Impact of Declining Births Among Adolescent and Young Adults to the Overall Decline in Preterm Births in California Between 2007 and 2014

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Introduction

- Births to adolescents aged 19 and below and preterm births have declined in California.[+]
- There is considerable interest in identifying drivers of these declines.
- The focus of this poster is to identify the contribution of declining births among adolescents and young adults aged 20-24 (YA) to the overall decline in preterm birth rate[§] (PTB) between 2007 and 2014.

Data Sources

- California Birth Statistical Master File, Center for Health Statistics and Informatics, California Department of Public Health. Population 2007-2014 Race/Hispanics Population with Age and Gender Detail, 2000-2010 and State and County Population Projections [P-3: Dataset] California Department of Finance. Demographic Research Unit. September 2012 and February 2017.

Methods

- Kitagawa* decomposition analyses were conducted to partition the effect of maternal age on the PTB decline into **two components**:

Component 1

Effects of shifting maternal age distribution = $(P_{2014} - P_{2007}) \times [(R_{2007} + R_{2014}) \div 2]$

Component 2

Effects of changes in the age-specific PTB = $(R_{2014} - R_{2007}) \times [(P_{2007} + P_{2014}) \div 2]$

Where:

P_{2007} = proportion of age distribution in 2007
P_{2014} = proportion of age distribution in 2014
R_{2007} = PTB in 2007
R_{2014} = PTB in 2014

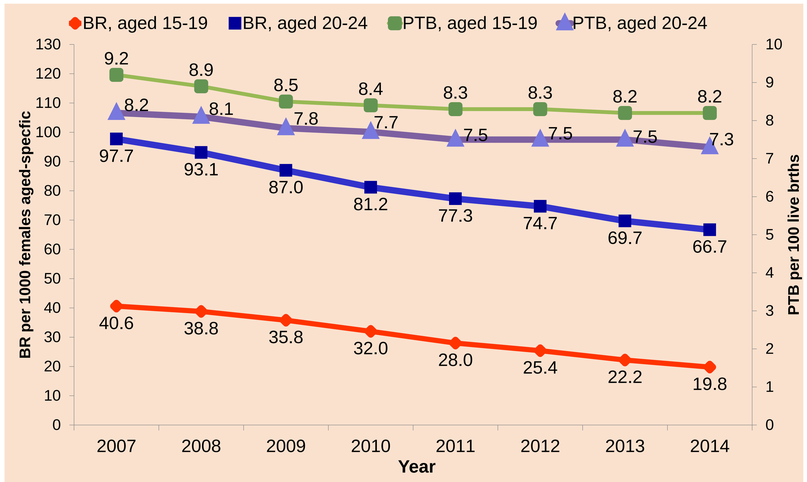
- Analyses were limited to births with gestational ages ≥ 17 and ≤ 47 weeks[‡] as determined by obstetric estimates.

[+]Adolescent births in California 2000-2014 Available at https://www.cdph.ca.gov/Programs/CFH/DMCAH/Pages/Data/ Adolescent-Health-Data.aspx; California's Preterm Birth Rate Declines to 9.6%, Meeting March of Dimes' 2020 Goal Available at http://californiahealthline.org/morning-breakout/californias-preterm-birth-rate-declines-to-9-meeting-march-of-dimes-2020-goal/
[§]Preterm birth rates are calculated as the number of preterm births divided by the number of live births with known gestational age multiplied by 100
*Kitagawa E. Components of a difference between two rates. J Am Stat Assoc 1955; 50:1168-94. Ferre C, Allaghan W, Olson C, et al. Effects of maternal age and age-specific preterm births on overall preterm birth rates-United States, 2007 and 2014. MMWR Morb Mortal Wkly Rep 2016; 65(43): 1181-1184
[‡]Following guidelines from the National Center for Health Statistics.

APHA 2017: Session #2062.0 / November 5, 2017

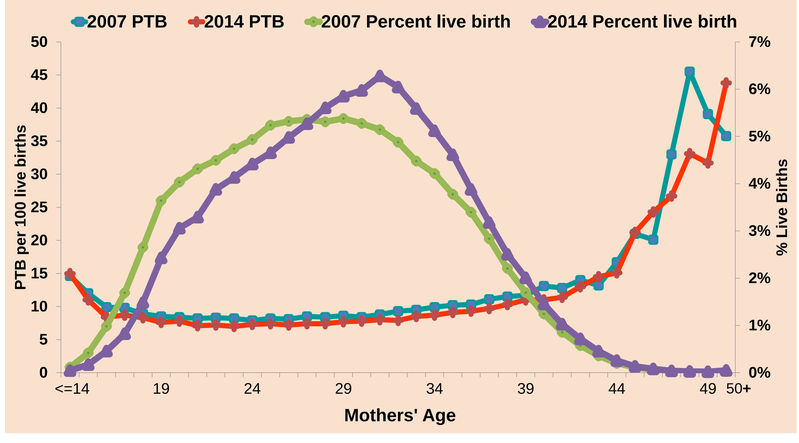
Results

Figure 1: **Birth rates (BR) and PTBs among adolescents and young adults, Years 2007 – 2014**



- **Between 2007 and 2014:**
  - BR among adolescents and YA declined by 51% and 32%, respectively
  - PTB declined by 11% for both adolescents and YA

Figure 2: **Percentages of live births and PTBs by maternal age, Years 2007 and 2014**



- The proportion of births to adolescents (aged 19 and below) was nearly 10% in 2007 and was down to 5% in 2014.
- At both time points, PTB was greater than 9 percent among mothers under aged 16 and those aged 35 and above.

Percentage of preterm births and components of PTB change by mothers' age

Mothers' Age	Preterm birth rates 2007	2014	PTB Difference	Components 1	2	Total Effect
<20	9.22%	8.19%	-1.02%	**-0.36**	-0.08	-0.43
20–24	8.21%	7.28%	-0.93%	-0.29	-0.19	-0.48
25–29	8.36%	7.45%	-0.91%	-0.02	-0.24	-0.26
30–34	9.14%	8.15%	-0.99%	0.43	-0.26	0.17
≥35	11.49%	10.45%	-1.04%	0.33	-0.20	0.14
Total	9.13%	8.27%	**-0.86**%	0.10	-0.97	**-0.86**

Notes: PTB difference=2014 minus 2007. Total effect is the sum of components 1 and 2; negative values indicate PTB decrease contributed by each age group.

- CA PTB declined from 9.13 in 2007 to 8.27 in 2014, a -0.86 rate difference. The table above shows how this total effect is parsed by components 1 and 2 across mother's age groups.

Changes due to shifting maternal age distribution (Component 1) contributed to the overall PTB decline only among mothers aged 29 and below, with adolescent mothers contributing the largest value at -0.36

- Component 2 –changes in the age-specific PTB– contributed to PTB decline across all age groups, with a total of -0.97
- Examining the impact of the two components – total effect – to the PTB decline by age group and race/ethnicity suggests that:

Adolescents have the largest total effect on PTB decline among Hispanic (-0.50) and Black (-0.78) individuals

Young adults ages 20-24 contributed the largest total effect on PTB decline among White (-0.50) individuals

Discussion

- These analyses demonstrate the mathematical relationships between birthing patterns (age distribution and age-specific PTB) to the overall PTB decline in California between 2007 and 2014.

Overall decline in PTB from 2007 to 2014 was partly related to the decline in number of adolescent and YA births, with the largest total effects contributed by these two subpopulation groups.

- Efforts to help adolescents and young adults avoid unplanned pregnancy and support them when pregnant to improve birth outcomes appear to also have direct effects on reducing PTB.

Acknowledgement: We thank Mark Damesyn for his review of the original abstract and Laurie Fong for her formatting assistance. This work was supported by the federal Title V block grant administered by the Health Resources and Services Administration. Contact: Marina.Chabot@cdph.ca.gov OR Chabot.Marina@ucsf.edu