

Effect of Legislation on Indoor Tanning Prevalence in Alabama

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Objectives. To examine changes in indoor tanning prevalence among Alabama high school students the year before and after its 2014 legal restrictions compared with Florida, which had more lenient legislation.

Methods. We analyzed the Alabama and Florida 2015 Youth Risk Behavior Survey (n = 14 389; population = 1 864 241) by gender, age, year (2013, 2015), state (Alabama, Florida), and year-by-state interactions.

Results. Prevalence of indoor tanning was higher among Alabama youths, but the difference did not significantly change after the law was passed in Alabama (between-state change differences ranged from a 3.3% increase among 14-year-old Alabama girls to a 9.7% decrease among 14-year-old Alabama boys).

Conclusions. We found no significant changes in indoor tanning among adolescents since the enactment of Alabama's tanning restrictions in 2014. More oversight and monitoring are needed to ensure that indoor tanning facilities are compliant with emerging laws. (*Am J Public Health.* 2017;107:966–968. doi:10.2105/AJPH.2017.303716)

Ultraviolet radiation exposure is one of the strongest risk factors for skin cancer.^{1,2} A growing list of US states have enacted restrictions on minors' use of indoor tanning.³ Given the increasing trend in state-level legislation regulating minors' access to indoor tanning, and perhaps a looming federal ban,⁴ research examining the effectiveness of these restrictions is needed.

Limited work has examined the effect of state-level restrictions on indoor tanning among minors. The few studies on this topic have produced conflicting results.^{5–7} Although recent state-based studies^{6,7} used samples that were representative of their given states, they did not include a comparison state as a control. Comparing indoor tanning rates in one state with rates in a control state with more lenient indoor tanning restrictions that did not change over the same period makes it possible to determine whether changes in indoor tanning were a result of the given state's legislation or the passing of time.

The aim of the current study was to compare state-representative data on indoor tanning from high school students

stratified by age and gender in Alabama and Florida from 2013 to 2015. In 2014, Alabama passed House Bill 254, which enacted a series of restrictions on indoor tanning among minors and became effective on September 1, 2014.⁸ Specifically, minors younger than 15 years are banned from indoor tanning, whereas 15-year-old minors are permitted to tan with in-person parent consent. Minors aged between 16 and 17 years are required to present written parental consent. Analyzing changes in the prevalence of indoor tanning from 2013 to 2015 may provide some evidence for the effect of House Bill 254 and also allows for a granular examination of type of restriction within the same state. Moreover, data from Florida were included as a control, because the restriction in place in Florida during 2013 to 2015 was a ban on indoor

tanning for minors younger than 14 years, which has been in place since 1998.

METHODS

We extracted data from the Alabama and Florida 2015 Youth Risk Behavior Survey (YRBS).⁹ These surveys are conducted every 2 years and assess health risk behaviors among 9th- to 12th-grade public and private school students. The Alabama and Florida surveys are of representative samples of the entire population of high school students in their respective states (n = 14 389; population = 1 864 241; mean age of participants = 16.10 years; [SD = 1.20 years]).

Indoor tanning was assessed with the item: "During the past 12 months, how many times did you use an indoor tanning device, such as a sunlamp, sunbed, or tanning booth? (Do not count getting a spray-on tan)." Response options ranged from "0 times" to "40 or more times." As in previous studies, this item was dichotomized as "0 times" versus "1 or more times." Given differences in the prevalence of indoor tanning by age and gender, we stratified all analyses by age and gender. We created 4 levels of age: 14, 15, 16 to 17, and 18 years. This approach allows a test of the various indoor tanning requirements in Alabama law. We used logistic regression models, with the independent variables of year (2013 vs 2015), state (AL vs FL), and year-by-state interaction term. A significant state-by-year interaction term would potentially provide evidence for the effect of Alabama's legislation on indoor tanning. The dichotomous

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TABLE 1—Unadjusted Prevalence (%) for Indoor Tanning in Past 12 Months in 2013, 2015, and Absolute Change in 2015: Alabama vs Florida

Age and Gender	Alabama, %			Florida, %			Between-State 2015-2013 Change Differences (95% CI)
	2013	2015	2015-2013 Change (95% CI)	2013	2015	2015-2013 Change (95% CI)	
14 y							
Female	16.8	18.8	+2.0 (-13.1, 17.1)	5.1	3.8	-1.3 (-4.4, 1.8)	+3.3 (-3.8, 10.4)
Male	14.4	3.2	-11.2 (-18.3, -4.2)	5.3	3.8	-1.5 (-5.1, 2.1)	-9.7 (-16.0, -3.4)
15 y							
Female	21.3	17.2	-4.1 (-13.6, 5.4)	4.9	4.2	-0.7 (-3.3, 1.9)	-3.4 (-8.9, 2.1)
Male	10.5	6.3	-4.2 (-10.9, 2.5)	5.5	3.7	-1.8 (-4.0, 0.4)	-2.4 (-6.3, 1.5)
16-17 y							
Female	29.6	28.4	-1.2 (-9.6, 7.2)	8.3	6.6	-1.7 (-4.1, 0.7)	+0.5 (-5.6, 6.6)
Male	13.4	11.7	-1.7 (-8.2, 4.8)	6.2	5.9	-0.3 (-2.7, 2.1)	-1.4 (-6.1, 3.3)
18 y							
Female	34.1	32.3	-1.8 (-17.3, 13.7)	14.0	9.0	-5.0 (-10.3, 0.3)	+3.2 (-5.4, 11.8)
Male	17.0	16.6	-0.4 (-10.9, 10.1)	8.6	9.1	+0.5 (-3.8, 4.8)	-0.9 (-7.5, 5.7)
14-18 y							
Female	27.3	25.5	-1.8 (-9.1, 5.5)	7.9	6.0	-1.9 (-5.6, 1.8)	+0.1 (-3.4, 3.6)
Male	13.4	10.7	-2.7 (-7.5, 2.1)	6.3	5.6	-0.7 (-2.2, 0.8)	-2.0 (-7.2, 3.2)

Note. CI = confidence interval. Adjusted models controlling for race/ethnicity did not differ substantially from unadjusted model.

indoor tanning variable was set as the criterion variable. We used Complex Samples in SPSS version 24 (IBM, Somers, NY) to account for weighting, clustering, and stratification, allowing for population-based estimates. All prevalence (95% confidence interval [CI]) estimates are presented as percentages.

RESULTS

Among females, significant main effects of state on indoor tanning rates emerged for those aged 14 years (odds ratio [OR] = 4.75; 95% CI = 2.31, 9.02), 15 years (OR = 4.95; 95% CI = 3.22, 7.69), 16 to 17 years (OR = 4.95; 95% CI = 3.97, 6.23), and 18 years (OR = 3.81; 95% CI = 2.36, 6.23) such that females in Alabama reported higher tanning rates than did females in Florida (Table 1). Among males, significant main effects of state on indoor tanning rates emerged for those aged 15 years (OR = 1.91; 95% CI = 1.13, 3.22), 16 to 17 years (OR = 2.20; 95% CI = 1.44, 3.32), and 18 years (OR = 2.07; 95% CI = 1.25, 3.42), with Alabama males reporting higher

rates of indoor tanning. No significant main effects for state were found for 14-year-old boys.

Among all participants, no significant main effects of time or state-by-time interactions were significant for any age group. Results stratified by gender also found no significant main effects of time or state-by-time interactions among any age group.

DISCUSSION

Findings indicated no statistically significant changes in the prevalence of indoor tanning in any age group of minors and in either females or males in Alabama, in general, or relative to Florida, following the enactment of new legislation. Several reasons could explain the lack of change in indoor tanning prevalence following enactment of restrictive legislation in Alabama. First, change in indoor tanning prevalence may require more than 1 year to emerge. Second, parental consent laws (relevant to 15- to 17-year-old children in AL) could be effective in reducing indoor tanning insofar as parents actually withhold permission. Future research

should explore parental attitudes about indoor tanning in states with parental permission laws. Third, previous research has found low compliance by tanning salons to indoor tanning laws in other states.¹⁰ Relatedly, Alabama's legislature did not grant any state institution the authority to enforce the law.

This study had some limitations. The YRBS does not assess location of indoor tanning; thus, we were unable to examine the effect of legislation on tanning that occurred in regulated versus unregulated (e.g., private homes) locations. The design of the YRBS is cross-sectional; thus, we were unable to assess within-person changes in indoor tanning. We were also unable to assess frequent indoor tanning, given restrictions in sample size. It is also possible that socially desirable responding affected Alabama participants, given the recent legislative changes in indoor tanning among minors; however, because the YRBS is anonymous, these concerns may have been minimal. Finally, additional relevant covariates (e.g., socioeconomic status, urbanicity) were not included within the YRBS, which could help control for other differences that may exist between Alabama and Florida.

PUBLIC HEALTH IMPLICATIONS

Consistent with a recent study conducted in New Jersey,⁷ the current study found no significant changes in indoor tanning among adolescents since the enactment of Alabama's tanning restrictions. More oversight and monitoring are needed to ensure that indoor tanning facilities are compliant with emerging laws. As the US Food and Drug Administration considers a national ban on minors' use of indoor tanning, enforcement interventions may need to be considered to maximize its effect. *AJPH*

CONTRIBUTORS

A. J. Blashill conceptualized the study, conducted the statistical analyses, and wrote the initial draft of the article. S. Pagoto provided intellectual feedback on the design of the study and assisted in drafting the article.

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HUMAN PARTICIPANT PROTECTION

Institutional review board approval was not required because the current study used secondary, de-identified data.

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