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Using Social Media to Recruit Youth Who Use Electronic Cigarettes

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Abstract

Objective: Research is needed to inform effective regulatory policy that can help curb electronic cigarette (e-cigarette) use among youth. However, several challenges interfere with studying e-cigarette use among youth. Social media may provide an outlet to overcome these challenges. Our objective was to provide instructional information on tested methods for using social media to study e-cigarette use among youth.

Methods: We developed 13 advertisements that were used to recruit e-cigarette users 14–24 years old who lived in the United States. We measured the effectiveness of the advertisements and quality of the resulting data.

Results: The advertisements reached 422,228 adolescents and young adults, 408 completed the survey, and 212 (52%) passed the quality check measures. The average cost per click was \$0.36.

Conclusions: Based on the current study, key recommendations for behavioral scientists interested in conducting e-cigarette research among youth include: (1) developing and testing multiple advertisements with the target audience; (2) advertising on social media platforms most commonly used by the target group; (3) tailoring (ie, age and interest) message options; and (4) using multiple types of data quality assurance items.

Keywords

e-cigarette; adolescent health; social media; vaping; tobacco control

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Conflict of Interest Disclosure Statement

All authors of this article declare they have no conflicts of interest.

Human Subjects Approval Statement

All procedures were approved by the Institutional Review Board at Brown University. The study protocol was approved by The Miriam Hospital IRB (protocol number 020418). Informed consent was obtained from screened eligible participants prior to data collection.

Electronic cigarette (e-cigarette) use among adolescents and young adults in the United States (US) increased significantly between 2017 (12%) and 2019 (28%).^{1,2} The use of e-cigarettes among adolescents and young adults is alarming given the unknown long-term health effects, the negative impact of nicotine exposure on the developing brain, and growing concern of increased risk of combustible cigarette uptake among youth who have ever used e-cigarettes.³ The scientific need to understand factors related to e-cigarette use among adolescents and young adults, in part, has motivated the inclusion of e-cigarette assessments in large nationally representative surveys on tobacco use, such as the Population Assessment of Tobacco and Health (PATH) Study⁴ and the National Youth Tobacco Survey.⁵ This epidemiological work has been paramount to elucidating clinically-important individual factors and device-specific factors, including flavors, designs, and patterns of use,^{3,5,6} associated with e-cigarette use among youth.

E-cigarette-related research on youth outside the context of epidemiological surveys may help to understand emerging issues in light of the rapidly evolving market and the delay of large-scale longitudinal studies to adapt quickly and meet current trends. Yet, challenges associated with traditional recruitment methods hinder scientific growth to study youth who engage in regular e-cigarette use (ie, 6 times per month).^{7–9} One potential solution is to use social media platforms as a recruitment tool for adolescent and young adult regular e-cigarette users. Such methods already have demonstrated effectiveness in recruiting adults who regularly use e-cigarettes.¹⁰ The extent to which social media platforms can be used to recruit younger populations of e-cigarette users, however, remains understudied.

Social Media: E-cigarette Marketing and Research

Adolescents and young adults strongly prefer technologically-based communication and report that social media are their preferred methods of communication.¹¹ E-cigarette companies and distributors have capitalized on this preference by using social media as a marketing tool to capture, engage, and expand their customer base which primarily consists of adolescents and young adults.^{12,13} Indeed, a large amount of the \$115 million annually spent by e-cigarette companies to advertise is allocated to Internet advertising.¹⁴ For example, 70% of e-cigarette vendors report using social media to market and promote e-cigarette use.¹⁵ JUUL, the most popular e-cigarette company, spent more than one million USD advertising on Twitter, Instagram, and YouTube during 2015–2017.¹⁶ Although JUUL does not directly target youth, nearly 90% of JUUL followers on Twitter are 13–24 years of age.¹² The engagement of this group with e-cigarette companies through social media, in part, highlights the readiness of these platforms to serve as effective research tools to study e-cigarette behavior.

Social media also may be the preferred methods of research recruitment and engagement among adolescents and young adults given their preference toward technology-based communication. In part, the anonymity and easy accessibility to scientific participation via social media likely supports this presupposition. Specifically, adolescents may be less likely to participate in substance use research that requires parental consent to participate.^{17,18} As a result, data collected from adolescent trials requiring parental consent may be biased towards a lower risk sample.¹⁹ Contingent on participant rights and IRB compliance,

however, researchers can obtain waivers to collect data from adolescents and young adults anonymously via social media platforms.²⁰ Research that uses traditional, in-person methods can apply for waivers of parental consent as well but recruitment for face-to-face studies may carry other challenges due to barriers such as scheduling difficulties, work-related commitments, and transportation issues. Ultimately, employing social media to study adolescent and young adult e-cigarette users may encourage participation from those who may otherwise be unlikely to participate because of concerns regarding the need for parental consent^{18,19} or other barriers to participation (eg, lack of transportation, scheduling difficulties). Therefore, using social media for research recruitment and participation may result in more generalizable data on e-cigarettes use among this group.

Benefits of Using Social Media Platforms in Research

Social media offer several potential benefits for e-cigarettes researchers, including a low-burden, low-cost solution to recruitment challenges.^{21–23} For example, one review found that Facebook advertising costs a median of USD \$14.41 per person recruited, which is significantly lower than traditional methods of research recruitment (television: USD \$1094.27; print media: USD \$811.99; radio: USD \$635.92; and email: USD \$37.77).^{21,24} The cost savings from using social media in place of other recruitment tactics could be used to recruit a larger and more representative sample. This is critical in novel tobacco research as emerging work directly informs public policy and government regulations.

Social media platforms also offer researchers the flexibility to *target* adolescent and young adult e-cigarette users.²⁵ Targeted campaigns can accelerate the rate of data collection, particularly when engaging hard-to-reach populations, thereby encouraging shorter time periods from study initiation to dissemination of findings.^{23,26–28} Given the call for additional research on e-cigarette use in this population,^{29,30} social media may offer a viable option to expedite the data collection process and help accelerate current understanding of this health behavior. Nevertheless, social media recruitment has resulted in lower quality data in limited research³¹ which raises concerns regarding the reliability of data collected via these methods. This is an important consideration given the need for valid and reliable e-cigarette data for effective regulatory policy. To date, however, no work has evaluated the quality of data collected from e-cigarette using adolescents and young adults in the context of social media research participation.

Current Study

For behavioral and social scientists unfamiliar with social media recruitment, the task of using such platforms for research may seem daunting. Although extant research provides broad guidelines and suggestions for best practices for social media recruitment and intervention delivery,²² no work has applied and refined these recommendations to address e-cigarette use among adolescents and young adults who report regular e-cigarette use defined as using 6 times per month. This is an unfortunate gap in the literature given the potential public health impact of regular e-cigarette use on health outcomes. Therefore, the current study complements and extends existing guidelines on social media use by providing an in-depth tutorial on how to use these methods to reach adolescents and young adults

who regularly use e-cigarette. To our knowledge, ours is the first study to report on the use of social media (ie, Facebook, Instagram) advertisements as an exclusive method for recruiting a sample of US adolescents and young adults between the ages 14 of 24 to participate in an online e-cigarettes survey of regular users. We describe our experience using social media to recruit participants for a pilot study, as well as provide lessons learned and recommendations, and discuss data quality management methods to encourage use of social media for research purposes.

METHODS

We used Facebook and Instagram advertising to recruit US adolescent and young adult e-cigarettes users between the ages of 14 and 24 from February 6, 2019 to April 10, 2019. We recruited participants via Facebook and Instagram given their high rate of use among teens and young adults.³² Facebook and Instagram allow targeting advertising based on sex, age, language, location, and interests. These features were used to target individuals between 14–24 years of age who lived in the US, spoke English, and interacted with a page classified as ‘Electronic Cigarette,’ which identified interest. Interested individuals clicked on the advertisement and were redirected to an IRB-approved electronic consent form that described the study and served as informed consent. Waivers were obtained for documentation of informed consent, parental consent, and written informed assent. For more information on ethical and IRB considerations when conducting research via social media, researchers are encouraged to review prior published work.^{22,33} The IRB approved the requested waivers based on the justification that the study did not collect any identifiable information and requiring parental consent would have the potential to bias participation and study results, as well as increase the risk of harm (eg, parental punishment) in addition to the minimal risk status of the current study. To ensure participants understood the nature and purpose of the study, participants were prompted to answer 3 questions regarding information contained on the information sheet. If an item was missed, participants were prompted with all 3 of the questions again. Participants had 3 opportunities to answer all questions correctly; those who did not answer the questions correctly were ineligible for the study.

Participants who responded correctly to the questions pertaining to the nature and purpose of the study and agreed to participate were assessed for eligibility via a Web-based screening survey. Eligibility criteria included: (1) providing a correct response to a CAPTCHA (Completely Automated Public Turing Test to Tell Computers and Humans Apart), (2) being 14 to 24 years of age, (3) engaging in regular e-cigarette use defined as using 6 or more days in the past 30 days,⁷ (4) having fluency in English, (5) having US residence, and (6) having no regular use of other tobacco products defined as 4 times in the past 30 days.³⁴ Eligible participants were redirected to the full survey that assessed aspects of e-cigarette cessation including motivation and interest in various treatment modalities. Incentive for survey completion was a one in 50 chance of winning a \$25 gift card. A redemption code was provided to the selected participants upon completion of the full survey. All surveys were administered through REDCap. To confirm accurate responding, select questions captured the same information or were repeated (ie, age and year of birth, state of residency) in the screener and full survey. An attention question (ie, ‘select the

number 3 to get correct') also was included. No personally identifiable information was collected for this study.

We initially developed 7 advertisements for recruiting participants. The lead author drafted the initial advertisements and edited each one based on feedback from the second and last authors (final draft of each advertisement available upon request from corresponding author). All authors approved the final version of the advertisements. Final advertisements were tested and continuously monitored for performance. Advertisements were archived after their performance began to decline, and an additional 6 replacement advertisements were created. These additional replacement 6 advertisements were tested consistent with procedures used for the initial 7 advertisements. Development of replacement advertisements was informed based on the best performing original advertisements. We used a total of 13 advertisements that consisted of a series of 3 to 5 PowerPoint slides, converted into a graphic interchange format (GIF), and run at an average speed of 2 seconds per slide (Table 1). Although advertisements differed in their presentation, each included information on the targeted sample (ie, e-cigarette users), time required, and compensation. Advertisements were tested to identify advertisements with the greatest potential to recruit participants. The best performing advertisements, defined as a price per link click less than \$0.30 during the testing period, were retained for continued recruitment after the testing period. This resulted in 3 of the original 7 advertisements used for recruitment beyond the testing period. Data collected during the testing period were retained for analyses.

Data Analysis

Performance metrics of interest included advertisement impression, reach, link clicks, cost per click, and amount spent (Tables 1–3). Metrics were summarized for each advertisement overall and by social media platform to provide a comprehensive overview of performance. Information on advertisement metrics across select sex, age, state, time of day, and device were also examined. Data quality was confirmed by consistent responding to repeated questions, including (1) age in years and year of birth [within one-year difference], (2) state of residency reported across the screener and full surveys, and (3) correctly answering the attention question (ie, 'Select the number 3 to get correct').

RESULTS

Performance Metrics

Tables 1–3 present findings for performance metrics for each advertisement overall and within social media platforms. Each advertisement included an average of 4 slides and was 8 seconds long. The targeted audience had a potential reach of 2,200,000 people. Total impressions and reach across the 13 advertisements were 345,223 and 56,459 people, respectively, for Facebook and 1,507,887 and 388,813 people, respectively, for Instagram. Of those individuals, 1054 (1.9%) adolescents and young adults on Facebook and 6234 (1.6%) on Instagram clicked on the advertisement. The average cost per click was \$0.36. Instagram outperformed Facebook on average cost per click (\$0.33 and \$0.50, respectively). In this study, a larger percentage of the total cost spent on advertising was allocated to Instagram (80%) relative to Facebook (20%).

Demographic Characteristics across Advertisements

Of the 422,228 individuals reached, 159,520 were girls and 189,222 were boys ages 13–17 years (adolescents 13 years of age were not targeted or recruited for this study; this is a pre-established Facebook and Instagram age group); 24,709 were young women and 46,537 were young men 18 to 24 years of age; and 2240 individuals did not identify their sex. The average cost per click was least expensive for boys aged 13–17 years (\$0.32) and most expensive for young women aged 18–24 years (\$0.79). More than 10% of those reached resided in California (47,369). The price per click was least expensive from 1:00 pm to 4:00 pm (based on participant's time zone) and ranged from \$0.31 to \$0.33 per click. Most of the registered link clicks occurred on a smartphone (99% across iPhone and Android Smartphones).

Data Quality

Figure 1 provides a flowchart of participant enrollment. Overall, 1257 adolescents and young adults completed questions pertaining to the nature and purpose of the study and consented to participate. Altogether, 555 adolescents and young adults were eligible and initiated the full survey and 408 (48% female; $M_{\text{age}} = 17$ years, $SD = 1$; 91% white) completed the full survey. In all, 394 (97%) participants provided consistent data on their age and year of birth between the screener and full survey. Moreover, 393 (96%) provided consistent data on their state of residency between the screener and full survey. Additionally, 219 (54%) participants correctly answered the attention check question. Overall, 212 (52%) participants passed all 3 data quality checks; 175 (43%) passed only 2 of the 3 quality checks; 20 (5%) passed only one of the quality checks; and one (0.2%) failed all 3 check questions.

DISCUSSION

In the current study, we evaluated the feasibility of using Facebook and Instagram to recruit and study e-cigarettes use among adolescents and young adults who regularly use e-cigarettes. Our study demonstrates that social media comprise an appropriate avenue to recruit and engage a sample of adolescent and young adult regular e-cigarette users across the US. Results from the data quality indicators highlight the importance of including data validity items when using social media as a tool to recruit participants for an online survey. Below, we consolidate key considerations based on learning points from the current study to encourage behavioral scientists to use social media to target e-cigarettes using adolescents and adults.

Advertisements

Consistent with prior work,³⁵ advertisement effectiveness varied. The most effective advertisements featured the target population (e-cigarette users), emphasized the study as an opportunity for others to share their opinion, and included bright, eye-catching colors and images. These features are consistent with social media recruitment recommendations set forth by other researchers.²² Considering the variability in advertisement performance, e-cigarette researchers are encouraged to develop several different advertisements and monitor performance over a testing period (eg, 2–5 days) to identify advertisements with the greatest

potential to recruit participants. Social media sites such as Facebook offer metrics to monitor advertisement performance and researchers should familiarize themselves with these metrics before launching an advertisement campaign. Arigo et al²² provide an in-depth review of performance metrics.²²

Platform

Instagram demonstrated a better average cost-per-click fee relative to Facebook. Extensive population-based social media indicate significant age differences in users of Instagram versus Facebook, with younger individuals more likely to use Instagram.³⁶ This parallels current findings with the majority of funds used to recruit via Instagram, resulting in a greater number of adolescents (83%) clicking on the advertisements relative to young adults (17%). E-cigarette companies and distributors take advantage of the age differential by having a stronger presence on social media platforms that are disproportionately used by youth and young adults, such as Instagram.^{16,37,38} Thus, Instagram may expose users more to e-cigarette products, and therefore, it may be a more appropriate social media platform from which to recruit regular e-cigarette-using adolescents and young adults. However, we did not assess from which platform eligible e-cigarette users were recruited, and therefore, cannot provide demographic evidence (such as age) for those recruited via each platform. Thus, continued work is needed to improve understanding of the utility of different social media platforms to recruit samples of adolescents and young adults who regularly use e-cigarettes as well as evaluating the demographics of those recruited through established and new social media platforms (eg, TikTok, Snapchat).

Data Validity

Overall, 52% of participants who completed the full survey passed all 3 data validity items and were considered authentic, valid responses. The high rate of invalid responding is consistent with prior work on hard-to-reach populations.³⁹ As such, it is critically important for behavioral scientists to include items to assess data quality and validity when conducting research via social media to ensure data integrity. Several methods have been proposed to identify quality data when using online methods to collect data.⁴⁰ We employed 2 methods: (1) verification of consistent reporting and (2) directed command item. Most of the invalid data in this study were due to incorrect responding to the directed command item. Unlike the other items, the direct command item was embedded in a questionnaire and did not ask participants to provide personal data. Thus, items that rely on personal information may not capture low-quality data as well as items that require a specific action to be correct. Researchers are encouraged to practice these methods of data validation and to include screening items that can serve to authenticate responses indirectly.

Based on the current statistics for quality and usable data, researchers who use social media to study regular e-cigarette users should consider the high percentage of invalid data in their power calculations. In this study, high-quality data were obtained for 212 (52% of 408 completers) regular e-cigarette using adolescents and young adults in a relatively short period of time. An additional avenue to combat the potential challenge of low rates of valid data is to use social media as adjuncts to traditional recruitment methods, including passive (posters, brochures) and active (in-person) recruitment. Although traditional recruitment

methods may yield lower response rates, and are associated with more personnel time, and thus, higher costs, a higher percentage of quality data may emerge using traditional methods. Ultimately, researchers will need to weigh the pros and cons of each method to determine which approach supports recruitment of a representative sample of young e-cigarette users.

Confidentiality and Ethical Considerations

Research conducted using social media has the benefit of offering an anonymous and confidential method for young e-cigarette users who might not otherwise participate in research.¹⁹ A major advantage of this approach is that it allows for a potentially less biased, more representative sample of regular e-cigarette users but it requires the approval of waivers of consent and assent. Participant risks and benefits should be carefully considered when conducting anonymous research. Moreover, pragmatic structuring of surveys and design consideration need to be considered when developing an anonymous survey for which participants are compensated. For example, the current project employed a linked survey method to randomly allocate compensation to participants without the need to collect identifiable information and used a cross-sectional design that allowed for anonymous data collection. Recruitment of participants using social media platforms also can be applied to longitudinal studies. These studies typically require participants to provide at least one personal identifier, making longitudinal data collection non-anonymous and increasing the risk of loss of confidentiality. Steps can be taken to mitigate such risks including assigning each participant a unique identification code and keeping keys matching the identification code and personally identifiable information separate. Ultimately, the flexibility to engage with potential participants across a continuum of research designs (cross-sectional, longitudinal) and survey specifications (anonymous, non-anonymous) permits examining complex and emerging research questions regarding e-cigarettes use for individuals with varying levels of comfort participating in this type of research.

Implications and Scientific Contribution

Our study highlights the potential value of social media to accelerate the study of regular e-cigarette use among adolescents and young adults. Considering the now recognized e-cigarettes epidemic and the rapidly evolving e-cigarette marketplace, researchers need avenues to quickly engage and study adolescents and young adults who regularly use these novel products. Indeed, this work is critically needed to inform regulation and policy on e-cigarette products. As proposed, one avenue to reach regular e-cigarette using adolescents and young adults may be through social media. In part, the current study provides preliminary evidence that regular e-cigarette using youth can be effectively targeted and assessed using social media. This study also offers a clear 'how-to' which serves to guide researchers interested in studying e-cigarette through social media means. Furthermore, as an extension of the current work, social media may serve as a method to intervene on e-cigarette use among youth. With engagement established, continued efforts should focus on the utility of social media to administer e-cigarette cessation materials. Such work may be key to helping abate the ongoing epidemic.

Limitations

Several limitations of the current research should be considered when interpreting our findings. First, several types of Web-based advertisements exist, ranging from static to dynamic. The current study relied on dynamic Web-based advertisements (ie, GIFs), developed by the investigators, to recruit the target audience. An important avenue for future work is to evaluate the effectiveness of different types of advertisements to recruit regular e-cigarette users via social media. One approach may be to study attention to advertisements by administering an eye-tracking assessment.⁴¹ Second, of the various social media platforms used by adolescents and young adults, only 2 (Facebook and Instagram) were used in the current study. These platforms were selected because they are among 2 of the most commonly used social media platforms among adolescents and young adults.³² Moreover, given the algorithm used through the advertising campaign at Facebook to recruit the targeted sample, the majority of funds were used to advertise on Instagram, which continues to be popular among younger generations. Future work is needed to examine the effectiveness of other social media sites, including YouTube, Twitter, TikTok, and Snapchat, to study e-cigarette use among adolescents and young adults. Third, performance metrics were used to determine the most effective advertisements in terms of clicks, but not did not provide evidence for the effectiveness of each advertisement to enroll eligible participants. Questions regarding which advertisements eligible participants clicked could be assessed as an additional metric for advertisement performance during the screener. Moreover, such work would benefit from evaluating demographics of eligible participants recruited from different social media sites. Fourth, although our sample was largely representative of a national sample of adolescent and young adult e-cigarette users,⁴² the response rate for those targeted was low as was the final sample of usable, valid data (212 out of 408 eligible participants who completed the survey and passed all 3 quality assurance items). Although these quality assurance items coupled with the screening questionnaire served to authenticate the data, it is possible that some responses were not authentic. Continued work is needed to evaluate methods to ensure data authenticity and develop procedures to increase participation in e-cigarette research conducted via social media. Additionally, although methods have been proposed to manage invalid responding,⁴³ more research is needed on this topic as Web-based research becomes a more common mode of data collection and engagement especially when in-person recruitment and data collection is not possible. Finally, limited testing was conducted to identify effective advertisement placement. Future research is needed to disentangle the effect of advertisement placement and that of the actual advertisement on e-cigarette study recruitment.

Conclusions

Social media have opened new recruitment channels to reach a large sample of adolescents and young adult e-cigarette users for behavioral scientists. E-cigarette companies have demonstrated the effectiveness of using social media to target and engage adolescents and youth in e-cigarette use, and social scientists can ‘piggyback’ on their efforts and substantial financial resources to target and engage youth in research that can inform e-cigarette prevention and intervention efforts. Indeed, as demonstrated, using social media offers behavioral scientists a cost- and time-effective option to study e-cigarette use among e-cigarette using adolescents and young adults. Given the lack of regulatory bodies governing

these platforms,⁴⁴ however, behavioral scientists are cautioned to use the utmost degree of care when targeting adolescents and young adults through social media sites. Based on the current study, key recommendations for behavioral scientists interested in conducting e-cigarette research among youth include: (1) developing and testing multiple advertisements with the target audience; (2) advertising on social media platforms most commonly used by the target group; (3) tailoring (ie, age and interest) message options; and (4) using multiple types of data quality assurance items.

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Figure 1.
Participant Flowchart

Table 1

Advertisement Characteristics and Overall Performance Metrics

Ad	No. Slides	Length (sec)	Total Days Active	Impressions ^a	Reach ^b	Clicks ^c	Cost per Click ^d	Money Spent ^e
Ad 1	5	8	2	24,657	24,657	70	\$0.39	\$27.42
Ad 2	4	7	12	293,295	152,195	1090	\$0.40	\$435.04
Ad 3	4	8	13	296,966	150,265	1163	\$0.38	\$437.98
Ad 4	4	7	23	571,195	233,867	2346	\$0.34	\$789.04
Ad 5	5	9	4	60,526	57,378	159	\$0.42	\$66.00
Ad 6	4	6	1	3120	3107	3	\$0.94	\$2.81
Ad 7	3	5	2	4628	4370	26	\$0.56	\$14.68
Ad 8	3	7	2	7912	7881	20	\$0.43	\$8.65
Ad 9	4	10	2	8740	8740	12	\$0.74	\$8.83
Ad 10	4	10	9	279,153	144,379	1159	\$0.35	\$399.93
Ad 11	4	10	9	285,371	150,011	1197	\$0.33	\$399.76
Ad 12	3	9	2	8592	8578	22	\$0.38	\$8.29
Ad 13	3	8	2	9033	8944	22	\$0.40	\$8.83
Overall	3.85	8	6.38	1,853,188	422,228	7289	\$0.36	\$2,607.26

Note.

^aThe number of times the ad was on screen.^bThe number of people who saw the ad at least once.^cThe number of clicks on links within the ad that led to destinations or experiences.^dThe average cost for each link click in USD.^eThe estimated total amount of money (in USD) spent to advertise the advertisement.

Table 2

Advertisement Performance Metrics on Facebook

Ad	Impressions ^a	Reach ^b	Clicks ^c	Cost per Click ^d	Money Spent ^e
Ad 1	1227	1104	3	\$0.31	\$0.92
Ad 2	64,675	30,445	172	\$0.58	\$100.01
Ad 3	84,856	37,614	292	\$0.45	\$132.51
Ad 4	111,603	38,210	363	\$0.45	\$164.64
Ad 5	5270	4489	12	\$0.66	\$7.95
Ad 6	536	524	1	\$0.44	\$0.44
Ad 7	1587	1404	9	\$0.59	\$5.27
Ad 8	1995	1928	6	\$0.38	\$2.27
Ad 9	862	842	1	\$1.00	\$1.00
Ad 10	19,433	9664	42	\$0.69	\$28.86
Ad 11	51,514	24,191	150	\$0.51	\$76.34
Ad 12	801	786	2	\$0.60	\$1.19
Ad 13	867	798	1	\$1.01	\$1.01
Overall	345,223	56,459	1054	\$0.50	\$522.39

Note.

^aThe number of times the ad was on screen.

^bThe number of people who saw the ad at least once.

^cThe number of clicks on links within the ad that led to destinations or experiences.

^dThe average cost for each link click in USD.

^eThe estimated total amount of money (in USD) spent to advertise the advertisement on Facebook.

Table 3

Advertisement Performance Metrics on Instagram

Ad	Impressions ^a	Reach ^b	Clicks ^c	Cost per Click ^d	Money Spent ^e
Ad 1	23,430	23,430	67	\$0.40	\$26.50
Ad 2	228,620	129,305	918	\$0.36	\$335.03
Ad 3	212,110	122,094	871	\$0.35	\$305.47
Ad 4	459,592	205,194	1983	\$0.31	\$624.40
Ad 5	55,256	53,274	147	\$0.39	\$58.05
Ad 6	2584	2584	2	\$1.19	\$2.37
Ad 7	2963	2943	16	\$0.59	\$9.36
Ad 8	5917	5917	14	\$0.46	\$6.38
Ad 9	7878	7878	11	\$0.71	\$7.83
Ad 10	259,720	138,204	1117	\$0.33	\$371.07
Ad 11	233,857	132,476	1047	\$0.31	\$323.42
Ad 12	7791	7791	20	\$0.36	\$7.10
Ad 13	8166	8152	21	\$0.37	\$7.82
Overall	1,507,887	388,813	6234	\$0.33	\$2,084.82

Note

^aThe number of times the ad was on screen.^bThe number of people who saw the ad at least once.^cThe number of clicks on links within the ad that led to destinations or experiences.^dThe average cost for each link click in USD.^eThe estimated total amount of money (in USD) spent to advertise the advertisement on Instagram.