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The high costs of cheap tanning: pricing and promotional practices of indoor tanning facilities in six cities in the United States

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Abstract

Few studies have investigated pricing and promotional practices used by the indoor tanning industry, despite their potential to promote indoor UV tanning—a well-established risk factor for melanoma skin cancer. Posing as potential customers, we telephoned 94 indoor tanning businesses in six United States (U.S.) cities and requested pricing information. The price of a single tanning session ranged from $0 to $23, and was lower at facilities that offered indoor tanning as a secondary service (mean $4.82 and free in 35%) than at tanning salons (mean $16.45). Session prices in salons could be as low as $1.50 with daily use of an unlimited monthly plan. Free indoor tanning, monthly packages, and memberships encourage increased use. Policies that limit free

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indoor tanning or that restrict pricing and advertising for indoor tanning exist in several places in the U.S. and Europe. Future research should evaluate whether those policies are effective in reducing indoor tanning.

Keywords

Skin cancer; Indoor tanning; Pricing; Promotions; Policy

Introduction

Due in part to the success of state-level age restrictions in the United States (U.S.) on indoor ultraviolet (UV) tanning [1–3], as well as other public health and policy efforts [4], the prevalence of indoor tanning among youth and adults in the U.S. has declined over the last decade [4, 5]. Despite these declines, indoor tanning is at unacceptably high levels in the U.S. [4, 5] and internationally [6], especially among white adolescent and young adult females [4, 5]. Indoor tanning is a well-established risk factor for melanoma [6, 7], which has increased precipitously in the last 40 years [8]. According to the Global Burden of Disease Study, approximately 352,000 people worldwide were diagnosed with melanoma in 2015, for an age-standardized rate of 5 per 100,000 persons [9]. The comparable rate in the U.S. was 22.1 per 100,000, reflecting nearly 81,000 cases across the nation [10]. In the absence of effective prevention, 112,000 new cases are projected in the U.S. by 2030, with treatment costs of $1.6 billion [11].

Policy has played a large role in reducing access to indoor tanning over the past decade, in both the U.S. and abroad. Indoor tanning salons are banned in Brazil and Australia [12, 13]. Many other countries, including Austria, Belgium, France, Germany, Ireland, Portugal, Scotland, Spain, United Kingdom, and Wales prohibit indoor tanning among minors [12, 13]. The U.S. government imposed a 10% tax on indoor tanning in 2010 [14], and 19 states and the District of Columbia have enacted complete bans on indoor tanning for minors; many others have partial bans or less-stringent age restrictions [15].

With few exceptions [16–18], policy initiatives have not focused on advertising, promotions, or pricing controls on indoor tanning. Indoor tanning businesses engage customers through many of the same marketing strategies used by the tobacco industry, including using advertising to downplay the health risks of tanning; claim health benefits (e.g., Vitamin D production); emphasize social rewards (e.g., the attractiveness of tanned skin); and appeal to specific demographic subgroups (e.g., young women) [19]. Price incentives, including multipack offers, discounts, coupons, and other promotional offers, are other key strategies of the tobacco industry [20–22]. These strategies:

- appeal to price-sensitive young adults and heavy tobacco users;
- are associated with a lower likelihood of quitting or reducing use; and
- may undermine tobacco prevention efforts that are based on taxation and other price increases [20–26].

We found only two studies [27, 28] that examined the use of price incentives by the indoor tanning industry. The current research addresses this topic by describing the pricing structures and promotions used by indoor tanning facilities in six U.S. cities and evaluating how the availability of unlimited monthly tanning packages impacts the price of individual indoor tanning sessions. It is an important step in understanding how the industry manipulates the consumer environment to increase the accessibility of risky, high-volume indoor tanning and may help to inform policy intended to mitigate such industry practices.

We use the following terms to characterize pricing for indoor tanning services:

Definitions

Price/fee:	The amount of money paid by a consumer for a product or service
Pricing:	Decisions made by businesses about how much consumers should be charged for products or services
Promotional practices:	Strategies that businesses use to encourage consumers to purchase their products or services
Price incentives:	Manipulation of prices that consumers pay for products or services for the purpose of motivating consumers to purchase those products or services
Price controls:	Regulations establishing minimum or maximum prices that businesses can charge consumers for products or services
Free:	The absence of an identified fee that a consumer is required to pay for a product or service
Stringency:	Quantification of the comprehensiveness and restrictiveness of a state's indoor tanning legislation with regard to (1) minors' access to indoor tanning devices; (2) customer notifications of risk; (3) control over UV exposure levels of indoor tanning devices; (4) standards for UV indoor tanning equipment; (5) operator training and responsibilities; (6) facility operations; (7) enforcement practices; (8) penalties for violating provisions of state indoor tanning law; and (9) sanitation of UV indoor tanning devices and facilities

Methods

Study sample

We selected six U.S. cities diverse in tanning facility density (the number of indoor tanning facilities in the city divided by the city's population) [29], stringency of state-level indoor tanning laws [30], climate [31], and geography: Akron, Ohio; Austin, Texas; Boston, Massachusetts; Denver, Colorado; Pittsburgh, Pennsylvania; and Portland, Oregon. At the time of data collection, Akron, Austin, Boston, and Portland had state laws restricting youth access to indoor tanning; Denver and Pittsburgh did not [30]. The stringency of tanning laws was low in Pittsburgh; moderate in Denver, Austin, Akron, and Boston; and high in Portland [30]. Based on the data collected by Hoerster et al. [29], Akron had the highest density of indoor tanning facilities in the midwestern U.S, and Pittsburgh had the highest density in the northeastern U.S. Facility density in Boston, Denver, and Portland was in the mid-range for the respective geographic area, and the density in Austin was low relative to other cities in the southern U.S [29].

Within each city, we used two strategies to select tanning facilities for this study. First, we selected the four 'Zip Code Tabulation Areas' (geographic areas created by the U.S. Census Bureau and abbreviated as 'ZCTAs') with the largest population of 18–24-year-old non-Hispanic white adults, and used online methods (Google, Yellow Pages, Yelp, Groupon) to

identify all primary and secondary indoor tanning facilities located in those ZCTAs. 'Primary' facilities offer UV tanning as their main service and/or include some form of the word "tanning" in their business name. 'Secondary' facilities offer UV tanning as an accessory service/amenity, such as in an apartment complex, gym, or hair salon.

Second, to obtain a picture of indoor tanning more broadly within each city, we used facility licensure lists from the year 2014 obtained from state regulatory agencies to randomly select a sample of indoor tanning facilities located outside the selected ZCTAs in each city. For Pittsburgh, there was no licensure at the time, so we used online search methods to identify tanning facilities citywide.

Data collection and measures

Three trained research assistants, posing as potential customers ('confederates'), telephoned each indoor tanning facility in 2014 and used a structured protocol to inquire about the availability and pricing of single UV tanning sessions, UV tanning packages, and UV tanning memberships. Data collection assessed: (a) points or rewards programs for UV tanning; (b) new customer specials; (c) member specials; (d) other specials; (e) coupons; (f) discounts for university students; (g) discounts with the purchase of other services or products; (h) incentives for using social media, and (i) incentives for referring new customers. Our research team coded interviews for availability of free tanning and each type of pricing promotion. We used facility websites for supplemental information. The Colorado Multiple Institutional Review Board approved the study protocol as 'exempt' from review (no risk to human subjects).

Statistical analysis

We calculated the mean and median prices of a single UV tanning session across all types and levels of UV tanning devices available at each facility, and the mean and median monthly prices of unlimited tanning across all unlimited monthly tanning packages and memberships offered. For gyms, we calculated the price of tanning as the difference between the lowest price for a gym membership without tanning and the lowest price for a gym membership plus tanning. We calculated prices of single UV tanning sessions and for unlimited monthly tanning packages twice—first based on all facilities, and second, for a more conservative estimate, we excluded facilities offering free indoor tanning.

Finally, we calculated the absolute and percent differences between the mean price of a single UV tanning session purchased individually and the mean price of a single UV tanning session where the customer purchased an unlimited monthly UV tanning package/membership that is used at a low (three times per month), moderate (ten times per month), or daily (thirty times per month) frequency [32]. We calculated these difference measures only for facilities that required customers to pay a separate fee for tanning and offered both single sessions and unlimited monthly UV tanning packages or memberships.

We used IBM SPSS Statistics Version 22.0 [33] to conduct analyses. We assessed differences using analysis of variance (ANOVA) or Chi-Square tests, as appropriate, with a 0.05 alpha level.

Results

We identified 58 indoor tanning facilities through ZCTA-level enumeration and 36 from citywide (non-ZCTA) sampling, for a total of 94. Of those, 54 were primary facilities and 40 were secondary (Table 1). Nearly all (96%) offered individual tanning sessions; half (52%) offered membership plans involving a monthly fee for unlimited tanning; and 68% offered session-limited, time-limited, or other tanning packages.

Free and discounted UV tanning

Indoor tanning was 'free' at 35% of secondary facilities and none of the primary facilities ($p < .001$). Nearly all apartments with tanning offered it 'free' (92%) compared to 12% of gyms and no hair salons, nail salons, or spas. 'Free' tanning was most common in Austin, with 89% of secondary facilities offering free tanning. Notably, seven of the nine secondary facilities in Austin (78%) were apartment complexes, the type of business where tanning is most likely to be offered 'free of charge.' No secondary facilities offered free tanning in Boston, Pittsburgh or Portland, while 75% did in Akron and 38% in Denver. As in Austin, this pattern mirrored the presence or absence of apartment complexes offering indoor tanning as an amenity in those cities. Nearly all (94%) primary facilities offered time-limited price reductions including discounts, customer specials, and others. Among secondary facilities that charged a specific fee for tanning, only 42% offered deals and discounts ($p <.001$). New customer specials were the most common type of discount (51%), followed by discounts for students with a university identification card (39%), discounts for engagement on social media (e.g., Facebook, Yipit, or email) (39%), referral incentives/coupons (36%), member specials (30%), loyalty programs (23%), and discounts with other purchases (15%).

Single session and unlimited monthly prices

In addition to single session purchases, all primary facilities and 80% of secondary facilities offered some form of unlimited monthly tanning option. Sessions purchased individually averaged $16.45 at primary facilities compared to $4.82 at all secondary facilities (including the 'free' ones) and $7.89 at the subgroup of secondary facilities that charged a fee for tanning ($p <.001$). Average prices for unlimited monthly tanning were $56.69 at primary facilities compared to $19.60 at all secondary facilities (including the 'free' ones) and $34.85 at the subgroup of secondary facilities that charged a designated fee for tanning ($p <.001$).

Figure 1 shows the mean price to consumers of a single UV tanning session when purchased individually compared to when an unlimited monthly plan is purchased and used three times a month, 10 times a month, or daily. As described above, we calculated these measures based on the subgroup of tanning facilities that charged a fee for tanning and that offered both single sessions and unlimited monthly UV tanning packages or memberships. Compared to purchasing UV tanning sessions individually, consumers paid more per single UV tanning session when they purchased an unlimited monthly plan and used only three tanning sessions per month. In contrast, consumers paid an average of $9.00 (63%) less per single UV tanning session when they purchased an unlimited monthly plan and used 10 tanning sessions per month. This difference was larger in primary facilities ($10.58, 64%

less expensive) than in secondary facilities that charged a fee for tanning ($4.49, 51% less expensive; data not shown). Finally, consumers paid an average of 88% less (under $2.00) per single UV tanning session when they purchased an unlimited monthly plan and used it daily. The magnitude of that reduction was similar in primary tanning facilities and in secondary tanning facilities that charged a fee for tanning (89% vs. 84%, respectively) and across all six cities (range = 73–92%; data not shown).

Discussion

The indoor tanning businesses we assessed in six diverse cities across the U.S. commonly used ‘free’ tanning, discounts, multiple session packages, or unlimited memberships. These resulted in substantial price reductions to consumers. Research on price incentives for other health risk behaviors [20–26, 34] suggests that the availability of low-price indoor tanning removes an important barrier for price-sensitive adolescents and young adults and may motivate them to engage in indoor tanning that they otherwise could not afford. Moreover, customers who purchase an unlimited monthly plan reach the ‘break-even’ point (with individually purchased sessions) after tanning four times per month. The substantially lower per session price with an unlimited monthly plan may create perceived savings and incentivize more frequent indoor tanning. These products may also promote prolonged intervals of indoor tanning since most memberships involve ‘rolling contracts’ (automatic renewal) that customers must actively terminate.

Age-restriction laws, combined with increased risk communications and updated safety measures, have successfully reduced the prevalence of indoor tanning among both adolescents and adults [1–5]. The current findings suggest that indoor tanning might be reduced even more through price interventions such as taxes, limits on free/low-price tanning, and/or minimum pricing laws which establish thresholds below which goods and services cannot be sold [35, 36], as they have with tobacco and alcohol use [26, 34, 37, 38]. A few such interventions have already been implemented, including legislation in Ireland that prohibits indoor tanning salons from offering free, unlimited, or reduced prices on indoor tanning as well as “happy hour” discounts, loyalty cards, or bonus points that substantially reduce the price of indoor tanning [17]. The U.S. government imposed a 10% federal excise tax on indoor tanning [14, 39] and Oregon state law prohibits indoor tanning salons from advertising or promoting tanning packages as “unlimited” [40]. In addition, an agreement between the New York State Attorney General’s Office and a national tanning salon chain prohibited all franchises in New York City from offering unlimited tanning packages [16]. While the impact of these measures still needs to be established, they are consistent with calls for broader-based, “bottom of the pyramid” public health interventions —ones that alter the environmental context in which decisions about health behaviors are made—and that may reach larger audiences and achieve greater behavior change [41].

The results also suggest that interventions addressing availability of low-price tanning be targeted to secondary indoor tanning facilities. We speculate that, relative to traditional indoor tanning salons, secondary facilities have been less impacted by age-restrictions and the other indoor tanning control efforts that have been implemented to date. For example, youth under the age of 18 are unlikely to rent an apartment, and most physical fitness

facilities are exempted from the U.S. federal excise tax [14]. Thus, policies that set minimum tanning prices may be particularly influential in discouraging tanning at non-salon businesses. These include gyms, nail salons, and apartment complexes where we have documented that tanning is particularly inexpensive and often ‘free.’

Of special note is the propensity of apartment complexes, compared to other types of secondary locations, to offer tanning to customers for no additional charge. Ninety-two percent of apartment complexes that offered tanning, offered it for ‘free.’ The presence of apartment complexes offering tanning differed by city, and following this, the availability of free tanning differed by city. The availability of free tanning is particularly common in housing for university students. Of the eight facilities in our Austin sample that offered free tanning, six were apartment complexes in the same zip code as a major university. One provided free tanning to all residents living in the eight apartment buildings within the complex. Housing for university students was also the main source of free tanning in Akron and Denver. Many colleges and universities have implemented evidence-based polices such as smoking bans on campus grounds and restrictions on the availability of alcohol at university events-policies that have successfully reduced use among students [42]. Efforts are currently underway to limit associations between universities and the indoor tanning industry, including eliminating indoor tanning salons as business partners in university debit card programs and removing tanning devices from campus grounds and affiliated residential complexes [43, 44]. Limiting financial incentives provided to universities by the indoor tanning industry as well as restricting indoor tanning advertising and promotion on college campuses are also important [45].

Limitations

It was beyond the scope of this study to evaluate how differences in prices and promotions relate to the prevalence or frequency of indoor tanning. This should be a priority for future research. In addition, the study oversampled indoor tanning facilities in young adult neighborhoods in six U.S. cities. Indoor tanning pricing and promotion may be different in other cities and types of communities, although we purposively chose cities with wide variation in key characteristics related to tanning (climate, geography, stringency of tanning laws, and density of facilities) and focused on the demographic group with the highest rates of indoor tanning.

Conclusions

This paper highlights the potential for indoor tanning pricing and promotions to engage new tanners and encourage more frequent tanning. Exposure to indoor tanning has been linked to melanoma risk throughout the world [6], and frequent tanning, the use of higher intensity devices, and tanning over longer periods have all been shown to increase risk [7]. The question of whether limiting free tanning and restricting pricing and advertising practices would decrease indoor tanning is an important area for future research.

References

1. Qin J, Holman DM, Everett Jones S, Berkowitz Z, Guy JP Jr. State indoor tanning laws and prevalence of indoor tanning among US high school students, 2009–2015. Am J Public Health. 2018;108:951–6. [PubMed: 29771612]
2. Guy GP Jr, Berkowitz Z, Everett Jones S, O'Malley Olsen E, Miyamoto JN, Michael SL, Saraiya M. State indoor tanning laws and adolescent indoor tanning. Am J Public Health. 2014;104:e69–74.
3. Geller AC. The story behind the sharp decline in US tanning bed rates. Am J Public Health. 2018;108:971–3. [PubMed: 29995485]
4. Guy GP Jr, Watson M, Seidenberg AB, Hartman AM, Holman DM, Perna F. Trends in indoor tanning and its association with sunburn among US adults. J Am Acad Dermatol 2017;76:1191–3. [PubMed: 28522044]
5. Guy GP Jr, Berkowitz Z, Everett Jones S, Watson M, Richardson LC. Prevalence of indoor tanning and association with sunburn among youth in the United States. JAMA Dermatol 2017;153:387–90. [PubMed: 28257531]
6. Wehner MR, Chren MM, Nameth D, Choudhry A, Gaskins M, Nead KT, Boscardin J, Linos E. International prevalence of indoor tanning: a systematic review and meta-analysis. JAMA Dermatol 2014;150(4):390–400. [PubMed: 24477278]
7. Boniol M, Autier P, Boyle P, Gandini S. Cutaneous melanoma attributable to sunbed use: systematic review and meta-analysis. BMJ. 2012;345:e4757. [PubMed: 22833605]
8. Howlader N, Noone AM, Krapcho M, Miller D, Bishop K, Kosary CL, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). SEER cancer statistics review, 1975–2014, National Cancer Institute Bethesda https://seer.cancer.gov/csr/1975_2014/, based on November 2016 SEER data submission, posted to the SEER web site, 4 2017 Accessed 16 Dec 2018.
9. Karimkhani C, Green AC, Nijsten T, Weinstock MA, Dellavalle RP, Naghavi M, Fitzmaurice C. The global burden of melanoma: results from the Global Burden of Disease Study 2015. Br J Dermatol 2017;177:134–40. [PubMed: 28369739]
10. U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on November 2017 submission data (1999-2015): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, 6 2018.
11. Guy GP Jr, Thomas CC, Thompson T, Watson M, Massetti GM, Richardson LC. Vital signs: melanoma incidence and mortality trends and projections United States, 1982–2030. MMWR Morb Mortal Wkly Rep 2015;64(21):591–6. [PubMed: 26042651]
12. Roache S Ban the (indoor) tan: It's time to ban tanning beds in the United States. http://oneill.law.georgetown.edu/ban-indoor-tan-time-ban-tanning-beds-united-states/ Accessed 21 Feb 2019.
13. Pawlak MT, Bui M, Amir M, Burkhardt DL, Chen AK, Dellavalle RP. Legislation restricting access to indoor tanning throughout the world. Arch Dermatol 2012;148(9):1006–12. [PubMed: 22801924]
14. Federal Register. Indoor Tanning Services; Excise Taxes https://www.federalregister.gov/documents/2013/06/11/2013-13876/indoor-tanning-services-excise-taxes Accessed 21 Feb 2019.
15. National Conference of State Legislatures. Indoor tanning restrictions for minors: a state by state comparison. http://www.ncsl.org/research/health/indoor-tanning-restrictions.aspx Accessed 21 Feb 2019.
16. New York State Office of the Attorney General. A.G. Schneiderman announces agreements barring national tanning salon chain Hollywood Tans and Manhattan franchise from making health claims. http://www.ag.ny.gov/press-release/ag-schneiderman-announces-agreements-barring-national-tanning-salon-chain-hollywood Accessed 21 Feb 2019.
17. Irish Cancer Society. New regulations on the use of sunbeds came into law today. https://www.cancer.ie/node/3313#sthash.LxOHFxrC.dpbs Accessed 21 Feb 2019.
18. Health. French health watchdog calls for ban on sunbeds. https://www.thejakartapost.com/life/2018/10/11/french-health-watchdog-calls-for-ban-on-sunbeds.html Accessed 21 Feb 2019.

19. Greenman J, Jones DA. Comparison of advertising strategies between the indoor tanning and tobacco industries. J Am Acad Dermatol 2010;62:685.e1–18. [PubMed: 20138395]
20. White VM, White MM, Freeman K, Gilpin EA, Pierce JP. Cigarette promotional offers. Who takes advantage? Am J Prev Med 2006;30(3):225–31. [PubMed: 16476638]
21. Choi K, Hennrikus DJ, Forster JL, Moilanen M. Receipt and redemption of cigarette coupons, perceptions of cigarette companies and smoking cessation. Tob Control. 2013;22:418–22. [PubMed: 23047886]
22. Cornelius ME, Driezen P, Fong GT, Chaloupka FJ, Hyland A, Bansal-Travers M, Carpenter MJ, Cummings KM. Trends in the use of premium and discount cigarette brands: findings from the ITC US surveys (2002–2011). Tob Control. 2014;23:i48–53. [PubMed: 24092600]
23. Ali FRM, Xu X, Tynan MA, King BA. Use of price promotions among U.S. adults who use electronic vapor products. Am J Prev Med 2018;55(2):240–3. [PubMed: 29937113]
24. Choi K, Hennrikus DJ, Forster JL, Claire AW. Use of price-minimizing strategies by smokers and their effects on subsequent smoking behaviors. Nicotine Tob Res 2012;14(7):864–70. [PubMed: 22193571]
25. Licht AS, Hyland AJ, O'Connor RJ, Chaloupka FJ, Borland R, Fong GT, Nargis N, Cummings KM. Socio-economic variation in price minimizing behaviors: findings from the International Tobacco (ITC) Four Country survey. Int J Environ Res Public Health. 2011;8:234–52. [PubMed: 21318026]
26. Hyland A, Bauer JE, Li Q, Abrams SM, Higbee C, Peppone L, Cummings KM. Higher cigarette prices influence cigarette purchase patterns. Tob Control. 2005;14:86–92. [PubMed: 15791017]
27. Kwon HT, Mayer JA, Walker KK, Yu H, Lewis EC, Belch GE. Promotion of frequent tanning sessions by indoor tanning facilities: two studies. J Am Acad Dermatol 2002;46:700–5. [PubMed: 12004310]
28. Brouse CH, Clarke Hillyer G, Basch CE, Neugut AI. Geography, facilities, and promotional strategies used to encourage indoor tanning in New York City. J Community Health. 2011;36:635–9. [PubMed: 21222021]
29. Hoerster KD, Garrow RL, Mayer JA, Clapp EJ, Weeks JR, Woodruff SI, et al. Density of indoor tanning facilities in 116 large U.S. cities. Am J Prev Med 2009;36:243–6. [PubMed: 19215849]
30. Woodruff SI, Pichon LC, Hoerster KD, Forster JL, Gilmer T, Mayer JA. Measuring the stringency of states' indoor tanning regulations: instrument development and outcomes. J Am Acad Dermatol 2007;56:774–80. [PubMed: 17276543]
31. Sun Safety Monthly Average UV Index. United States Environmental Protection Agency http://www.epa.gov/sunsafety/sun-safety-monthly-average-uv-index#tab-1 Accessed 16 Dec 2018.
32. National Health Interview Survey. Atlanta (GA): Centers for Disease Control and Prevention http://www.cdc.gov/nchs/nhis/ Accessed 5 June 2016.
33. IBM Corp. Released 2013 IBM SPSS Statistics for Windows, Version 22.0. Armonk: IBM Corp.
34. Kuo M, Wechsler H, Greenberg P, Lee H. The marketing of alcohol to college students: the role of low prices and special promotions. Am J Prev Med 2003;25(3):204–11.
35. Sinclair C, Makin JK. Implications of lessons learned from tobacco control for tanning bed reform. Prev Chronic Dis 2013;10 https://www.cdc.gov/pcd/issues/2013/12_0186.htm Accessed 16 Dec 2016.
36. World Health Organization. Artificial tanning devices: public health interventions to manage sunbeds. Geneva: World Health Organization; 2017.
37. Amato MS, Boyle RG, Brock B. Higher price, fewer packs: evaluating a tobacco tax increase with cigarette sales data. Am J Public Health. 2015;105:e5–8.
38. Seidenberg AB, Mahalingam-Dhingra A, Weinstock MA, Sinclair C, Geller AC. Youth indoor tanning and skin cancer prevention: lessons from tobacco control. Am J Prev Med 2015;48(2):188–94. [PubMed: 25442227]
39. Jain N, Rademaker A, Robinson JK. Implementation of the federal excise tax on indoor tanning services in Illinois. Arch Dermatol 2012;148(1):122–4. [PubMed: 22250250]
40. Oregon Health Authority. Tanning operator training: rules for the operation of tanning devices & facilities. https://www.oregon.gov/oha/ph/HealthyEnvironments/RadiationProtection/Tanning/Documents/tanningtraining.pdf Accessed 21 Feb 2019.

41. Frieden TR. A framework for public health action: the health impact pyramid. Am J Public Health. 2010;100(4):590–5. [PubMed: 20167880]

42. Lechner WV, Meier E, Miller MB, Wiener JL, Fils-Aime Y. Changes in smoking prevalence, attitudes, and beliefs over 4 years following a campus-wide anti-tobacco intervention. J Am Coll Health. 2012;60(7):505–11. [PubMed: 23002798]

43. Boyers L, Karimkhani C, Crane LA, Asdigian NL, Hollonds A, Dellavalle RP. Buying indoor tanning with university debit cards. J Am Acad Dermatol 2014;71(1):199–201. [PubMed: 24947697]

44. Mounessa JS, Pagoto SL, Baker K, Antonishak J, Dellavalle RP. Creating the first indoor tan-free skin smart college campus. Prev Med Rep 2017;6:44–6. [PubMed: 28271019]

45. U.S. Department of Health and Human Services. The Surgeon General's Call to Action to Prevent Skin Cancer. Washington (DC): U.S. Department of Health and Human Services, Office of the Surgeon General; 2014.

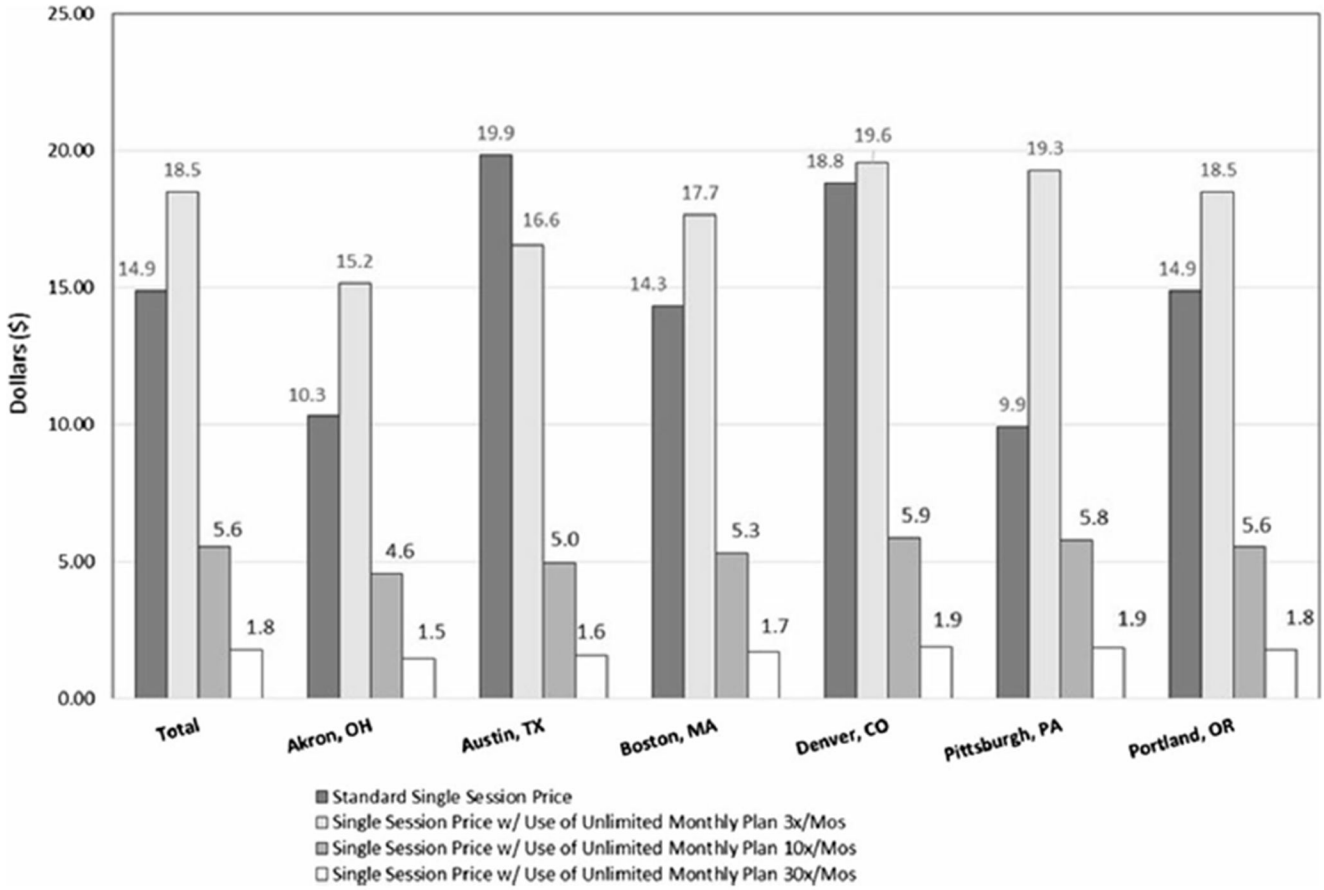

Fig. 1.

Mean price of single ultraviolet (UV) tanning sessions: purchased alone or purchased with an unlimited monthly plan and used 3, 10, or 30 times per month ($n = 68$). The average price of a single tanning session when purchased alone or when purchased with an unlimited monthly plan and used 3, 10, or 30 times per month, among indoor tanning facilities that charged a fee for tanning and that offered both single sessions and unlimited monthly UV tanning packages or memberships facilities, as reported by facility operators in 2014

Table 1

Type of indoor tanning business and facility (primary vs. secondary) in 2014 by city

	City													
	Total		Akron OH		Austin TX		Boston MA		Denver CO		Pittsburgh PA		Portland OR	
	N	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Business type														
Tanning salon	52	55.3	6	60.0	10	52.6	6	42.9	7	43.8	14	77.8	9	52.9
Gym	16	17.0	1	10.0	2	10.5	3	21.4	3	18.8	3	16.7	4	23.5
Apartment	13	13.8	3	30.0	7	36.8	0	0.0	2	12.5	0	0.0	1	5.9
Hair salon	8	8.5	0	0.0	0	0.0	4	28.6	1	6.3	1	5.6	2	11.8
Nail salon	4	4.3	0	0.0	0	0.0	1	7.1	2	12.5	0	0.0	1	5.9
Spa	1	1.1	0	0.0	0	0.0	0	0.0	1	6.3	0	0.0	0	0.0
Facility type[a]														
Primary[b]	54	57.4	6	60.0	10	52.6	7	50.0	8	50.0	14	77.8	9	52.9
Secondary	40	42.6	4	40.0	9	47.4	7	50.0	8	50.0	4	22.2	8	47.1
Total	94	100	10	100	19	100	14	100	16	100	18	100	17	100

[a]Primary tanning facilities were defined as those that offer UV tanning as their main consumer service and/or include some form of the word “tan” or “tanning” in their business name. Secondary facilities offer UV tanning as an accessory service or amenity, such as in an apartment complex, gym/health club, hair salon/barbershop, nail salon, etc

[b]The 54 primary facilities in our sample included 52 tanning salons and 1 hair salon and 1 nail salon with “tan” or “tanning” in the business name