Original Article

To Ban or Not to Ban Tanning Bed Use for Minors: A Cost-Effectiveness Analysis From Multiple US Perspectives for Invasive Melanoma

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BACKGROUND: Tanning bed use is common among US adolescents, but is associated with increased melanoma risk. The decision to ban tanning bed use by adolescents should be made in consideration of the potential health benefits and costs. **METHODS:** The US population aged 14 to 17 years was modeled by microsimulation, which compared ban versus no ban strategies. Lifetime quality-adjusted life years (QALYs) and costs were estimated from a health care sector perspective and two societal perspectives: with and without the costs of policy enforcement and the economic losses of the indoor-tanning bed industry. **RESULTS:** Full adherence to the ban prevented 15,102 melanoma cases and 3299 recurrences among 17.1 million minors, saving $61in formal and informal health care costs per minor and providing an increase of 0.0002 QALYs. Despite the intervention costs of the ban and the economic losses to the indoor-tanning industry, banning was still the dominant strategy, with a savings of $12 per minor and $205.4 million among 17.1 million minors. Findings were robust against varying inspection costs and ban compliance, but were sensitive to lower excess risk of melanoma with early exposure to tanning beds. **CONCLUSIONS:** A ban on tanning beds for minors potentially lowers costs and increases cost effectiveness. Even after accounting for the costs of implementing a ban, it may be considered cost effective.

Even after accounting for the costs of implementing a ban and economic losses in the indoor-tanning industry, a tanning bed ban for US minors may be considered cost effective. A ban has the potential to reduce the number of melanoma cases while decreasing health care costs. ***Cancer* 2021;127:2333-2341**.

LAY SUMMARY:

- Previous meta-analyses have linked tanning bed use with an increased risk of melanoma, particularly with initial use at a young age. Yet, it remains unclear whether a ban of adolescents would be cost effective.
- Overall, a ban has the potential to reduce the number of melanoma cases while promoting a decrease in health care costs.
- Even after accounting for the costs of implementing a ban and the economic losses incurred by the indoor-tanning industry, a ban would be cost effective.

KEYWORDS: cost-effectiveness analysis, health policy, melanoma, preventative medicine, tanning bed.

INTRODUCTION

Indoor tanning is common among US adolescents, with 25.4% of female and 6.7% of male high school students reporting having used a tanning bed at least once in the prior year according to 2009 National Youth Risk Behavior Survey data.[1] Furthermore, 24% of non-Hispanic teenagers used a tanning salon at least once within the previous year.[2] This concerning pattern is also evident in Canada, with a near doubling in the last 5 years.[3] Recent meta-analyses have shown that tanning booth use is associated with an increased risk of melanoma, and the risk is greatest in those with initial use at a young age.[4,5]

Despite this evidence, few countries have implemented policies to ban tanning beds, in part because of uncertainty around the cost savings and effectiveness of such a policy. Brazil, Poland, and Australia have implemented a total

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ban, whereas other countries, including Austria, Belgium, France, Germany, Portugal, Spain, and the United Kingdom, have banned use for those under 18 years of age.[6] In some parts of Canada and the United States, similar policies have been implemented but without a unified policy at the federal level.[6] A tanning bed ban for adolescents has the potential to save lives and downstream treatment-related costs. However, there would be associated costs of policy implementation and enforcement, as well as lost revenue to the indoor-tanning industry.

The objective of this study was to use decision analysis to quantify the difference in costs and effectiveness of implementing a policy to ban tanning bed use for those below the age of 18 in the United States so as to determine the cost effectiveness of this policy.

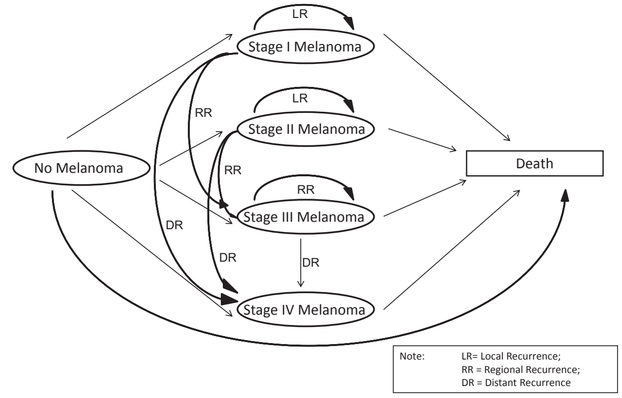

Figure 1. State-transition diagram. DR indicates distal recurrence; LR, local recurrence; RR, regional recurrence.

MATERIALS AND METHODS

Decision Model and Study Population

We developed a state-transition model (TreeAge Pro 2020; TreeAge Software, Inc) to model the virtual life course of the US population aged 14 to 17 years by microsimulation. This age range was chosen because the incidence of tanning bed use in teenagers below the age of 14 years is considered negligible.[1,7,8] The starting age of each individual in the model was weighted for census population according to age.[9] The model allowed individuals to transition between 6 states, including a no melanoma health state, four melanoma health states defined by disease stage (I-IV), and an absorbing death state (Fig. 1). All individuals started in the no melanoma state and were modeled until death or age 100 years, while assuming two policy scenarios: no ban versus a complete ban on tanning bed use in minors (age <18 years).

Transition Probabilities

We used a 1-year–cycle length for state transitions. The annual probability of developing melanoma was based on age-dependent annual incidence rates of melanoma for the US general population,[9] the age-dependent probability that a US teenager will use a tanning bed (based on 2011 rates as they are currently the best available age-dependent rates in the literature),[10] and the odds ratio (OR) of developing melanoma for exposure to tanning bed at a young age (defined as before age 25 years).[5] In the base case analysis, the probability of using a tanning bed before 18 years of age was set to zero for a complete ban scenario. After age 18, the use of tanning beds was assumed to be the same as the general population regardless of tanning policy. Similarly, the model did not take into account the dose-response effect as it relates to the frequency of use of indoor tanning, given that the OR provided from the studies for minors focused on whether a minor had “ever” used indoor tanning. Thus, using a conservative approach, minors in our model were assessed as either having used indoor tanning ever or not.

For individuals who developed a new melanoma, the stage at presentation, risk of disease recurrence, and mortality were derived from the literature (Table 1). Recurrence was defined as local, regional, or distant and modeled with a Dirichlet distribution. Recurrence and mortality rates were modeled dependent on initial stage (Supporting Tables 1 and 2). Individuals without melanoma faced a risk of dying based on age-dependent death rates from US life tables, which were adjusted for deaths from melanoma as the cause.[11] More details on input parameters and sources are outlined in Table 1 and Supporting Methods.

Costs and Quality-of-Life Utility Weights

We modeled costs using a US societal perspective. In addition to total cumulative costs per scenario, we calculated disaggregated costs by: 1) intervention (inspection) costs, 2) formal health care sector, 3) informal health care sector (time costs by patients and caregivers), 4) lost productivity, and 5) the economic loss of the indoor-tanning industry. The costs of melanoma treatment by year by diagnosis and stage were derived from the literature (Table 1). The costs for managing melanoma stages III and IV have significantly increased in recent years with the introduction of the US Food and Drug Administration (FDA)-approved molecular targeted and immune-oncology agents and were estimated separately (see Supporting Methods).

TABLE 1. Model Parameters: Probabilities, Costs, and Utilities

Parameter	Value (95% CI)	Distribution Type	Source
Probabilities			
Melanoma-specific survival	Conditional on initial stage	Kaplan-Meier	Balch et al[12]
Melanoma recurrence-free survival	Conditional on initial stage (only for stage I-III)	Kaplan-Meier	Leiter et al[13]
Distant metastatic recurrence-free survival	Conditional on initial stage (only for stage I-III)	Kaplan-Meier	Romano et al Moore Dalal et al Baughan et al[14-16]
Local recurrence-free survival	Conditional on initial stage (only for stage I-III)	Kaplan-Meier	Baughan et al[14-16]
Regional recurrence-free survival	Conditional on initial stage (only for stage 1-III)	Kaplan-Meier	Baughan et al[14-16]
Probability of death from other causes	US Life Tables	Kaplan-Meier	Arias et al [17]
Stage at diagnosis			
Stage I	80.0% (79.6-80.4%)	Dirichlet	Xing et al[18]
Stage II	12.6% (12.2-12.9%)	Dirichlet	Xing et al[18]
Stage III	4.8% (4.6-5.1%)	Dirichlet	Xing et al[18]
Stage IV	2.6% (2.5-2.8%)	Dirichlet	Xing et al[18]
Melanoma incidence in general US population	Age dependent	—	Center for Disease Control and Prevention[19]
Probability that a teenager will use tanning bed	Age dependent (2011 rate)	β	Guy et al[10]
Odds ratio of developing melanoma with tanning bed use before age 25 y	1.35 (0.99-1.84)	Lognormal	Colantonio et al[5]
Costs, US$			
Stage I			
Year 1	5259.15 (3394.45-7514.19)	γ	Alexandrescu et al[20]
Year 2	1008.12 (650.68-1440.39)	γ	Alexandrescu et al[20]
Year 3	918.12 (592.59-1311.79)	γ	Alexandrescu et al[20]
Year 4	640.28 (413.26-914.82)	γ	Alexandrescu et al[20]
Year 5	550.27 (355.16-786.22)	γ	Alexandrescu et al[20]
Stage II			
Year 1	6663.95 (4301.16-9521.34)	γ	Alexandrescu et al[20]
Year 2	1719.88 (1110.07-2457.34)	γ	Alexandrescu et al[20]
Year 3	1099.98 (709.97-1571.63)	γ	Alexandrescu et al[20]
Year 4	1032.46 (666.39-1475.16)	γ	Alexandrescu et al[20]
Year 5	621.15 (400.91-887.49)	γ	Alexandrescu et al[20]
Stage III			
Year 1	220,609.50 (178,709.94-266,879.94)	γ	Centres for Medicare and Medicaid Services (CMS); https://www.cms.gov/; Wu et al[61]
Year 2	8945.98 (5774.06-12,781.87)	γ	CMS; Wu et al[61]
Year 3	8465.03 (5463.64-12,094.70)	γ	CMS; Wu et al[61]
Year 4	8057.35 (5200.51-11,512.21)	γ	CMS; Wu et al[61]
Costs, US$			
Year 5	7771.85 (5016.24-11,104.29)	γ	CMS; Wu et al[61]
Stage IV			
Year 1	165,863.18 (135,914.75-199,327.00)	γ	CMS; Wu et al[61]
Year ≥2, per y	122,307.64 (98,144.75-149,494.61)	γ	CMS; Wu et al[61]
Productivity loss	15,843.78	—	Hutubessy et al[62]
BRAF mutation testing	509 (329-727)	γ	CMS; Wu et al[61]
Terminal-care costs	18,385.64 (11,866.77-26,269.10)	γ	Lang et al[21]
Patient-time cost wages	37.10/h	—	Bureau of Labor Statistics[22]; Sanders et al[23]
Cost/inspection	136.03 (60.79-225.57)	—	DiFranza et al[25]
No. of annual inspections	4 (2-6)	—	DiFranza et al[25]
No. of outlets	13,286 (9300-17,272)	—	IBISWorld[26]
Cost of tanning	12 (5-20)	—	IBISWorld[26]
Time estimates, h			
Informal caregiving			
Stages I-III, years 1-5	1172.90 (1054.20-1297.00)		Yabroff et al[24]
Stage IV, each y	1172.90 (1054.20-1297.00)		Yabroff et al[24]
Utilities			
Stage I (diagnosis/initial treatment)	0.687 (0.641-0.731)	β	Tromme et al[63]
Stage I (posttreatment)	0.809 (0.773-0.843)	β	Tromme et al[63]

TABLE 1. *Continued*

Parameter	Value (95% CI)	Distribution Type	Source
Stage II (diagnosis/initial treatment)	0.579 (0.486-0.670)	β	Tromme et al[63]
Stage II (posttreatment)	0.802 (0.763-0.838)	β	Tromme et al[63]
Stage III (diagnosis/initial treatment)	0.535 (0.393-0.674)	β	Tromme et al[63]
Stage III (posttreatment)	0.703 (0.659-0.745)	β	Tromme et al[63]
Stage IV (diagnosis/initial treatment)	0.583 (0.524-0.641)	β	Tromme et al[63]
Stage IV (posttreatment)	0.796 (0.701-0.877)	β	Tromme et al[63]

For modeling societal costs, we included costs incurred based on lost productivity and leisure time associated with patient illness and informal care.[23] We used the friction method for the estimation of productivity time loss and literature estimates of time lost by informal caregivers. We included informal caregiving time for all stages as estimated by Yabroff et al.[24] The costs of productivity loss were applied as a one-off penalty when terminal care was modeled for death in patients with stage IV melanoma. We applied average US wages including fringe benefits for valuing the time lost. For additionally modeling the costs of the implementation of tanning ban laws, we assumed 4 annual inspections per tanning salon, modeled after reported costs associated with enforcing a ban on tobacco sales to minors.[25,26] We included no additional cost for the development of new legislation, assuming that this is part of the usual scope of ongoing government/policy work. We also included loss of revenue to the indoor-tanning industry, which was calculated based on the number of tanning bed sessions prevented in minors at a cost of $12 per session (range, $5-$20). All costs were inflated to 2018 US dollars using the Personal Consumption Expenditure Health indices.[27]

Health state utilities were derived from EuroQol- 5 Dimension preference weights.[28] We assumed a baseline age-dependent utility weight as estimated for the United States and modified the utility when melanoma was diagnosed.[29] The utility after a diagnosis of melanoma depended on stage and time since diagnosis. Both utility weights and costs were discounted to account for time preference with a 3% discount rate.[23]

Cost-Effectiveness Analyses

For the base-case analysis, we ran a probabilistic sensitivity analysis by drawing 500 random samples from all prespecified parameter distributions. For each set of parameters, we simulated 100,000 lives of US teenagers, while assuming the two policy scenarios. We calculated incremental cost-effectiveness ratios (ICERs), defined as the difference in average costs divided by the difference in average quality-adjusted life years (QALYs). We used recommended cost-effectiveness (willingness-to-pay) thresholds of $50,000, $100,000, and $150,000 per QALY gained to determine whether ICERs would meet the expectation of good value for US society.[23,30]

Furthermore, we calculated 95% CIs by using the 2.5 and 97.5 centiles of the 500 modeled outcomes, and summarized outcomes as a scatter plot (of the 500 pairs of difference in average costs and QALYs) and as cost-effectiveness acceptability curves.

In deterministic sensitivity analysis, we varied the probability of using a tanning bed before age 18 according to recently published adherence rates to tanning bed bans in the United States.[31] We varied the OR of tanning bed use for melanoma risk, utility weights, and costs using the lower and upper 95% CI limits of input distributions. In these deterministic sensitivity analyses, we used the net monetary benefit (QALY × cost-effectiveness threshold – cost) to assess which policy is most cost effective.

RESULTS

Base Case

Average health care costs with no ban were $1500.03 per minor (Table 2). For the ban, the average costs decreased to $1439.03. Costs of productivity loss decreased from $4.41 to $4.22 per minor with the ban. However, with the ban, there were additional costs of monitoring the ban and implications for the indoor-tanning industry: $3.16 and $46.03 per minor, respectively.

In sum, the total cost and effectiveness for no ban was $1504.44 and 24.8595 QALYs (Table 2). For the ban policy, the costs and QALYs were $1492.44 and $24.8597, respectively. As such, the ban policy dominated no ban with a lower cost ($12 less) and higher effectiveness (0.0002 QALYs) per simulated minor. Our model estimated that a ban of minors aged 14 to 17 years with 100% compliance would prevent 15,101 melanoma cases, 3299 melanoma recurrences, and $205.4 million over the lifetime of 17,120,236 US minors.[32]

TABLE 2. Base Case: Costs and Effectiveness by Strategy and Perspective

Outcome	Ban (95% CI)	No Ban (95% CI)	Δ Ban vs No Ban (95% CI)
Cumulative costs			
Ban intervention (inspection)			
Per minor	$3.16 (1.23-5.93)	$0	$3.16 (1.23-5.93)
In total population	$54.1 × 10^6^	$0	$54.1 × 10^6^
Formal health care			
Per minor	$410.22 (332.84-502.47)	$427.71 (346.84-525.99)	$–17.48 (–44.91-0.00)
In total population	7023.1 × 10^6^	$7322.4 × 10^6^	$-299.3 × 10^6^
Informal health care			
Per minor	$1028.81 (910.95-1147.54)	1072.32 (949.20-1191.83)	$–43.52 (–102.31-0.00)
In total population	17,613.4 × 10^6^	$18,358.4 × 10^6^	$–745.0 × 10^6^
Lost productivity			
Per minor	$4.22 (3.35-5.19)	$4.41 (3.53-5.50)	$–0.18 (–0.51-0.00)
In total population	$72.3 × 10^6^	$75.5 × 10^6^	$–3.1 × 10^6^
Loss to indoor-tanning industry			
Per minor	$46.03 (19.89-73.54)	$0	$46.03 (19.89-73.54)
In total population	$788.0 × 10^6^	$0	$788.0 × 10^6^
Total			
Per minor	$1492.44 (1334.38-1666.10)	$1504.44 (1333.78-1669.15)	$–12.00 (–99.76-56.01)
In total population	$25,550.9 × 10^6^	$25,756.3 × 10^6^	$–205.4 × 10^6^
Cumulative QALYs			
Per minor	24.8597 (24.8394-24.8802)	24.8595 (24.8394-24.8803)	0.0002 (–0.0002-0.0006)
In total population	425.601 × 10^6^	425.603 × 10^6^	2775

Abbreviations: ICER, incremental cost-effectiveness ratio; LL, lower limit; QALYs, quality-adjusted life years; UL, upper limit.
Total population estimates were calculated by multiplying by the 2010 Census population aged 14-17 y: 17,120,236.

Probabilistic Sensitivity Analysis: Monte Carlo Simulation

Sixty-four percent (319 of 500) of simulations fell below the $50,000 cost-effectiveness threshold, including all societal costs, 96% of simulations when excluding economic losses to the indoor-tanning industry, and 90% of simulations when also excluding other societal costs such as those based on productivity loss and informal caregiving (Fig. 2).

When excluding the costs of economic loss for the indoor-tanning industry, a ban policy had the highest likelihood of cost effectiveness, ranging from 94% to 96% (Fig. 3). The full societal perspective had a lower likelihood of cost effectiveness, although this increased with increasing cost-effectiveness threshold and was greater than 50% (range, 64%-69%) for nearly all thresholds.

Sensitivity Analyses: Inspection Cost, Noncompliance, and Relative Risk of Melanoma

The net monetary benefit for the ban strategy was greater than that of the no ban policy for all cost-effectiveness thresholds when the cost per inspection was varied ($60.97-$225.57; Supporting Fig. 1A-C). At a threshold of $50,000/QALY, even with a noncompliance rate of approximately 85%, the ban policy had a net monetary benefit over the no ban policy (Supporting Fig. 2A-C). When the OR of developing melanoma associated with early tanning bed use is >1.2, the ban strategy yields a greater net monetary benefit over the no ban strategy at a cost-effectiveness threshold of $50,000/QALY (Supporting Fig. 3A). With higher cost-effectiveness thresholds, the OR could be as low as 1.1, and the ban policy would still provide a net monetary benefit over the no ban policy (Supporting Fig. 3B,C).

DISCUSSION

Our analysis found that the ban policy would be favored both from a population health and economic perspective because it is associated with improved quality-adjusted survival and saves costs (0.0002 and $12 per average minor, respectively). We estimated that a ban of minors aged 14 to 17 years with 100% compliance would prevent 15,101 melanoma cases, 3299 melanoma recurrences, and $205.4 million in health care costs over the lifetime of 17.1 million minors in the United States. This is more cost effective than many well-established public health interventions: processed meats taxation ($270/QALY),[33] smoking education campaign ($1337/QALY),[34] lung cancer screening ($49,200-$96,700/QALY),[35] cervical cancer screening ($2166/QALY),[36] and breast cancer screening ($29,284/QALY).[37] The robustness of these findings was supported using a probabilistic sensitivity analysis, which found cost effectiveness was established in the majority of cases. The robustness of our conclusions was further supported with 1-way deterministic

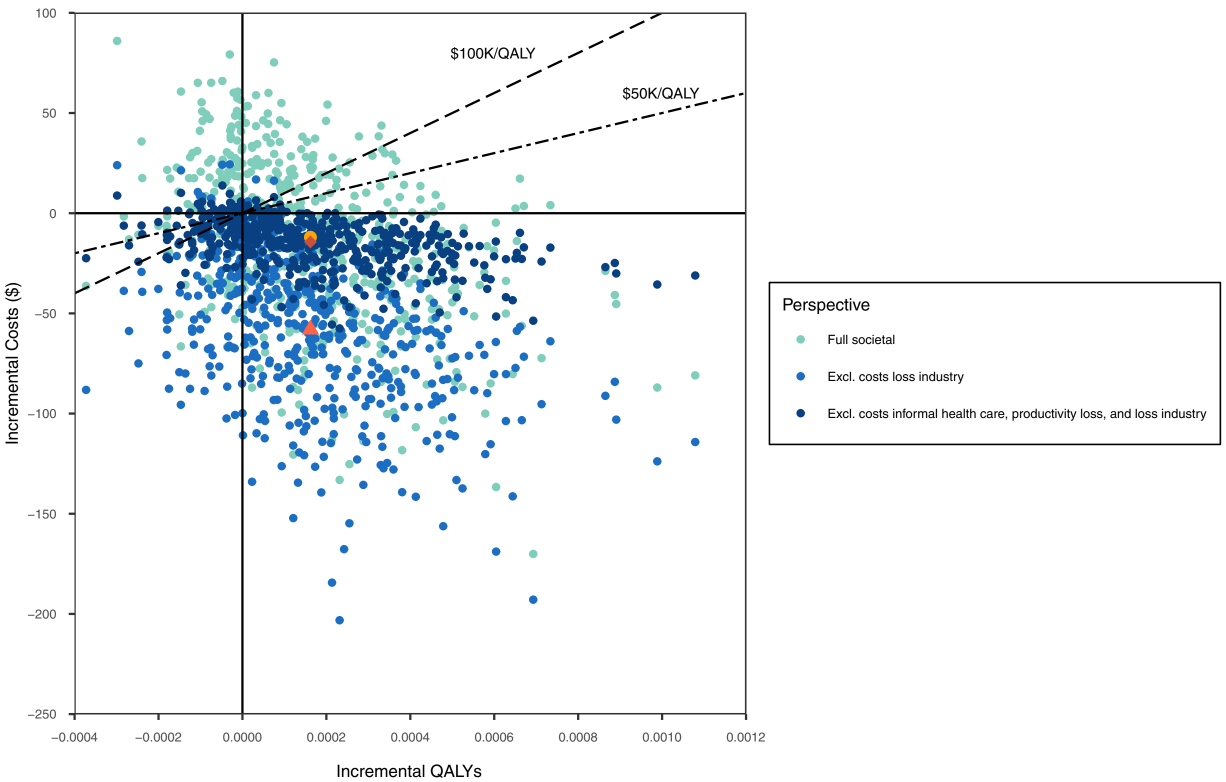

Figure 2. Scatter plot showing incremental costs and QALYs from the probabilistic sensitivity analysis. QALY indicates quality-adjusted life year.

sensitivity analyses that varied costs per inspection and compliance with the ban, although results were sensitive to lower OR inputs (<1.2) of developing melanoma with early exposure to tanning beds.

A number of cost-effectiveness analyses assessing the impact of skin surveillance, melanoma screening, and dermoscopy on earlier detection of melanoma have been performed.[28,38-40] Others assessed the impact of sentinel lymph node biopsy in patients with melanoma of any thickness.[41] However, despite excellent data for decision and cost-effectiveness analysis in melanoma, the literature lacks a robust analysis examining the impact of policy questions on a ban of minors balancing clinical and economic trade-offs using the relevant perspectives. Nonetheless, many editorials have commented on this policy with mixed recommendations and warnings. We identified only one modeling study using a Markov model to show the number of cases and deaths averted, life years saved, and melanoma treatment costs saved by reducing indoor tanning by minors.[42] Our model shows that a ban of minors with 100% compliance can prevent 61,839 melanoma cases and save $342.9 million in treatments costs over the lifetime of 61.2 million youth aged 14 years or younger in the Unites States.[42] These results are not surprising given that the model did not take into account the potential noncompliance with a ban policy and the lack of any balancing measures.[31,43,44] From a health care perspective, a ban seems to be a simple, straightforward, and beneficial policy decision that has been advocated in a number of health policy statements.[45,46] However, when considering the recommended societal perspective,[23] this is not such a straightforward decision given the ongoing costs of inspections and loss of economic productivity in the indoor-tanning industry. Our study comprehensively addresses the policymaker critique regarding an economic approach to a ban, in that it evaluated noncompliance with the ban, the economic loss to the industry, and the costs of enforcing a ban.[43]

Our findings must be interpreted in the context of the study design. Our analysis places important weight on the increased risk of developing melanoma with the early use of tanning beds. Multiple case-control studies, a prospective population-based study, and several meta-analyses of such studies have shown the impact of early

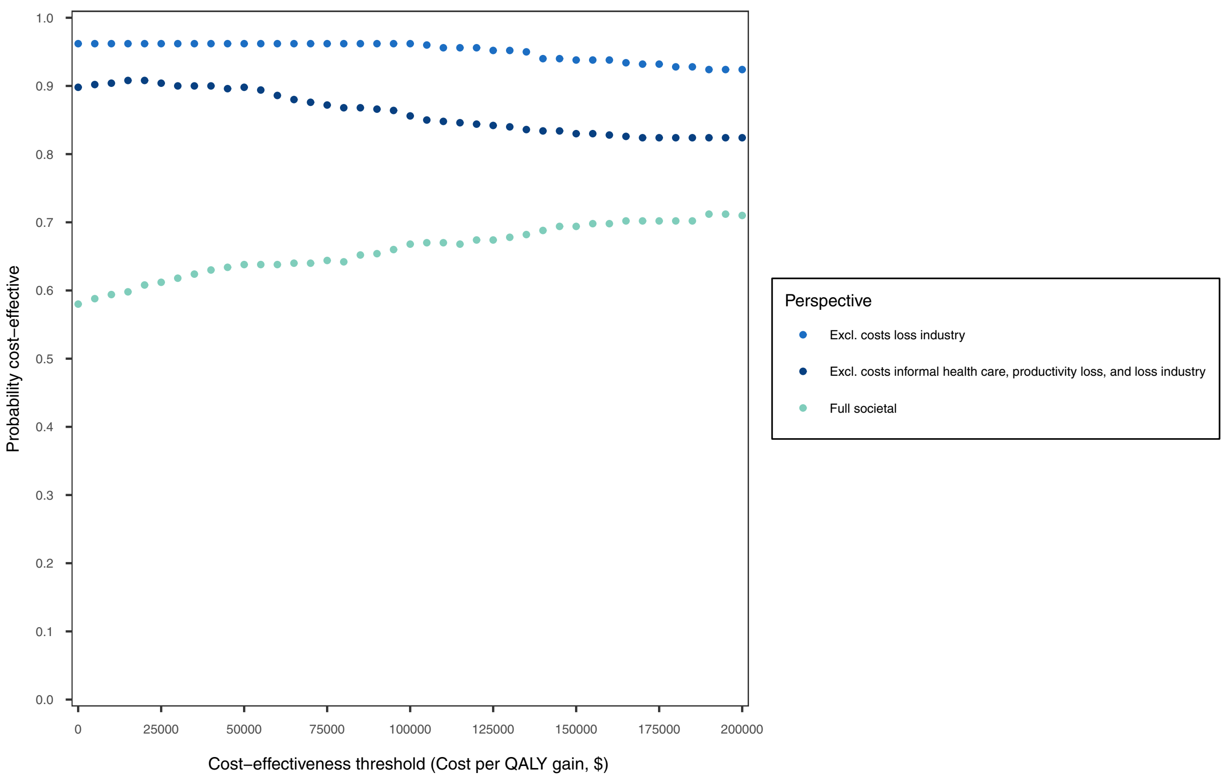

Figure 3. Acceptability curves showing the probability of the ban being cost effective. QALY indicates quality-adjusted life year.

tanning bed use on the incidence of melanoma, but may have suffered from the inherent limitations of observational research and generalizability issues.[5,47-50] We performed a 1-way sensitivity analysis to include the full range of effect sizes in this population. As such, we feel our results reflect the imperfections in the derivation of this estimate and are informative regarding the implications on the results.

Similarly, we assumed no additional drop in the use of tanning beds in those above the age of 18 years related to a ban of minors. We made this assumption given a lack of data to suggest otherwise, but this is a limitation of our current model. However, if a ban of minors leads to a decreased use of indoor-tanning beds, then our model would identify an even greater benefit of a ban. Therefore, the policy would continue to be cost effective, and hence not change our conclusions. Nonetheless, future studies should accurately assess the impact of these policies on populations outside of the target-age range.

Despite a thorough analysis, the costs of managing melanoma are constantly increasing because of the effectiveness of immunotherapy in the high-risk primary setting.[51,52] Therefore, our cost analysis likely underestimates the potential cost savings of a ban as there is almost a constant addition of new drugs to the market. Also, our analysis did not take into the account the potential effects of a decreased risk of developing cutaneous squamous cell carcinoma and basal cell carcinoma, potentially underestimating additional health and economic benefits of a ban.

Although legislation has decreased tanning bed use among minors, noncompliance is a real concern.[10,53-55] Furthermore, in states with parental consent laws only, tanning bed use among minors does not differ from states without any laws.[10] Tripp et al reported compliance rates as high as 81% in Texas without a state enforcement or inspection policy.[44] However, this level of adherence may not be true of other states. Therefore, enforcing legislation in this situation is just as important as implementing it, particularly early on in the public health campaign to inform the public of the hazards of indoor tanning.[56] Our model used the Guy et al[10] 2011 age-dependent rates of use, as these are the best available in the literature at this time. However, it is likely that use has decreased because there have been bans in many states. As far as we know, 42 states and the District of Columbia have some form of legislation in place regarding tanning-bed use by minors; nonetheless, less than half actually ban use by minors, whereas others simply require parental consent.[57]

Therefore, there is an opportunity for more aggressive legislation in the United States. Furthermore, given the goal of our model was to assess the impact of a ban on indoor tanning for minors, it was worthwhile to assess preban usage rates. The FDA proposed a ban of minors in 2016, although this was not pursued. It now categorizes a tanning bed as a class II device; therefore, it is open to restrictions and oversight.[58] In Australia, Poland, and Brazil, a complete ban, not just for minors, has been implemented. In Australia, where compliance with the ban has been enforced and carefully monitored, a number of unintended consequences have resulted: increased use of private at-home sunbeds creating a small but unregulated market.[59] In the United States, there has been a noticeable drop in the incidence of melanoma for younger, non-Hispanic White groups over the last few years; it is thought that this could be early real-world evidence of the impact of limitations on an indoor-tanning ban on minors, even without complete adherence and enforcement policies.[60] Future studies looking to assess the impact of a complete ban will need to take this into account when addressing the effectiveness of the ban.

In conclusion, a ban on tanning beds for minors is a dominant policy from a health care and societal perspective without including the costs of implementing a ban. When balancing measures are accounted for in an extended societal perspective analysis, even with extensive sensitivity analyses on the costs of inspections, noncompliance with a ban, and the risk of developing melanoma in those who have used tanning beds, a ban can be considered highly cost effective.

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CONFLICT OF INTEREST DISCLOSURES

The authors made no disclosures.

AUTHOR CONTRIBUTIONS

Antoine Eskander: Study design; administrative support; data acquisition, analysis, and interpretation; and writing–review and editing. **Kathryn E. Marqueen:** Data acquisition, analysis, and interpretation; and writing–review and editing. **Heather A. Edwards:** Data acquisition, analysis, and interpretation; and writing–review and editing. **Anthony M. Joshua:** Data acquisition, analysis, and interpretation; and writing–review and editing. **Teresa M. Petrella:** Data acquisition, analysis, and interpretation; and writing–review and editing. **John R. de Almeida:** Data analysis and interpretation, and writing–review and editing. **David Goldstein:** Study design, data analysis and interpretation, and writing–review and editing. **Bart P. Ferket:** Study design; data acquisition, analysis, and interpretation; writing–original draft, and writing–review and editing.

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