Indoor tanning promotions on social media in six US cities #UVTanning #tanning

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Abstract

There is no research investigating indoor tanning advertising on social media. We assessed the use of social media to promote indoor tanning. We subscribed to social media platforms in six US cities and content-analyzed promotional messages received. We captured 662 messages on Twitter and Facebook, through salon emails, and in daily deal coupons. Salon postings were most frequent on Twitter and Facebook, with an average of 2–3 postings per week. National chains posted more frequently than local businesses. Forty percent of messages were devoid of tanning content and included photos, jokes, or popular references. Thirty percent mentioned price reductions, and 28 % referenced an upcoming holiday. Sunless tanning (17 %) was promoted more often than ultraviolet tanning (9 %). Tanning salons actively use social media as a strategy for maintaining relationships with customers and offer pricing deals that promote loyalty and high-frequency tanning.

Keywords

Indoor tanning, Skin cancer, Social media, Advertising

BACKGROUND

Skin cancer incidence is rising and is increasingly affecting adolescents and young adults, creating a profound social and economic burden in the USA [1–11]. Ultraviolet (UV) exposure is the primary and preventable risk factor for skin cancer [12–14]. Indoor UV tanning appears responsible for part of the rise over the past several decades among young women [15, 16]. More frequent use, use of higher intensity devices, and use over longer periods of time have all been linked to elevated melanoma risk [15, 16].

The annual prevalence of indoor tanning in the USA is highest among non-Hispanic white women between the ages of 18–21 (32 %) and 22–25 (30 %) [17]. Two thirds (68 %) of 18–21-year-old non-Hispanic white women who use indoor tanning report frequent use (10 or more indoor tanning sessions per year), with an average of nearly 28 indoor tanning sessions per year [17]. These and other data suggest that reducing indoor tanning use among young adults is a public health imperative [18–20]. Indeed, the Surgeon General released a “Call to Action” in 2014 highlighting skin

Implications

Practice: Public health practitioners should explore the use of social media to reach and engage young audiences and promote norms that discourage indoor tanning and other forms of high-risk ultraviolet exposures among adolescents and young adults.

Policy: Policy makers at the local, state, and national level need to be informed about the advertising strategies used by the tanning industry in order to develop effective public policies to reduce skin cancer risk.

Research: Research is needed to determine how young adults are accepting tanning advertisements on Internet channels and how this affects their tanning behavior.

Electronic supplementary material

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cancer as a major public health problem in the USA and calling on multiple community sectors (e.g., policy makers, employers, clinicians, schools, families, and so on) to come together in comprehensive risk reduction efforts [21].

Public health messages about the risks of indoor tanning compete with a multibillion dollar a year tanning industry that maximizes young adult consumer markets through the strategic location of tanning facilities, pricing promotions that incentivize high volume use, and targeted advertising intended to increase the appeal and ease of indoor tanning among adolescents and young adults [22–25]. Advertising strategies are similar to those from the tobacco industry, including appeals that reduce health concerns, convey social acceptance, highlight positive psychological effects, and target specific populations [26].

Although previous reports have provided important information about the marketing strategies used to engage young consumers and promote increased

use of indoor tanning, the landscape of indoor tanning advertising has changed as consumers shift from consumption of print media to Web-based media. Nearly all (97 %) young adults age 18–29 were online in 2014, and of those 87 % were on Facebook¹ [27], using it as a primary source of news [28]. Advertising has seen a corresponding shift. Internet advertising revenue reached \$11.6 billion during the first quarter of 2014, representing a 19 % increase over the first quarter of 2013 (\$9.6 billion) and a doubling since 2010 [29, 30]. When the Wharton Future of Advertising Program asked industry leaders how they envision advertising in the year 2020, the overwhelming expectation was that traditional campaign-based models would be replaced with strategies resembling real-time, data-driven newsrooms [31].

Consistent with these trends, a 2012 Congressional Investigative Report found that many indoor tanning businesses currently use their own social media sites (Facebook, Twitter) and/or the social media sites of strategically selected consumer groups (e.g., Facebook pages of student groups, cheerleading squads) to advertise discounts and specials, particularly unlimited tanning packages that promote high-volume tanning [32]. That report also noted that indoor tanning customers are frequently referred to trade association websites such as www.tanningtruth.com or www.smarttan.com that present misleading and inaccurate information about the health risks and benefits of indoor tanning [32]. In addition, an Australian study found that tanning salons routinely advertised pricing incentives for multi-session packages, free offers, membership awards, and used images of tanned women [33]. A French investigation reported that 70 % of indoor tanning websites examined did not comply with national advertising restrictions [34].

In the present study, we provide a detailed description of how these new social network advertising frontiers are being used to promote indoor tanning. Specifically, we investigated the volume and content of advertisements and other communications that indoor tanning facilities post on social media platforms and other Internet-based communication channels. Our goal was to provide a rich profile of the current strategies and technologies used by the indoor tanning industry to reach their adolescent and young adult consumer base. Such an understanding is critical for informing counter efforts from the public health community to communicate accurate information about the risks of indoor tanning and otherwise facilitate informed choice.

METHODS

The present study was part of a larger investigation of environmental influences on the indoor tanning behavior of young adults, which also assessed availability

of tanning facilities, pricing, and other factors. Six US cities were selected to provide diversity in geography, climate, state-level indoor tanning legislation, and density of indoor tanning facilities: Akron, OH; Austin, TX; Boston, MA; Denver, CO; Pittsburgh, PA; and Portland, OR.

We selected at least five indoor tanning salons and five non-indoor tanning businesses in each city and signed up to receive emails, “liked” them on Facebook, and/or “followed” them on Twitter. See [Appendix](#) for definitions of social media terms. The inclusion criteria for all businesses were the availability of a Facebook page, a Twitter account, and/or a public email “club.” The non-indoor tanning businesses were included to have a reference against which tanning advertising could be compared. These included hair salons, nail salons, movie theaters, performing arts centers, fitness centers or gyms, yoga or Pilates studios, and/or clothing retailers (e.g., Victoria’s Secret). We used Google and Yellow Pages online to identify tanning salons and other businesses in each city with a presence on social media (Facebook, Twitter, or email). We first targeted the search in the zip code in each city with the highest percentage of non-Hispanic white adults age 18–24. Search terms included a combination of the respective city, the target zip codes, and the words “tan,” “tanning,” “salon,” and “UV tanning.” Businesses that offered UV tanning in addition to other services were included as long as UV tanning was their primary service. Businesses offering only sunless or UV-free tanning were excluded. Finally, we established a “Yipit” account in each city. Yipit is a website that aggregates discounted “deals” from sources such as Groupon, LivingSocial, AmazonLocal, Travelzoo, and others. We requested information about deals on “tanning” and, for comparison, “yoga.”

Social media activity and data collection—We implemented a protocol that varied the weeks and days that the first author (C.A.R.) was active and collecting data (spending at least 10 min each) on Facebook and Twitter. In 1 week, we posted status updates on Facebook and collected data on Tweets and advertisements received in the Twitter Timeline. In the following week, we sent Tweets on Twitter and collected data on sidebar advertisements, sponsored posts, and other posts in the Facebook News Feed. Each week, we alternated the days in which we collected data on Facebook and Twitter (Monday, Wednesday, and Friday vs. Tuesday, Thursday, Saturday or Sunday) so we could capture systematic differences in the volume and/or content of advertisements and other communications due to day of the week.

We engaged in activity on Facebook and Twitter each week in an effort to create a presence on social media reflective of a young adult female tanner’s social media behavior. This was done to assess the degree to which indoor tanning-related advertisements are “pushed out” to a social media user with those characteristics. Internet activity is tracked through “cookies.” A cookie is a small file that contains user activity

¹The use of trade names within this paper is for identification purposes only and does not imply endorsement by the Department of Health and Human Services.

Table 1 | Characteristics of selected indoor tanning salons

	City										Total	
	Akron		Austin		Boston		Denver		Pittsburgh		Portland	
	n	%	n	%	n	%	n	%	n	%	n	%
Businesses identified	7	18.4	6	15.8	5	13.2	6	15.8	7	18.4	7	18.4
Social media platform ^a												
Facebook	5	16.7	5	16.7	5	16.7	5	16.7	5	16.7	5	16.7
Twitter	4	13.8	5	17.2	5	17.2	5	17.2	5	17.2	5	17.2
Tanning club emails	1	10.0	2	20.0	0	0.0	3	30.0	1	10.0	3	30.0
Chain status												
National chain	2	20.0	3	30.0	1	10.0	2	20.0	1	10.0	1	10.0
Regional chain	2	18.2	3	27.3	0	0.0	1	9.1	1	9.1	4	36.4
Non-chain	3	21.4	0	0.0	3	21.4	3	21.4	3	21.4	2	14.3
Indeterminate	0	0.0	0	0.0	1	33.3	0	0.0	2	66.7	0	0.0
No social media activity	3	33.3	2	22.2	1	11.1	0	0.0	2	22.2	1	11.1
^a Not mutually exclusive												

information and is saved on a user's computer when the user visits a website. Cookies allow websites to track user preferences and customize advertisements and/or product suggestions to a specific user's online activity. Thus, our Internet activity during the study period was designed to create cookies that would elicit indoor tanning advertisements. A new Lenovo laptop was used for this project to ensure no cookies were present from previous Internet activity that could alter the results of our study.

Half of all of the Facebook status updates and Tweets we posted were tanning related (e.g., "Tanning is a must...I refuse to be pale #justsaying;" "Tanning is just what I needed to relax"), and half were related to school, family, or going out with friends (e.g., "I think I need an IV of coffee to get me through tonight's homework to do list!;" "Ready to have some fun #Boston #Friday #YOLO").

Data collection on Facebook extended from October 21 through October 31, 2013. On November 1, Facebook denied access unless we provided government-issued identification (Numerous months later, Facebook reinstated access without government identification.). Facebook data collection included the number of (a) News Feed posts received from the tanning salons and non-indoor tanning businesses selected in each city, (b) sponsored posts received from other indoor tanning salons and non-indoor tanning businesses, and (c) advertisements appearing in the Facebook sidebar (see [Appendix](#) for definitions). We used a time-sampling method for the latter, which involved recording sidebar advertisements every 2 min for a total of 10 min every other day.

Data collection on Twitter occurred between October 22 and November 28, 2013 for Tweets and between October 28 and November 28, 2013 for retweets. We recorded the number of (a) Tweets and retweets received from the tanning salons and non-indoor tanning businesses selected in each city and (b) promoted Tweets received from other tanning and non-indoor tanning businesses.

We also recorded the number of tanning club emails and Yipit deals received each week between October 21 and November 28, 2013.

Coding and analysis—We captured screenshots of all of the previously described communications received from indoor tanning salons and classified them by city, date, and source. The first author (C.A.R.) coded the content of each of those communications using a protocol developed by three authors (C.A.R., L.A.C., N.L.A.) after extensive review and discussion of a sample of communications collected for this study. A random 10 % of the communications was coded by a second author (L.A.C.), and all conflicts between coders were resolved through discussion. We only coded content available in the original communication; additional content reached through hyperlinks embedded within the original communication was excluded.

We classified the selected indoor tanning salons in each city by their chain status, including (a) national

chain (defined as a business with multiple salons in locations throughout the USA), (b) regional chain (defined as a business with multiple salons in locations throughout a particular region in the USA, e.g., the Pacific Northwest or throughout a single city), (c) non-chain (defined as a single independent salon located within a single city), and (d) indeterminate (usually because the business had permanently closed by the time we sought this information).

We used SPSS v. 22 to calculate descriptive statistics (means and percentages) to characterize the volume and content of communications received on each social media platform (Facebook, Twitter, email, Yipit), for both tanning salons and non-tanning businesses (volume only), overall and by city and chain status of the tanning salon sending the communication. We standardized measures of communication volume by calculating the mean number of communications generated by a business on each platform per week. Because the goal of our analysis was to describe the volume and content of social media use by indoor tanning salons, we did not use inferential statistics to evaluate differences.

RESULTS

We identified and followed 38 indoor tanning salons in the six cities with a presence on one or more forms of social media (Facebook, Twitter, email club; see Table 1). With an aim to identify five in each city, we identified between four² and seven indoor tanning salons in each city; we selected more than five in some cities in order to fulfill our protocol requirement to include all social media platforms in each city. We were able to identify only 10 indoor tanning salons across the six cities with a public email club—three each in Denver and Portland; two in Austin; one each in Akron and Pittsburgh; and none in Boston. Typically, email clubs were either offered only to existing salon customers or not offered at all.

Of the selected tanning salons, 10 were part of national chains, 11 were part of regional chains, 14 were not part of chains, and 3 could not be classified due to inadequate information (Table 1). Nine tanning salons engaged in no social media activity during our data collection period, including 43 % of the salons selected in Akron, 33 % in Austin, 29 % in Pittsburgh, 20 % in Boston, 14 % in Portland, and 0 % in Denver.

Communication volume—We collected a total of 662 communications from indoor tanning salons during the study period. Of those, 126 were posts in the Facebook News Feed, 379 were Tweets in the Twitter Timeline, 106 were Twitter retweets, 27 were tanning club emails, and 24 were Yipit deals on indoor tanning services. We found no sidebar advertisements and no sponsored News Feed posts on Facebook from indoor

²We selected only four indoor tanning salons in Akron because we were unable to identify five that met our inclusion criteria.

Table 2 | Mean number of communications per indoor tanning salon per week, by social media platform and city

	Facebook		Twitter Tweets		Twitter retweets		Tanning club emails		Yipit deals	
	<i>n</i> ^a	Mean ^b	<i>n</i> ^a	Mean ^b	<i>n</i> ^a	Mean ^b	<i>n</i> ^a	Mean ^b	<i>n</i> ^a	Mean ^b
Akron	5	1.0	4	2.5	4	1.6	1	0	0	0.00
Austin	5	2.0	5	1.9	5	1.0	2	0.4	3	0.18
Boston	5	1.5	5	1.2	5	0.4	0	0.0	5	0.22
Denver	5	3.5	5	2.9	5	0.8	3	1	6	0.24
Pittsburgh	5	5.5	5	3.2	5	0.7	1	0.5	2	0.18
Portland	5	4.2	5	2.7	5	0.6	3	0.2	5	0.18
Total	30	2.9	29	2.4	29	0.8	10	0.5	21	0.21

^a Number of indoor tanning salons “liked” on Facebook, “followed” on Twitter, joined email club, offering deals on Yipit

^b Mean number of communications (Facebook posts, Tweets, retweets, emails, or deals) sent per indoor tanning salon per week

The data collection period was 10 days for Facebook, 38 days for Tweets, 32 days for retweets, and 39 days for both Yipit deals and email clubs

Table 3 | Communication content by social media platform

Communication content ^a	Facebook (n = 126)		Twitter Tweets (n = 379)		Twitter retweets (n = 106)		Yipit deals (n = 24)		Tanning club emails ^b (n = 27)		Total (n = 662)	
	n	%	n	%	n	%	n	%	n	%	n	%
Tanning-related words or images	81	64.3	213	56.2	57	53.8	24	100.0	22	95.7	397	60.3
Tanning-related words	75	59.5	202	53.3	57	53.8	21	87.5	21	91.3	376	57.1
Tanning-related images	31	24.6	26	6.9	8	7.5	23	95.8	19	82.6	107	16.3
Devoid of any tanning-related content	45	35.7	166	43.8	49	46.2	0	0.0	1	4.3	261	39.7
Elements of sex appeal or beauty standards	26	20.6	10	2.6	7	6.6	24	100.0	18	78.3	85	12.9
Holiday mentioned	49	38.9	117	30.9	10	9.4	0	0.0	9	39.1	185	28.1
Celebrity or sports team	21	16.7	24	6.3	14	13.2	0	0.0	9	39.1	68	10.3
UV tanning or specific UV tanning device promoted	8	6.3	23	6.1	3	2.8	10	41.7	18	78.3	62	9.4
Sunless tanning or specific sunless tanning device promoted	26	20.6	46	12.1	10	9.4	14	58.3	17	73.9	113	17.2
Discount price for UV tanning	7	5.6	16	4.2	0	0.0	9	37.5	14	60.9	46	7.0
Discount price for sunless tanning	12	9.5	19	5.0	0	0.0	13	54.2	12	52.2	56	8.5
Discount price for lotion or tanning accessory products	16	12.7	19	5.0	4	3.8	0	0.0	14	60.9	53	8.1
URL or hyperlink to another webpage	28	22.2	229	60.4	34	32.1	0	0.0	23	85.2	314	47.4
Salon address or specific location	4	3.2	32	8.4	9	8.5	23	95.8	22	81.5	90	13.6
Event or contest the salon is participating in	6	4.8	27	7.1	9	8.5	0	0.0	1	4.3	43	6.5
Unspecified type of tanning lotion	21	16.7	35	9.2	9	8.5	0	0.0	13	56.5	78	11.9
Other salon services—spa, teeth whitening, red light therapy, etc.	4	3.2	15	4.0	0	0.0	3	12.5	11	47.8	33	5.0

^a Characteristics present in 5 % or fewer communications are not listed in the table, including the following: salon rewards program or incentive, 4.3 %; weather, 4.1 %; reminder to book tanning appointment, 4.0 %; beauty claims, 4.0 %; alignment with social cause, 3.5 %; standard price for unspecified tanning services, 2.1 %; convenience of salon, 1.8 %; health, safety, or mental health claims, 1.7 %; free unspecified tanning offer, 1.8 %; effectiveness or specific UVA or UVB information of tanning beds, 1.5 %; tanning tips, 1.2 %; events including prom, formal dance, wedding, 1.1 %; standard price for lotion or tanning accessory products, 1.1 %; free UV tanning offer, 1.1 %; tanning expertise of salon staff, 0.8 %; standard price for sunless tanning, 0.6 %; standard price for UV tanning, 0.2 %; tanning to prevent sunburn or before a vacation, 0.0 %

^b Denominator varies from 23-27 due to missing data

Facebook Posts

University Tans
~Get 2 Mystic Spray Tans for \$20~

Happy Halloween from University Tans

Like · Comment · Share · 1 · 13 hours ago ·

Darque Tan
What movie is this? #happyhumpday

4 hours ago ·

Like · Comment · Share · 29 Likes · 24 Comments

Yipit Deal

GROUPON 971 DAYS LEFT

Up to 66% Off Spray and UV Tanning

Sun Kiss Tan
5000 E 4th Plain Blvd, Vancouver, WA

DEAL PRICE:	DISCOUNT:	
\$17	66%	View

Tweet & retweet

Grand Palms Tanning @palmsanning 15h
COME ENJOY 50% OFF TANNING AND MYSTIC TAN HD ALL WEEK AT THE GRAND PALMS!

WELCOME TO THE GRAND PALMS
2013 FALL... <fb.me/ZY06HP83K>

[Collapse](#) · [Reply](#) · [Retweet](#) · [Favorite](#) · [More](#)

I love Hollywood tans they upgraded me to the highest level today for free ♥♥

[Retweeted by Hollywood Tans Corp](#)

[Collapse](#) · [Reply](#) · [Retweet](#) · [Favorite](#) · [More](#)

Tanning Club Email

NOVEMBER
Autumn at Zolarium

EVERYBODY SAVES IN NOVEMBER!!

Any Combination of Tan or Lotion Purchase

- Spend \$50 get 5% off
- Spend \$100 get 10% off
- Spend \$200 get 20% off
- Spend \$300 or more get 25% off

DaVinci Teeth Whitening
only \$99 Save 60% Makes a GREAT gift!

First Time Evolv Session
only \$25
HEAT-INFUSED AIRBRUSH TANNING

FALL/WINTER HOURS
M-F 9am-7pm Sat 10am-4pm Sun 11am-3pm

ZOLARIUM TANNING STUDIO
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Fig 1 | Typical indoor tanning communications on social media platforms

tanning salons, nor did we find any promoted Tweets from indoor tanning salons.

As shown in Table 2, the average weekly volume of social media communications sent by a given indoor tanning salon was highest for Facebook (2.9 News Feed posts per week per salon) and Twitter (2.4 Tweets per week per salon), with retweets trailing far behind at 0.8 per week per salon. The average weekly volume of tanning club emails per salon and Yipit deals was much

lower at 0.5 and 0.21, respectively. We observed these patterns in all cities except Akron where the average weekly volume of social media communications was highest for Tweets, followed by retweets, and then Facebook News Feed posts. In addition, indoor tanning salons in Boston and Austin showed less of a preference for Facebook News Feed posts relative to Tweets. Pittsburgh, Portland, and Denver had the highest volume of Facebook News Feed posts and Tweets of the six

cities. Most communications from indoor tanning salons were sent during weekdays, with very few sent on Saturdays and Sundays.

Communication content—Figure 1 shows examples of typical communications from indoor tanning salons (see also Table 3). A typical Facebook post included an image; connected tanning to a holiday through either images, promotional discounts, or slogans (e.g., “Pale is the scariest thing you can be this Halloween”); provided discount pricing information; or was a meme (see Appendix and Fig. 1, “What hump?” Facebook post) or other post devoid of tanning content (36 %). When tanning content was included, tanning-related words were more common than tanning-related images. Tweets generally included tanning discounts (often connected to a holiday); tanning-related hashtags; URLs leading to the salon’s Facebook page or website; reminders about a sweepstakes; or content related to pop culture with no mention of tanning (44 %). Photos were rarely used in Tweets or retweets. Retweets were often customers “checking in at the salon” (tagging yourself at a particular place, letting your friends know of your current location; see Appendix) or stating that they love a particular tanning salon; 46 % were devoid of tanning content. Yipit deals primarily used pictures of tanned women and provided information about a discounted price and the percentage saved with the discount. A typical email from a salon was extremely dense with information and graphics. These emails typically included most or all of the following: information about the salon; pricing for sunless and UV tanning; other services offered at the salon; images of tanned individuals and tanning devices; and information about the salon’s presence on social media platforms. Overall, social media communications from indoor tanning salons were nearly twice as likely to promote sunless tanning and associated devices compared to UV tanning (17 % vs. 9 %, respectively; Table 3). In addition, there were more Yipit deals for sunless tanning than for UV tanning (54 % vs. 37 %, respectively), although salon emails were somewhat more likely to advertise discounts on UV tanning (61 %) than on sunless tanning (52 %). Over one quarter of all communications (28 %) mentioned a holiday (Halloween, Thanksgiving, Christmas) or connected a holiday to tanning by promoting tanning products and gift cards as great stocking stuffers, strategies for improving appearance for the holidays, or as interactive activities for customers. This was particularly true in Facebook posts, Tweets, and salon emails (Table 3). The mention of celebrities or a sports team occurred more often in salon emails (39 %) than in communications found on other platforms, particularly on Twitter and Yipit (6 % and 0 %, respectively). Information about standard pricing of tanning services was almost never present in communications on social media. When discounts were posted on Facebook or tweeted on Twitter, the type of tanning being discounted was frequently unspecified, while in Yipit deals and tanning club emails, discounts were

more typically targeted for a specific type of tanning or explicitly both UV and sunless tanning.

Explicit beauty (4 %) and health, safety, or mental health claims (2 %) were rare. No communications mentioned the importance of a base tan to prevent sunburns while on vacation. Only one communication mentioned vitamin D and did not explicitly link tanning to vitamin D: “Another SunFact™ from Captain D: New research presented at the American Society for Bone and Mineral Research Annual Meeting has found that Vitamin D helps with neural health and muscle performance. This finding corroborates with past research. www.vitaminadecouncil.org.” The volume of claims about mental health (e.g., “improves mood”) was equivalent to the volume of health claims (0.8–0.9 % of all posts).

Communication volume and content by chain status—Indoor tanning salons that were part of a national chain had the highest average volume of social media communications, with a per salon weekly average of 6.0 Facebook News Feed posts and 3.9 Tweets. Regional chains averaged 1.5 Facebook posts and 2.1 Tweets per week per salon. Non-chain salons had a slightly greater Facebook presence compared to regional chains, averaging about 3 posts per week. National chains were the only type of indoor tanning business to retweet messages and did so an average of 2.3 times per week.

Table A (shown as an online supplement) presents data on the characteristics of Tweets and retweets sent by the five national indoor tanning chains represented in our study.³ Most notable among the differences across chains was that three of the five chains emphasized sunless tanning over UV tanning in Tweets, and only one chain emphasized beauty and sex appeal in its tanning Tweets.

Differences between indoor tanning salons and non-tanning businesses—Overall, the non-tanning businesses we “liked” on Facebook and “followed” on Twitter sent social media communications more frequently than did the indoor tanning salons (Table 4). Non-tanning businesses posted nearly twice as often in the Facebook News Feed compared to indoor tanning salons (245 vs. 126). We found a total of 941 advertisements on the Facebook sidebar—none of which were sponsored by an indoor tanning salon or referred to tanning. The selected non-indoor tanning businesses also tweeted (2670) and retweeted (922) more often than did indoor tanning salons (379 and 106, respectively). Moreover, yoga deals appeared nearly twice as often on Yipit as did indoor tanning deals (44 vs. 24).

DISCUSSION

While not ubiquitous and not to the extent of comparison industries (e.g., clothing retailers and movie theaters), the

³We used Tweets to evaluate content differences by salon chain status because the data collection period for Twitter was longer than that for Facebook.

Table 4 | Number of communications from indoor tanning salons and non-indoor tanning businesses, by city

	Facebook			Twitter Tweets			Twitter retweets			Yipit deals ^a			Total
	Tanning salons ^b	Other businesses ^c		Tanning salons ^b	Other businesses ^c		Tanning salons ^b	Other businesses ^c		Tanning salons ^b	Other businesses ^c		
Akron	7	34		55	592		29	255		0	1		973
Austin	14	41		52	352		22	62		3	4		550
Boston	11	26		32	480		8	243		6	19		825
Denver	25	58		79	631		18	256		8	14		1089
Pittsburgh	39	51		87	384		15	66		2	4		648
Portland	30	35		74	231		14	40		5	2		431
Total	126	245		379	2670		106	922		24	44		4516

^a These communications are largely from businesses not actively chosen to follow on Internet sources^b Indoor tanning salons “liked” on Facebook, “followed” on Twitter, and offering deals on Yipit^c Other businesses (national clothing store, fitness center, hair salon, yoga/Pilates studio, and movie theater) “liked” on Facebook, “followed” on Twitter, and offering deals on Yipit

indoor tanning industry uses social media to market their products and services and to maintain connections with their adolescent and young adult clientele. In six US cities, indoor tanning salons used Facebook, Twitter, email, and/or online “daily deal” offers to push out a steady stream of communications to their consumer base, although at a lower volume than non-tanning businesses. Facebook was the social media platform most frequently used by indoor tanning salons, followed closely by Twitter. However, we observed no sidebar ads, no promoted Tweets, and no paid ads in the Facebook News Feed. Thus, at the time of this study, the tanning industry did not appear to be fully exploiting all possible avenues of Internet marketing. Among indoor tanning businesses, national chain salons were the heaviest users of social media, presumably due to a greater infrastructure to produce communications compared to independently owned salons. These findings suggest that skin cancer prevention efforts may benefit from accelerated counter-messaging activity on social media platforms, perhaps with factual information about the immediate skin damage caused by indoor tanning. Understanding how various social media platforms are used to promote indoor tanning may also inform the efforts of organizations that regulate or monitor health claims made about consumer products and medical devices.

A large portion of social media communications from indoor tanning salons were based on pop culture themes and devoid of any tanning references or content except the name and/or logo of the business initiating the communication. This suggests that a key marketing strategy of the indoor tanning industry involves using social media as a mechanism for maintaining an ongoing “relationship” with customers and a continual awareness about the possibility of using indoor tanning [35]. Indeed, marketing professionals are explicit about the need to use social media to build relationships and personally engage with young adult consumers rather than directly trying to sell to them [36, 37]. Public health practitioners should consider testing the effectiveness of messages that engage and entertain the audience first and subsequently connect the engaged audience with health promotion messages. Mimicking the marketing strategies used by the tanning industry, we propose social media content that maintains a friendly, non-nagging connection to the subscriber, conveys caring and a sense of membership, and is frugal in its use of health education messages. Maintaining such a relationship may add trust so that important health messages are given more credence within a broader social media relationship. A recent study provides evidence that such an approach can be successful and cost-effective in achieving high reach for a program that promoted healthy family meals [38]. A key to their use of social media was that the messages connected the audience with a program, rather than delivering traditional educational messages. An anti-indoor tanning campaign based largely on social media (including YouTube) and aimed at adolescents and young adults in Denmark has shown promising behavior change effects, including a reduction in self-reported current use of indoor tanning [39].

When communications from tanning salons included tanning content, they frequently advertised a particular location, tanning lotion, as well as discount pricing or special promotions on tanning services (e.g., “Free tan Friday,” “Buy One Get One Free on tanning services,” “Tan-A-Friend-Tuesday”). The latter types of messages serve to increase the accessibility of indoor tanning, especially in a highly price-sensitive young adult population. Tobacco control efforts have included limitations on advertising [40], and similar approaches could be evaluated for indoor tanning. Examples of advertising restrictions related to indoor tanning include an Oregon state law that prohibits the advertising of unlimited tanning options and an agreement between the New York City Attorney General’s office and a national chain salon that prohibits the franchises in New York City from making health claims, offering “unlimited” tanning packages, or targeting high school students [41, 42]. The US FDA is currently developing guidance on industry use of social media to promote FDA-regulated drugs and medical devices, including tanning devices [43]. Those efforts may prove particularly important as indoor tanning advertising increasingly migrates to online platforms. However, more research is needed to determine the extent to which advertising guidance or restrictions would influence tanning behaviors.

It is important to recognize that the indoor tanning industry does not exclusively rely on direct-to-consumer messages to promote their services. Sponsorships of cheerleading squads, sports teams, sorority functions, and other community events involving young people are also employed [44, 45]. These activities capitalize on common interests and social connections with potential customers to promote an important risk behavior as mainstream and normative.

We observed fewer promotions specific to UV (vs. sunless) tanning than expected, as well as the relative absence of claims about safety, health and beauty, and the importance of a base tan. This finding may reflect a response by the indoor tanning industry to policies regarding misleading advertising—policies informed by the public health and medical community, or a shift in marketing practices by the indoor tanning industry. While we can only speculate on the reasons for this, they might include considerations by the industry of risk and profit. Although some have suggested sunless tanning as a harm reduction strategy, others have raised concerns about this approach, noting that promotion of sunless tanning may perpetuate tanning norms and beauty standards, and sunless tanning is often used in conjunction with rather than in place of UV tanning [21].

Limitations—One limitation of our study design is the time frame of data collection (October–November). We observed a high number of posts related to holidays. It is possible that, had we conducted this study for longer than 6 weeks or during a different season, we would have seen different levels and/or different types of content. Previous research suggests that advertising for and engagement in indoor tanning peaks in March and April [24, 25; Shields A, Hillhouse J, Longacre H, Benfield N, Longacre I, and Bruner C, unpublished data; Seidenberg

A, unpublished data; Hillhouse J, personal communication]. We observed no sidebar ads for tanning, and this could be due to insufficient tanning-related references in our social media posts or the absence of sidebar advertising as a strategy used by the indoor tanning industry. We rarely observed communications from salons that were not specifically “liked” or joined. While we developed an Internet activity protocol that we believe reflected a typical young adult social media user, we utilized only one protocol and cannot comment on how our results might have been different with other levels of Internet activity or if our Internet profile specifically indicated membership in a different demographic group. Moreover, we did not assess communications from indoor tanning businesses on other social media platforms such as “Instagram” nor did we examine content pushed out through text messaging clubs, which are also popular with indoor tanning salons. All of our Internet activity occurred from Denver, CO, which could have affected our results. Almost a quarter of selected tanning salons ($n=9$) had no social media activity during our study period even though they offered consumers opportunities to connect with them through social media, and this varied dramatically by city. Because of this, our conclusions about communication content are influenced more by the social media output from tanning salons in Denver and Portland. Finally, our study did not address other types of advertising that may be used by tanning salons, such as billboards, radio or television, or print media.

CONCLUSION

The use of real-time advertising, which mixes advertisements with friendly communications that connect with consumers on pop culture topics, is increasing, particularly in online marketing efforts targeting younger populations [46]. Such communications may not always clearly appear as “marketing” in that they are not direct advertisements but make use of pop culture references to engage target audiences. These communications have great potential to be “tailored” based on individual characteristics of the consumer as seen in the marketing strategies of other industries. The public health community should test outreach strategies that target social media-based prevention messages to young adults who post or Tweet about tanning or other unhealthy behaviors.

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Compliance with ethical standards

Conflict of interest: The authors have no competing or conflicting interests to disclose. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Adherence to ethical principles: This article does not contain any studies with human participants or animals performed by any of the authors.

Appendix

Social media terminology

General	
Cookie	A cookie is a small file left on a user's computer when visiting a particular website containing user activity information. Cookies allow websites to track online activity and use this information to tailor advertisements specifically to the user.
Meme	An Internet meme is an image, text, or video that has been altered, usually in a humorous way, and is spread from individual to individual on the Internet. Memes typically make some cultural reference.
Hashtag (#)	Using a hashtag (#) allows social media platforms a way to group specific topics across Tweets or Facebook posts making them easily searchable (e.g., searching #skincancer in Twitter will show you every Tweet that used #skincancer). This is also a way to track what topics are trending on social media platforms among users.
Trending	Trending refers to popular topics or hashtags being discussed or used on a social media platform in real time.
Checking in at a location	The use of GPS on a mobile phone to announce the user's location (e.g., a tanning salon) on Facebook or Twitter. Check-ins generate a story in the Facebook News Feed or Twitter Timeline of all of the user's Facebook friends or Twitter Followers. They also appear in the Recent Activity section on the location's Facebook page.
Twitter	
Twitter Timeline	List of Tweets of people or companies a user has followed on Twitter that is constantly being updated; also includes promoted Tweets; similar to a home page.
Tweet	A post on Twitter that is limited to 146 characters.
Retweet	When a Twitter user tweets a message that the user received through a Tweet from another user, it is called a retweet and is identified as RT @ the user's twitter name. The retweet goes to all followers of the user who is retweeting the message.
Follow	On Twitter, a person chooses to actively follow a person or company. This allows the Tweets from followed accounts to regularly appear in a user's Timeline.
Promoted Tweets	In Twitter, advertisers can pay for a Tweet to appear in a user's Twitter Timeline in order to reach a wider group of users than those users who are currently following them on Twitter. Algorithms are used to identify users who are likely to find the promoted Tweet to be relevant to them. Users can delete a promoted Tweet from their Timeline, but they cannot opt out of promoted Tweets.
Facebook	
Facebook News Feed	List of posts from a user's friend list and companies a user has liked on Facebook that is constantly being updated; also includes sponsored ads; similar to a home page.
Like	On Facebook, a person can choose to like a company's page. This allows that company's activity to regularly appear in a user's News Feed.
Friend	On Facebook, a friend is someone who a user has agreed to share information with. Friends' posts appear in the user's News Feed.
Sidebar ad	In Facebook, a vertical panel appears to the right of the user's News Feed. This panel includes paid ads, which may be targeted to the user's previous Internet activity or profile. These ads change every few minutes.
Sponsored posts	In Facebook, advertisers can pay for ads that appear in the user's News Feed. These do not require the user to be connected to the advertiser's page. Users can choose to hide all posts from a particular sponsor so that they no longer appear in the News Feed.

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