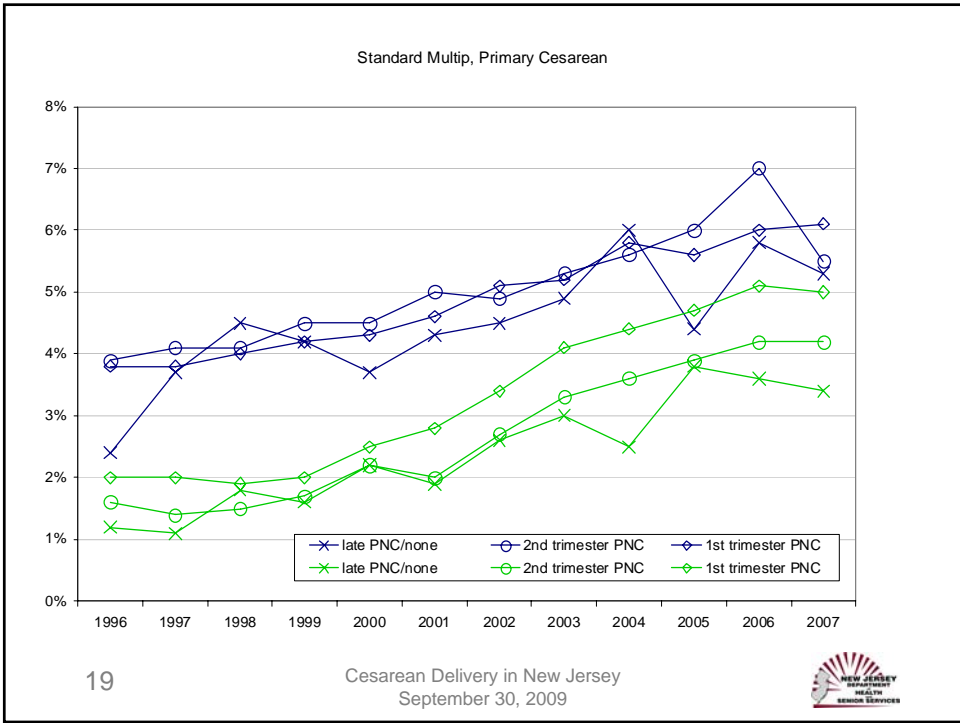
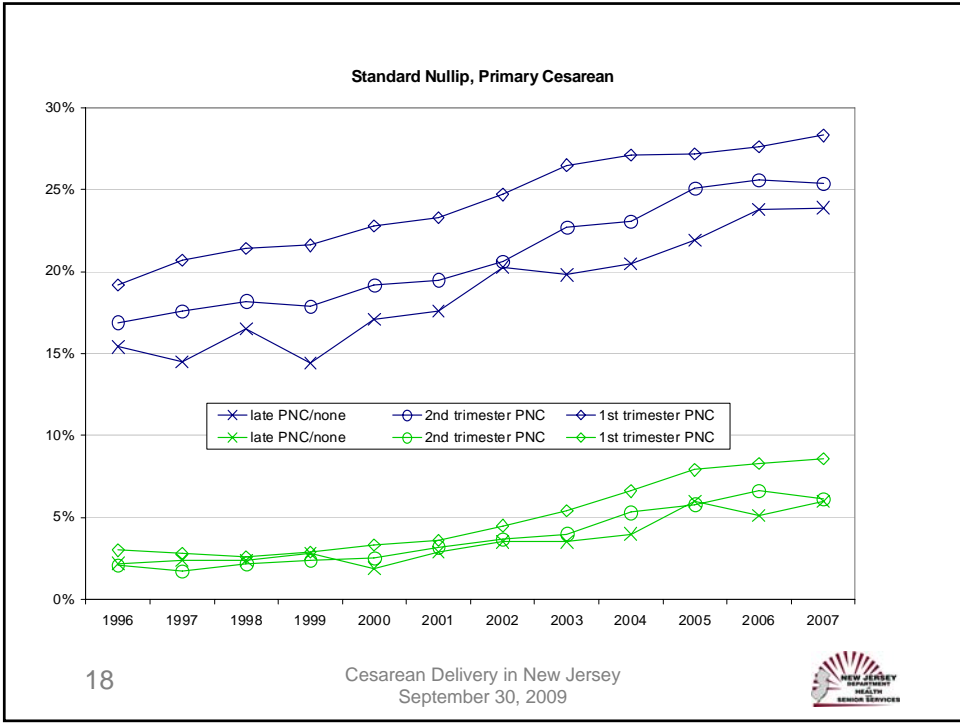


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On the one hand ...

“There is increasing demand among some groups for scheduled deliveries.”

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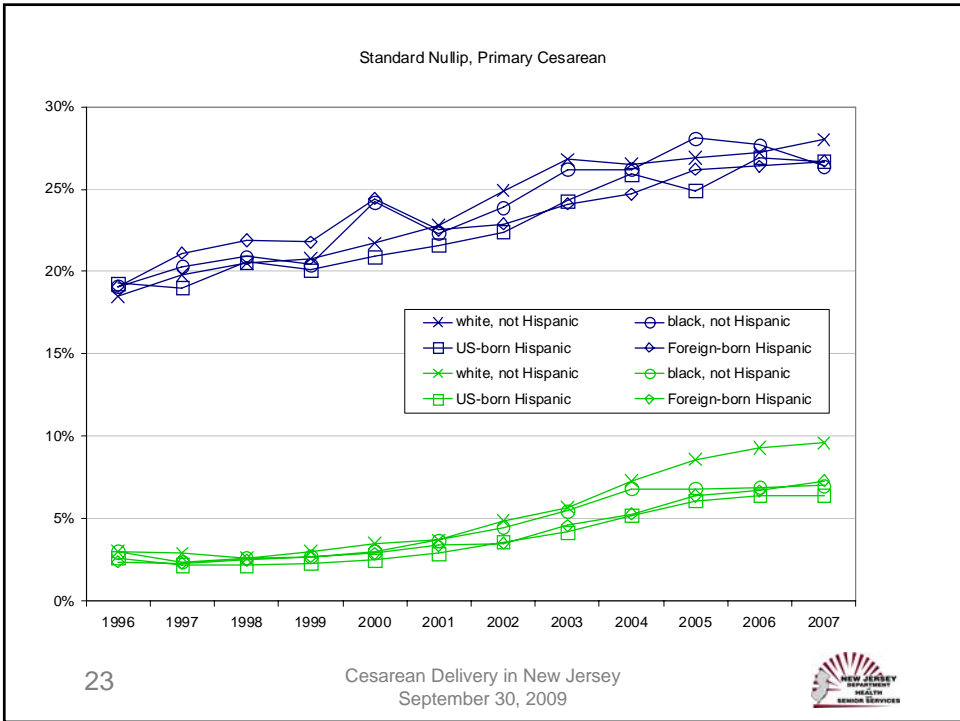
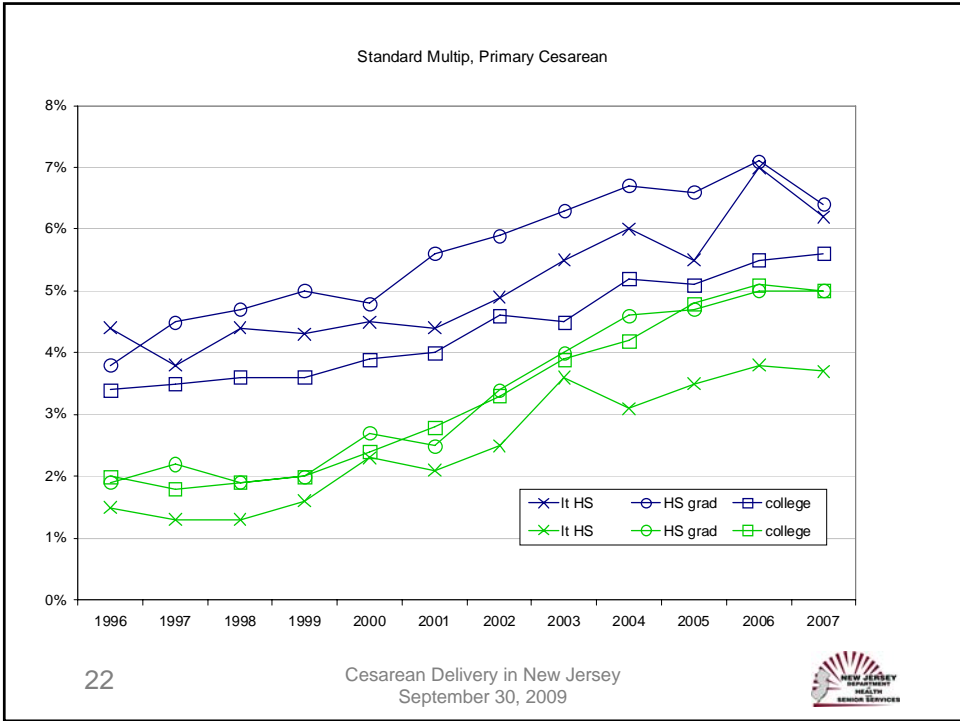
Standard Nullip, Primary Cesarean

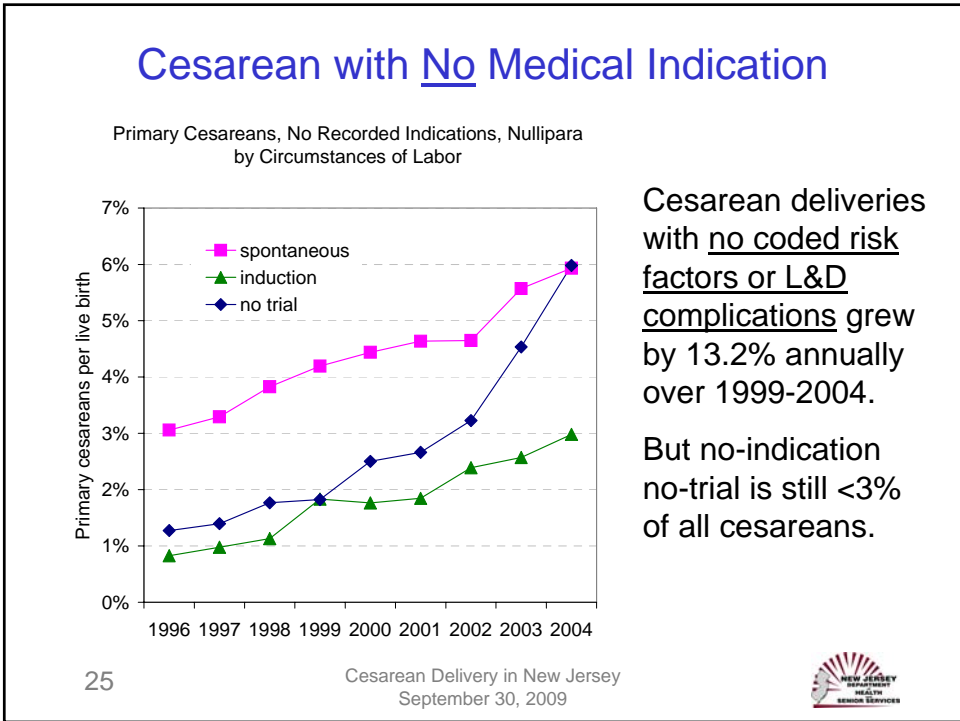
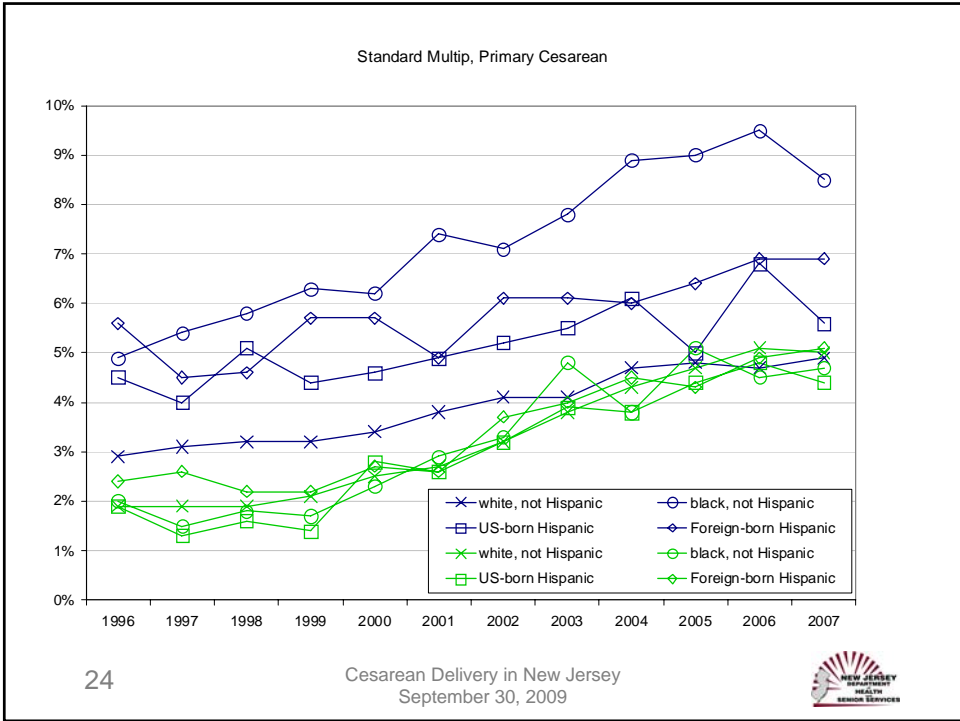


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## On the flip side ...

“Our maternal population is older, sicker and more ART.”

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## More High-Risk Deliveries? Standard Nullipara, Diabetes

	<b>1999</b>	<b>2004</b>
Live births	771	1,077
Cesarean rate (%)	39.2	39.8
Increase in sections: observed		127
Increase extrapolating 1999 rate		120

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## More High-Risk Deliveries? Standard Nullipara, Maternal Age 35+

	<b>1999</b>	<b>2004</b>
Live births	3,861	4,419
Cesarean rate (%)	39.4	48.1
Increase in sections: observed		603
Increase extrapolating 1999 rate		218

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## More High-Risk Deliveries? Standard Multipara, Maternal Age 35+

	<b>1999</b>	<b>2004</b>
Live births	9,897	10,594
Cesarean rate (%)	8.2	13.0
Increase in sections: observed		570
Increase extrapolating 1999 rate		59

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## More High-Risk Deliveries? All Multiple Gestations

	<b>1999</b>	<b>2004</b>
Live births	3,956	4,317
Cesarean rate (%)	62.3	75.3
Increase in sections: observed		787
Increase extrapolating 1999 rate		224

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## High-Risk Pregnancies Don't Even Lead the Charge

	<b>Relative Risk</b>	
	<b>1999</b>	<b>2004</b>
Standard Nullip, Maternal Age 35+	1.8	1.6
Standard Multip, Maternal Age 35+	1.5	1.5
Standard Nullip, Diabetes	1.7	1.2
Standard Nullip, Hypertensive Dis	1.6	1.4
Standard Nullip, Macrosomia	2.6	2.3
All Multiple Gestations	2.4	2.1

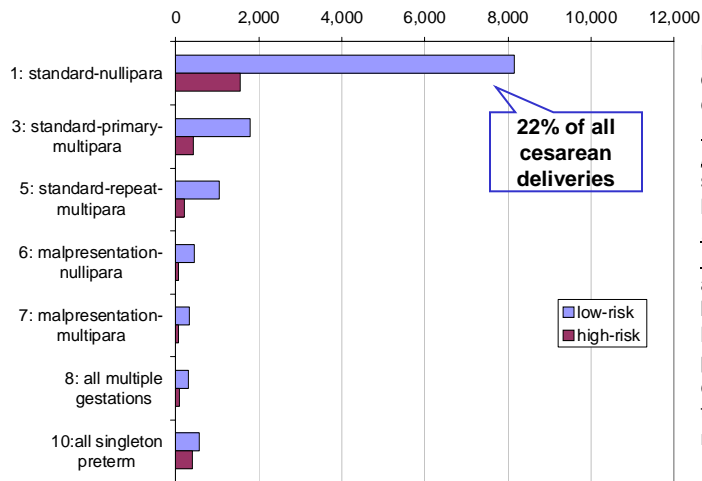
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## The medical context of most cesareans is relatively low-risk.

Annual Cesarean Deliveries After Trial of Labor, 2003-05



Low antepartum risk of cesarean and/or complication:  
Standard presentation: singleton, full term, head down  
Maternal risk factors: serious antepartum bleeding, severe hypertension, preeclampsia, eclampsia, uterine tissue abnormality, macrosomia

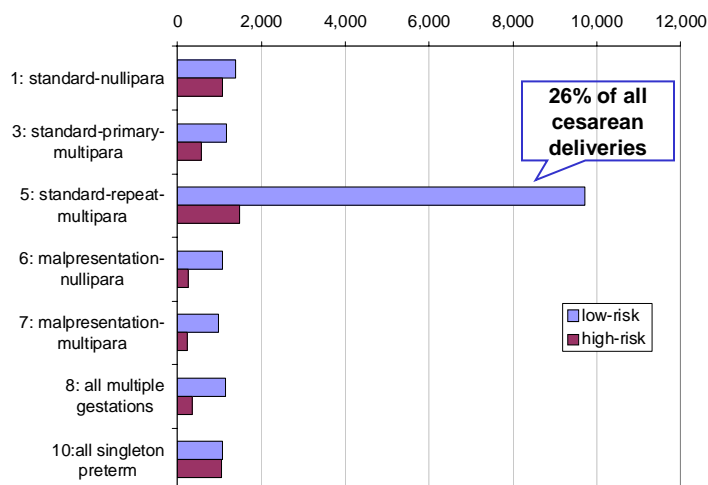
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## The medical context of most cesareans is relatively low-risk.

Annual Cesarean Deliveries Without Trial of Labor, 2003-05



79% of standard, low-risk deliveries to women with a prior cesarean are sectioned without trial of labor

60% of VBAC attempts in this group achieve a vaginal delivery

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## 2006 Hospital Comparisons

MCH-Epi report documents variations across hospitals.

- *Variations persist after risk adjustment*
- *Not explained by size or intensive care designation (eg RPC)*

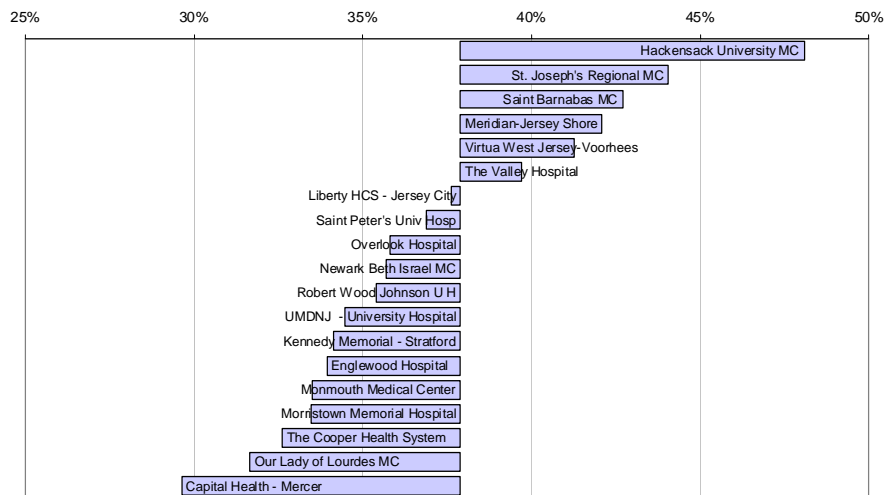
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### New Jersey's Intensive Care Delivery Hospitals

Cesarean Delivery Index (2006 State Avg. 38%)  
Adjusted for Robson Mix



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## Is there an optimal cesarean rate?

- Healthy People 2010 calls for 15% primary rate!
- Are alternatives, diagnostics and decision processes improving?
- Are obstetric resources available to lower the rate?
- What interventions first?

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## NJHA Perinatal Collaborative

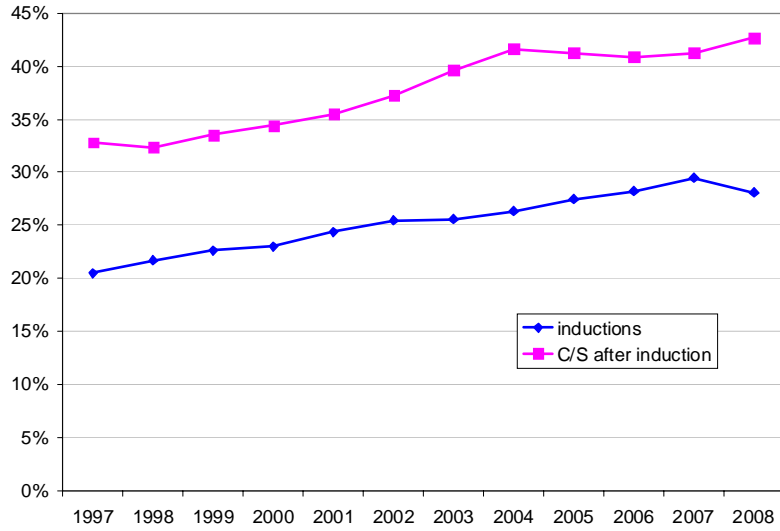
- Focus on Patient Safety generally
- IQI Protocols and Training
- Pushing back: 38 should not be (but is) the new 39

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## Induction and Cesarean Standard Nulliparas

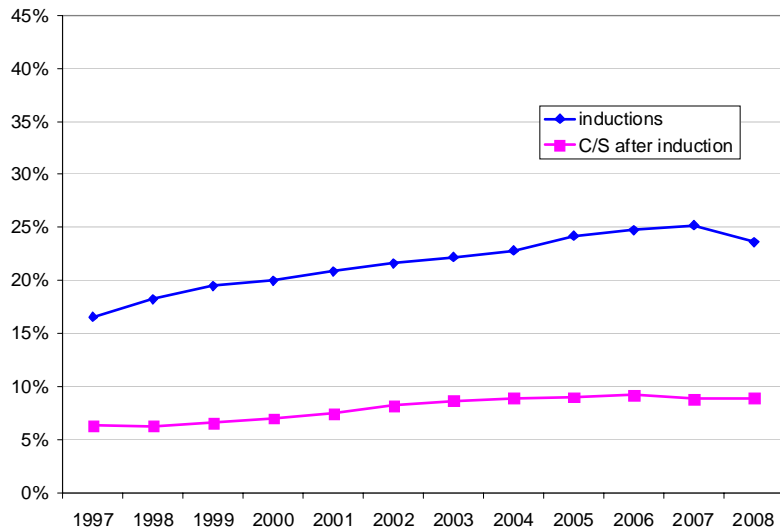


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## Induction and Cesarean Standard Multiparas



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## Next steps at DHSS

- Completing report on maternal complications.
- Still investigating neonatal complications.
- Use PRAMS to learn more about intentions and informed consent, starting in 2009.

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## I'm with the government, I'm here to help.

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- PRAMS  
... [/fhs/professional/prams.shtml](http://fhs/professional/prams.shtml)

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