

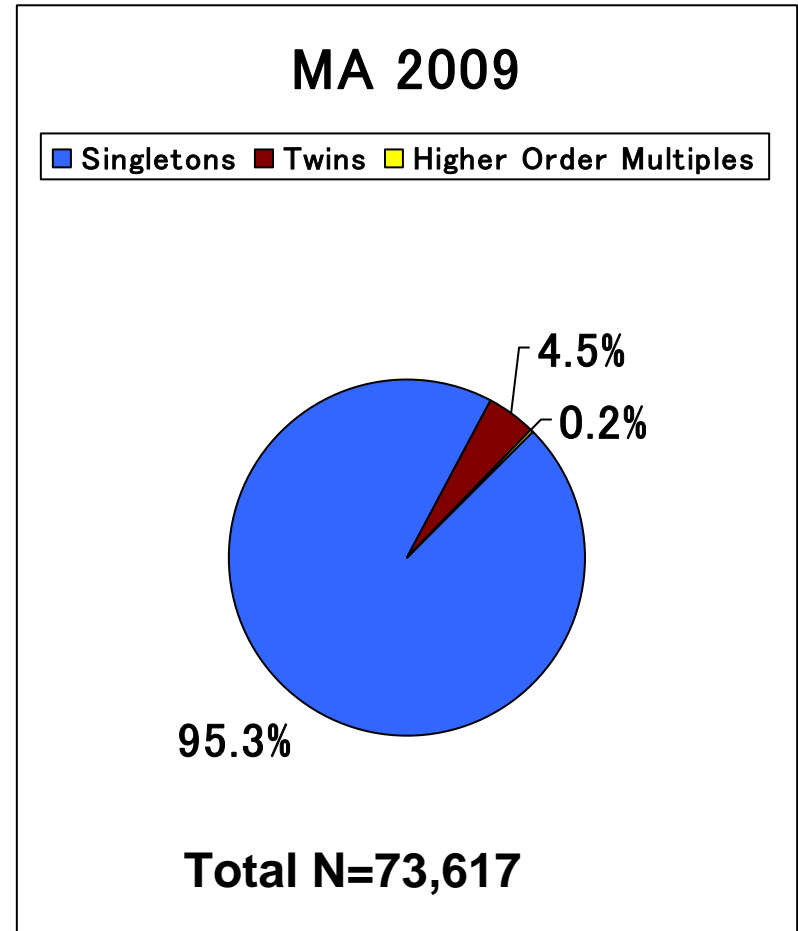
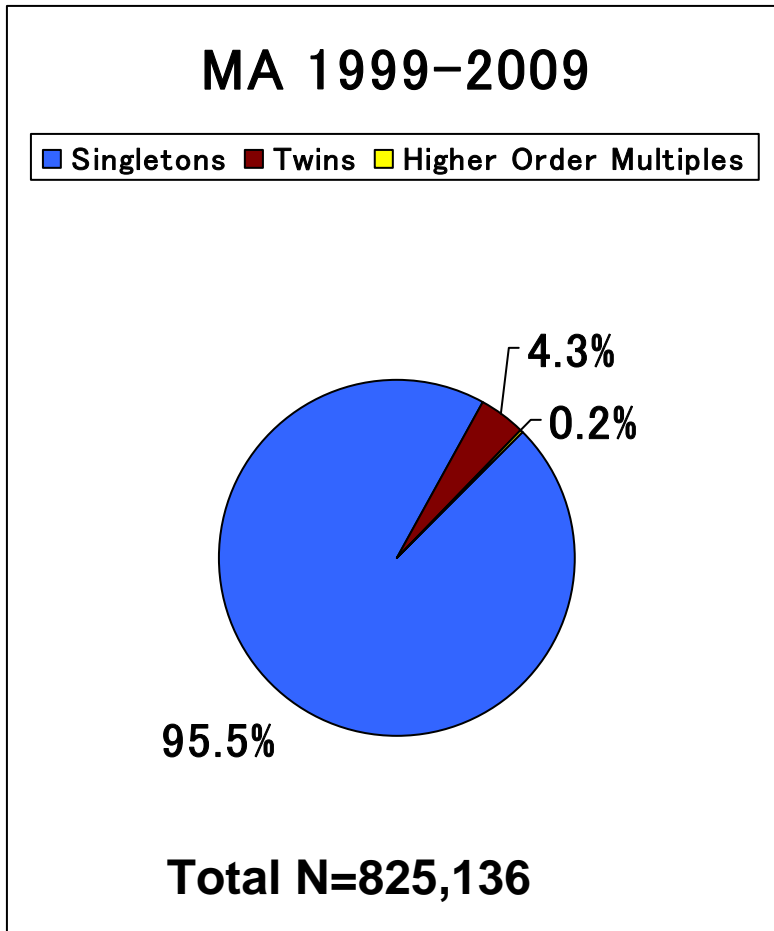
Prematurity Prevention: The Potential of Progesterone Usage

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Massachusetts Births by Plurality



- Data Source: PELL Data System
- Percentage of plurality calculated as the proportion of all births.

Preterm Births by Plurality: Massachusetts 1999-2009

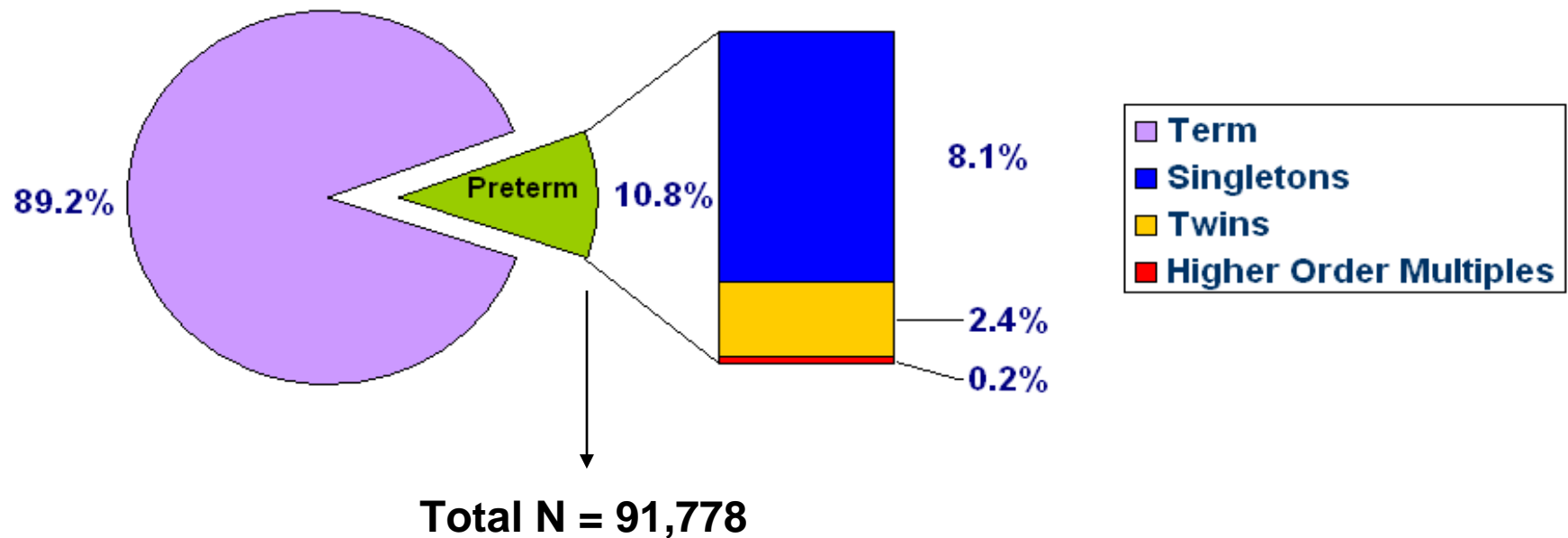
10.8% of All MA Births are preterm

| Gestational Age | Plurality | | | |
|---------------------|-----------|---------------|---------------|---------------|
| | | Singleton | Multiples | Total |
| 37+ weeks | N | 744,352 | 16,006 | 760,358 |
| | % | 91.5 | 41.6 | 89.2 |
| <37 weeks | N | 69,224 | 22,554 | 91,778 |
| | % | 8.5 | 58.4 | 10.8 |
| Total | | 813,576 | 38,560 | 852,136 |

•Data Source: PELL Data System

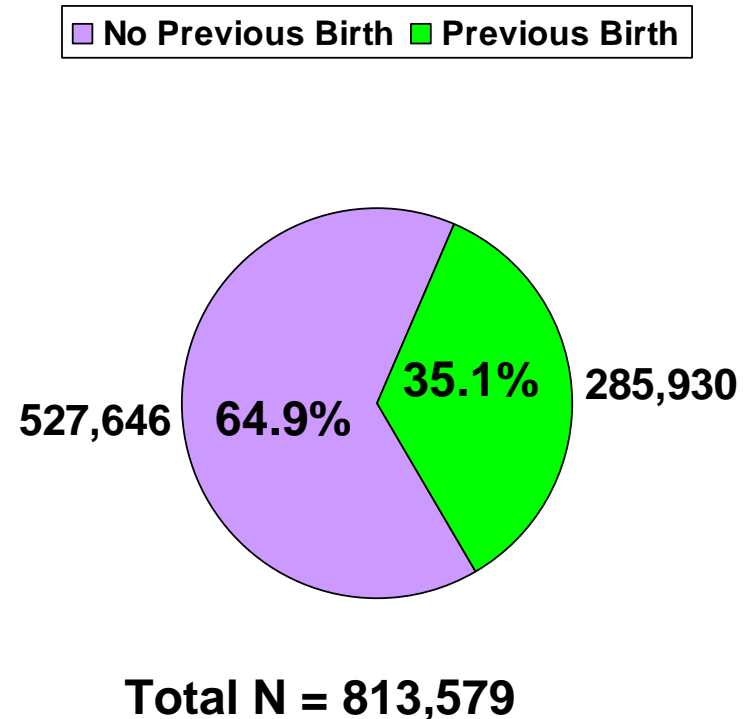
•Percentage of preterm births=proportion of preterm births (singletons, twins, and higher multiple order) of all births in a given year

Prevalence of Preterm Birth by Plurality: MA 1999-2009



Birth History of Current Singleton Birth: MA 1999-2009

- Included women with at least one prior birth only
- Excluded women whose first birth in the dataset is a preterm (that is this is her first pregnancy)
- Previous births to women who had a delivery out-of-state will not be included



Previous Preterm Birth among Current Singleton Birth: MA 1999-2009

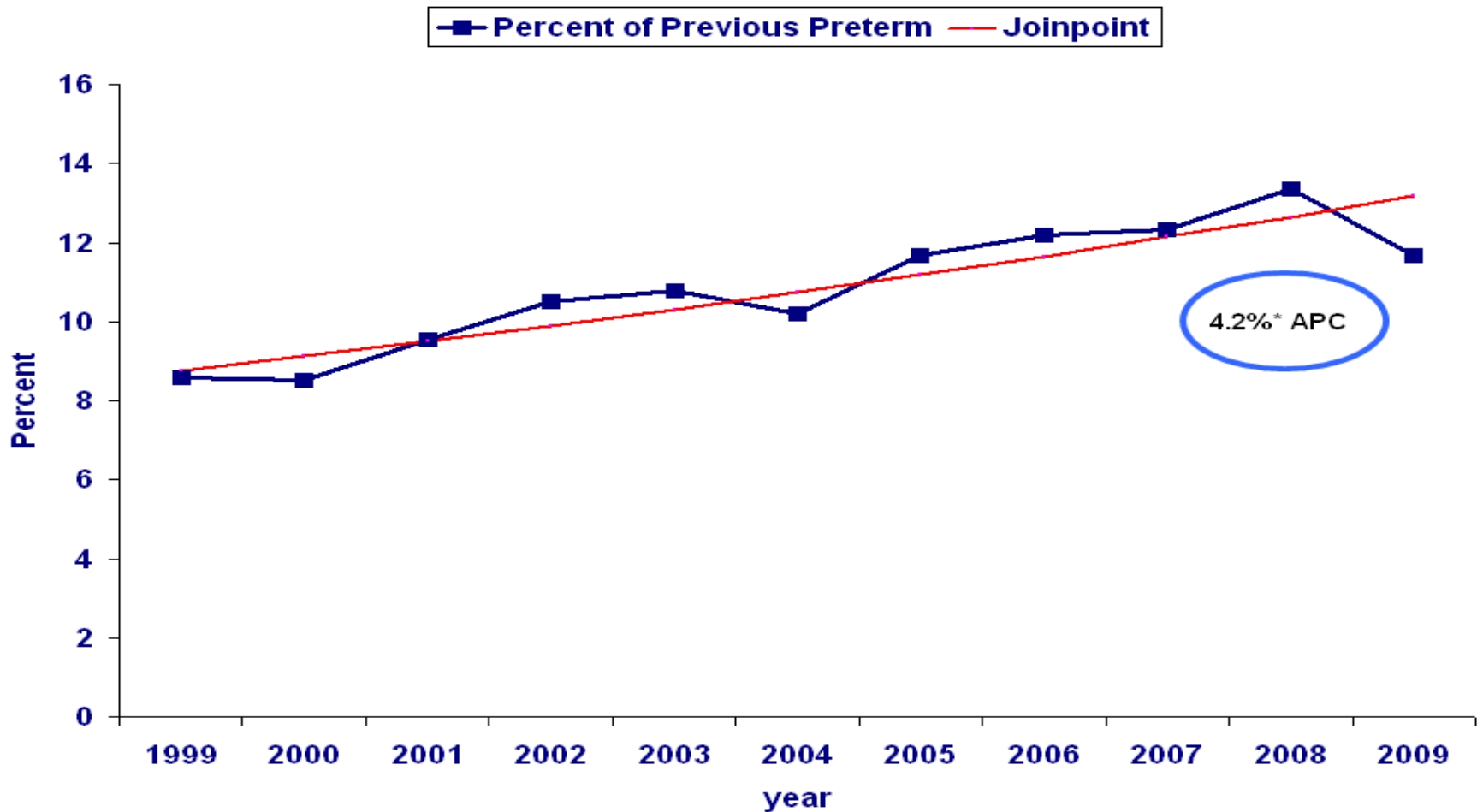
22,189 (7.8%) current singleton preterm births had a previous birth
2500 (11.3%) had a previous preterm birth

| Current Singleton Pregnancy | Previous Singleton Pregnancy | | | |
|-----------------------------|------------------------------|---------------|--------------|---------------|
| | | 37+weeks | <37 weeks | Total |
| 37+ weeks | N | 244,030 | 19,711 | 263,771 |
| | % | 92.5 | 7.5 | 92.2 |
| <37 weeks | N | 19,689 | 2,500 | 22,189 |
| | % | 88.7 | 11.3 | 7.8 |
| Total | | 263,719 | 22,211 | 285,930 |

•Data Source: PELL Data System

•This only includes women with at least one prior birth included in the 1999-2009 dataset. It excludes women whose first birth in the dataset is a preterm birth. Previous birth to women who had a delivery out of state (preterm or not) will be automatically excluded.

Previous Preterm Birth among Current Singleton Preterm Birth: MA 1999-2009



*Statistically significant ($p \leq .05$). APC = Annual Percentage Change

PPROM among Previous Singleton Preterm Birth: MA 1999-2009

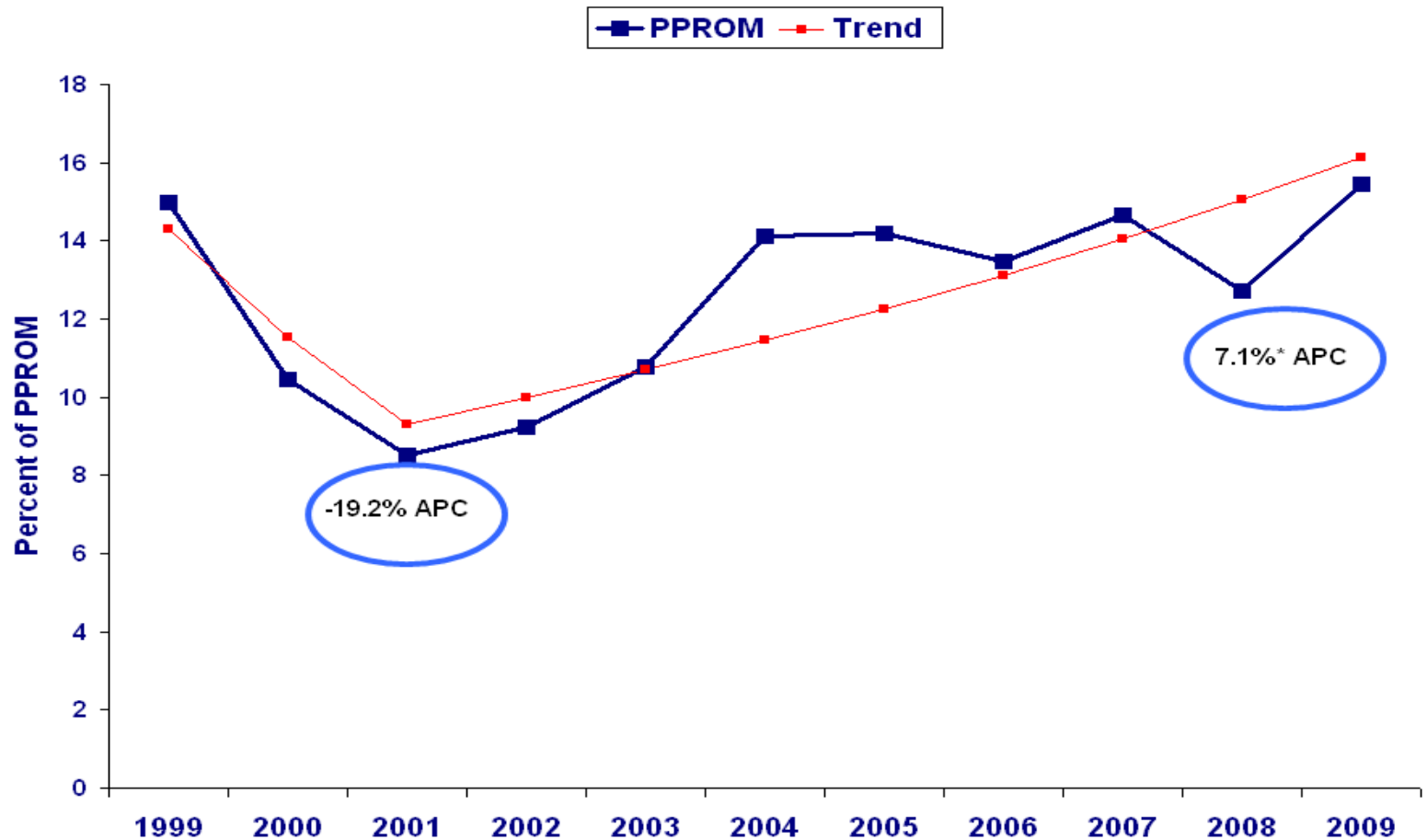
12.9% of all previous singleton preterm birth had PPRM

| Previous Pregnancy | PPROM | | | |
|--------------------|-------|-------------|-------|--------------|
| | | Yes | No | Total |
| <37 weeks | N | 323 | 2,177 | 2,500 |
| | % | 12.9 | 87.1 | 100.0 |

•Data Source: PELL Data System

•PPROM defined as rupture of membranes (less than 12 hours or greater than 24 hours) based on birth certificate data and ICD-9CM codes 658.1 or 761.1 from hospital discharge data (diagnosis codes #1-15).

PPROM among Previous Preterm Birth Current Singleton Preterm Birth: MA 1999-2009



•PPROM defined as rupture of membranes (less than 12 hours or greater than 24 hours) based on birth certificate data and ICD-9CM codes 658.1 or 761.1 from hospital discharge data (diagnosis codes #1-15).

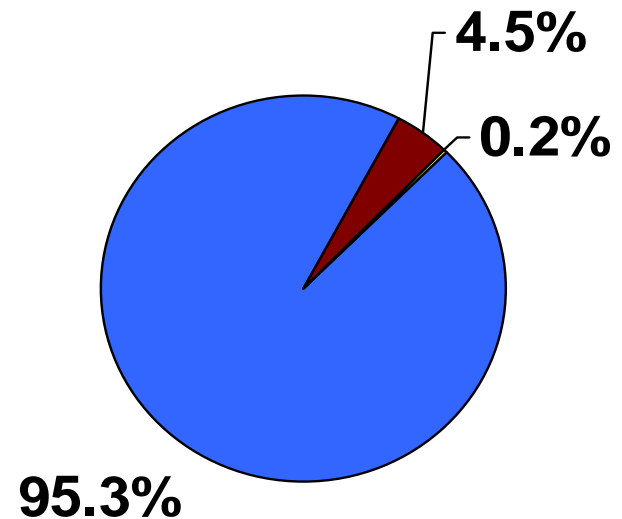
•*Statistically significant ($p \leq .05$). APC = Annual Percentage Change

Number of Births by Plurality: MA 2009

Total number of Births:

73,617

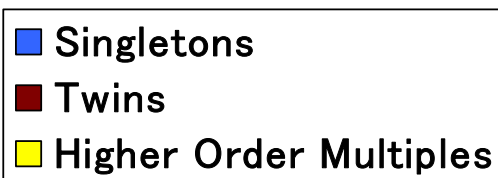
- Singletons:
70,173 (95.3%)
- Twins:
3,304 (4.5%)
- Higher order multiples:
140 (0.2%)



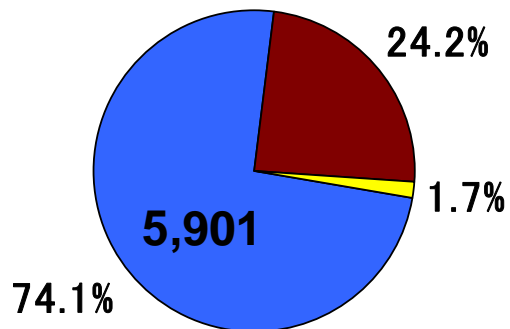
•Data Source: PELL Data System

•Percentage of plurality calculated as the proportion of all births.

Distribution of Preterm Birth by Plurality & Prevalence of Preterm Singletons: MA 2009



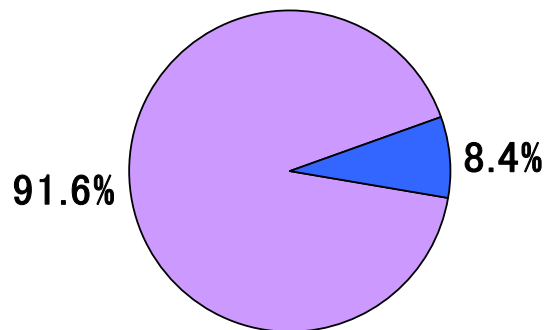
Of all preterm births (7,965), 5,901 (74.1%) were singletons



Total N = 7,965



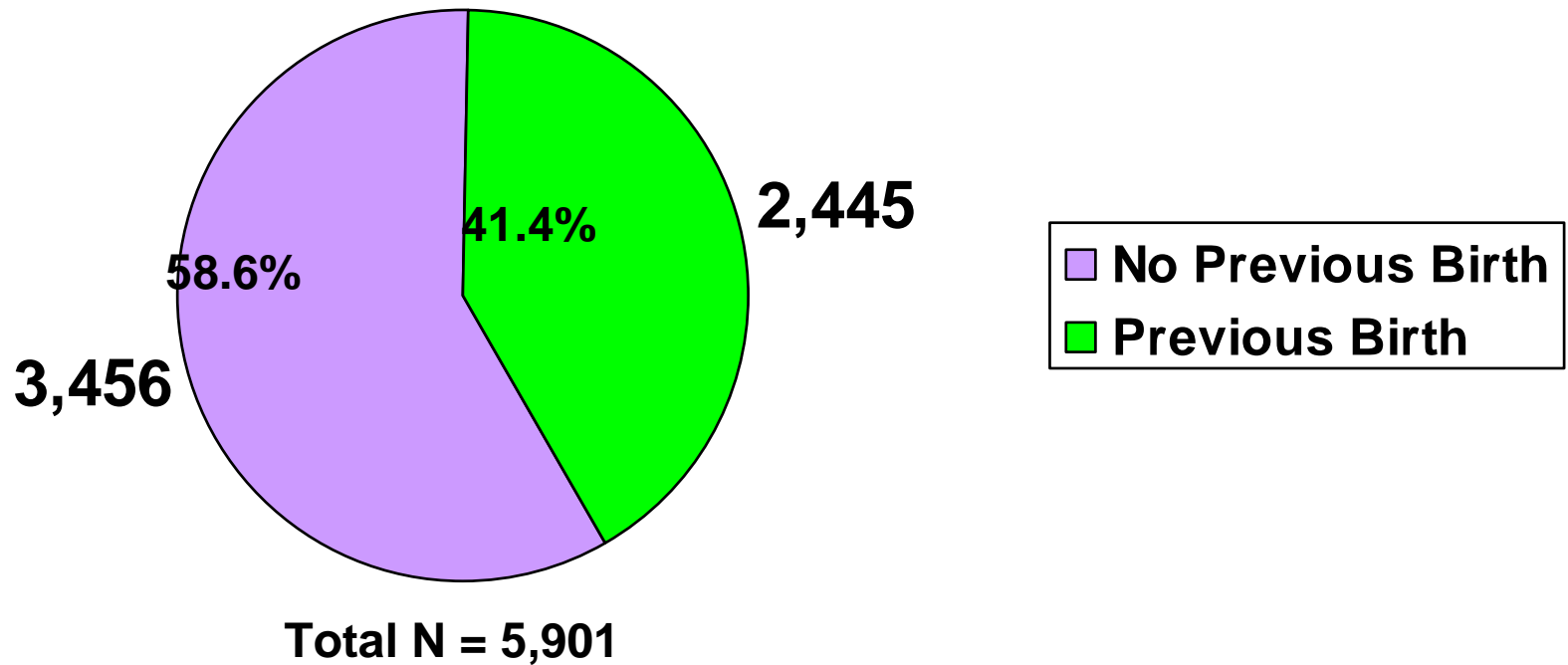
Out of all singleton births (70,173), 5,901 (8.4%) were preterm births



Total N = 70,173

- Data Source based on PELL Data System
- Preterm birth is defined as gestational age < 37 weeks

Birth History of Current Singleton Birth: MA 2009



Previous Preterm Birth among Current Singleton Birth: MA 2009

11.7% (285) of current preterm birth had a previous singleton preterm birth

| Current Pregnancy | Previous Singleton Pregnancy | | | |
|-------------------|------------------------------|----------|------------|-------|
| | | 37+weeks | <37 weeks | Total |
| <37 weeks | N | 2,160 | 285 | 2,445 |
| | % | 88.3 | 11.7 | 100.0 |

•Data Source: PELL Data System

•This only includes women with at least one prior birth included in the 1999-2009 dataset. It excludes women whose first birth in the dataset is a preterm birth. Previous birth to women who had a delivery out of state (preterm or not) will be automatically excluded.



PPROM among Previous Singleton Preterm Birth: MA 2009

15.4% (44) of current preterm birth had a previous singleton preterm birth with PPRM

| Previous Pregnancy | PPROM | | | |
|--------------------|-------|------|------|-------|
| | | Yes | No | Total |
| <37 weeks | N | 44 | 241 | 285 |
| | % | 15.4 | 94.6 | 100.0 |

•Data Source: PELL Data System

•PPROM defined as rupture of membranes (less than 12 hours or greater than 24 hours) based on birth certificate data and ICD-9CM codes 658.1 or 761.1 from hospital discharge data (diagnosis codes #1-15).

Projected Progesterone Intervention Effect on PPROM

- There were **5,901** singleton preterm births in 2009
 - **285** had a previous preterm (11.7%)
 - **44** had previous preterm with PPROM (15.4%)
- Projected progesterone effect at preventing PPROM based on 2009 data

| Estimate of Progesterone Effect on PPROM | Number of Preterm PPROM Prevented | % Preterm PPROM Projected |
|--|-----------------------------------|---------------------------|
| 100% | N=44 | 0.0 |
| 75% | N=33 | 3.8 |
| 66% | N=29 | 5.3 |
| 50% | N=22 | 7.7 |
| 25% | N=11 | 11.6 |

Projected Progesterone Intervention Effect on Singleton Preterm Birth

- There were **70,173** singletons in 2009, **5,901** (8.4%) of them were preterm
 - **285** had a previous preterm
 - **44** had previous preterm with PPRM
- Projected progesterone effect at preventing preterm birth based on 2009 data

| Estimate of Progesterone Effect on Preterm | Number of Preterm PPRM Prevented | % Overall Preterm Projected | % Decrease* |
|--|----------------------------------|-----------------------------|-------------|
| 100% | N=44 | 8.35 | 0.6 |
| 75% | N=33 | 8.36 | 0.5 |
| 66% | N=29 | 8.37 | 0.4 |
| 50% | N=22 | 8.38 | 0.2 |
| 25% | N=11 | 8.39 | 0.1 |

* Percent decrease of preterm prevalence among current singletons

Limitations

- **No information on women's cervical length**
- **No information about spontaneous births that occurred <37 weeks of gestation**

Progesterone for Prevention of Preterm Birth

- For more information on the use of progesterone in preventing preterm click on the link below:

http://www.effectivehealthcare.ahrq.gov/ehc/products/104/1239/ProgestogensPretermBirth_FinalReport_20120823.pdf

