Table. Results From 4 Years of Full-Population Newborn Dried Blood Spot Screening in Missouri[a]

Lysosomal Storage Disease	Positive Screen Result	Confirmed Disorder	Genotypes of Unknown Significance or Onset	Pseudo-deficiency	Carrier	False-Positive Findings (False-Positive Rate, %)[b]	Lost to Follow-up or Refused Further Testing	Incidence in Missouri[c]	Positive Predictive Value,[d] %
Pompe	161	32[e]	9	31	39	48 (0.04)	2	1:9625	26
Gaucher	37	5	2	0	6	22 (0.01)	2	1:61 600	20
Fabry	179	94	6	1	0	66 (0.02)	12	1:3277	60
MPS I	133	2	2	71	8	45 (0.04)	5	1:154 000	3
All	510	133	19	103	53	181	21	1:2316	NA

Abbreviations: MPS I, mucopolysaccharidosis I; NA, not applicable.

[a] Includes approximately 308 000 newborns undergoing screening. Unless otherwise indicated, data are expressed as numbers of newborns.

[b] Calculated as those with pseudodeficient, carrier, and false-positive findings divided by the total number screened.

[c] Includes only confirmed disorders.

[d] Calculated as those with confirmed disorders and genotypes of unknown significance or onset divided by the number with positive screen results.

[e] Includes 8 infantile and 24 late onset.

monitors for any false-negative cases, and to date we have had no reports of missed LSD cases. The fluorimetric multiplexed assay streamlines the workflow, makes efficient use of limited newborn screening materials, technical staff, and laboratory space, and allows a same-day turn-around time.

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Study concept and design: Hopkins, Klug.
Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: Hopkins.
Critical revision of the manuscript for important intellectual content: All authors.
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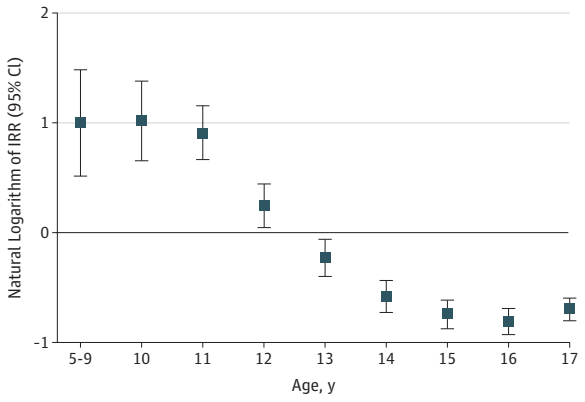
Age-Related Racial Disparity in Suicide Rates Among US Youths From 2001 Through 2015

Suicide rates in the United States have traditionally been higher among white than black individuals across all age groups.[1] However, suicide rates increased from 1993 to 1997 and 2008 to 2012 among black children aged 5 to 11 years (from 1.36 to 2.54 per million) and decreased among white children of the same age (from 1.14 to 0.77 per million).[2] The existing literature does not adequately describe the extent of age-related racial disparities in youth suicide, and understanding racial differences is critical to developing targeted prevention efforts. Therefore, we compared age-specific suicide rates between black and white youths from 2001 through 2015.

Methods | Data for which suicide was listed as the underlying cause of death among youths aged 5 to 17 years from January 1, 2001, through December 31, 2015, were obtained from the Web-based Injury Statistics Query and Reporting System (WISQARS) of the Centers for Disease Control and Prevention.[3] Annual number of deaths was extracted by sex, age, and race (black or white). Suicide rates were calculated using population estimates obtained from WISQARS. Age-specific incidence rate ratios (IRRs), corresponding natural logarithms, and 95% CIs comparing suicide rates between black and white youths were estimated using negative binomial regression. Analyses were performed using Stata/IC statistical software (version 13.1; StataCorp) and a 2-tailed significance level of $P < .05$. This study was not considered to be human subjects research by the institutional review board of Nationwide Children's Hospital, Columbus, Ohio.

Results | We identified 1661 suicide deaths among black youths (1225 boys [73.8%] and 436 girls [26.2%]) and 13 341 suicide deaths among white youths (9916 boys [74.3%] and 3425 girls [25.7%]) in the United States from 2001 through 2015. During this period, the suicide rate was approximately 42% lower among black youths (1.26 per 100 000) than

Figure. Comparison of Suicide Incidence Rates Between Black and White Youths in the United States From 2001 to 2015 by Age



Squares indicate the estimated natural logarithm of the age-specific incidence rate ratio (IRR); vertical lines, 95% CI. The reference group is white youth. The 95% CIs that do not include zero are considered to be statistically significant.

among white youths (2.16 per 100 000). However, this racial difference was strongly moderated by age (**Figure** and **Table**). Among children aged 5 to 12 years, black children had a significantly higher incidence of suicide than white children (IRR, 1.82; 95% CI, 1.59-2.07), whereas from 13 to 17 years, the suicide rate was approximately 50% lower among black youths than among white youths (IRR, 0.51; 95% CI, 0.48-0.53). This pattern of results was similar in analyses stratified by sex (Table). No evidence suggested that the observed age-related racial differences in suicide rates changed from 2001 through 2007 and from 2008 through 2015 (IRR, 1.05 [95% CI, 0.77-1.42; P = .76] for race × period interaction in 5- to 12-year-old individuals; IRR, 1.04 [95% CI, 0.93-1.17; P = .49] for race × period interaction in 13- to 17-year-old individuals).

Table. Comparison of Suicide Rates Between US Black and White Youths by Age and Sex, 2001-2015

	Youth Suicides, No. (Rate per 1 Million Persons)		
Age, y	Black	White	IRR (95% CI)[a]
All			
5-9	26 (0.53)	45 (0.19)	2.73 (1.69-4.43)
10	47 (4.68)	79 (1.68)	2.79 (1.95-4.00)
11	101 (9.93)	190 (4.00)	2.48 (1.95-3.16)
12	129 (12.57)	471 (9.86)	1.28 (1.05-1.55)
13	167 (16.16)	979 (20.37)	0.79 (0.67-0.93)
14	194 (18.69)	1625 (33.65)	0.56 (0.48-0.64)
15	252 (24.25)	2496 (51.48)	0.47 (0.41-0.54)
16	317 (30.49)	3372 (69.20)	0.44 (0.39-0.49)
17	428 (41.13)	4084 (83.39)	0.49 (0.45-0.54)
Boys			
5-9	22 (0.88)	40 (0.34)	2.62 (1.56-4.41)
10	42 (8.24)	67 (2.78)	2.97 (2.02-4.36)
11	70 (13.55)	154 (6.33)	2.14 (1.62-2.84)
12	91 (17.45)	336 (13.72)	1.27 (1.01-1.60)
13	122 (23.24)	649 (26.34)	0.88 (0.73-1.07)
14	129 (24.47)	1117 (45.09)	0.54 (0.45-0.65)
15	164 (31.07)	1760 (70.71)	0.44 (0.37-0.52)
16	238 (45.07)	2512 (100.33)	0.45 (0.39-0.51)
17	347 (65.62)	3281 (130.17)	0.50 (0.45-0.56)
Girls			
5-11[b]	40 (1.17)	53 (0.33)	3.53 (2.34-5.32)
12	38 (7.53)	135 (5.80)	1.30 (0.91-1.86)
13	45 (8.85)	330 (14.10)	0.63 (0.46-0.86)
14	65 (12.73)	508 (21.60)	0.59 (0.46-0.76)
15	88 (17.20)	736 (31.19)	0.55 (0.44-0.69)
16	79 (15.44)	860 (36.30)	0.43 (0.34-0.54)
17	81 (15.83)	803 (33.78)	0.47 (0.37-0.59)

Abbreviation: IRR, incidence rate ratio.

[a] White race is the reference group. 95% CIs that do not include 1.00 are considered to be statistically significant. In analyses stratified by sex, the suicide rate among youths aged 5 to 17 years from 2001 through 2015 was 41% lower among black (0.67 per 100 000) than among white girls (1.14 per 100 000) and 42% lower among black (1.83 per 100 000) than among white boys (3.13 per 100 000). Among girls, the black-to-white IRR of suicide among those aged 5 to 12 years was 1.94 (95% CI, 1.49-2.52), whereas the IRR among those aged 13 to 17 years was 0.51 (95% CI, 0.46-0.57). In boys, the black-to-white IRR of suicide among those aged 5 to 12 years was 1.79 (95% CI, 1.53-2.09), whereas the IRR among those aged 13 to 17 years was 0.51 (95% CI, 0.47-0.54). The overall pattern of results was similar across US regions (Northeast, South, Midwest, and West) in analyses stratified by age group (those aged 5-12 years and 13-17 years) and when restricted to non-Hispanic youth.

[b] Suicide rates were estimated among youths aged 5 to 11 years to ensure stable rate estimates for analyses.

Discussion | Our findings provide further evidence of a significant age-related racial disparity in childhood suicide and rebut the long-held perception that suicide rates are uniformly higher among white than black individuals in the United States.[1] Analyses revealed that the suicide rate among those younger than 13 years is approximately 2 times higher for black children compared with white children, a finding observed in boys and girls. The large age-related racial difference in suicide rates did not change during the study period, suggesting that this disparity is not explained by recent events (eg, economic recession).

Although findings highlight an important opportunity for more targeted intervention, these data are limited and cannot elucidate potential mechanisms for observed age-related racial differences. We lacked information on key factors that may underlie developmental racial differences in suicide, including access to culturally acceptable behavioral health care[4] or the potential role of death due to homicide among older black adolescents[5] as a competing risk for suicide in this subgroup. Future studies should aim to clarify whether risk and protective factors identified in studies of primarily white adolescent suicide decedents are associated with suicide in black youths and how these determinants change throughout childhood and adolescence.[6]

Our findings underscore the need to explore potential race-related differences in mechanisms of suicide and to develop more effective suicide detection and prevention

efforts for black children. Ongoing surveillance efforts must reflect the dynamic association between race and age-related risk for youth suicide.

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Acquisition, analysis, or interpretation of data: Bridge, Horowitz, Sheftall, Greenhouse, Kelleher, Campo.
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Association of Maternal Eligibility for the Deferred Action for Childhood Arrivals Program With Citizen Children's Participation in the Women, Infants, and Children Program

Nearly 7% of children living in the United States, the vast majority of whom are US citizens, have at least 1 undocumented immigrant parent.[1] These children face several disadvantages, culminating in reduced lifetime socioeconomic mobility and reduced well-being.[1] One mechanism underlying these adverse consequences could be failure to receive critical public benefits despite meeting eligibility criteria because undocumented parents may be less likely to apply for these services on their child's behalf if they fear being discovered by immigration authorities.[2,3]

Policies that bring undocumented parents "out of the shadows," such as the 2012 Deferred Action for Childhood Arrivals (DACA) program, may have positive spillover effects for their children by improving uptake of public benefits. We examined the association of parental DACA eligibility with children's participation in the Women, Infants, and Children (WIC) program, a benefit that has been shown to improve child health and socioeconomic outcomes.[4]

Methods | We used data from the 2010-2015 National Health Interview Surveys (NHIS). Our sample consisted of US citizen children who were 5 years of age or younger (reflecting WIC age eligibility criteria) and whose mothers were Hispanic and not US citizens. The latter criterion follows earlier work that noted that a large percentage (>60%) of self-reported noncitizens are undocumented.[5] In addition, we further restricted the sample to children whose mothers had lived in the United States for at least 5 years. We also restricted our sample to children of mothers who were 19 years of age or older and had received at least a high school diploma or General Educational Development certificate, to hold fixed 2 key DACA eligibility criteria.[5] This study was acknowledged as exempt, non-human subjects research by the Johns Hopkins School of Medicine Institutional Review Board.

Our main outcome was whether the child was enrolled in WIC in the previous calendar year (the period queried by the NHIS). Our main exposure—whether the mother met DACA eligibility criteria—was defined on the basis of the mother's age at immigration (≤16 years) and age at DACA implementation (≤31 years at policy implementation).[5]

We estimated a difference-in-difference model that compared changes in WIC enrollment among children whose mothers met the 2 DACA age eligibility criteria before (survey years, 2010-2012) vs after (survey years, 2014-2015) policy introduction with changes among children whose mothers did not meet these criteria. (Survey year 2013 was excluded because it corresponded to WIC participation in the year DACA was implemented). We adjusted for sociodemographic characteristics of both the child and mother.[6] All descriptive statistics and analyses were performed using NHIS sample weights.

Results | Our final sample consisted of 1911 children 5 years or younger, of whom 33.8% had a mother who likely met DACA eligibility criteria (**Table 1**). Overall, 43.1% children participated in the WIC program during the study period.