Libraries as Community Hubs for Citizen Science
Ad Campaign Evaluation Report (IMLS)

Funded by the Phase 2 Supplement: November 2019 – March 2022

University Office of Evaluation and Educational Effectiveness

Arizona State University

June 27, 2022

This report was previously provided under the following title:

Citizen Science 2022 Ad Campaign Evaluation Report

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SUMMARY

AD CAMPAIGN SUMMARY

The 2022 Citizen Science Ad Campaign ran from January 4 – March 31, 2022, and featured 18 ads (17 images and 1 video) advertised on the following social media platforms:

- Facebook/Instagram (54% of ad campaign)
    - Images only targeted to (1) 55+ seniors, (2) parents of teens, and (3) parents of homeschoolers; retargeted ads to each of the three groups
    - Some ads for seniors and parents of teens were placed in a "carousel" that would show three ads that the viewer could scroll through
- LinkedIn (8%)
    - Images only targeted to educators
- YouTube (23%)
    - 30-second video
- Connected TV (15%)
    - 30-second video (same one as for YouTube)

The following markets were targeted by zip code(s):

- Maricopa County partner libraries and other Arizona partner libraries
- Libraries participating in a national pilot of citizen science and citizen science kits
    - Arkansas River Valley Regional Library System
    - Augusta-Richmond County Library
    - Everett Public Library
    - Lee County Library
    - Margaret R. Grundy Memorial Library
    - Show Low Public Library

Target Audience

- The ad campaign focused on reaching underserved seniors (55+) and other underrepresented groups (e.g., Native American/Tribal populations, Hispanic/Latino/a/x populations, and Black/African American populations).
- Secondary targets were adults 18 – 55, including educators and homeschoolers
- Tertiary targets were families and teens
- The advertising agency, LAVIDGE, targeted these individuals based on age (55+) and interests identified on social media.
    - Example interests include tribal art, African American culture, Latin American music, and Hispanic culture.
    - Also targeted gardening, pollination, and other topics related to kits.
- **In summary, ad campaign targets had to be the correct age, have relevant interests (largely linked to being from an underrepresented group), and be connected with the target zip codes to be presented with the ad.**

The total cost of the ad campaign was $29,209.00.

REPORT OVERVIEW

The report is organized by the components of the theory of change/evaluation plan presented in the next section. The approach used for the ad campaign evaluation, a contribution analysis approach, is presented in the same section. Following, key findings, conclusions, and recommendations are summarized. Finally, lessons learned are presented. Detailed findings are presented in the appendices.

AD CAMPAIGN EVALUATION PLAN/THEORY OF CHANGE AND APPROACH

The ad campaign was part of an effort to fulfill the following proposed objective: “Iterate and measure broad and targeted marketing and outreach efforts to promote the kits to address lack of awareness of the kits.” To evaluate the impact of the ad campaign to (1) increase awareness of the citizen science kits and (2) promote the use of the kits, a **contribution analysis framework** was used (e.g., Mayne, 2019; Patton, 2012). A contribution analysis differs from an attributional analysis in that the former is less concerned with making causal claims about the impact of a program/event/campaign precisely because the desired outcome is likely influenced by multiple, complex, and competing factors. That is, a contribution analysis addressed the question of whether the campaign has ***contributed*** to the desired outcome as opposed to whether the campaign ***caused*** the outcome. The two approaches are not mutually exclusive in that evidence that the campaign ***caused*** a specific outcome is also evidence that it ***contributed*** to the outcome. The difference is that contribution analysis will consider the ***strength*** of the evidence that the campaign contributed to the desired outcome and will acknowledge that it may not be feasible (because of limited resources, ethical concerns, or issue complexity) to administer the data or gather the data in a way to draw conclusive causal claims. In other words, a contribution analysis framework recognizes the limitations inherent to conducting and evaluating project activities in the real world.

Critical to conducting a contribution analysis is the clear delineation of the theory of change, or the hypothesized causal model linking project activities (i.e., the ad campaign) to desired outcomes. Based on a theory of change developed by evaluators in consultation with project leaders, a logic model for the ad campaign was created along with an accompanying evaluation plan (see Figures 1 and 2 below).

As noted in the logic model/evaluation plan, some aspects of the evaluation plan were dropped (e.g., asking librarians to help gather data in the form of an ad campaign survey administered to those checking out citizen science kits) due to extensive demands placed on librarians and COVID-19 pandemic-related challenges (e.g., short staff, curbside pickup, COVID-19 test kit distributions). Further, one component of the evaluation plan did not produce any usable data. Specifically, the Citizen Science Kit Feedback Survey was completed by eight individuals during the ad campaign. None of the eight reported learning of the kits through the ad campaign. However, this finding provides little insight into the effectiveness of the ad campaign given that there is likely considerable drop-off at each step from seeing the ad online, visiting SciStarter.org/library-kits, visiting a library and checking out a kit, and taking the Citizen Science Kit Feedback Survey.

Figure 1. *Timeline for Ad Campaign and Evaluation*

Month	S	M	T	W	H	F	S
October						1	2
2021	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	1	2	3	4	5	6
November	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	1	2	3	4
December	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	1
January	2	3	**4**	5	6	7	8
2022	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	1	2	3	4	5
February	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	1	2	3	4	5
March	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	**31**		

← **Data collected prior to the ad campaign** were used to establish a **baseline** against which to evaluate data collected **during the Ad Campaign**, and include, when available:

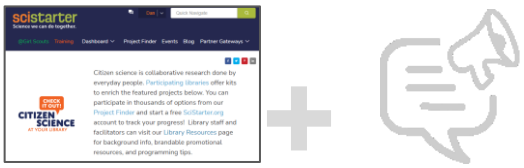
- Visits to SciStarter.org/library-kits webpage
- Visits to specific kit pages on SciStarter.org
- Kit circulation statistics among Arizona libraries

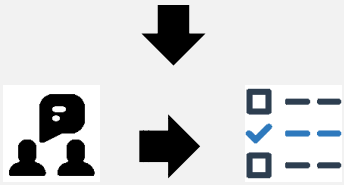
In addition, **SciStarter Analytics for October 2020 - March 2021 (not shown)** were also used to conduct a **year-over-year analysis against October 2021 – March 2022** to verify the impact of the ad campaign **beyond seasonal trends.**

← **Ad Campaign Launched on January 4, 2022**

← **Ad Campaign Ended on March 31, 2022**

Figure 2. *Visual Logic Model (Based on the Theory of Change)/Evaluation Plan for Ad Campaign*

Process	Data Collection Method	Key Indicators
 **Community Member** ↓  **Visits Social Media** ↓  **Views ad**	• Ad metrics provided by the advertising agency, LAVIDGE, in a dashboard	By ad, platform, and overall • # Impressions • # Visits: # site visitors = # CT + # VT • # Actions: Click on a kit webpage • VTS: % of visits/impressions • CNV: % of actions/visits • Spend: total spent on media • CPM: cost per 1,000 impressions • CPV: cost per visit • CPA: cost per action *Note.* CT = Click-through, or clicked on ad; VT = view-through, or visited the site later without clicking
↓  **Visits SciStarter.org/library-kits webpage** Process not enacted: SciStarter webpage includes an Announcement that community members can be entered into a drawing to win a prize if they mention the social media ad to their librarian and take a one-minute survey (link provided by a librarian)	Completed • Data collected by the SciStarter website Decided Against • Due to concerns about the very limited bandwidth of librarians and competition with other data collection efforts, project leaders and evaluators decided against a webpage announcement, survey, and drawing.	• SciStarter website analytics ○ # of visits to the SciStarter.org/library-kits webpage and specific kit pages ○ # of visits identifiable as resulting from the campaign ○ Social media platform of campaign visitors (Facebook/ Instagram, LinkedIn, YouTube, Connected TV) ○ Geographic location (top 10) of campaign visitors ○ Device type of campaign visitors
↓  **Goes to Library or Contacts by Phone or Email** ↓  **Inquires about Kit**	Decided Against • Ad Campaign Survey • Drawing/prizes encourage ad viewers to complete the survey	

Process	Data Collection Method	Key Indicators
 **Process not enacted**: Librarian directs to the one-minute survey (i.e., shares survey link/QR code located on a bookmark, card, and/or laminated sheet kept with kits; this would be part of the kit check-out process)		
 **Checks out Kit**	• Circulation statistics gathered from Arizona libraries	• **Arizona libraries**: # of kits checked out before/after ad campaign; an increase may indicate a positive contribution to the ad campaign
 **Takes Citizen Science Kit Feedback Survey as the final step of instructions**	• Circulation statistics gathered from Pilot libraries	• **Pilot libraries**: # of kits checked out during the campaign by pilot libraries involved/not involved in the ad campaign. Greater circulation among libraries participating in the ad campaign **may** indicate a positive contribution; however, involvement in the ad campaign is likely a result of greater progress/ preparedness to circulate kits. Circulation of kits at pilot libraries began at roughly the same time as the ad campaign, preventing a before/after ad campaign comparison.
 **Checks Kit in** **As part of the check-in process, the librarian encourages users to complete the** Citizen Science Kit Feedback Survey**, if not already done, as an act of citizen science**	• Citizen Science Kit Feedback Survey (online for kit end-users)	• Citizen Science Kit Feedback Survey: # of respondents reporting they learned of the kits through a social media ad.

KEY FINDINGS

DEMOGRAPHIC/GEOGRAPHIC ANALYSIS

- Ad campaign targets had to be the correct age, have relevant interests (largely linked to being from an underrepresented group), and be connected with the target zip codes to be presented with the ad.
- 36.1% (*n* = 13 of 36) of targeted zip codes included more individuals who were underrepresented in scientific research by age (55+) than the United States as a whole.
- 44.4% (*n* = 16 of 36) of targeted zip codes included more individuals who were underrepresented in scientific research by race/ethnicity (using the census categories: “Hispanic or Latino,” “Black or African American alone,” “American Indian and Alaska Native alone,” or “Native Hawaiian and Other Pacific Islander alone”) than the United States as a whole.

EVALUATION OF DIGITAL ADS

- The take-home message of each ad was mostly related to the action of checking out a kit at the library but was less clear about why there was a need to click on the ad.
- The story or what is occurring in each ad is generally clear, but for some ads featuring primarily a kit, the story may be less readily understood by those without prior exposure to the kits. While the text explains what is being done in all ads, the ads featuring the kits are less readily understood in comparison to images of models looking at plants or the night sky, for example. In addition, one image included in the carousel for seniors lacks text explaining what the models are doing, though this may be inferred from the other images included in the carousel.
- The text of most ads was clear, but the font size of some text was small for all ads, especially for ads that were targeted to seniors who may experience vision problems. Further, the key message “Check one out!” consisted of white text on an orange background, which can be difficult to read.
- Most ads were inclusive of the target group in that they included a member of that group or related to that group (e.g., the model was a teen in ads targeted to parents of a teen) or the model was not clearly identified as belonging to any specific group (e.g., a silhouette of individual looking at the stars) and could thus be a member of any group. Three ads did not feature a model that fit these criteria.
- Nearly all of the 18 ads were related to a kit featured on SciStarter.org/library-kits during the ad campaign. One was related to a kit that had been discontinued/replaced, and one was for a kit that was added after the ad campaign was completed (but was in development during the ad campaign).

LAVIDGE Analytics Regarding Views of and Clicks on Ads and Resulting Actions

- Overall and By Platform
    - Per LAVIDGE data, the ads were seen by over 1.5 million viewers resulting in over 6,000 visits to the SciStarter.org/library-kits webpage and 22 actions (i.e., clicking on the link to a kit page on the landing page) at the cost of approximately $29,000.00. Approximately 1 out of every 260 individuals who viewed an ad visited the webpage.
    - In terms of VTS (visits per impressions), Facebook/Instagram, LinkedIn, and YouTube were very similar, with approximately 1 out of every 240 impressions resulting in a visit to the webpage.
    - Facebook/Instagram and YouTube had the lowest cost per impression ($13.01 and $19.21, respectively) and cost per visit ($3.24 and $4.70, respectively).
- Individual Ad Performance
    - **VTS**: % of visits/impressions. Overall, VTS was fairly stable or increased over time for Facebook/Instagram ads and was extremely stable for YouTube and Connected TV video ads. VTS of LinkedIn ads was more variable over time.
    - **CPV**: cost per visit. Overall, CPV for Facebook/Instagram ads was somewhat stable over time, with the exception of the carousel ads, for which CPV was highly variable over time. Likewise, LinkedIn ads and the Connected TV video were highly variable in terms of CPV. The CPV of the YouTube video was stable over time.
    - Because the # of actions, as recorded by LAVIDGE, were few (or non-existent), for most ads, metrics based on actions are less informative at the level of individual ads.
- Comparison of Ads
    - VTS (Visits per impressions)
        - The best performing ads were those used in retargeting on Facebook/Instagram (VTS: 1.25%, or about 1 visit/80 impressions). Of those, Stargazing and Pollinators 1 were the most effective, but differences among ads were minimal (between 1 visit/73 impressions and 1 visit/104 impressions).
        - The next most effective ads were those targeting seniors on Facebook/Instagram (VTS: 0.68%, or about 1 visit/147 impressions). The performance of individual ads was similar (between 1 visit/124 impressions and 1 visit/178 impressions), with the exception of the carousel of ads (about 1 visit/370 impressions).
        - Ads on LinkedIn and YouTube performed similarly (VTS: ~ 0.43%, or about 1 visit/233 impressions). The three ads used on LinkedIn performed nearly identically.
        - LinkedIn, YouTube, and Facebook/Instagram (overall) ads performed nearly identically.

- Ads on Facebook/Instagram targeted to parents of teens and parents of homeschoolers performed very similarly (about 1 visit/476 impressions) but worse than other ads/target populations with the exception of the Connected TV Video (about 1 visit/2000+ impressions). There were no real differences among ads targeted to the two populations.

- CPM (Cost per 1,000 impressions)

  - The most cost-effective ads in terms of impressions were the Facebook/Instagram ads targeted to parents of teens and homeschoolers, costing between $9.00 and $10.00 per 1,000 impressions. There was minimal difference in CPM between individual ads.

  - Facebook/Instagram ads targeting seniors and the YouTube video were the next most cost-effective, costing between about $18.00 and $19.00 per 1,000 impressions. The carousel ad for seniors was more cost-effective (CPM: $9.86) than other ads for seniors (CPM: ~$16.00 - $21.00).

  - Retargeted ads on Facebook/Instagram were slightly less cost-effective (CPM: $25.15) but more cost-effective than Connected TV ads (CPM: $50.79) or LinkedIn ads targeted to educators (CPM: ~$89.00).

- CPV (Cost per visit)

  - The most cost-effective ads in terms of visits were the retargeted Facebook/Instagram ads (CPV: ~$2.00) and Facebook/Instagram Ads targeted to Seniors (CPV: ~$2.00 - $3.00). Ads targeted to parents of teens on Facebook/Instagram (CPM: ~$4.00 - $5.00), the YouTube video (CPM: $4.70), and ads targeted to parents of homeschoolers on Facebook/Instagram (CPM: ~$4.00 - $6.00) were slightly less cost-effective but more cost-effective than LinkedIn ads targeted to educators (CPV: ~$21.00) or Connected TV ads (CPV: $97.18).

SciStarter Analytics Regarding Visits to Target Webpage and Kit Pages Before and During Ad Campaign

- In total, 4,611 new users visited the SciStarter.org/library-kits webpage as a result of the ad campaign.
- Depending on the month, between one-half and nearly all visitors came to the website after clicking on a Facebook/Instagram ad. Visitors from LinkedIn constituted about one-fifth of ad campaign visitors in January but less than 5% thereafter.
- Visitors from YouTube and Connected TV constituted less than 5% of any ad campaign visitors during the ad campaign.
- A clear majority of visitors (89.1%) visited the webpage using a mobile device. The rest were about evenly split between a desktop or tablet.
- Approximately two-thirds of visitors *from one of the top 10 geographic locations* were from Arizona.

AZ Circulation Data Before and During Ad campaign

- Across the reporting Arizona libraries, there was quite a bit of evidence that kit circulation increased during the ad campaign. While data are not sufficient to say that kit circulation increased *as a result of the ad campaign*, circulation overall did increase, which would be consistent with a positive impact of the ad campaign. That is, the evidence is consistent with the ad campaign contributing to increased kit usage.
- Just over one-half of the 20 reporting libraries (55.0%) experienced an increase in kit circulation during compared to before the ad campaign.

National Pilot Libraries Circulation Data during Ad Campaign

- All five of the pilot libraries that participated in the ad campaign and provided monthly circulation data experienced at least slightly increased circulation during the campaign (i.e., through March). In contrast, only two of the four pilot libraries that did ***not*** participate in the ad campaign but provided monthly circulation data reported increased circulation during the campaign.
- Because pilot libraries were not randomly assigned to participate in the ad campaign and likely differed in terms of their preparedness to participate in the ad campaign, caution should be used when interpreting this finding. That being said, the finding that the pilot library that participated in the ad campaign may have seen increased circulation suggests that the campaign may have contributed to the circulation at those libraries.

CONCLUSIONS

Objective	Component of Theory of Change/ Logic Model	Level of Evidence that Ad Campaign *Contributed* to Target Outcome Options: None, A little, Some, Quite a bit	Notes
Reach underrepresented individuals	All	• Quite a bit	• Ad campaign targets had to be the correct age, have relevant interests (largely linked to being from an underrepresented group), and be connected with the target zip codes to be presented with the ad. • 36.1% (*n* = 13 of 36) of zip codes included a larger percentage of individuals who were underrepresented in scientific research by age (55+) than the United States as a whole. • 44.4% (*n* = 16 of 36) of zip codes included a larger percentage of individuals who were underrepresented in scientific research by race/ethnicity (using the census categories: "Hispanic or Latino," "Black or African American alone," "American Indian and Alaska Native alone," or "Native Hawaiian and Other Pacific Islander alone") than the United States as a whole.
Increase awareness of the citizen science kits	Social media users view ads advertising	• Quite a bit	• The ads were viewed over 1.5 million times
	Social media users are directed by ads to the SciStarter.org/library-kits site	• Quite a bit	• Between ~4,600 and 6,400 individuals visited the target SciStarter webpage
	Social media users visit kit pages on the website	• Quite a bit	• Across all four kits featured on SciStarter.org/library-kits during the ad campaign, there were ~35 more visits/week during the ad campaign across all four featured kits than before. • Across all four kits, the number of visits to the kit pages during the ad campaign (January 4 – March 31, 2022) was ~19 visits/week higher than the number of visits during the same period a year earlier (January 1 – March 31, 2021).

Objective	Component of Theory of Change/ Logic Model	Level of Evidence that Ad Campaign *Contributed* to Target Outcome Options: None, A little, Some, Quite a bit	Notes
Promote the use of the kits	Social media users check kits out from their library	• A little	• Across the reporting Arizona libraries, there was quite a bit of evidence that kit circulation increased during the ad campaign. While data are not sufficient to say that kit circulation increased *as a result of the ad campaign*, circulation overall did increase, which would be consistent with a positive impact of the ad campaign. That is, the evidence is consistent with the ad campaign contributing to increased kit usage. • Just over one-half of the 20 reporting AZ libraries (55.0%) experienced an increase in kit circulation during compared to before the ad campaign. • All five of the national pilot libraries that participated in the ad campaign and provided monthly circulation data experienced at least slightly increased circulation during the campaign (i.e., through March). In contrast, only two of the four pilot libraries that did ***not*** participate in the ad campaign but provided monthly circulation data reported increased circulation during the campaign. • Because pilot libraries were not randomly assigned to participate in the ad campaign and likely differed in terms of their preparedness to participate in the ad campaign, caution should be used when interpreting this finding. That being said, the finding that the pilot libraries that participated in the ad campaign may have seen increased circulation suggests that the campaign may have contributed to the circulation at those libraries. • None of the eight respondents to the Citizen Science Kit Feedback Survey reported learning of the kits through the ad campaign. Given the small sample size and alternative ways of learning of the kits, this finding provides no insight into the effectiveness of the ad campaign.

RECOMMENDATIONS

Recommendations are organized by topic.

AD DESIGN

- Create better alignment/a clearer connection between the message of the ad and the desired action. For example, consider noting in the ad that the viewer can "Click here to find a participating library now!" Further, consider developing a specific landing page on SciStarter.org designed specifically for media campaigns. The SciStarter.org/library-kits page currently includes a lot of information in a wide sidebar, a large image that pushes key text almost off-screen, and a relatively large amount of text to read. First-time visitors may benefit from a landing page designed to quickly and succinctly orient them to the website and, more importantly, what their next step should be. Consider adding headers, such as "Welcome to SciStarter," "What is a citizen science kit?", and "How do I find a participating library to check out a kit?" to help visitors quickly identify and take the next step.
- Revise/replace some ad images so the desired action(s) (e.g., visiting SciStarter and going to a local library to check out a citizen science kit) are more readily understood by those without prior exposure to citizen science kits.
- Use a larger font for ad text and make sure the contrast of font colors facilitates legibility, particularly on ads for target populations who may have vision difficulties.
- Verify ad images feature models relevant to target populations.
- Consider using only ads that relate to kits featured on the landing page during the ad campaign. Doing so can help visitors avoid confusion when they cannot find a kit related to the ad that piqued their interest.

PLATFORMS

- Consider whether Connected TV and LinkedIn are cost-effective platforms for future ad campaigns.

TIMING OF DECISION TO DISCONTINUE ADS/PLATFORMS

- Given that VTS was fairly stable over time, consider dropping lower-performing ads early on (e.g., after the first month).
- Given that CPV for Facebook/Instagram ads and the YouTube video showed some stability, consider dropping more costly ads early on.

AD PERFORMANCE

- In terms of VTS, there is no clear indication that some ads performed better than others *within a given target population*.
- Retargeted ads and ads targeting seniors were more effective in terms of VTS and slightly more cost-effective in terms of CPV than the ads targeting parents of teens or homeschoolers, but the ads targeted to parents of teens and homeschoolers were more cost-effective in terms of CPM.
- Carousel ads on Facebook/Instagram may be less effective with seniors in terms of VTS but more cost-effective in terms of impressions. That is, carousel ads for seniors were more cost-effective at presenting the ads but less effective at encouraging people to visit the target website.

- LinkedIn ads, while effective in terms of VTS, were substantially more expensive in terms of the impressions and visits they generated.
- The Connected TV ad was not effective and extremely expensive in terms of the number of impressions and visits generated. It should be reused only with caution.
- Note that recommendations provided here diverge in some instances from those provided by LAVIDGE in the "Full Campaign Recap Report." The difference is that LAVIDGE's report identifies some ads as top performers even though they do not meaningfully differ in performance from other ads.

AD OPTIMIZATION

- Given that most visitors viewed the ads on a mobile device, consider optimizing the ads and the website for mobile devices.

DATA COLLECTION

- Coordinate with website development/maintenance team to avoid shifts in analytic service (GA to GA4) during future ad campaigns.

LESSONS LEARNED

- During project meetings, the ad campaign company, LAVIDGE, the project team, and the evaluation team came to meetings with their own expectations, processes, and vocabulary. During meetings, efforts were made to clarify campaign goals and needs, but difficulties in communicating were apparent. For example, although LAVIDGE provided a glossary, several terms used in their documentation were either not defined or the definitions were incomplete or not defined for the citizen science ad campaign. As another example, the dashboards provided by LAVIDGE were overly complex (i.e., included unnecessary filters), lacked an explanation of terms/statistics, and were extremely slow to load. Further, no instructions were provided for using the dashboard. LAVIDGE personnel were willing to answer questions when asked, but ad campaign performance tracking could be more easily facilitated if instructions and/or a more lay-user-friendly dashboard could be provided. Likewise, project leaders strived to communicate project goals and needs, and meeting time was taken to clarify actual intent. Developing a shared understanding is a natural and essential part of any successful collaborative project. A lesson learned from the ad campaign experience is that there is a greater need for purposefully establishing a shared understanding than may be needed for other projects.
- As noted by the PI during the final meeting with the ad agency, the citizen science ad campaign differed from other ad campaigns facilitated by SciStarter in that the message of the ad was more complex. In contrast to ads that directed the viewer to join an online citizen science event from their computer, the ads in this ad campaign tried to communicate three pieces of information: (1) what is citizen science, (2) citizen science kits exist, and (3) go to your library to check out a kit. In addition, evaluations note that a fourth piece of information is implied but not stated explicitly: go to SciStarter to find a participating library. Ads may be more effective if they clearly communicate and are tied to the target action.

- LAVIDGE staff noted during the final meeting that ad campaign analytics are less robust when the sample size is smaller. For example, per LAVIDGE analytics, there were only 22 actions (i.e., clicking on one of the kits' pages); other data suggest the total may be higher. LAVIDGE staff noted that 500 – 1,000 actions are really needed to have strong evidence on which to base claims of best- and worst-performing ads in terms of yielding actions. Thus, it would be misleading to compare ads in this campaign to one another in terms of their ability to produce actions.
- LAVIDGE staff recommended locating at the top of the webpage the part of the page directing the visitor to the target action because visitors may not scroll down.
- Collecting demographic information on individuals who view or click on ads is extremely difficult for a variety of reasons:
    - (1) Out of concern for privacy and in response to increased scrutiny of data collection practices, social media platforms do not provide demographic information on campaign participants and will not provide even geographic data of participants if the number of individuals in a Designated Market Areas (DMA, a set of geographic areas that are quite large) is too low.
    - (2) The geographic data provided by social media platforms is also returned in terms of DMAs, even if campaign targeting is done through zip codes.
    - (3) Social media platforms rely on algorithms to target specific individuals, and these algorithms require very large samples, moreso if the target population is difficult to identify and requires a number of criteria to identify, such as was the case for this ad campaign. Thus, attempts to conduct the ad campaign on a smaller scale to trick the platforms into providing more information could backfire. For example, if this ad campaign were conducted separately within each target zip code (thus allowing us to know exactly how ads perform in each zip code), there may not be a sufficient number of eligible people for the algorithm to identify potential targets, and the ads may not even be shown. Further, the algorithm would be limited in its ability to optimize and use the most effective ads over time.
    - In summary, campaigns targeting individuals using multiple criteria (zip code, demographics, and interests) are more complex, require campaigns of a larger scale to work effectively, and are more limited in their ability to identify the demographics of campaign participants than simpler campaigns. Collecting demographic information on ad campaign participants may not be particularly feasible; evaluation and monitoring efforts may be best spent on tracking how ads were targeted to specific populations.
- Librarians are under an extremely high level of stress due to increased challenges and responsibilities associated with the pandemic. The original evaluation plan called for data collection facilitated by library patrons, but this approach was not feasible. Evaluation and monitoring efforts may need to focus on alternatives rather than relying on the voluntary participation of extremely busy librarians.

APPENDIX A. DEMOGRAPHIC/GEOGRAPHIC ANALYSIS

Groups underrepresented in scientific research were targeted by the ad campaign by age (55+) and interests (e.g., tribal art, African American culture, Latin American music, and Hispanic culture). In summary, the targets had to be the correct age, have the relevant interests, and be connected with the target zip codes to be presented with the ad.

Evaluating whether individuals who saw the ads were indeed from underrepresented groups is difficult. Due to privacy and ethical concerns and the challenges in correctly identifying individuals, social media platforms do not provide demographic data on individuals who click on ads, especially after the increased scrutiny social media companies have faced in recent years.

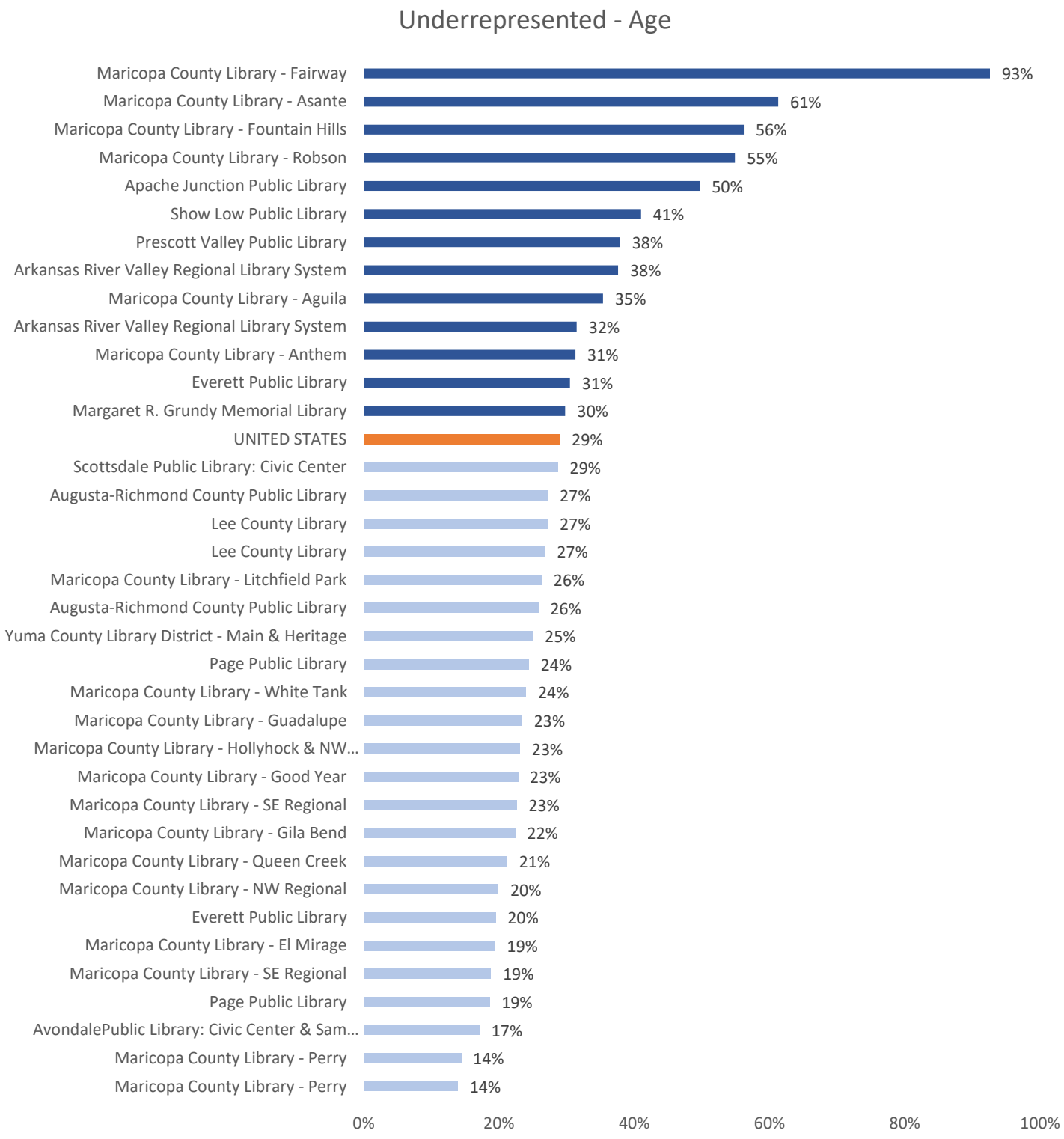
To supplement our understanding of who the ad campaign may have reached, evaluators obtained the 2020 American Community Survey (ACS) 5-Year Estimates generated by the U.S. Census Bureau (https://data.census.gov/) for each of the target zip codes[1] and estimated the percentage of the population in each zip code area who were underrepresented by age (55+) or race/ethnicity (using the census categories: “Hispanic or Latino,” “Black or African American alone,” “American Indian and Alaska Native alone,” or “Native Hawaiian and Other Pacific Islander alone”). Results are presented in Figures 3 and 4.

Key Findings

- Ad campaign targets had to be the correct age, have relevant interests (largely linked to being from an underrepresented group), and be connected with the target zip codes to be presented with the ad.
- 36.1% (*n* = 13 of 36) of zip codes included more individuals who were underrepresented in scientific research by age (55+) than the United States as a whole.
- 44.4% (*n* = 16 of 36) of zip codes included more individuals who were underrepresented in scientific research by race/ethnicity (using the census categories: “Hispanic or Latino,” “Black or African American alone,” “American Indian and Alaska Native alone,” or “Native Hawaiian and Other Pacific Islander alone”) than the United States as a whole.

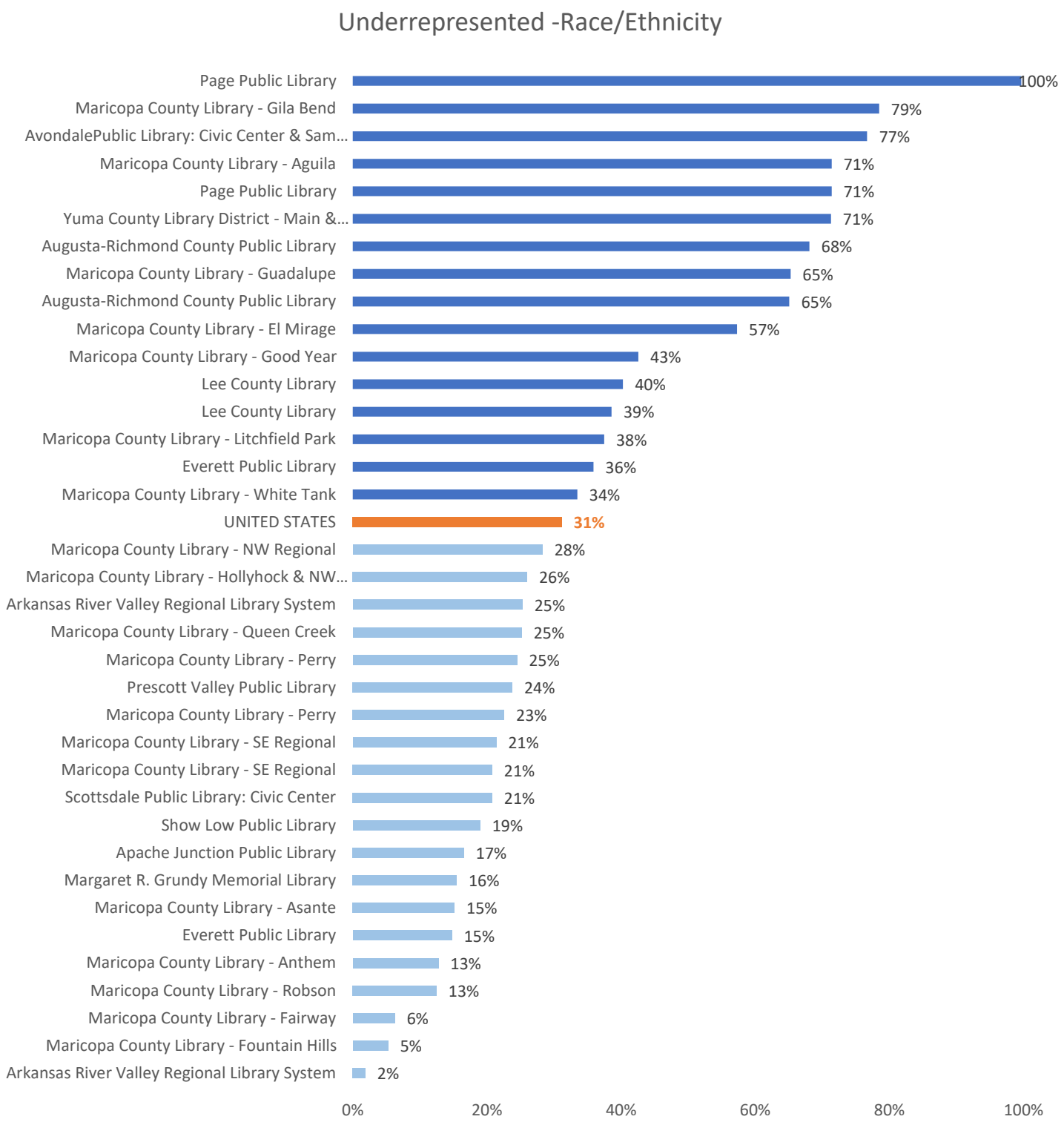
[1] The U.S. Census Bureau provides estimates of population demographics within zip codes by using ZCTAs (Zip Code Tabulation Areas) corresponding to U.S. Postal zip codes.

Figure 3. Percentage of Residents in Zip Codes Targeted by Ad Campaign Underrepresented by Age (55+)



Source: 2020 American Community Survey (ACS) 5-Year Estimates

Figure 4. Percentage of Residents in Zip Codes Targeted by Ad Campaign Underrepresented by Race/Ethnicity[2]



Source: 2020 American Community Survey (ACS) 5-

[2] Census Categories: “Hispanic or Latino,” “Black or African American alone,” “American Indian and Alaska Native alone,” or “Native Hawaiian and Other Pacific Islander alone”)

APPENDIX B. EVALUATION OF DIGITAL ADS

Each of the 18 digital ads (image or video) was evaluated on five criteria by UOEEE evaluators as described in Table 1. Results are presented in Table 2.

Table 1. Criteria Used to Evaluated Digital Ads

Criteria	Explanation	Rating Scale
Message clearly directs the viewer to take the intended action	Does the ad's message clearly direct the viewer to take the intended action? The target action in terms of campaign analytics was to click on a kit page on SciStarter.org/library-kits. However, the ultimate action was to check out a citizen science kit from the library.	☆☆☆ = Message incongruent with action ★☆☆ = Message mostly incongruent ★★☆ = Message mostly related to action ★★★ = Message clearly related to action
Clarity of Image's Story	Ease in comprehending the story the image or video is telling (i.e., easy to tell what is happening in the image or video).	☆☆☆ = Not at all clear ★☆☆ = Somewhat clear ★★☆ = Mostly clear ★★★ = Completely clear
Legibility of text	Can the text be easily seen, **especially by the target audience**, based on font size and contrast of font color and background? To evaluate font size, images were sized to 2.8 inches wide, consistent with a standard cell phone width (see https://www.pcmag.com/picks/the-best-small-phones).	☆☆☆ = Severe problems with legibility ★☆☆ = Major problems ★★☆ = Minor problems ★★★ = No problems
Inclusive of the target group	Is a member of the target group included in the image/video, OR is the identity of the person/people in the ad obscured to be relevant to the target group (or any other group)? Note that the individual in the ad does not need to be directly connected to the target group, but could be indirectly related (e.g., an image of a teen rather than a parent for the target group, parents of teens).	Yes/Somewhat/No
Tied to a featured kit	Is the ad related to a kit hosted onSciStarter.org/library-kits during the ad campaign?	Yes/No

Key Findings

- The take-home message of each ad was mostly related to the action of checking out a kit at the library but was less clear about why there was a need to click on the ad.
- The story or what is occurring in each ad is generally clear, but for some ads featuring primarily a kit, the story may be less readily understood by those without prior exposure to the kits. While the text explains what is being done in all ads, the ads featuring the kits are less readily understood in comparison to images of models looking at plants or the night sky, for example. In addition, one image included in the carousel for seniors lacks text explaining what the models are doing, though this may be inferred from the other images included in the carousel.
- The text of most ads was clear, but the font size of some text was small for all ads, especially for ads that were targeted to seniors who may experience vision problems. Further, the key message "Check one out!" consisted of white text on an orange background, which can be difficult to read.
- Most ads were inclusive of the target group in that they included a member of that group or related to that group (e.g., the model was a teen in ads targeted to parents of teen) or the model was not clearly identified as belonging to any specific group (e.g., a silhouette of individual looking at the stars) and could thus be a member of any group. Three ads did not feature a model that fit these criteria.
- Nearly all of the 18 ads were related to a kit featured on SciStarter.org/library-kits during the ad campaign. One was related to a kit that had been discontinued/replaced, and one was for a kit that was added after the ad campaign was completed (but was in development during the ad campaign).

Recommendations

- Created better alignment/a clearer connection between the message of the ad and the desired action. For example, consider noting in the ad that the viewer can "Click here to find a participating library now!" Further, consider developing a specific landing page on SciStarter.org designed specifically for media campaigns. The SciStarter.org/library-kits page currently includes a lot of information in a wide sidebar, a large image that pushes key text almost off-screen, and a relatively large amount of text to read. First-time visitors may benefit from a landing page designed to quickly and succinctly orient them to the website and, more importantly, what their next step should be. Consider adding headers, such as "Welcome to SciStarter," "What is a citizen science kit?", and "How do I find a participating library to check out a kit?" to help visitors quickly identify and take the next step.
- Revise/replace some ad images so they are more readily understood by those without prior exposure to citizen science kits.
- Use a larger font for ad text and make sure the contrast of font colors facilitates legibility, particularly on ads for target populations who may have vision difficulties.
- Verify ad images features models relevant to target populations.
- Consider using only ads that relate to kits featured on the landing page during the ad campaign. Doing so can help visitors avoid confusion when they cannot find a kit related to the ad that piqued their interest.

Figure 5. Screenshot of Top Part of the SciStarter.org/library-kits Page

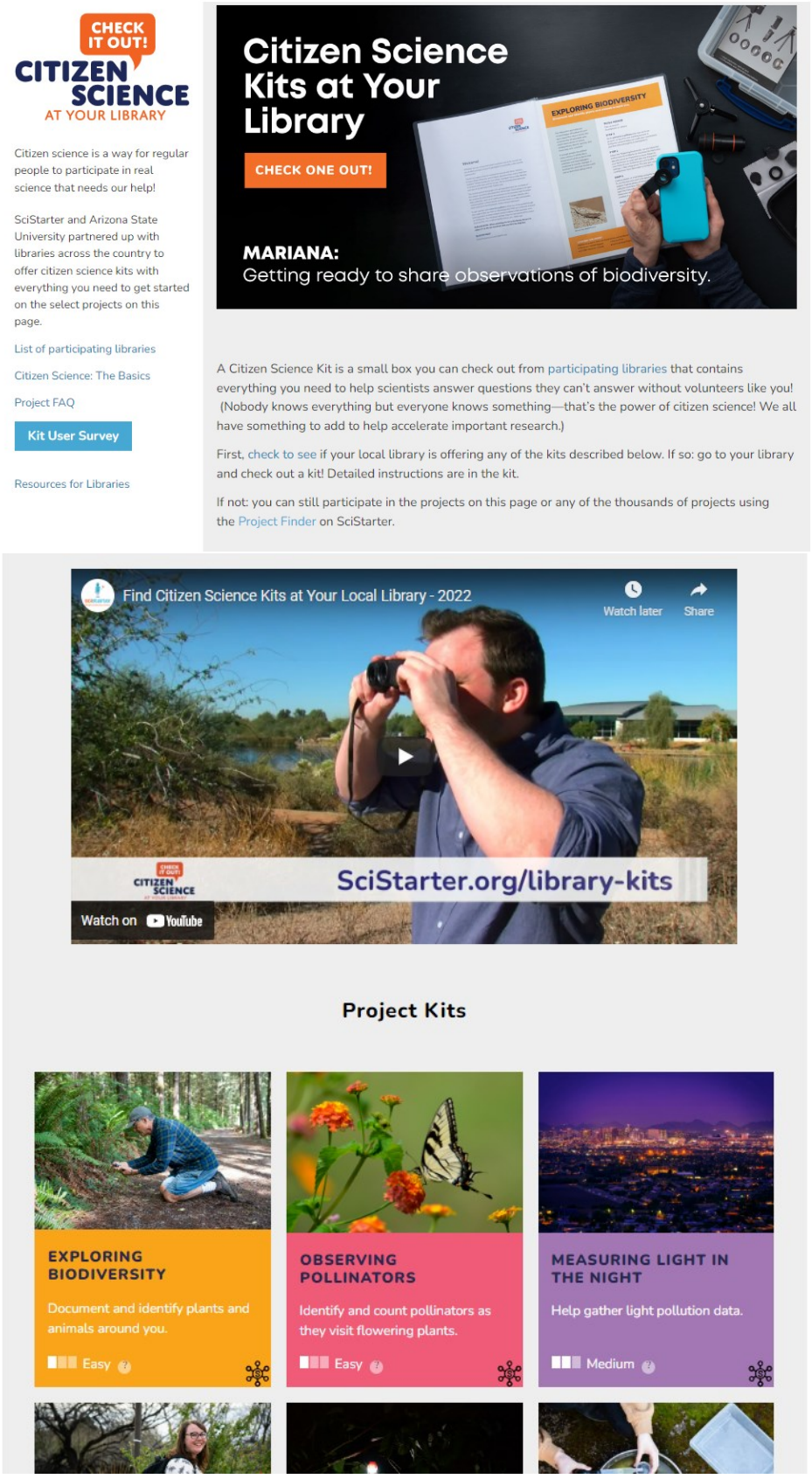
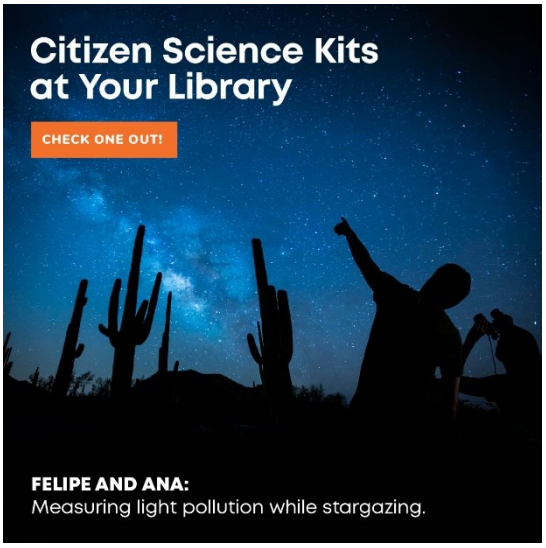
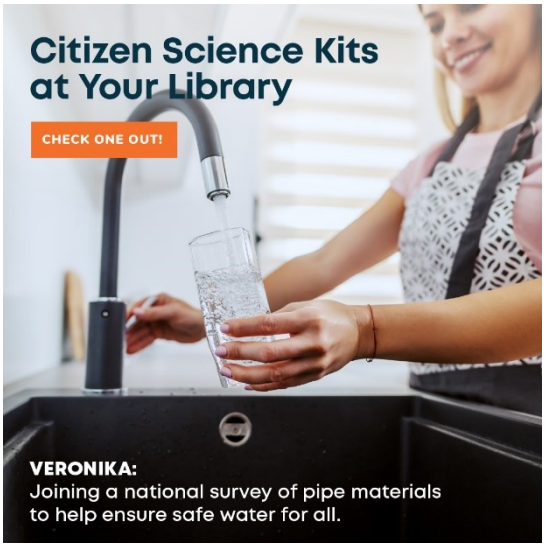


Table 2. Evaluation of Digital Ads

Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • “Stargazing” Relevant kit: • Measuring Light in the Night Target: • FB/IG Seniors • FB/IG Parents of Teens (Carousel)		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★★
		Legibility of text	★☆☆ *White on orange is hard to read; font is small for the target*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes
Ad Name: • “Light Pollution 1” Relevant kit: • Measuring Light in the Night Target: • FB/IG Seniors • FB/IG Parents of Teens (Carousel)		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★☆ *Not entirely clear what the model is doing or how it relates to light pollution*
		Legibility of text	★☆☆ *White on orange is hard to read; font is small for the target*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes

Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • “Light Pollution 2” Relevant kit: • Measuring Light in the Night Target: • FB/IG Seniors • FB/IG Parents of Teens (Carousel)		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★☆ *Not entirely clear what the models are doing or how it relates to light pollution*
		Legibility of text	★☆☆ *White on orange is hard to read; font is small for the target*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes
Ad Name: • “Bird Migration” Relevant kit: • Exploring Biodiversity Target: • FB/IG Seniors • FB/IG Seniors (Carousel)		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★★
		Legibility of text	★☆☆ *White on orange is hard to read; font is small for the target*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes

Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • Part of FB/IG Seniors Carousel Relevant kit: • Exploring Biodiversity Target: • FB/IG Seniors (Carousel)		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★☆ *The bottom image lacks any textual explanation alone.*
		Legibility of text	★☆☆ *White on orange is hard to read; font is small for the target*
		Inclusive of the target group	Somewhat
		Tied to a featured kit	Yes
		Note: the top two images are rated above; ratings only apply to the large, bottom image	
Ad Name: • “Biodiversity” Relevant kit: • Exploring Biodiversity Target: • FB/IG Parents of Teens • FB/IG Seniors (Carousel)		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★☆ *Not entirely clear what the model is doing or readily apparent how it is related to observing biodiversity*
		Legibility of text	★★☆ *White on orange is hard to read; font is small, especially for one target*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes

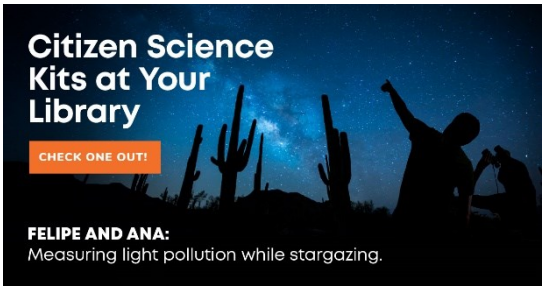
Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • “Pipe Materials” Relevant kit: • N/A Target: • FB/IG Parents of Teens		Message clearly directs the viewer to take the intended action Clarity of Image’s Story Legibility of text Inclusive of the target group Tied to a featured kit	★★☆ ★★★ ★★☆ *White on orange is hard to read; font is small* Yes No
Ad Name: • “Plant Species” Relevant kit: • Exploring Biodiversity Target: • FB/IG Parents of Teens		Message clearly directs the viewer to take the intended action Clarity of Image’s Story Legibility of text Inclusive of the target group Tied to a featured kit	★★☆ ★★★ ★★☆ *White on orange is hard to read; font is small* Somewhat *The younger model appears to be a child rather than teen* Yes

Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • “Pollinators” Relevant kit: • Observing Pollinators Target: • FB/IG Parents of Teens		Message clearly directs the viewer to take the intended action Clarity of Image’s Story Legibility of text Inclusive of the target group Tied to a featured kit	★★☆ ★★★ ★★☆ *White on orange is hard to read; font is small* Yes Yes
Ad Name: • “Biodiversity” Relevant kit: • Exploring Biodiversity Target: • FB/IG Homeschoolers		Message clearly directs the viewer to take the intended action Clarity of Image’s Story Legibility of text Inclusive of the target group Tied to a featured kit	★★☆ ★★★ ★★☆ *White on orange is hard to read; font is small* Yes Yes

Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • “Butterfly” Relevant kit: • Observing Pollinators Target: • FB/IG Homeschoolers		Message clearly directs the viewer to take the intended action Clarity of Image’s Story Legibility of text Inclusive of the target group Tied to a featured kit	★★☆ ★★★ ★★☆ *White on orange is hard to read; font is small* Yes Yes
Ad Name: • “Mosquito” Relevant kit: • Mapping Mosquito Habitats (launched after ad campaign) Target: • FB/IG Homeschoolers		Message clearly directs the viewer to take the intended action Clarity of Image’s Story Legibility of text Inclusive of the target group Tied to a featured kit	★★☆ ★★★ ★★☆ *White on orange is hard to read; font is small* Yes No, but the kit would launch later

Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • “Pollinators” Relevant kit: • Observing Pollinators Target: • FB/IG Homeschoolers		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★★
		Legibility of text	★★☆ *White on orange is hard to read; font is small*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes
Ad Name: • “Winter” Relevant kit: • Exploring Biodiversity Target: • FB/IG Homeschoolers		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★★
		Legibility of text	★★☆ *White on orange is hard to read; font is small*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes

Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • “Light Pollution” Relevant kit: • Measuring Light in the Night Target: • LI Educators		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★☆ *Not entirely clear what the models are doing or how it relates to light pollution*
		Legibility of text	★★☆ *White on orange is hard to read; font is small*
		Inclusive of the target group	Somewhat *Neither model appears to be a student*
		Tied to a featured kit	Yes
Ad Name: • “Biodiversity” Relevant kit: • Exploring Biodiversity Target: • LI Educators		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★★
		Legibility of text	★★☆ *White on orange is hard to read; font is small*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes

Ad Info	Ad Image Sized (on Printed Page) to Standard Smartphone Width of 2.8”	Criteria	Rating
Ad Name: • “Stargazing” Relevant kit: • Measuring Light in the Night Target: • LI Educators		Message clearly directs the viewer to take the intended action	★★☆
		Clarity of Image’s Story	★★★
		Legibility of text	★★☆ *White on orange is hard to read; font is small*
		Inclusive of the target group	Yes
		Tied to a featured kit	Yes
30-second Video Ad		Message clearly directs the viewer to take the intended action	★★★
		Clarity of Video’s Story	★★★ Speaker could explain what kits are
		Legibility of text	★★★
		Inclusive of the target group	Unknown
		Tied to a featured kit	N/A

APPENDIX C. LAVIDGE ANALYTICS REGARDING VIEWS OF AND CLICKS ON ADS AND RESULTING ACTIONS

The ad campaign analytics provided by LAVIDGE in the "Full Campaign Recap Report" and the dashboard were reviewed to identify performance at the following levels:

- Overall
- By platform
- By individual ads

OVERALL AND BY PLATFORM

Key Findings

- As shown in Table 3, per LAVIDGE data, the ads were seen by over 1.5 million viewers resulting in over 6,000 visits to the SciStarter.org/library-kits webpage and 22 actions (i.e., clicking on the link to a kit page on the landing page) at the cost of approximately $29,000.00. Approximately 1 out of every 260 individuals who viewed an ad visited the webpage.
- In terms of VTS (visits per impressions), Facebook/Instagram, LinkedIn, and YouTube were very similar, with approximately 1 out of every 240 impressions resulting in a visit to the webpage.
- Facebook/Instagram and YouTube had the lowest cost per impression ($13.01 and $19.21, respectively) and cost per visit ($3.24 and $4.70, respectively).

Table 3. Ad Campaign Performance by Platform (Adapted from LAVIDGE "Full Campaign Recap Report")

Platform	Impressions	Visits	Actions	VTS%	CNV%	Spend	CPM	CPV	CPA
Facebook/Instagram	1,205,480	4,837	21	**0.40%**	0.43%	$15,679.22	**$13.01**	**$3.24**	$746.23
LinkedIn	27,281	118	0	**0.43%**	N/A	$2,426.09	$88.93	$20.56	N/A
YouTube	343,809	1,404	0	**0.41%**	N/A	$6,605.39	**$19.21**	**$4.70**	N/A
Connected TV	89,932	47	1	0.05%	2.13%	$4,567.51	$50.79	$97.18	$4,567.51
Total	**1,666,502**	**6,406**	**22**	**0.38%**	**0.34%**	**$29,278.20**	**$17.57**	**$4.57**	**$1,330.83**

Note. Top performers by VTS, CPV, and CPM are highlighted. Impressions = ad was in view; Visits: # site visitors = # CT + # VT; CT = click-through, or clicked on ad; VT = view-through (visited site later without clicking); Actions = click on kit link; VTS = % of visits/impressions; CNV = % of actions/visits; Spend = total spent on media; CPM = cost per 1,000 impressions; CPV = cost per visit; CPA = cost per action.

Recommendations

- Consider whether Connected TV and LinkedIn are cost-effective platforms for future ad campaigns.

INDIVIDUAL AD PERFORMANCE SUMMARIES

Performance summaries for individual ads are presented in Figures 6 – 29 and include information on performance over time as well as overall performance. Note that while efforts were made to keep figures on the same scale, the scales for impressions and cost per visit vary between figures due to large discrepancies in maximum values across ads. Further, the initial and end points of each figure are for weeks with fewer days (i.e., the campaign started and ended roughly mid-week).

Key Findings

- **VTS**: % of visits/impressions. Overall, VTS was fairly stable or increased over time for Facebook/Instagram ads and was extremely stable for YouTube and Connected TV video ads. VTS of LinkedIn ads was more variable over time.
- **CPV**: cost per visit. Overall, CPV for Facebook/Instagram ads was somewhat stable over time, with the exception of the carousel ads, for which CPV was highly variable over time. Likewise, LinkedIn ads and the Connected TV video were highly variable in terms of CPV. The CPV of the YouTube video was stable over time.
- Because the # of actions, as recorded by LAVIDGE, were few (or non-existent), for most ads, metrics based on actions are less informative at the level of individual ads.

Recommendations

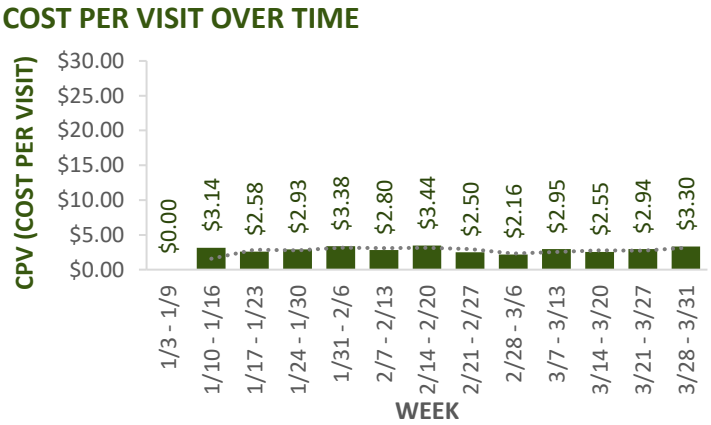
- Given that VTS was fairly stable over time, consider dropping lower-performing ads early on (e.g., after the first month).
- Given that CPV for Facebook/Instagram ads and the YouTube video showed some stability, consider dropping more costly ads early on.

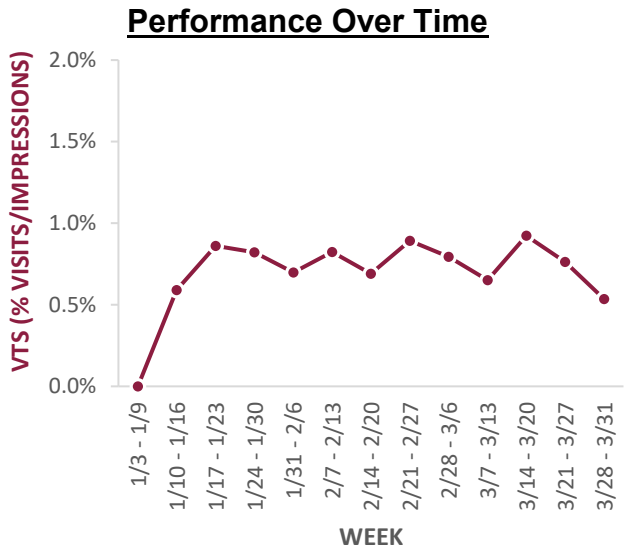
Figure 6. LAVIDGE Metrics for the ***Stargazing Ad*** on **Facebook & Instagram** Targeted to *Seniors*

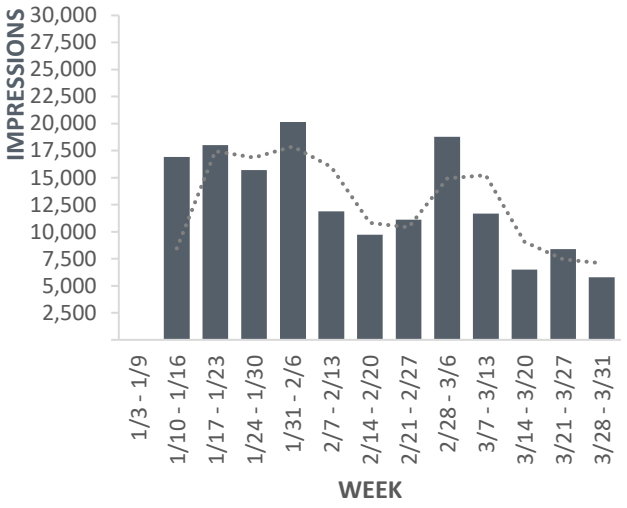


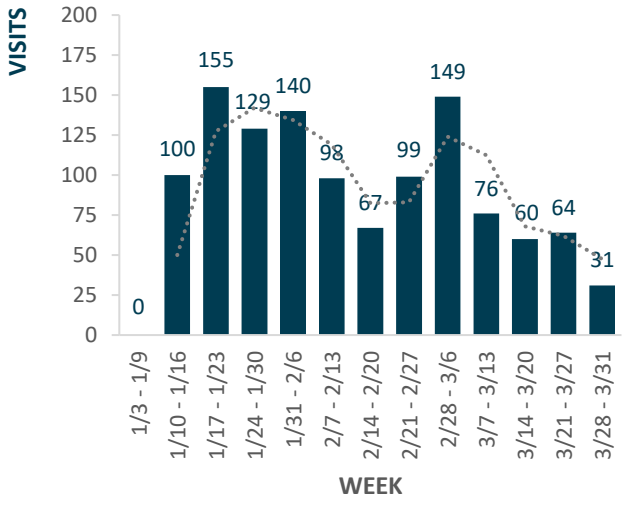
Overall Performance

Impressions	154,520
Visits: # site visitors = # CT + # VT	1,168
Actions	3
VTS: % of visits/impressions	0.76%
CNV: % of actions/visits	0.26%
Spend: total spent on media	$3,308.28
CPM: cost per 1,000 impressions	$21.41
CPV: cost per visit	$2.83
CPA: cost per action	$1,102.76









Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

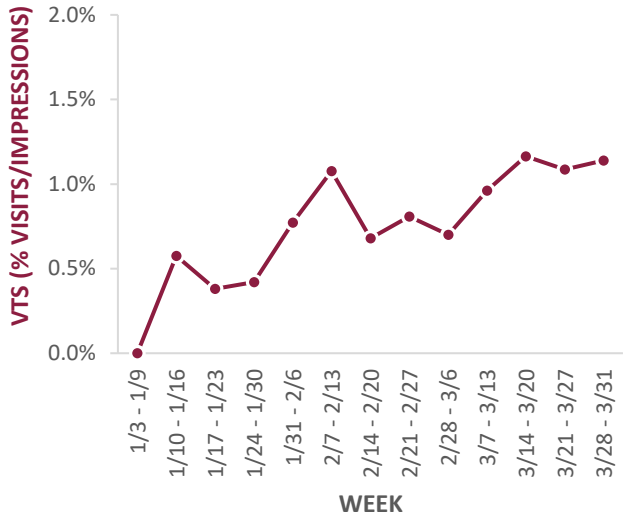
Figure 7. LAVIDGE Metrics for the ***Light Pollution 1 Ad*** on **Facebook & Instagram** Targeted to *Seniors*

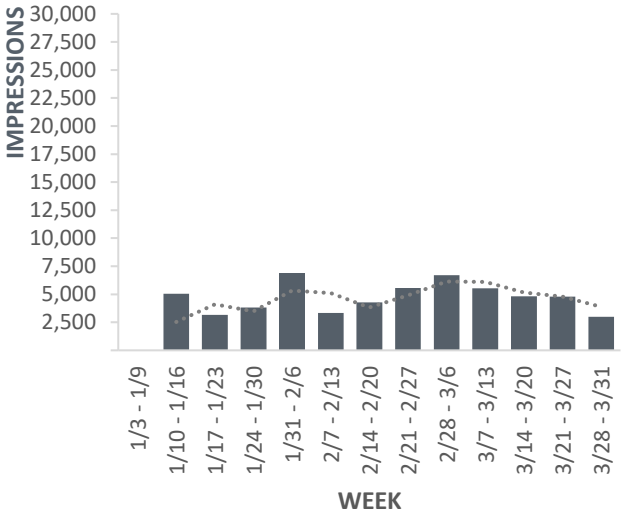


Overall Performance

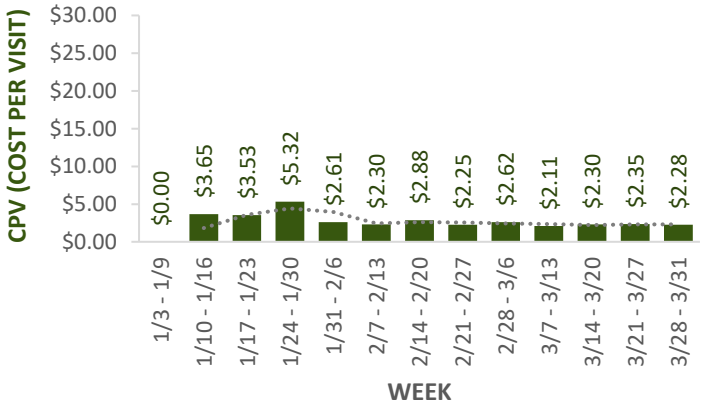
Impressions	56,867
Visits: # site visitors = # CT + # VT	462
Actions	2
VTS: % of visits/impressions	0.81%
CNV: % of actions/visits	0.43%
Spend: total spent on media	$1,202.88
CPM: cost per 1,000 impressionss	$21.15
CPV: cost per visit	$2.60
CPA: cost per action	$601.44

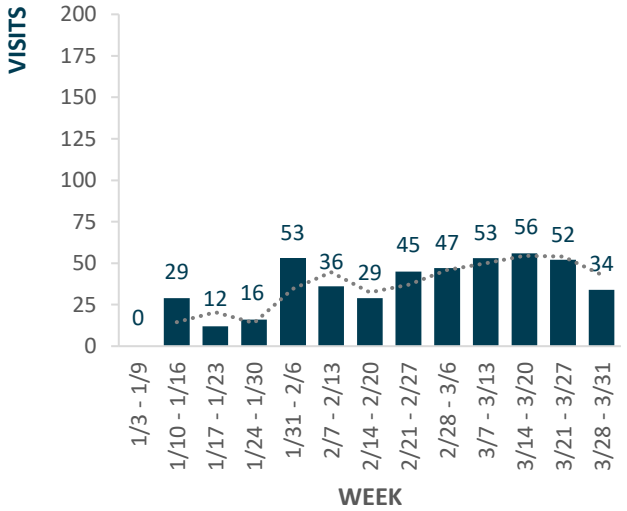
Performance Over Time





COST PER VISIT OVER TIME





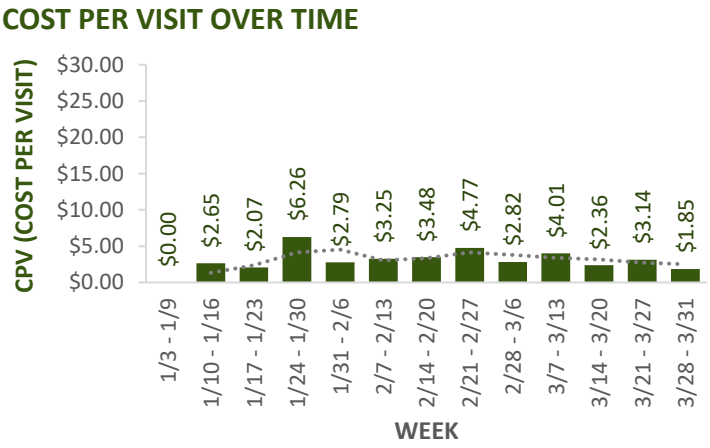
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

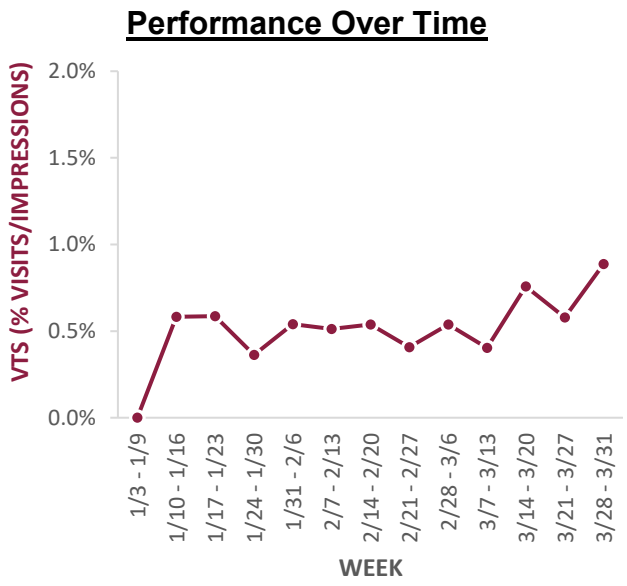
Figure 8. LAVIDGE Metrics for the ***Light Pollution 2 Ad*** on **Facebook & Instagram** Targeted to *Seniors*

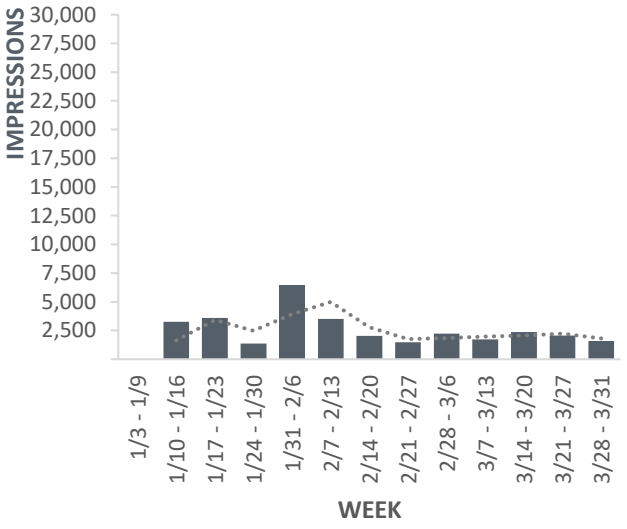


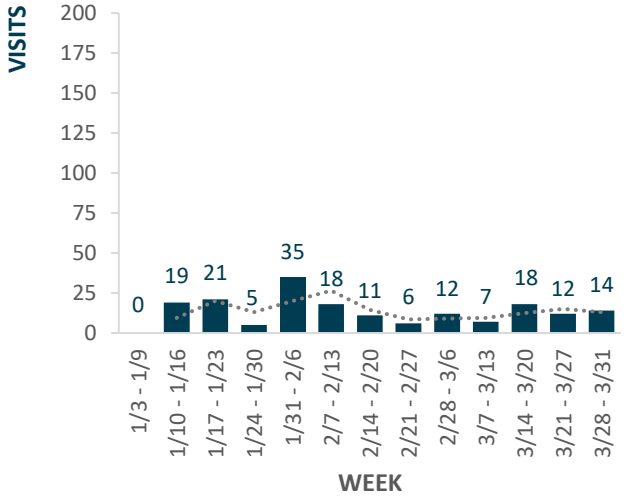
Overall Performance

Impressions	31,716
Visits: # site visitors = # CT + # VT	178
Actions	1
VTS: % of visits/impressions	0.56%
CNV: % of actions/visits	0.56%
Spend: total spent on media	$516.25
CPM: cost per 1,000 impressions	$16.28
CPV: cost per visit	$2.90
CPA: cost per action	$516.25









Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

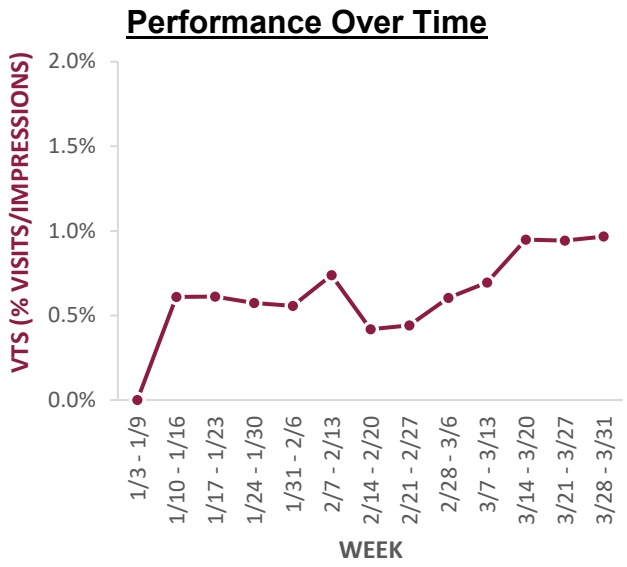
Figure 9. LAVIDGE Metrics for the ***Bird Migration Ad*** on **Facebook & Instagram** Targeted to *Seniors*

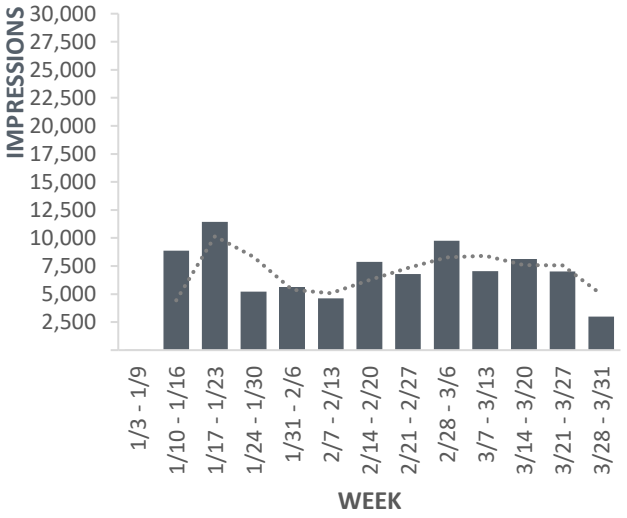


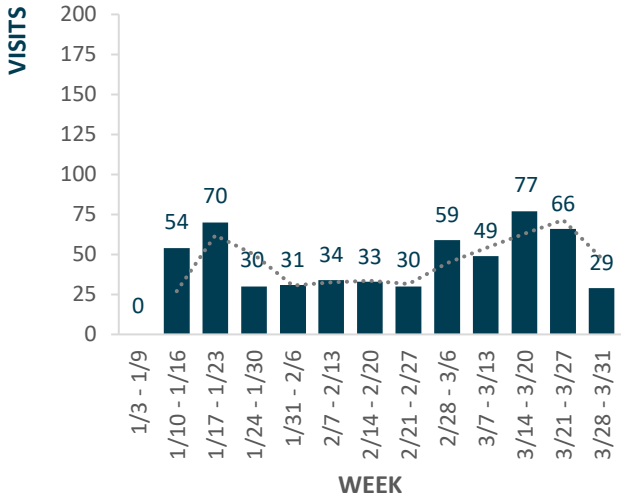
Overall Performance

Impressions	85,326
Visits: # site visitors = # CT + # VT	562
Actions	4
VTS: % of visits/impressions	0.66%
CNV: % of actions/visits	0.71%
Spend: total spent on media	$1,389.79
CPM: cost per 1,000 impressions	$16.29
CPV: cost per visit	$2.47
CPA: cost per action	$347.45









Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

Figure 10. LAVIDGE Metrics for the ***Carousel Ad*** on **Facebook & Instagram** Targeted to *Seniors*

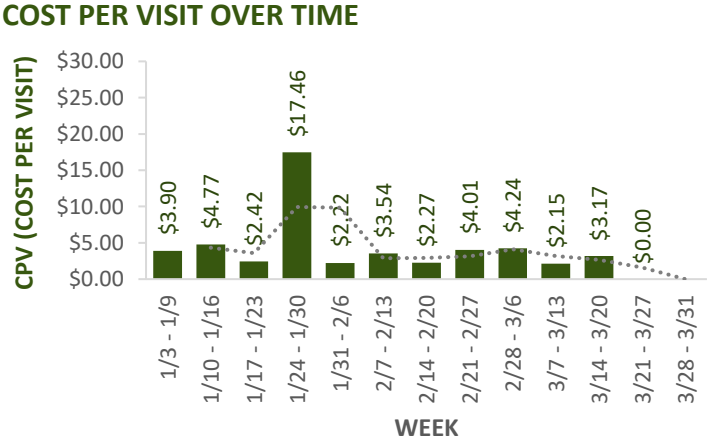


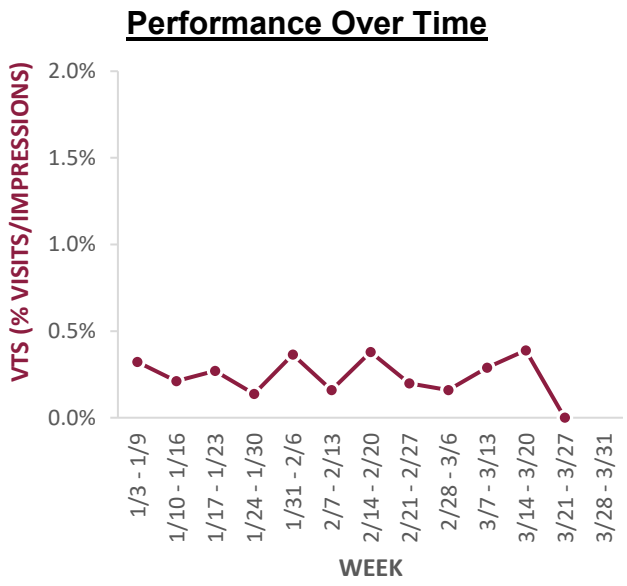


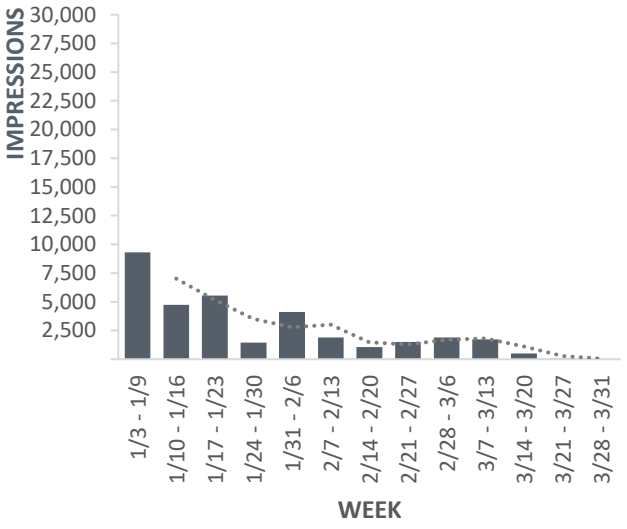


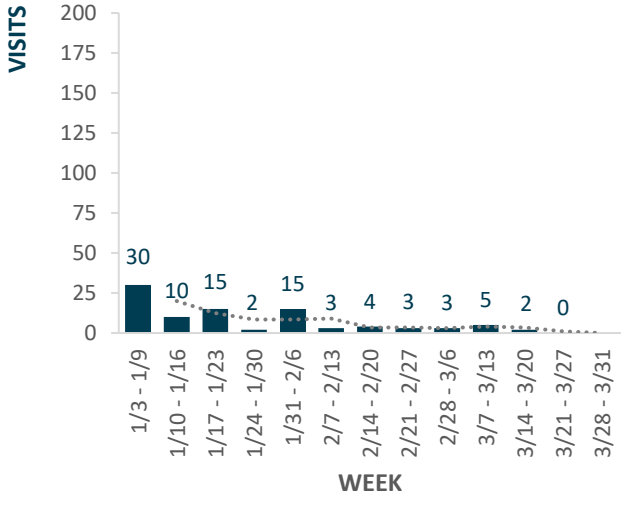
Overall Performance

Impressions	33,794
Visits: # site visitors = # CT + # VT	92
Actions	0
VTS: % of visits/impressions	0.27%
CNV: % of actions/visits	0.00%
Spend: total spent on media	$333.09
CPM: cost per 1,000 impressions	$9.86
CPV: cost per visit	$3.62
CPA: cost per action	$0.00









Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

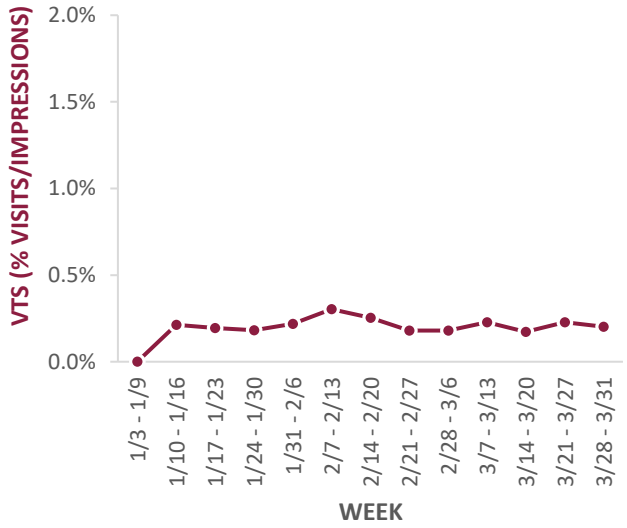
Figure 11. LAVIDGE Metrics for the ***Biodiversity Ad*** on **Facebook & Instagram** Targeted to *Parents of Teens*

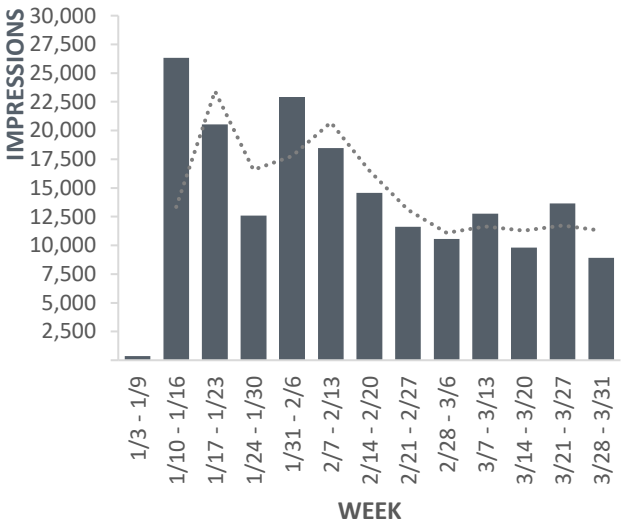


Overall Performance

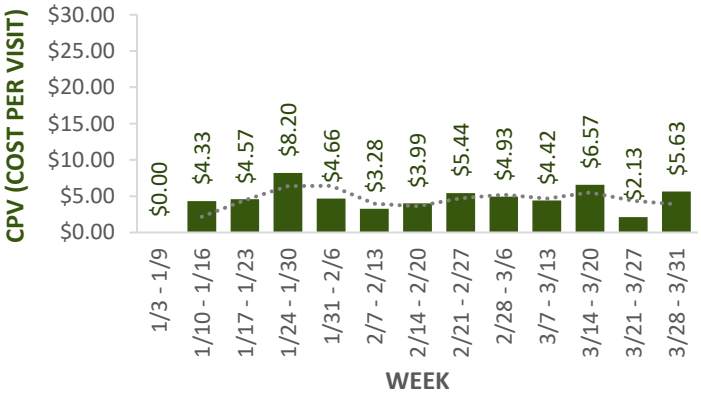
Impressions	183,127
Visits: # site visitors = # CT + # VT	397
Actions	0
VTS: % of visits/impressions	0.22%
CNV: % of actions/visits	N/A
Spend: total spent on media	$1,936.29
CPM: cost per 1,000 impressions	$10.57
CPV: cost per visit	$4.88
CPA: cost per action	N/A

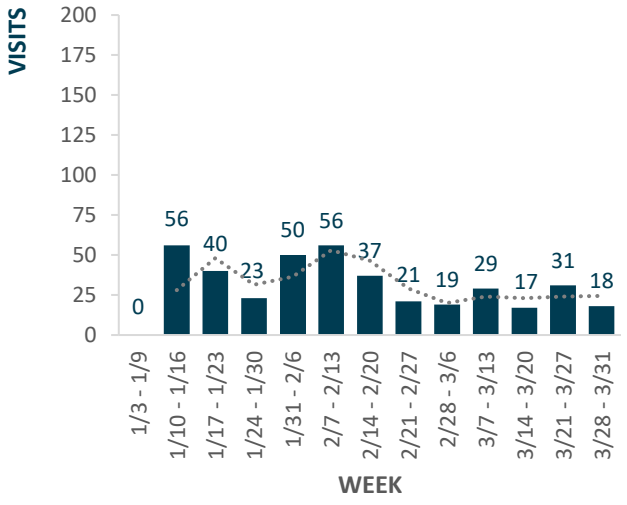
Performance Over Time





COST PER VISIT OVER TIME





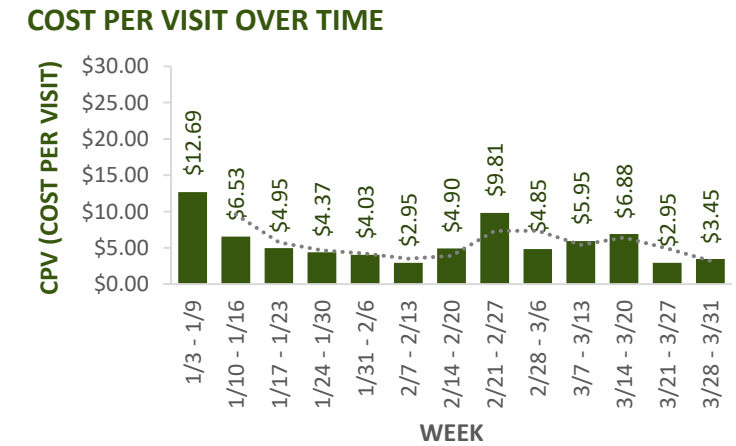
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

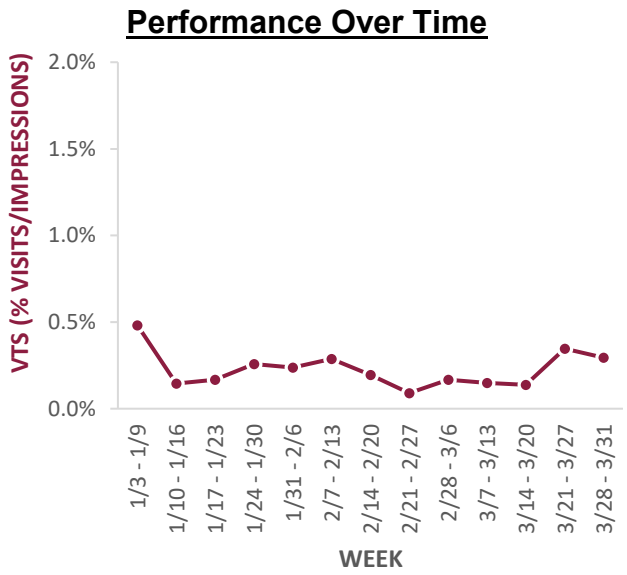
Figure 12. LAVIDGE Metrics for the ***Pipe Materials Ad*** on **Facebook & Instagram** Targeted to *Parents of Teens*

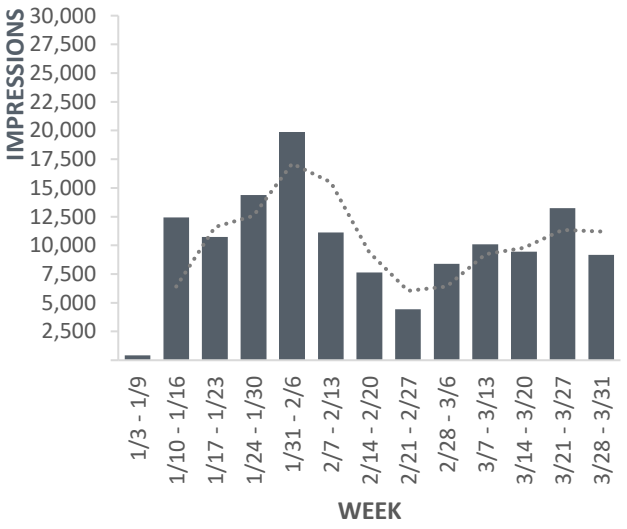


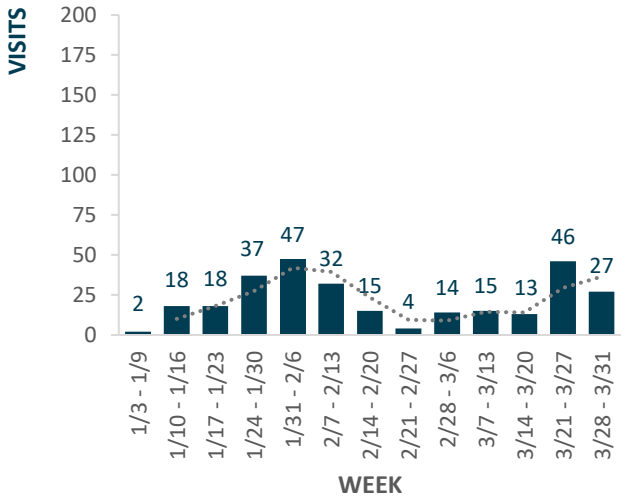
Overall Performance

Impressions	131,387
Visits: # site visitors = # CT + # VT	288
Actions	0
VTS: % of visits/impressions	0.22%
CNV: % of actions/visits	N/A
Spend: total spent on media	$1,265.92
CPM: cost per 1,000 impressions	$9.64
CPV: cost per visit	$4.40
CPA: cost per action	N/A









Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

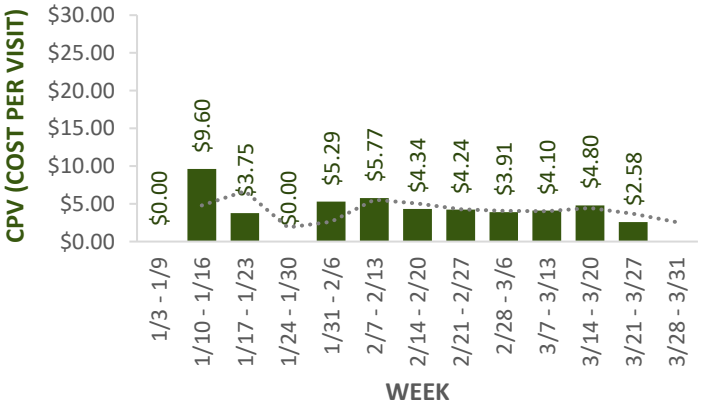
Figure 13. LAVIDGE Metrics for the ***Plant Species Ad*** on **Facebook & Instagram** Targeted to *Parents of Teens*



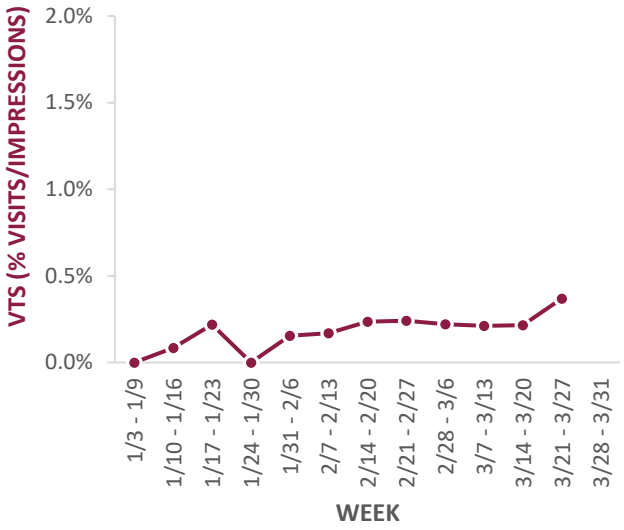
Overall Performance

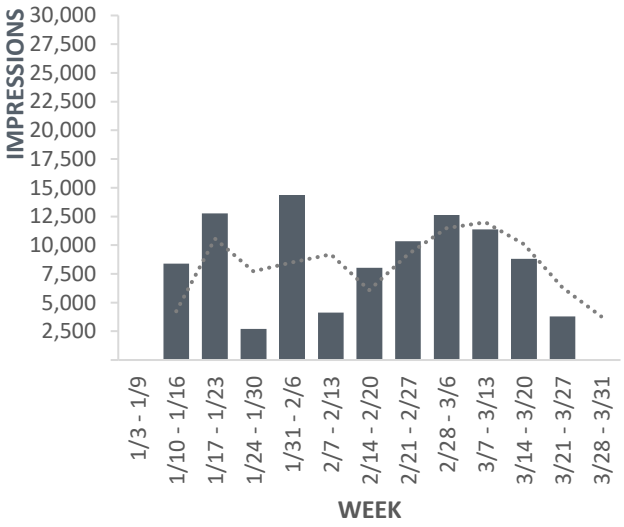
Impressions	97,312
Visits: # site visitors = # CT + # VT	193
Actions	0
VTS: % of visits/impressions	0.20%
CNV: % of actions/visits	N/A
Spend: total spent on media	$888.64
CPM: cost per 1,000 impressions	$9.13
CPV: cost per visit	$4.60
CPA: cost per action	N/A

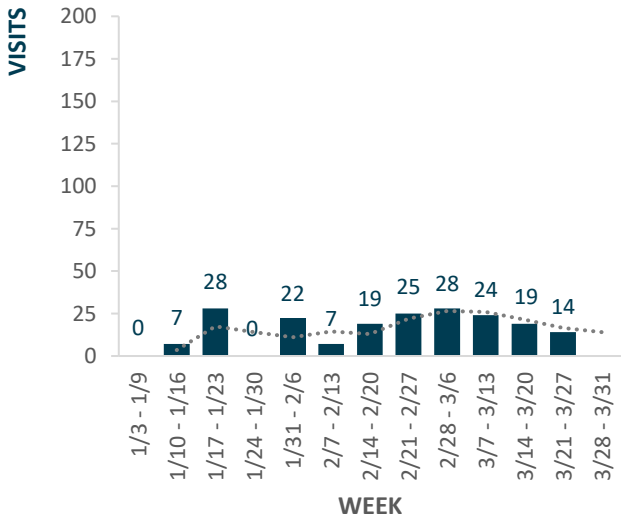
COST PER VISIT OVER TIME



Performance Over Time







Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

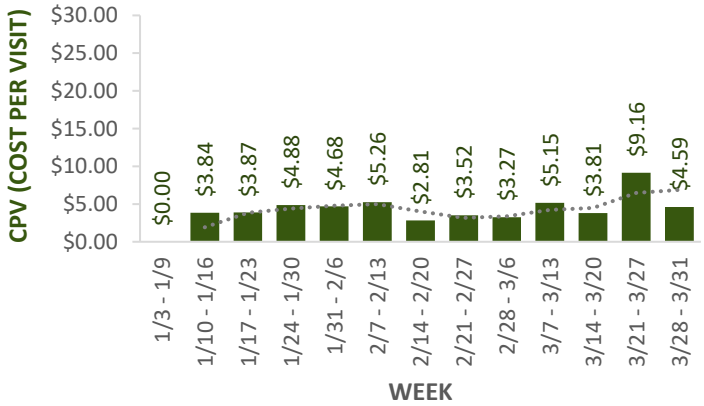
Figure 14. LAVIDGE Metrics for the ***Pollinators Ad*** on **Facebook & Instagram** Targeted to *Parents of Teens*



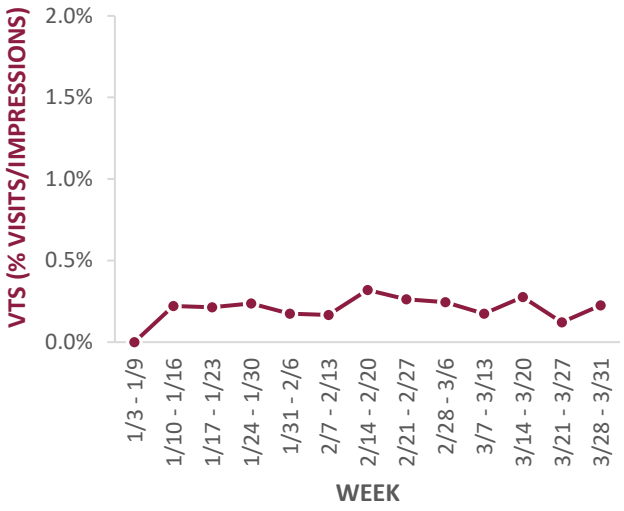
Overall Performance

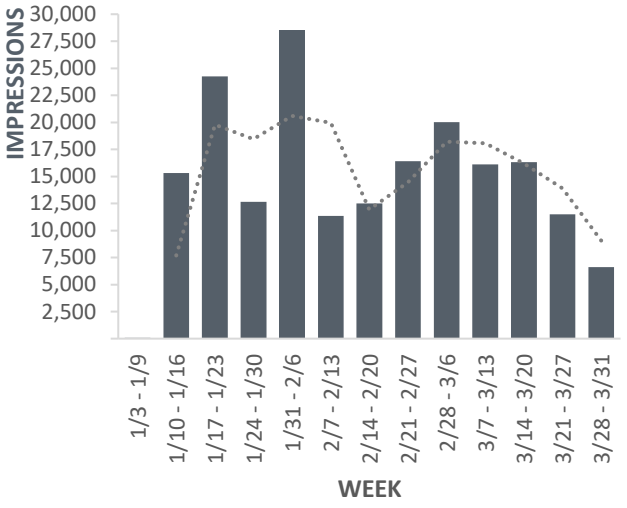
Impressions	191,625
Visits: # site visitors = # CT + # VT	419
Actions	0
VTS: % of visits/impressions	0.22%
CNV: % of actions/visits	N/A
Spend: total spent on media	$1,751.86
CPM: cost per 1,000 impressions	$9.14
CPV: cost per visit	$4.18
CPA: cost per action	N/A

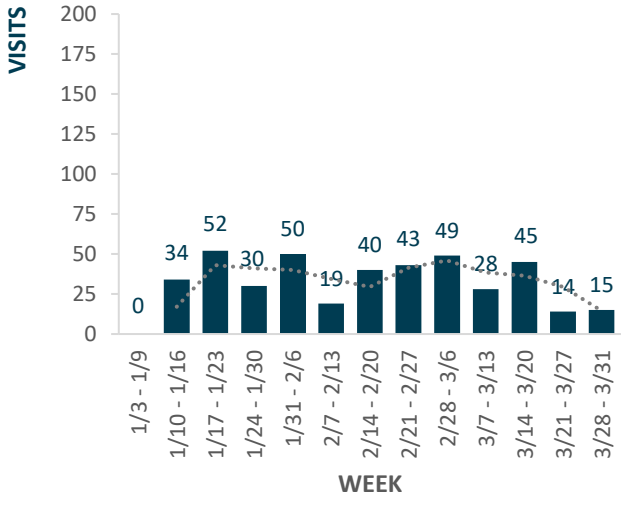
COST PER VISIT OVER TIME



Performance Over Time







Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

Figure 15. LAVIDGE Metrics for the ***Carousel Ads*** on **Facebook & Instagram** Targeted to *Parents of Teens*

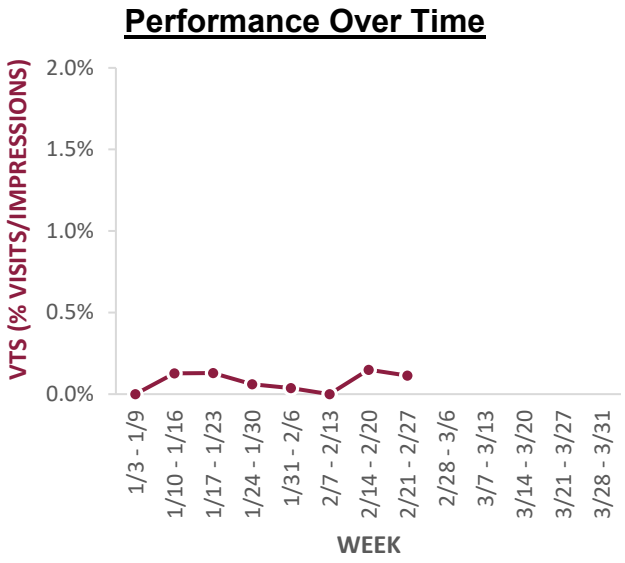


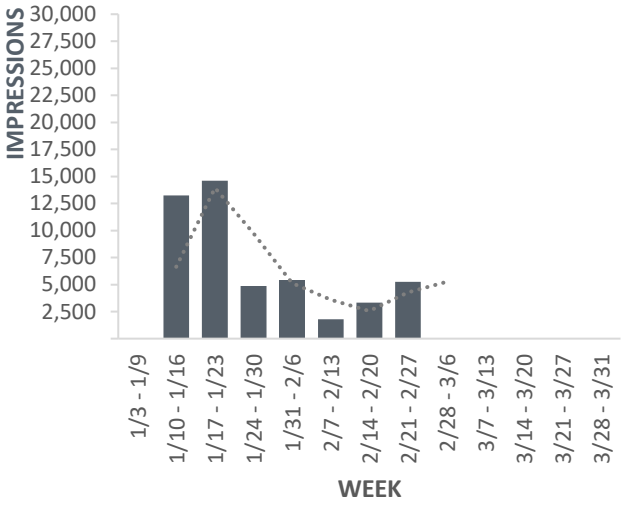


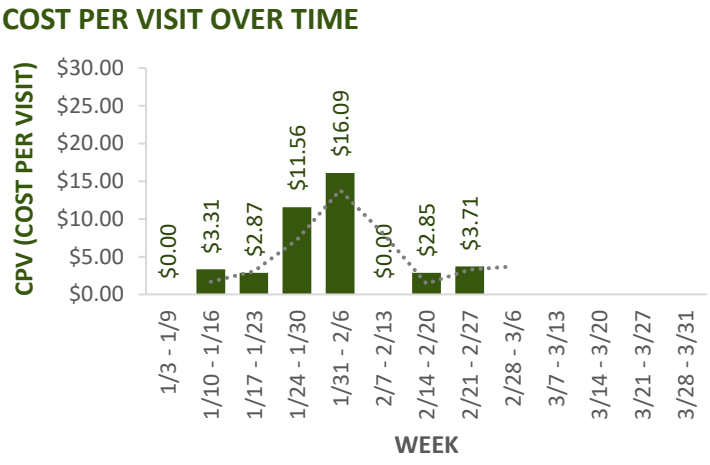


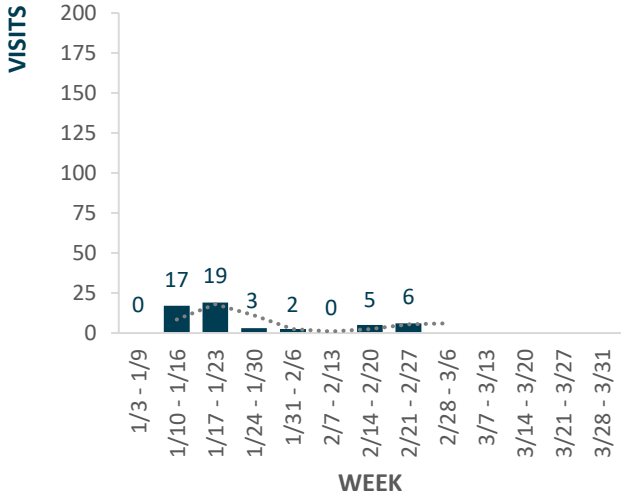
Overall Performance[3]

Impressions	48,528
Visits: # site visitors = # CT + # VT	52
Actions	0
VTS: % of visits/impressions	0.11%
CNV: % of actions/visits	N/A
Spend: total spent on media	$227.80
CPM: cost per 1,000 impressions	$4.69
CPV: cost per visit	$4.38
CPA: cost per action	N/A









Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

[3] Values differ from LAVIDGE's final report, but are based on the online dashboard provided by LAVIDGE.

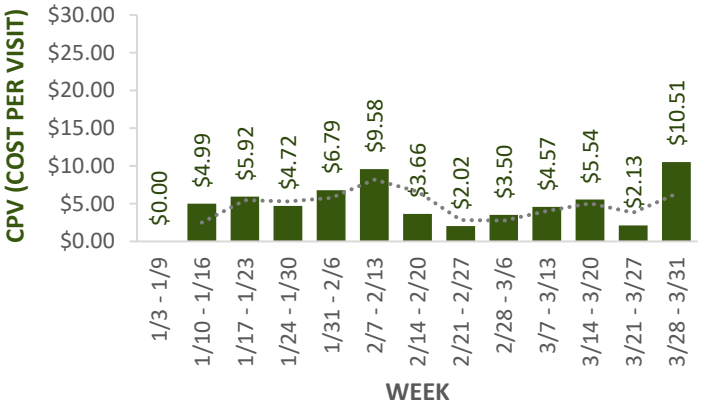
Figure 16 LAVIDGE Metrics for the ***Biodiversity Ad*** on **Facebook & Instagram** Targeted to *Homeschoolers*



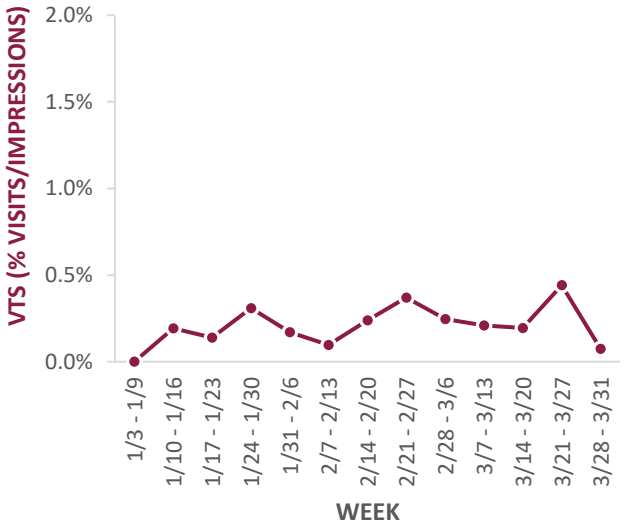
Overall Performance

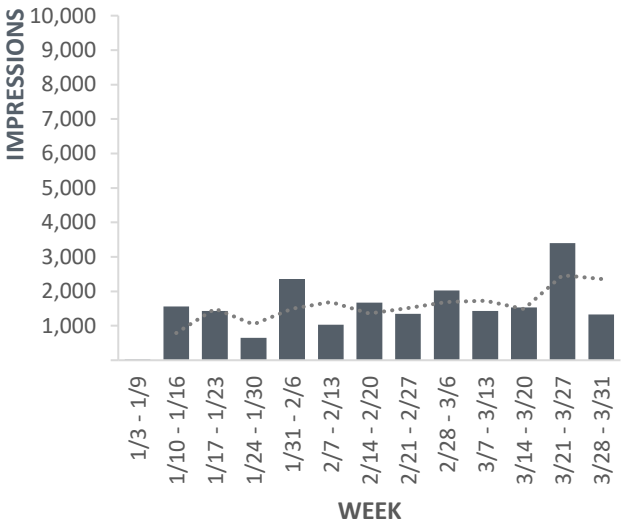
Impressions	19,778
Visits: # site visitors = # CT + # VT	48
Actions	0
VTS: % of visits/impressions	0.24%
CNV: % of actions/visits	N/A
Spend: total spent on media	$188.60
CPM: cost per 1,000 impressions	$9.54
CPV: cost per visit	$3.93
CPA: cost per action	N/A

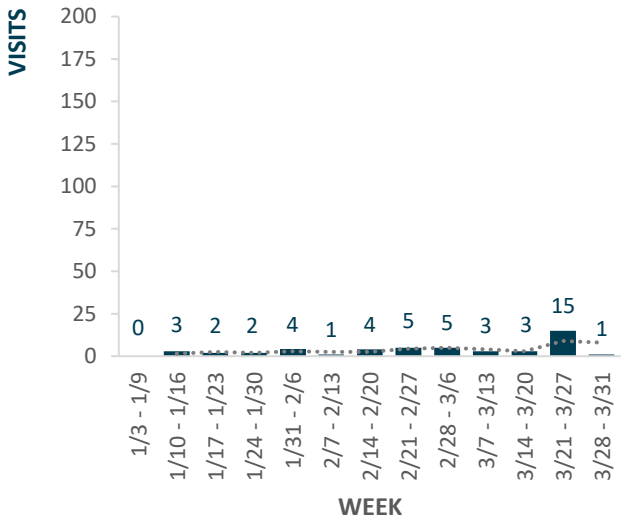
COST PER VISIT OVER TIME



Performance Over Time

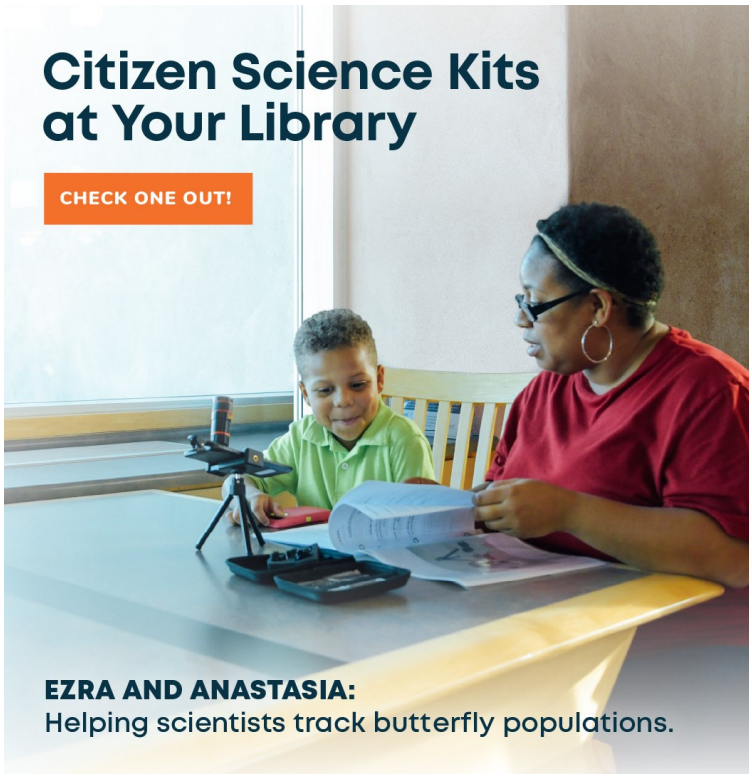






Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

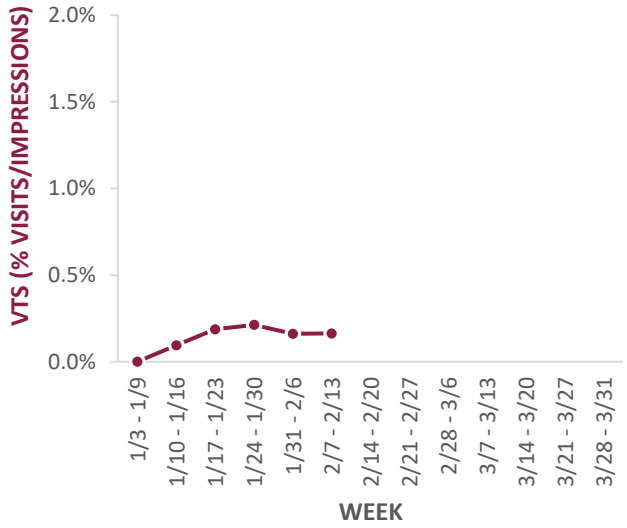
Figure 17. LAVIDGE Metrics for the ***Butterfly Ad*** on **Facebook & Instagram** Targeted to *Homeschoolers*

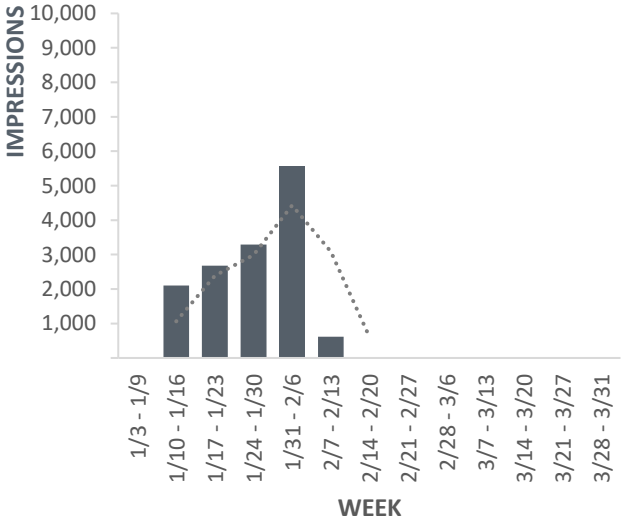


Overall Performance

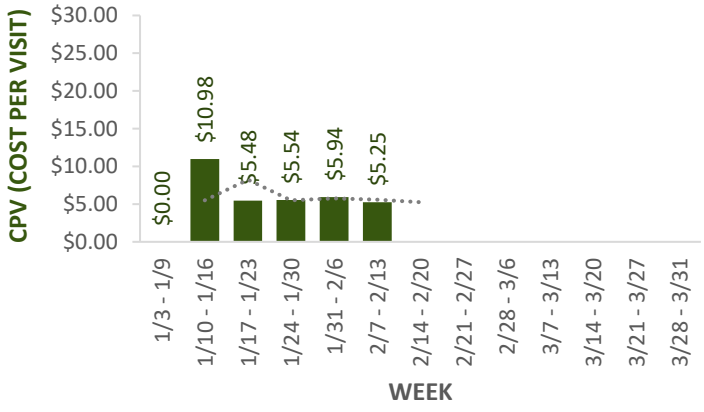
Impressions	14,275
Visits: # site visitors = # CT + # VT	24
Actions	0
VTS: % of visits/impressions	0.17%
CNV: % of actions/visits	N/A
Spend: total spent on media	$148.53
CPM: cost per 1,000 impressions	$10.41
CPV: cost per visit	$6.19
CPA: cost per action	N/A

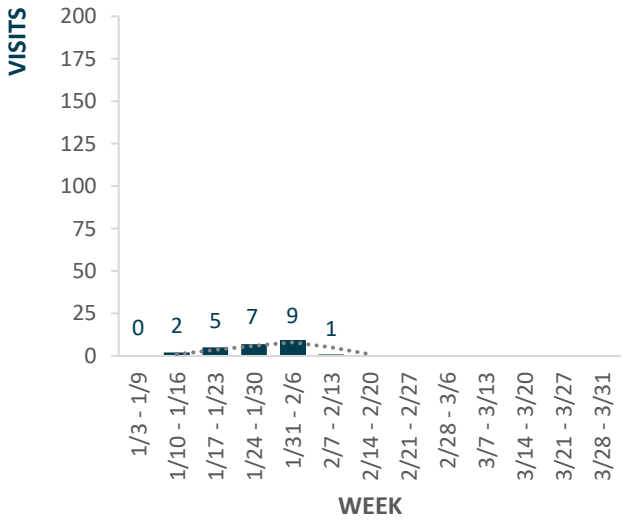
Performance Over Time





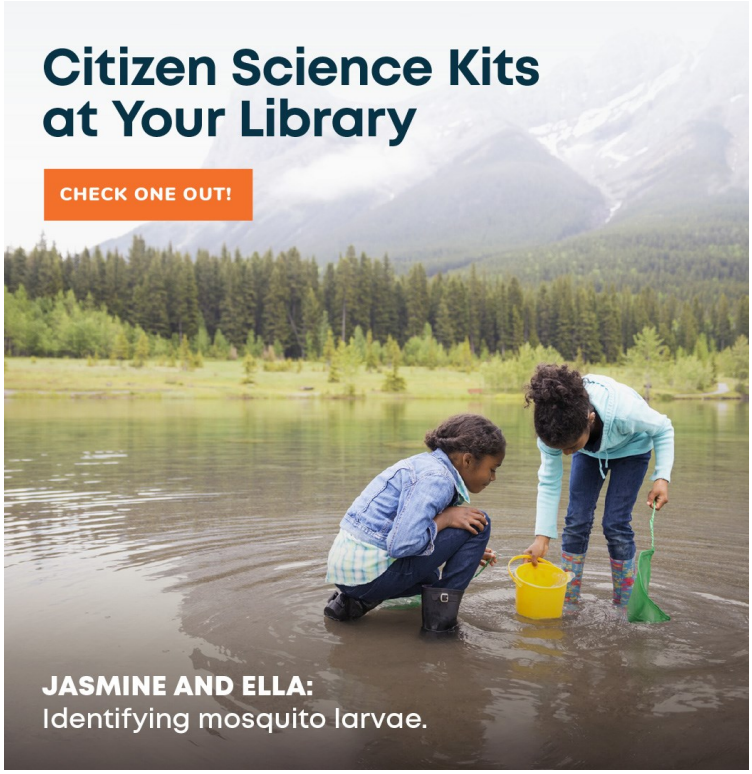
COST PER VISIT OVER TIME





Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

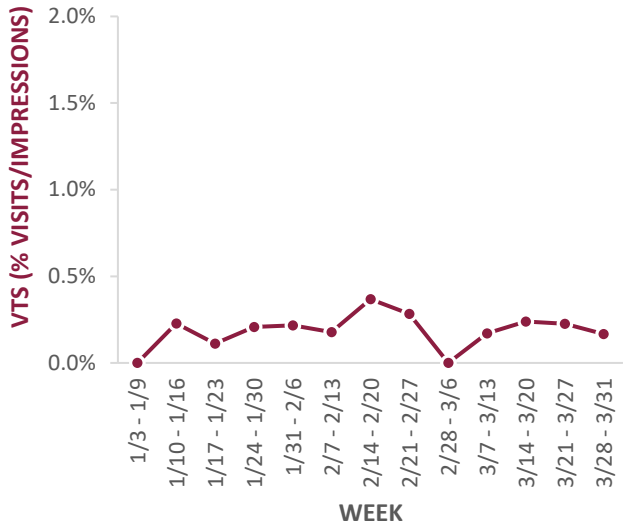
Figure 18. LAVIDGE Metrics for the ***Mosquito Ad*** on **Facebook & Instagram** Targeted to *Homeschoolers*

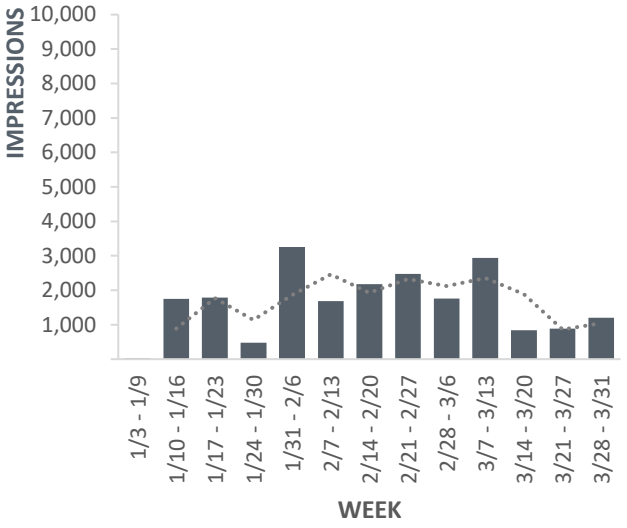


Overall Performance

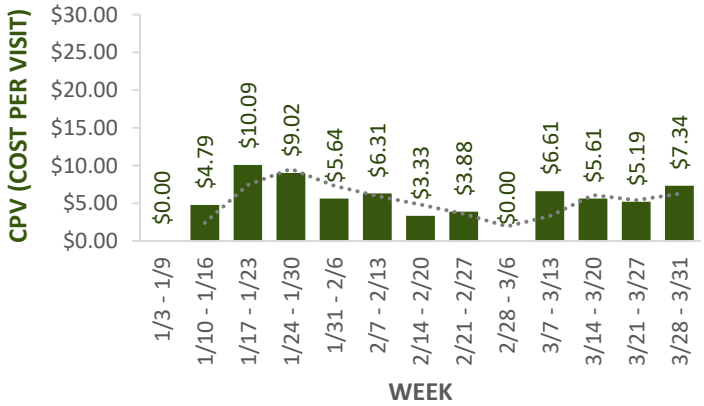
Impressions	21,250
Visits: # site visitors = # CT + # VT	43
Actions	0
VTS: % of visits/impressions	0.20%
CNV: % of actions/visits	N/A
Spend: total spent on media	$252.24
CPM: cost per 1,000 impressions	$5.87
CPV: cost per visit	$11.87
CPA: cost per action	N/A

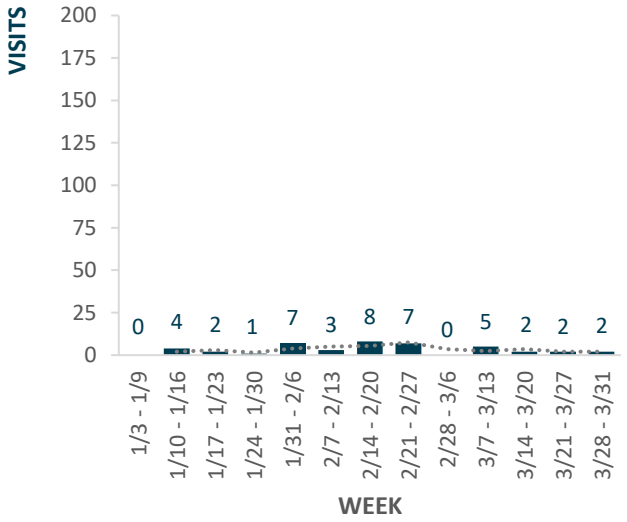
Performance Over Time





COST PER VISIT OVER TIME





Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

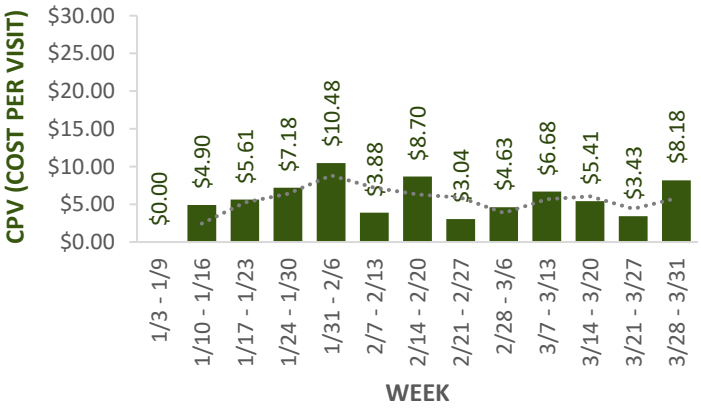
Figure 19. LAVIDGE Metrics for the ***Pollinators Ad*** on **Facebook & Instagram** Targeted to *Homeschoolers*



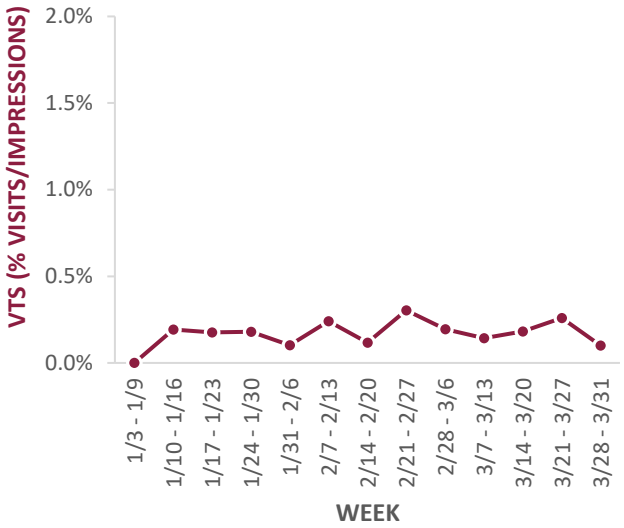
Overall Performance

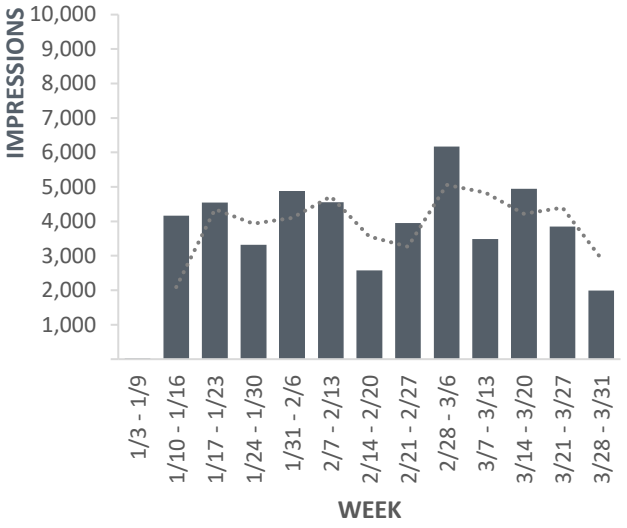
Impressions	48,450
Visits: # site visitors = # CT + # VT	91
Actions	0
VTS: % of visits/impressions	0.19%
CNV: % of actions/visits	N/A
Spend: total spent on media	$474.91
CPM: cost per 1,000 impressions	$9.80
CPV: cost per visit	$5.22
CPA: cost per action	N/A

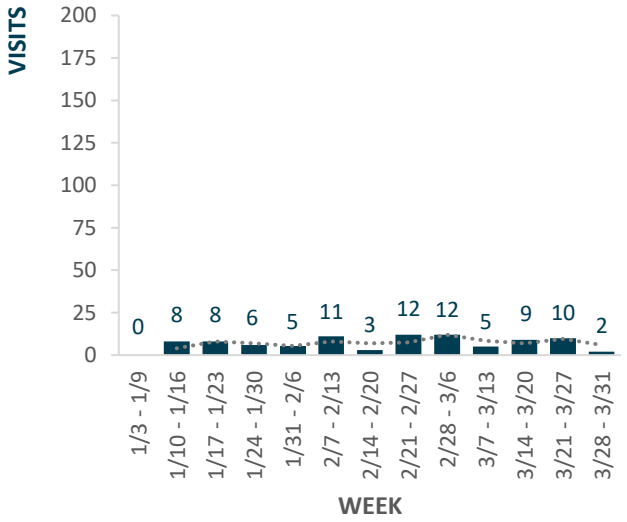
COST PER VISIT OVER TIME



Performance Over Time







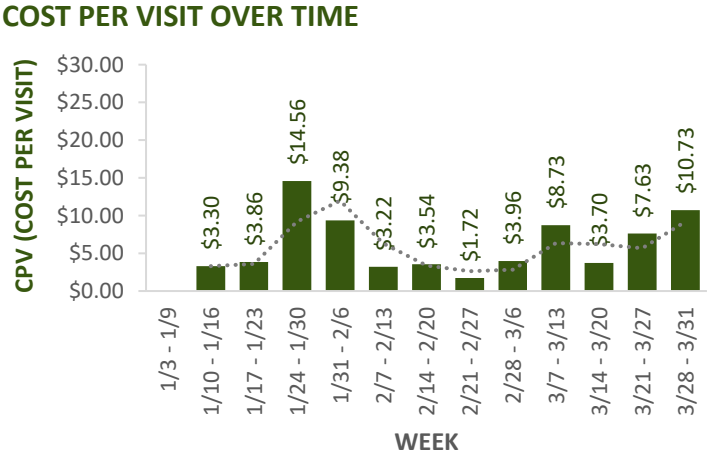
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

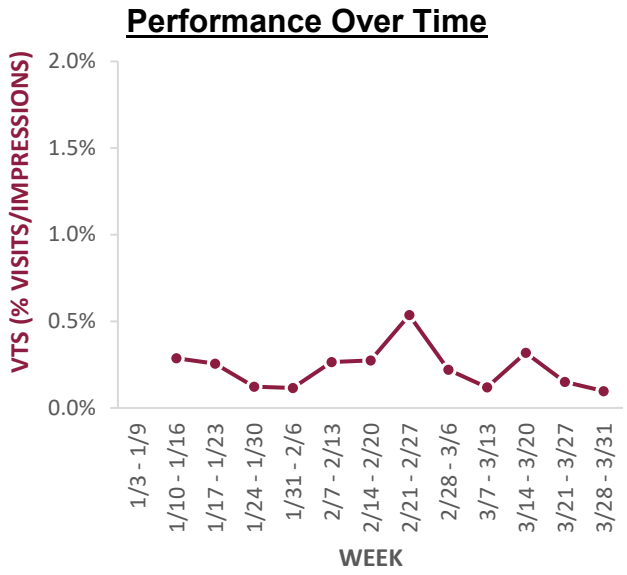
Figure 20. LAVIDGE Metrics for the ***Winter Ad*** on **Facebook & Instagram** Targeted to *Homeschoolers*

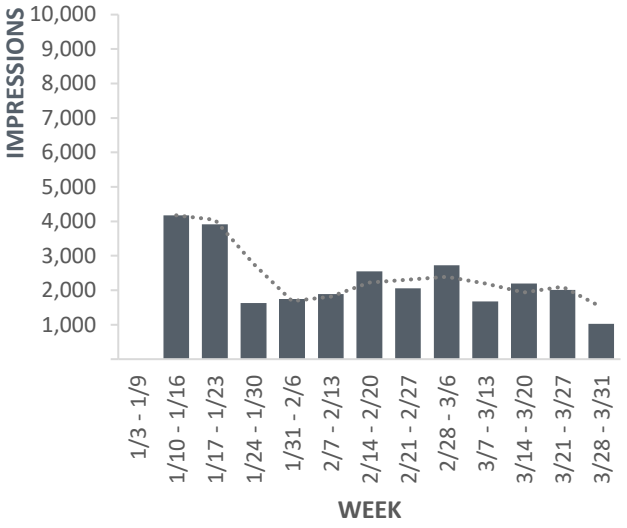


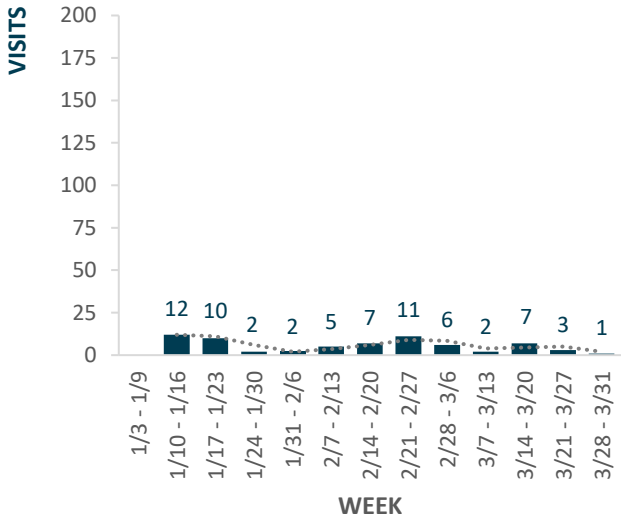
Overall Performance

Impressions	27,574
Visits: # site visitors = # CT + # VT	68
Actions	0
VTS: % of visits/impressions	0.25%
CNV: % of actions/visits	N/A
Spend: total spent on media	$286.55
CPM: cost per 1,000 impressions	$10.39
CPV: cost per visit	$4.21
CPA: cost per action	N/A









Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

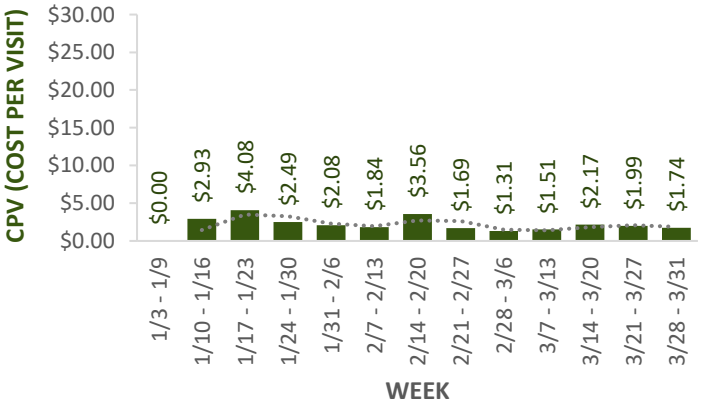
Figure 21. LAVIDGE Metrics for the ***Pollinators 1 Ad*** on **Facebook & Instagram** **Retargeting** Targeted to *Homeschoolers*



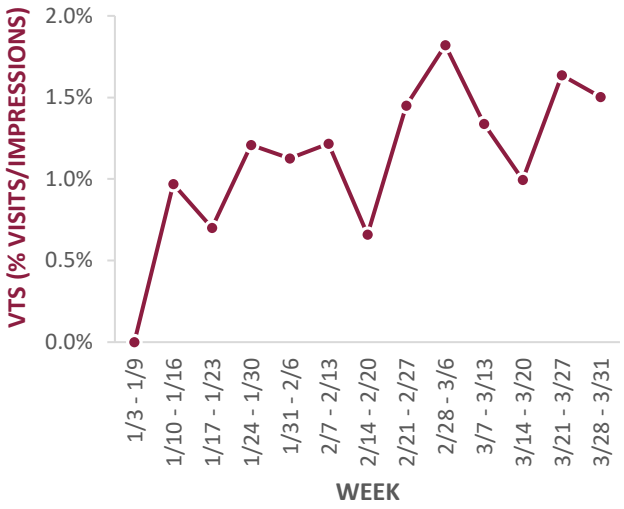
Overall Performance

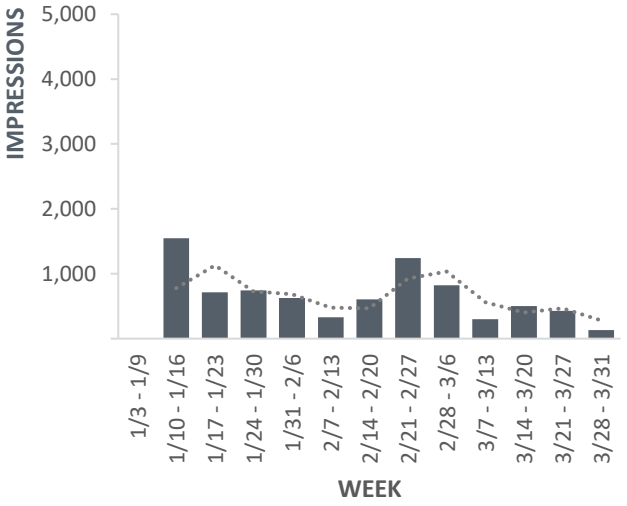
Impressions	7,996
Visits: # site visitors = # CT + # VT	95
Actions	0
VTS: % of visits/impressions	1.19%
CNV: % of actions/visits	N/A
Spend: total spent on media	$207.45
CPM: cost per 1,000 impressions	$25.94
CPV: cost per visit	$2.18
CPA: cost per action	N/A

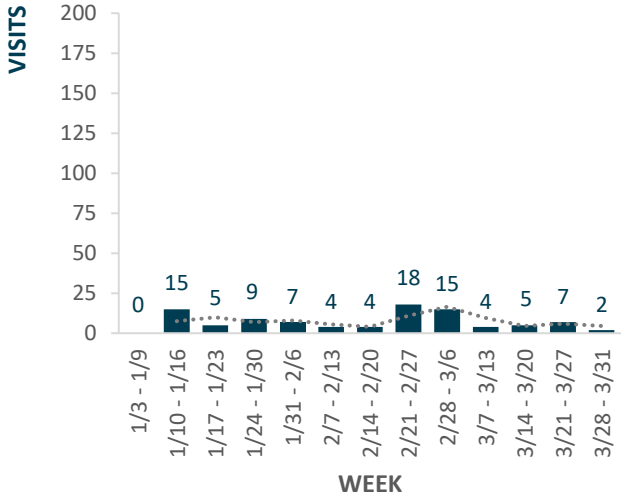
COST PER VISIT OVER TIME



Performance Over Time







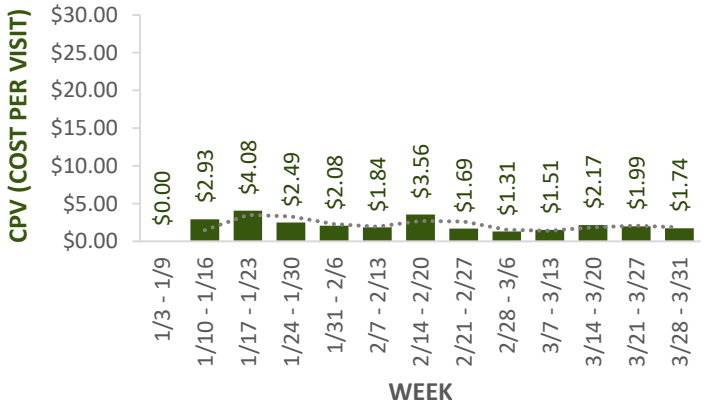
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

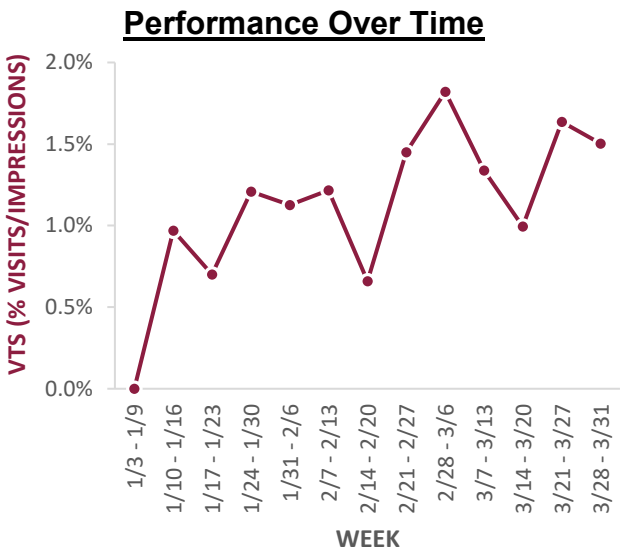
Figure 22. LAVIDGE Metrics for the ***Pollinators 2 Ad*** on **Facebook & Instagram** Retargeting Targeted to *Parents of Teens*

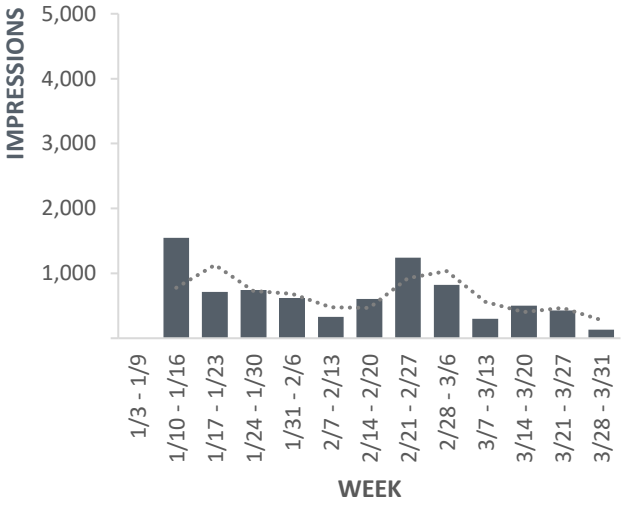


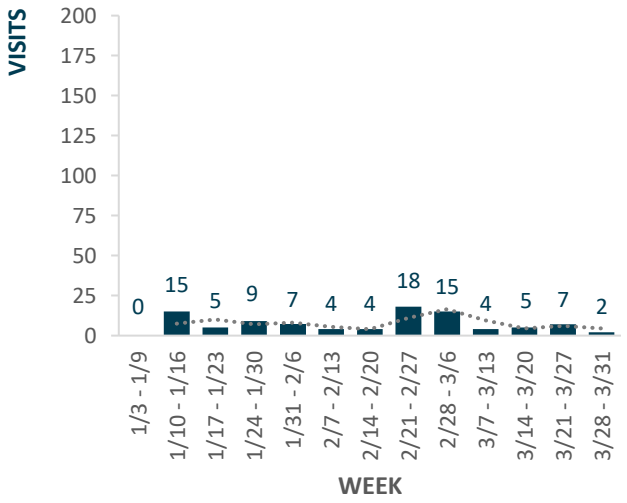
Overall Performance

Impressions	7,996
Visits: # site visitors = # CT + # VT	95
Actions	0
VTS: % of visits/impressions	1.19%
CNV: % of actions/visits	N/A
Spend: total spent on media	$207.45
CPM: cost per 1,000 impressions	$25.94
CPV: cost per visit	$2.18
CPA: cost per action	N/A









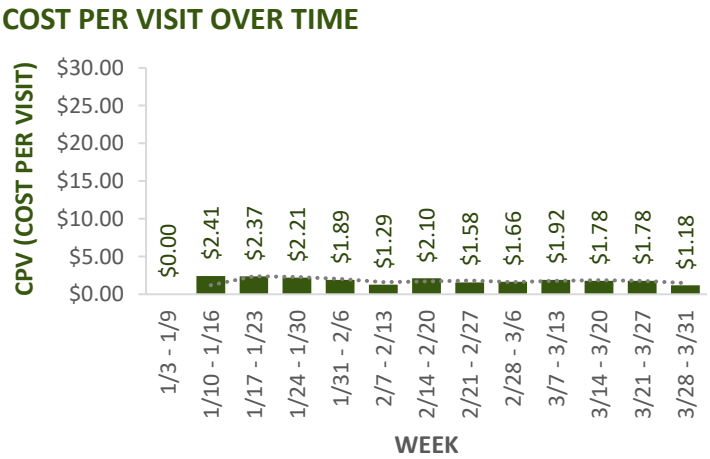
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

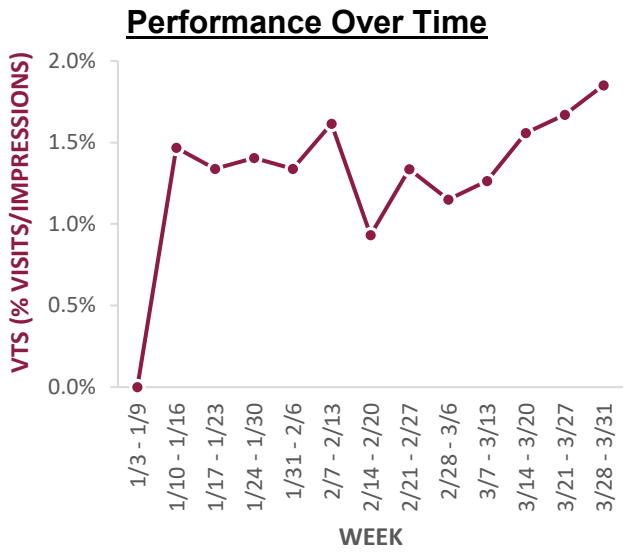
Figure 23. LAVIDGE Metrics for the ***Stargazing Ad*** on **Facebook & Instagram** Retargeting Targeted to *Seniors*

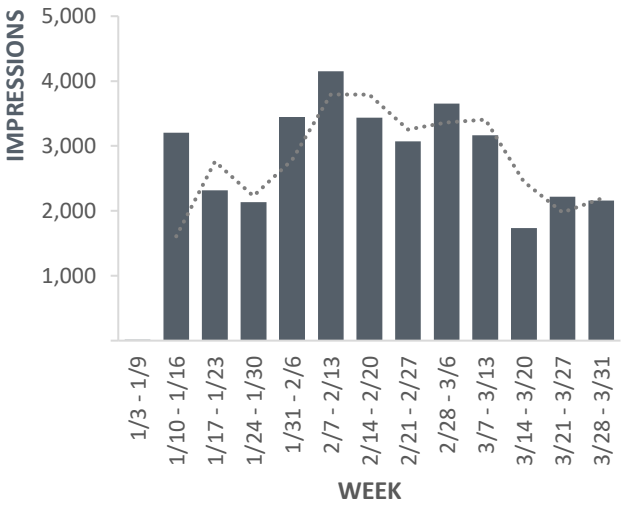


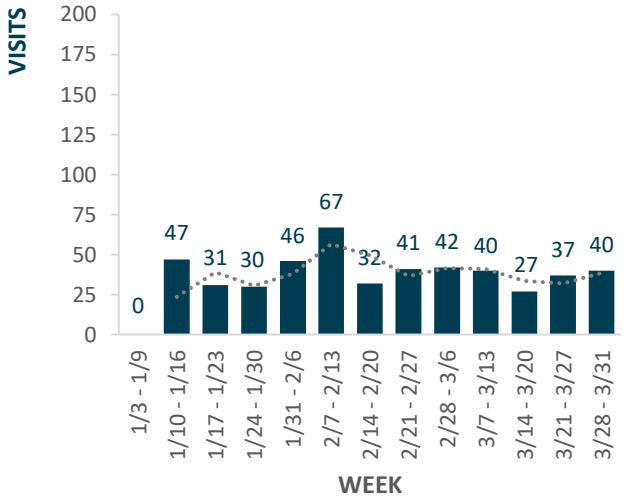
Overall Performance

Impressions	34,690
Visits: # site visitors = # CT + # VT	480
Actions	9
VTS: % of visits/impressions	1.38%
CNV: % of actions/visits	1.88%
Spend: total spent on media	$867.03
CPM: cost per 1,000 impressions	$24.99
CPV: cost per visit	$1.81
CPA: cost per action	$96.34









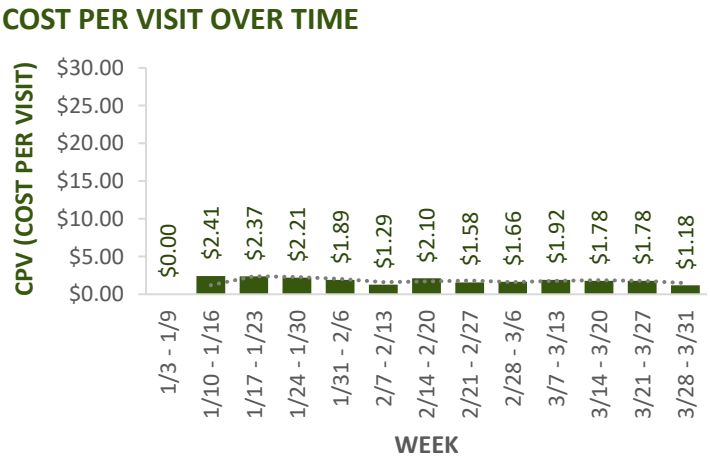
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

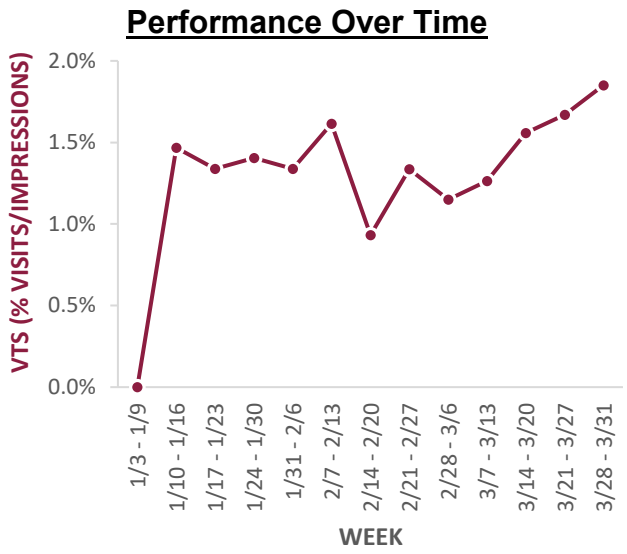
Figure 24. LAVIDGE Metrics for the ***Bird Migration Ad*** on **Facebook & Instagram** Retargeting Targeted to *Seniors*

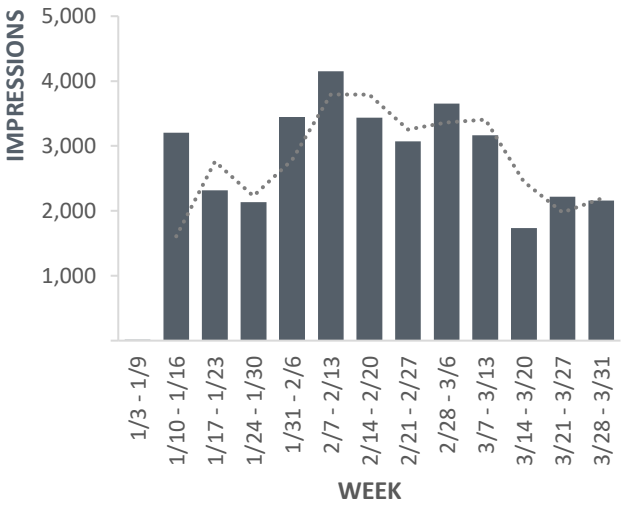


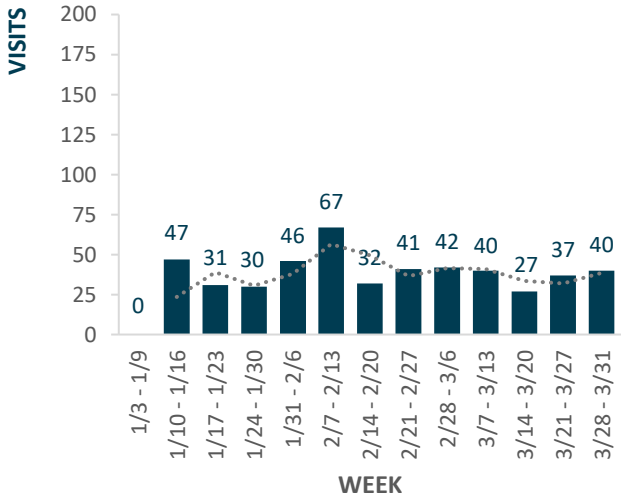
Overall Performance

Impressions	13,308
Visits: # site visitors = # CT + # VT	139
Actions	2
VTS: % of visits/impressions	1.04%
CNV: % of actions/visits	1.44%
Spend: total spent on media	$328.49
CPM: cost per 1,000 impressions	$24.68
CPV: cost per visit	$2.36
CPA: cost per action	$164.24



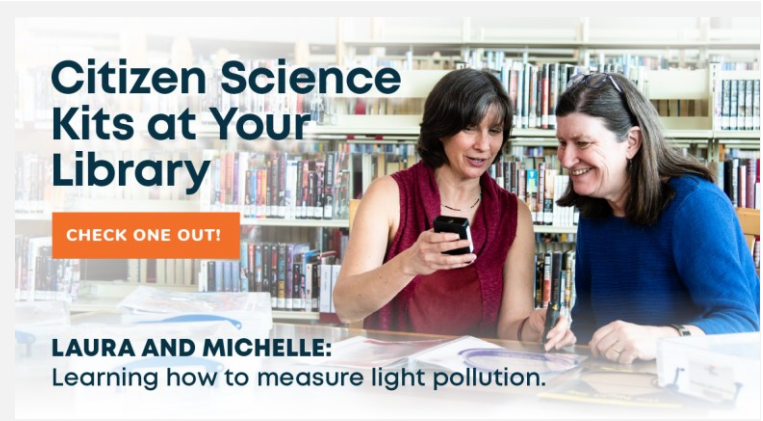






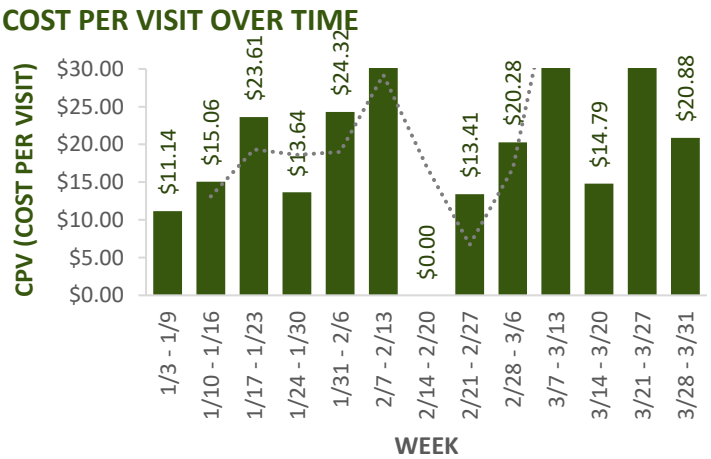
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

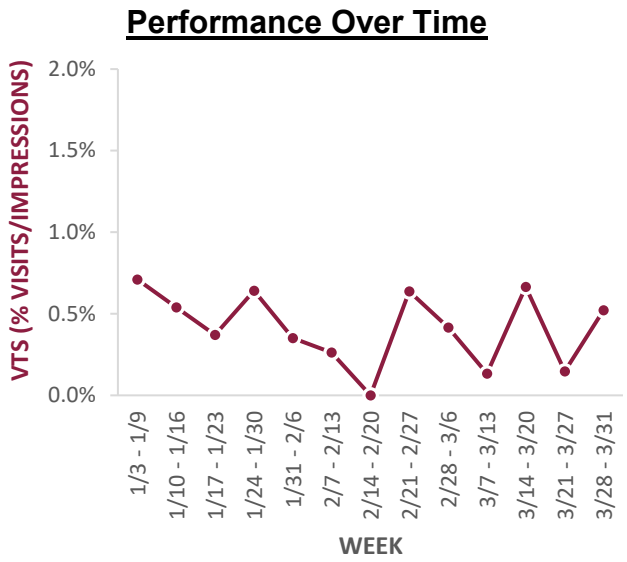
Figure 25. LAVIDGE Metrics for the ***Light Pollution Ad*** on **LinkedIn** Targeted to *Educators*

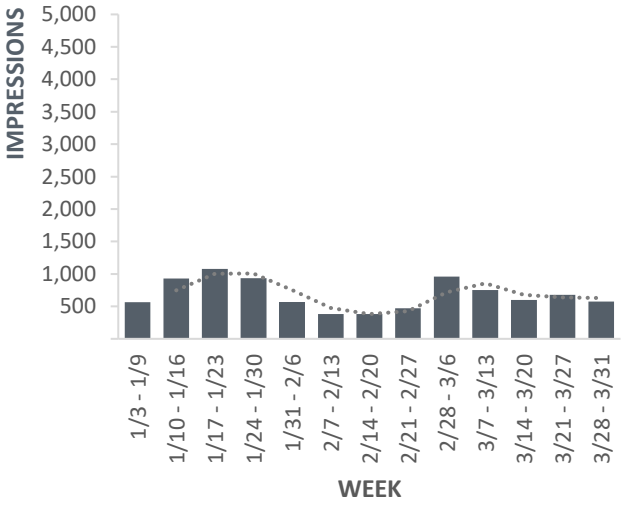


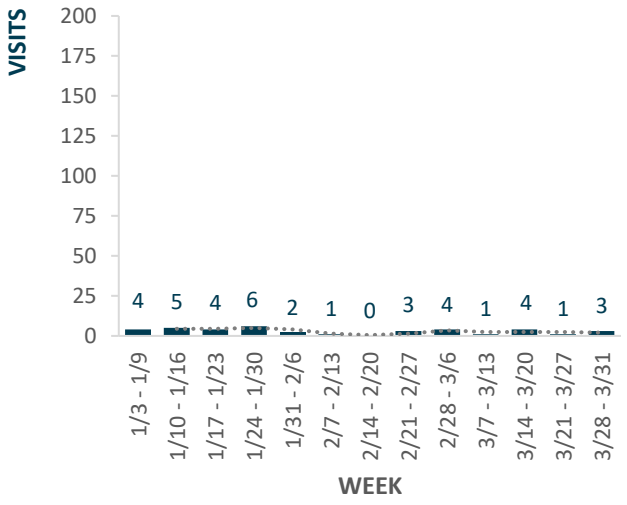
Overall Performance

Impressions	8,872
Visits: # site visitors = # CT + # VT	38
Actions	0
VTS: % of visits/impressions	0.43%
CNV: % of actions/visits	N/A
Spend: total spent on media	$796.98
CPM: cost per 1,000 impressions	$89.83
CPV: cost per visit	$20.97
CPA: cost per action	N/A



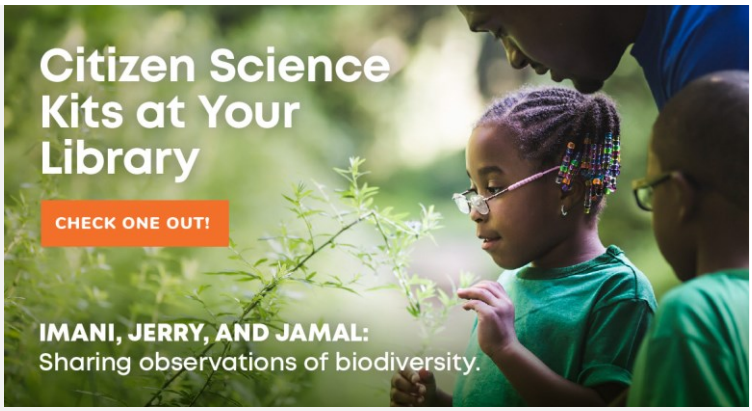






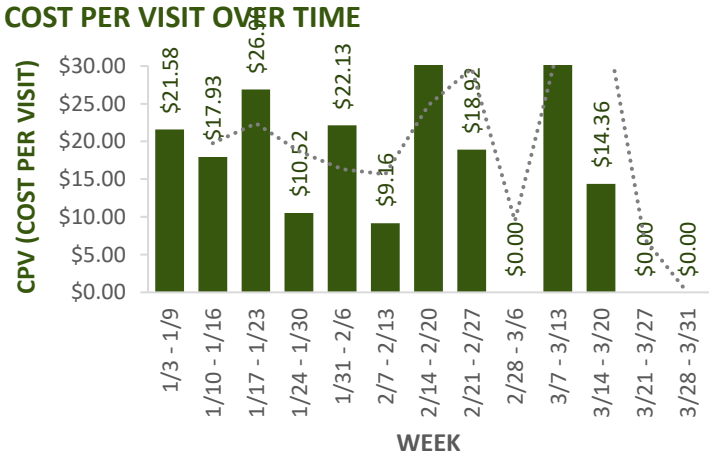
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

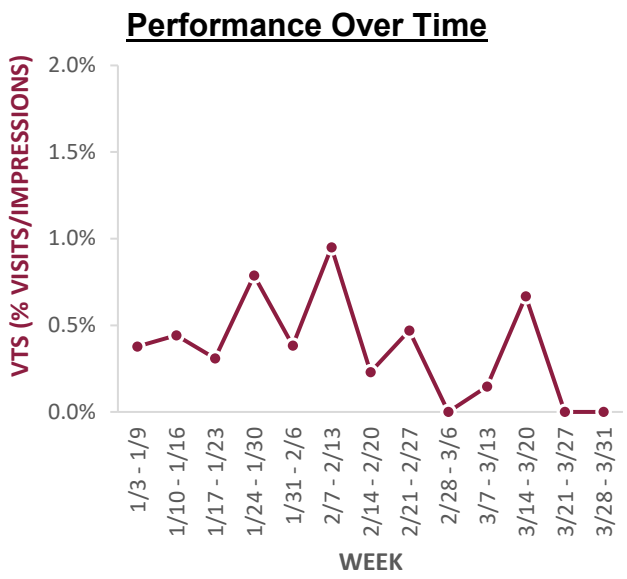
Figure 26. LAVIDGE Metrics for the ***Biodiversity Ad*** on **LinkedIn** Targeted to *Educators*

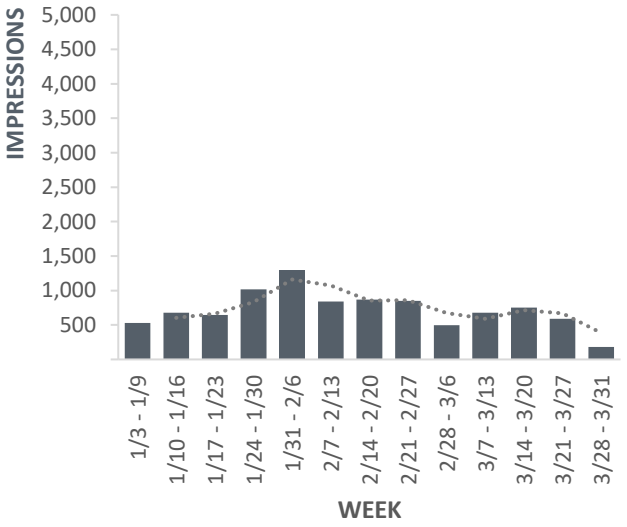


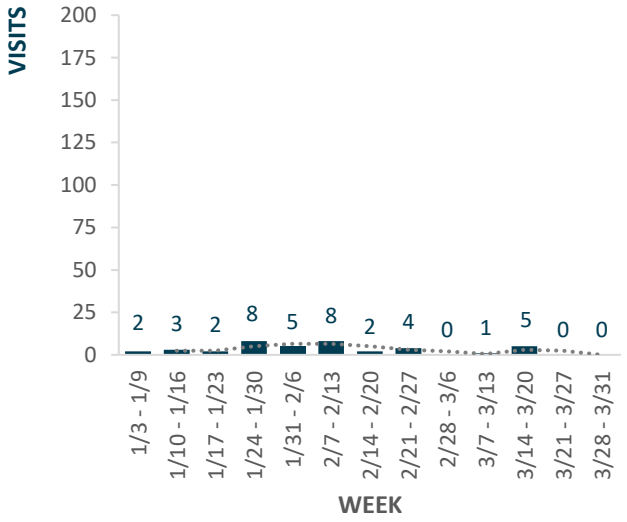
Overall Performance

Impressions	9,433
Visits: # site visitors = # CT + # VT	40
Actions	0
VTS: % of visits/impressions	0.42%
CNV: % of actions/visits	N/A
Spend: total spent on media	$834.79
CPM: cost per 1,000 impressions	$88.50
CPV: cost per visit	$20.87
CPA: cost per action	N/A



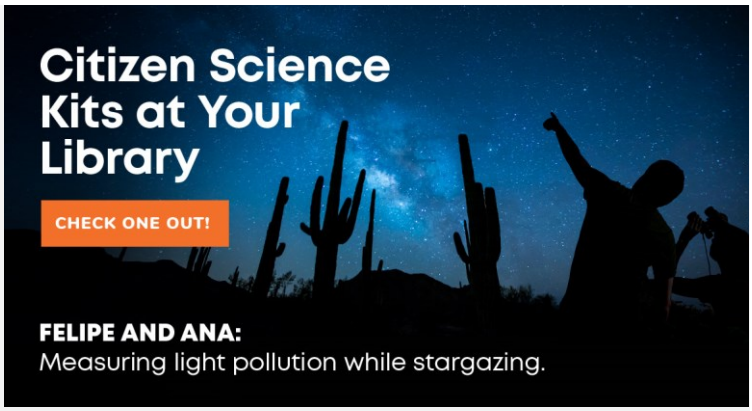






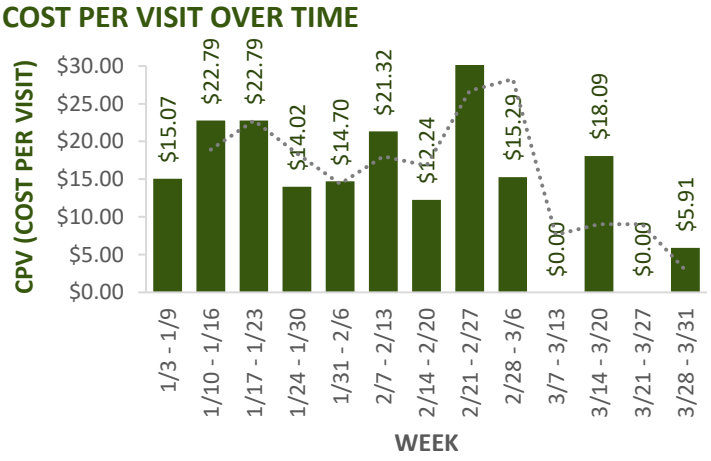
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

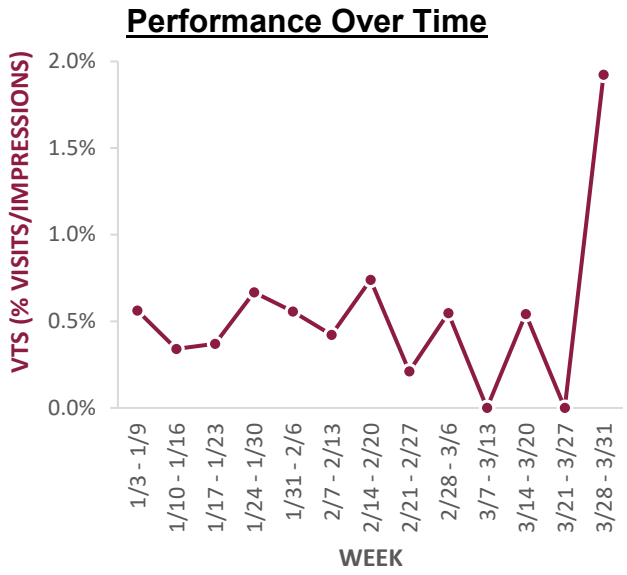
Figure 27. LAVIDGE Metrics for the ***Stargazing Ad*** on **LinkedIn** Targeted to *Educators*

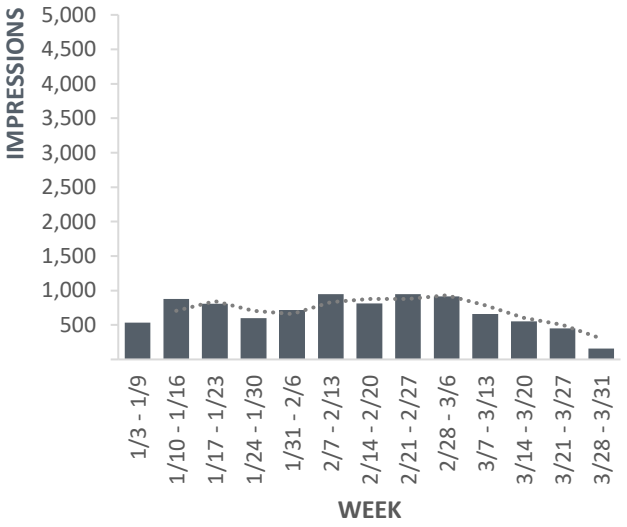


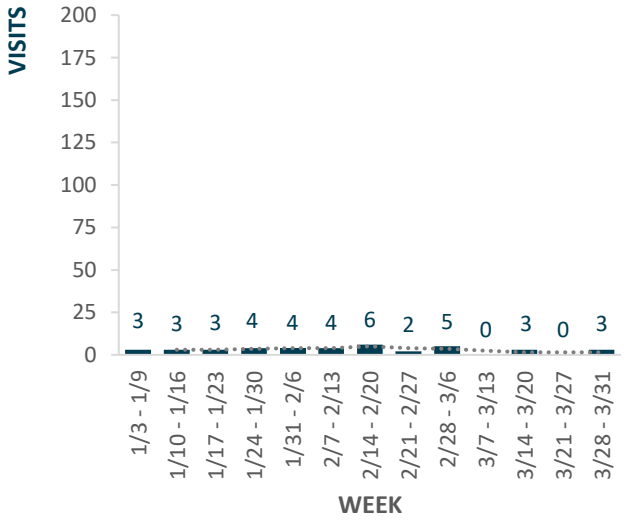
Overall Performance

Impressions	8,976
Visits: # site visitors = # CT + # VT	40
Actions	0
VTS: % of visits/impressions	0.45%
CNV: % of actions/visits	N/A
Spend: total spent on media	$794.32
CPM: cost per 1,000 impressions	$88.49
CPV: cost per visit	$19.86
CPA: cost per action	N/A









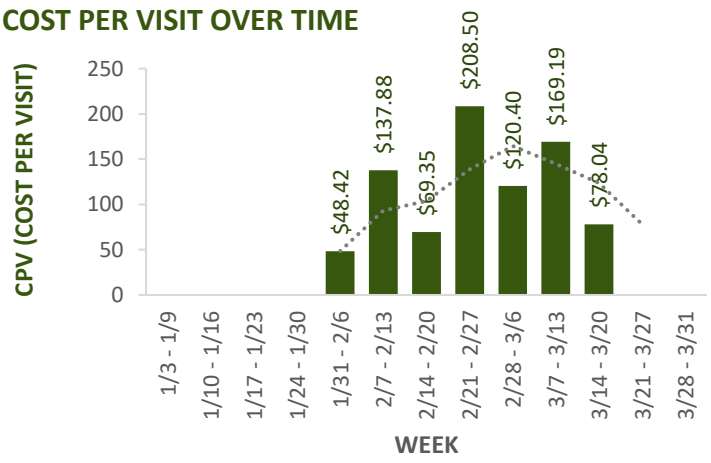
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

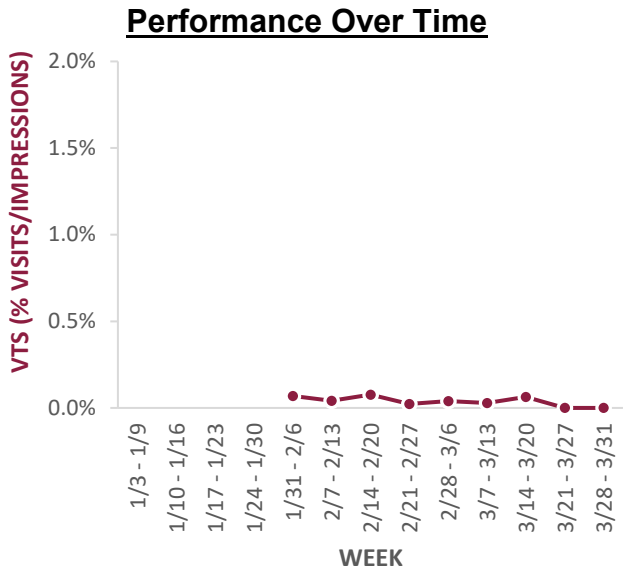
Figure 28. LAVIDGE Metrics for the ***30-second Video*** on Connected TV

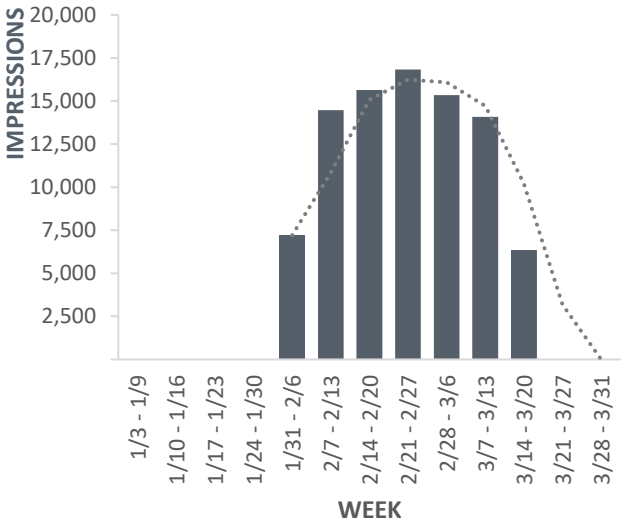


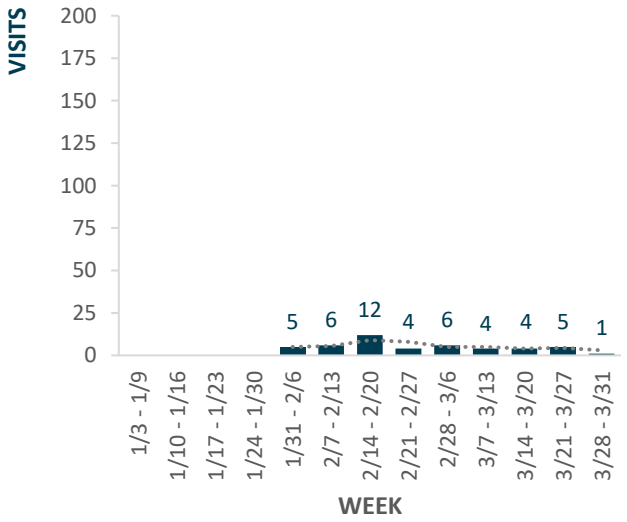
Overall Performance

Impressions	89,932
Visits: # site visitors = # CT + # VT	47
Actions	1
VTS: % of visits/impressions	0.05%
CNV: % of actions/visits	2.13%
Spend: total spent on media	$4,567.51
CPM: cost per 1,000 impressions	$50.79
CPV: cost per visit	$97.18
CPA: cost per action	$4,567.51









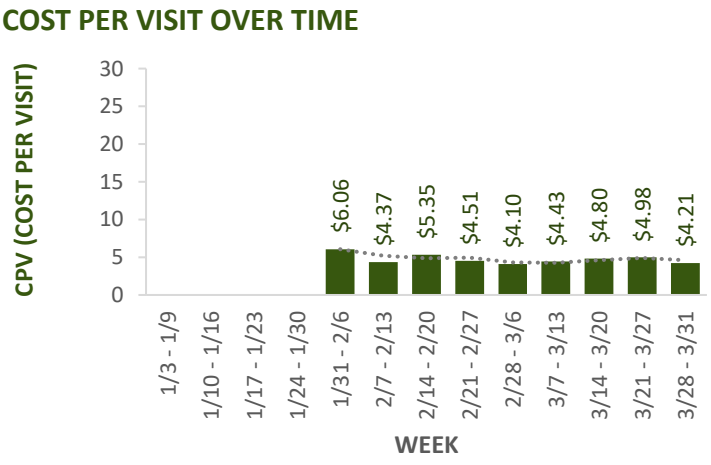
Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

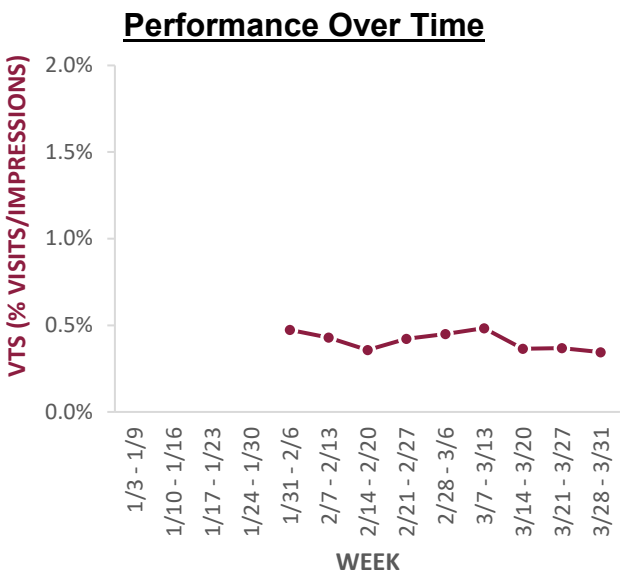
Figure 29. LAVIDGE Metrics for the ***30-second Video*** on YouTube

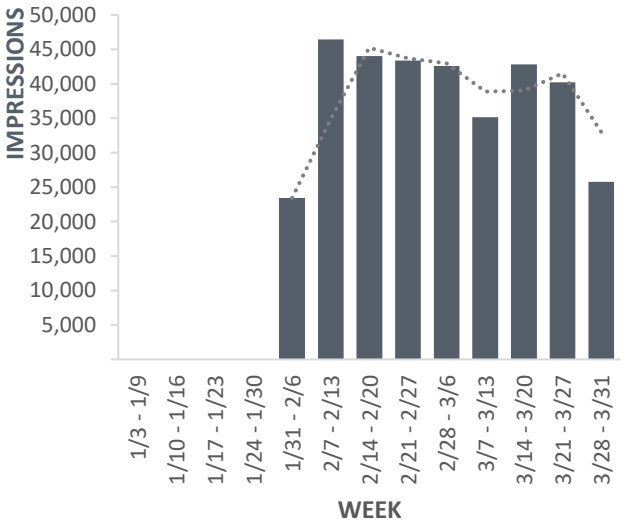


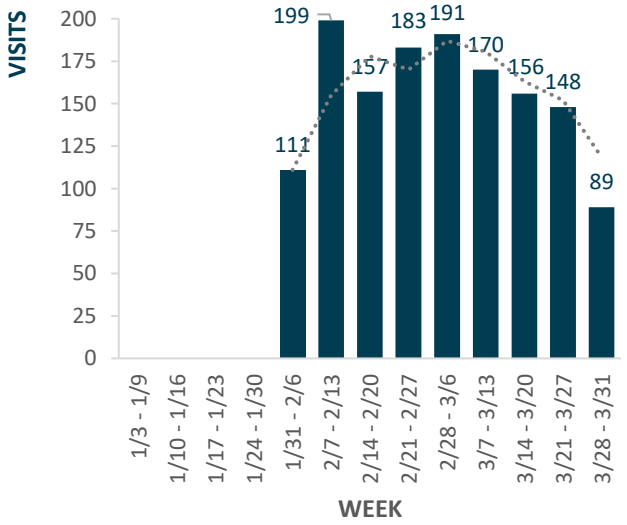
Overall Performance

Impressions	343,809
Visits: # site visitors = # CT + # VT	1,404
Actions	0
VTS: % of visits/impressions	0.41%
CNV: % of actions/visits	0.00%
Spend: total spent on media	$6,605.39
CPM: cost per 1,000 impressions	$19.21
CPV: cost per visit	$4.70
CPA: cost per action	- - - - -









Note. CT = Click-through, or clicked on ad; VT = view-through (visited site later without clicking); Action = Click on kit link.

COMPARISON OF ADS' PERFORMANCE AND RECOMMENDATIONS

To facilitate comparisons across ads and across and within target populations, the performance of ads in terms of VTS (visits per impressions), CPM (cost per 1000 impressions), and CPV (cost per visit) was graphed in Figures 30 – 32.

Key Findings

- VTS (Visits per impressions)
  - The best performing ads were those used in retargeting on Facebook/Instagram (VTS: 1.25%, or about 1 visit/80 impressions). Of those, Stargazing and Pollinators 1 were the most effective, but differences among ads were minimal (between 1 visit/73 impressions and 1 visit/104 impressions).
  - The next most effective ads were those targeting seniors on Facebook/Instagram (VTS: 0.68%%, or about 1 visit/147 impressions). The performance of individual ads was similar (between 1 visit/124 impressions and 1 visit/178 impressions), with the exception of the carousel of ads (about 1 visit/370 impressions).
  - Ads on LinkedIn and YouTube performed similarly (VTS: ~ 0.43%, or about 1 visit/233 impressions). The three ads used on LinkedIn performed nearly identically.
  - LinkedIn, YouTube, and Facebook/Instagram (overall) ads performed nearly identically.
  - Ads on Facebook/Instagram targeted to parents of teens and parents of homeschoolers performed very similarly (about 1 visit/476 impressions) but worse than other ads/target populations with the exception of the Connected TV Video (about 1 visit/2000+ impressions). There were no real differences among ads targeted to the two populations.
- CPM (Cost per 1000 impressions)
  - The most cost-effective ads in terms of impressions were the Facebook/Instagram ads targeted to Parents of teens and homeschoolers, costing between $9.00 and $10.00 per 1000 impressions. There was minimal difference in CPM between individual ads.
  - Facebook/Instagram ads targeting seniors and the YouTube video were the next most cost-effective, costing between about $18.00 and $19.00 per 1000 impressions. The carousel ad for seniors was more cost-effective (CPM: $9.86) than other ads for seniors (CPM: ~$16.00 - $21.00).
  - Retargeted ads on Facebook/Instagram were slightly less cost-effective (CPM: $25.15) but more cost-effective than Connected TV ads (CPM: $50.79) or LinkedIn ads targeted to educators (CPM: ~$89.00).
- CPV (Cost per visit)
  - The most cost-effective ads in terms of visits were the retargeted Facebook/Instagram ads (CPV: ~$2.00) and Facebook/Instagram Ads targeted to Seniors (CPV: ~$2.00 - $3.00). Ads targeted to parents of teens on Facebook/Instagram (CPM: ~$4.00 - $5.00), the YouTube video (CPM: $4.70), and ads targeted to parents of homeschoolers on Facebook/Instagram (CPM: ~$4.00 - $6.00) were slightly less cost-effective but more cost-effective than LinkedIn ads targeted to educators (CPV: ~$21.00) or Connected TV ads (CPV: $97.18).

Recommendations

- In terms of VTS, there is no clear indication that some ads performed better than others *within a given target population*.
- Retargeted ads and ads targeting seniors were more effective in terms of VTS and slightly more cost-effective in terms of CPV than the ads targeting parents of teens or homeschoolers, but the ads targeted to parents of teens and homeschoolers were more cost-effective in terms of CPM.
- Carousel ads on Facebook/Instagram may be less effective with seniors in terms of VTS but more cost-effective in terms of impressions. That is, carousel ads for seniors were more cost-effective at presenting the ads but less effective at encouraging people to visit the target website.
- LinkedIn ads, while effective in terms of VTS, were substantially more expensive in terms of the impressions and visits they generated. Consider their benefit vs. cost.
- The Connected TV ad was not effective and extremely expensive in terms of the number of impressions and visits generated. It should be reused only with caution.
- Note that recommendations provided here diverge in some instances from those provided by LAVIDGE in the “Full Campaign Recap Report.” The difference is that LAVIDGE’s report identifies some ads as top performers even though they do not meaningfully differ in performance from other ads.

Figure 30. VTS by Ad, Target Group, and Platform

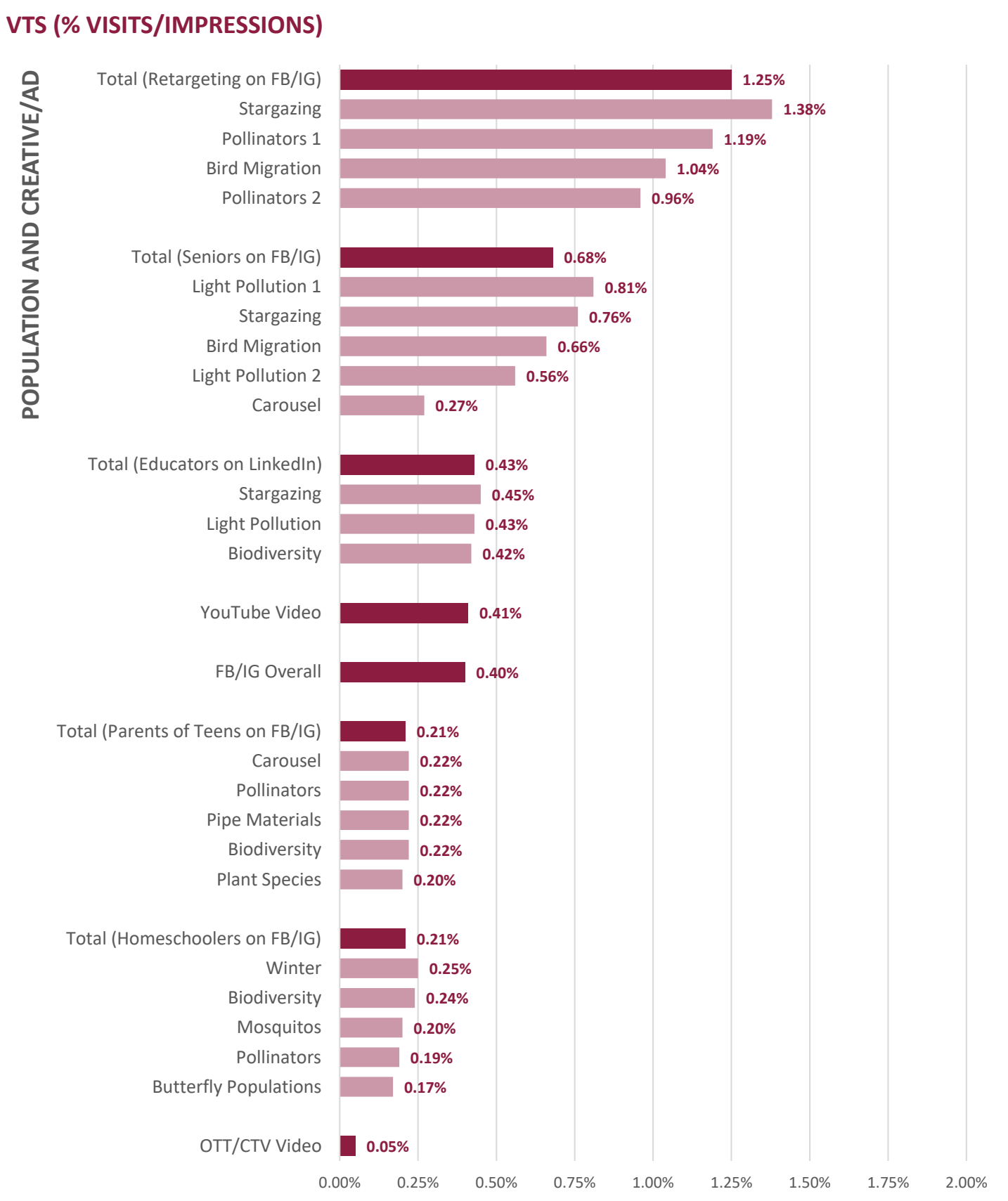


Figure 31. CPM by Ad, Target Group, and Platform

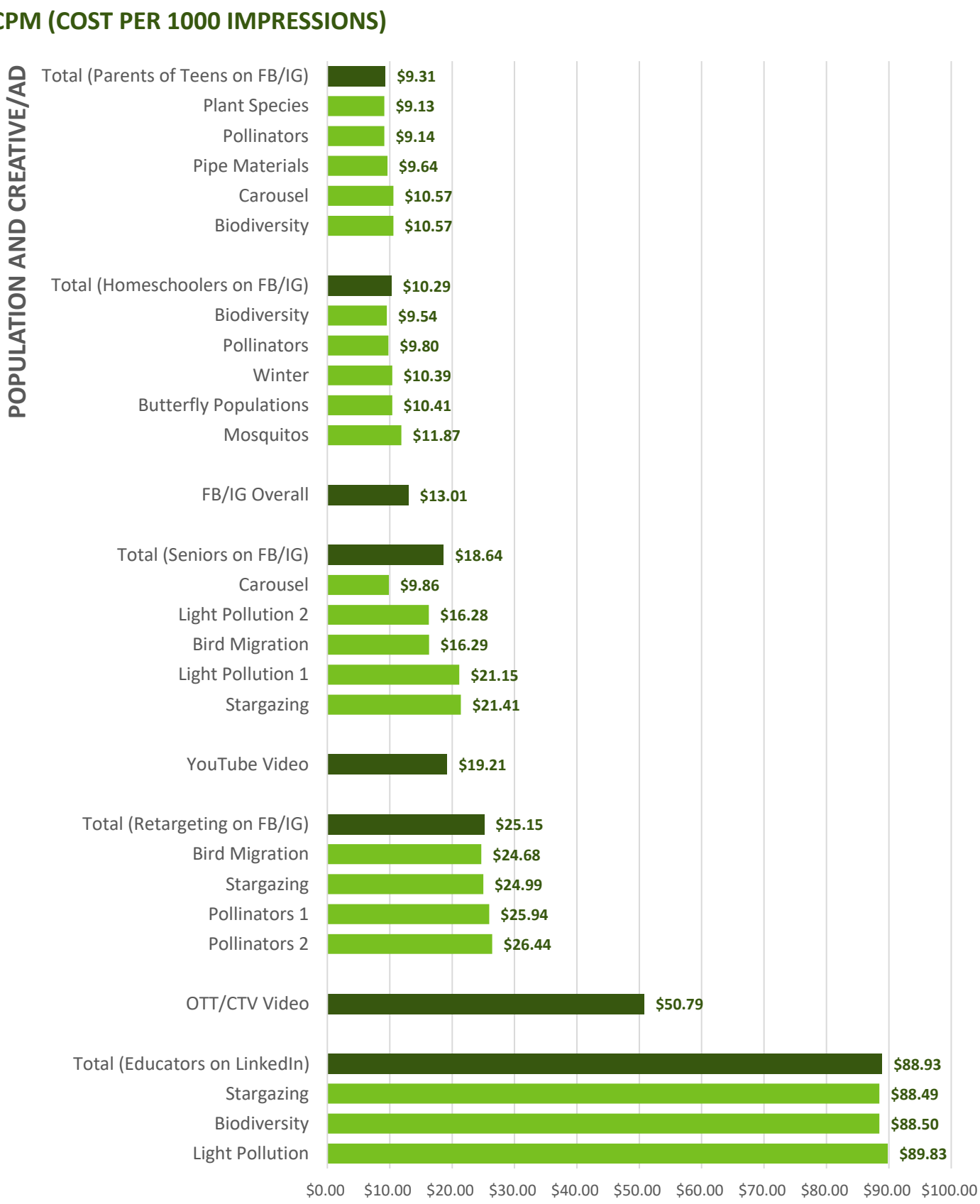
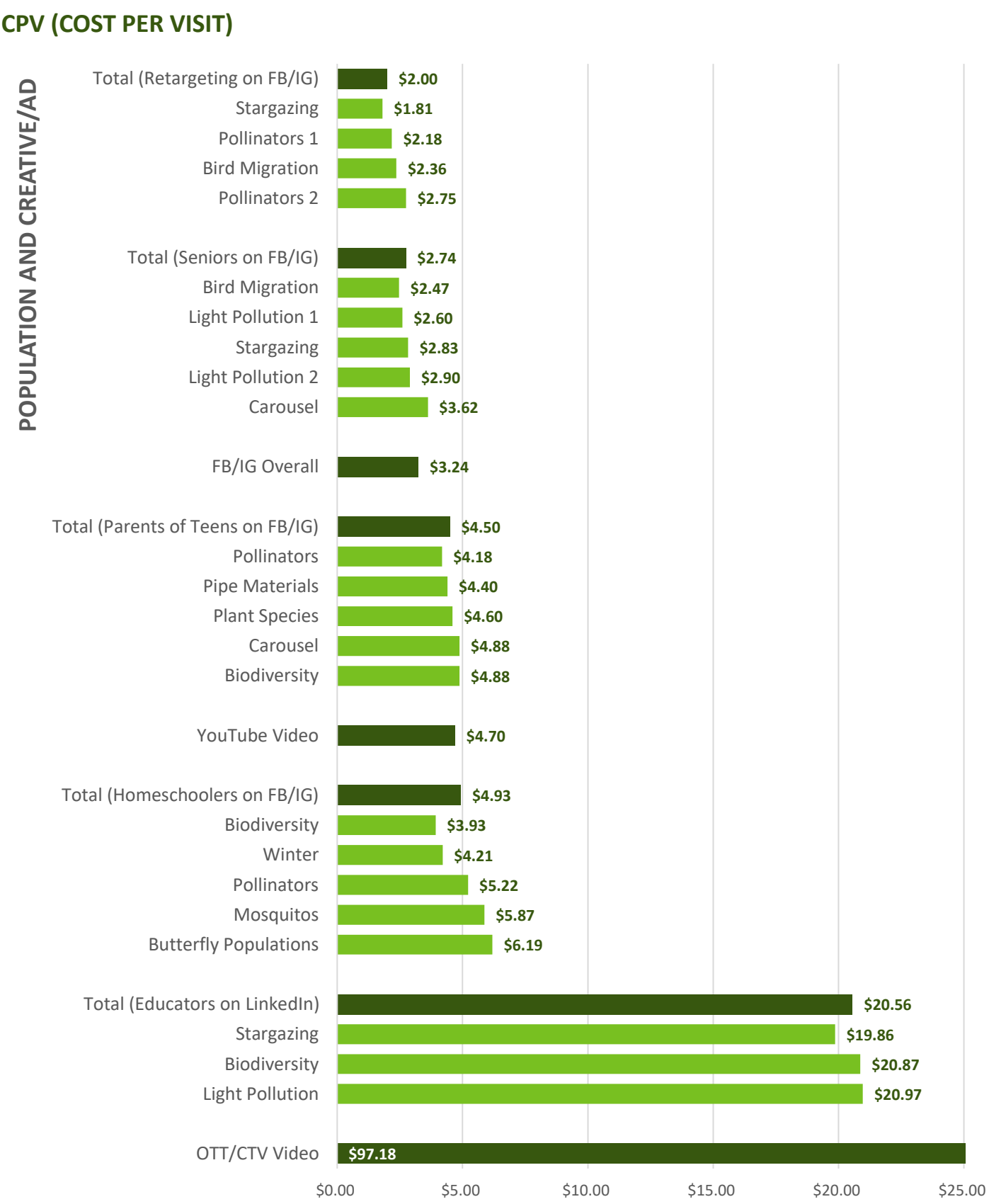


Figure 32. CPV by Ad, Target Group, and Platform



APPENDIX D. SCISTARTER ANALYTICS REGARDING VISITS TO TARGET WEBPAGE AND KIT PAGES BEFORE AND DURING AD CAMPAIGN

SciStarter analytics were reviewed to identify the impact of the campaign. Two approaches were used:

1. The SciStarter website development/maintenance team provided analytics directly connecting the ad campaign to visitors to the SciStarter.org/library-kits webpage
2. The number of visits to specific kit pages was examined both before and during the ad campaign to track impact.

WEBSITE ANALYTICS TRACKING MEDIA CAMPAIGN IMPACT

Website analytics for the SciStarter.org/library-kits webpage were tracked during the ad campaign. Because of a change from GA to GA4 Google Analytics mid-campaign, some data are not available for the time period of January and February 1 – 11. Using Google Analytics and UTM parameters linked to the ads for each platform, the SciStarter team was able to identify visitors who came to the site as a result of the ad campaign. Note that not all visitors resulting from the ad campaign can be identified. For example, if someone sees an ad and uses a search engine to search for "citizen science kits," they may find their way to the SciStarter.org/library-kits webpage without clicking on the ad and picking up the "UTM" parameters that identify them as someone who saw an ad. Tables 4 – 8 below present information about visitors resulting from the ad campaign.

Key Findings

- In total, 4,611 new users visited the SciStarter.org/library-kits webpage as a result of the ad campaign.
- Depending on the month, between one-half and nearly all visitors came to the website after clicking on a Facebook/Instagram ad. Visitors from LinkedIn constituted about one-fifth of ad campaign visitors in January but less than 5% thereafter.
- Visitors from YouTube and Connected TV constituted less than 5% of any ad campaign visitors during the ad campaign.
- A clear majority of visitors (89.1%) visited the webpage using a mobile device. The rest were about evenly split between a desktop or tablet.
- Approximately two-thirds of visitors *from one of the top 10 geographic locations* were from Arizona.

Recommendations

- Given that most visitors viewed the ads on a mobile device, consider optimizing the ads and the website for mobile devices.
- Coordinate with website development/maintenance team to avoid shifts in analytic service (GA to GA4) during future ad campaigns.

Table 4. Pageviews and New Users on SciStarter.org/library-kits During the Months of the Ad Campaign: January 1 – March 31, 2022

Data	Jan (GA)	Feb (GA/GA4)	Mar (GA4)	Total
Pageviews	2919	1303	335	4557
New Users	1871	789	1951	4611

Table 5. Activity of Visitors to SciStarter.org/library-kits During February 12 – May 31, 2022 that can be Linked to the Ad Campaign

Data	Feb	Mar	Apr	May
New Users	1049	1488	25	8
Engaged Sessions Per User	0.32	0.29	0.06	0
Views	66	69	0	0
Avg engagement time per session	19s	17s	4s	0
Engagement Rate	26%	26%	7%	7%

Note. Because of a change from GA to GA4 Google Analytics, data for January and February 1 – 11 are not available.

Table 6. Platforms from Which Ad Campaign Visitors Came During January 1 – May 31

Data	Jan (GA)	Feb (GA/GA4)	Mar (GA4)	Apr (GA4)	May (GA4)
Facebook/Instagram	1615 (45.5%)	1684 (92.2%)	1441 (95.6%)	17 (50.0%)	7 (63.6%)
LinkedIn	442 (21.5%)	44 (2.4%)	21 (1.4%)	0 (0.0%)	0 (0.0%)
YouTube	0 (0.0%)	73 (4.0%)	38 (2.5%)	1 (2.9%)	0 (0.0%)
CTV/Programmatic	0 (0.0%)	25 (1.4%)	7 (0.5%)	16 (47.1%)	4 (36.4%)
Total	**2057**	**1826**	**1507**	**34**	**11**

Table 7. Device Type of Visitors to SciStarter.org/library-kits During February 12 – May 31, 2022, that can be Linked to the Ad Campaign

Device Type	*n*	*%*
Mobile	2136	89.1%
Desktop	153	6.4%
Tablet	109	4.5%

Table 8. Location of Visitors to SciStarter.org/library-kits During February 12 – May 31, 2022, that can be Linked to the Ad Campaign

Location (Top 10)	*n*	*%*
Phoenix	539	36.6%
Tucson	202	13.7%
Atlanta	128	8.7%
Augusta	126	8.6%
Mesa	123	8.4%
Yuma	117	7.9%
Unknown	75	5.1%
Los Angeles	63	4.3%
Sanford	59	4.0%
Everett	41	2.8%

VISITS TO FEATURED KITS PAGES ON THE SCISTARTER.ORG/LIBRARY-KITS WEBPAGE

To examine the impact of the ad campaign on visits to the webpages of the kits featured on SciStarter.org/library-kits, the number of visits was examined in two ways:

- Before and after the ad campaign: the comparison of the number of visits before (October – December 2021) and during the ad campaign (January 4 – March 31st) provides insights into whether the ad campaign contributed to an increase in visits over the baseline.
- Year-over-year: Visits to the webpages for kits may vary over time, and may increase during the ad campaign period due to other programming (e.g., webinars leading up to the annual Citizen Science Month in April). Thus, programming and events other than the ad campaign may impact the number of visits. To account for this, we made a comparison of the same time period from one year (October 2021 – March 2022) over the same period a year earlier (October 2020 – March 2021). Given that there were also webinars in early 2020 leading up to Citizen Science Month 2021, the comparison across years may increase the validity of findings and conclusions.

The number of visits to each of the four featured citizen science kits is presented in Figures 33 – 37.

Key Findings

- Across all four kits featured on SciStarter.org/library-kits during the ad campaign, there was at least an increase in the number of visits to the kit pages during the ad campaign (January 4 – March 31st) in comparison to the number of visits before (October – December 2021). The average difference (excluding one outlier from each time period) was ~35 more visits/week during the ad campaign across all four featured kits.
- Across all four kits, the number of visits to the kit pages during the ad campaign (January 4 – March 31, 2022) was higher than the number of visits during the same period a year earlier (January 1 – March 31, 2021). The average difference was ~ 19 more visits/week during the ad campaign across all four featured kits.
- Together, these findings suggest that the ad campaign contributed to driving visitors to the kits' pages.

Figure 33 SciStarter.org/library-kits Analytics for Visits to the Four Kit Pages

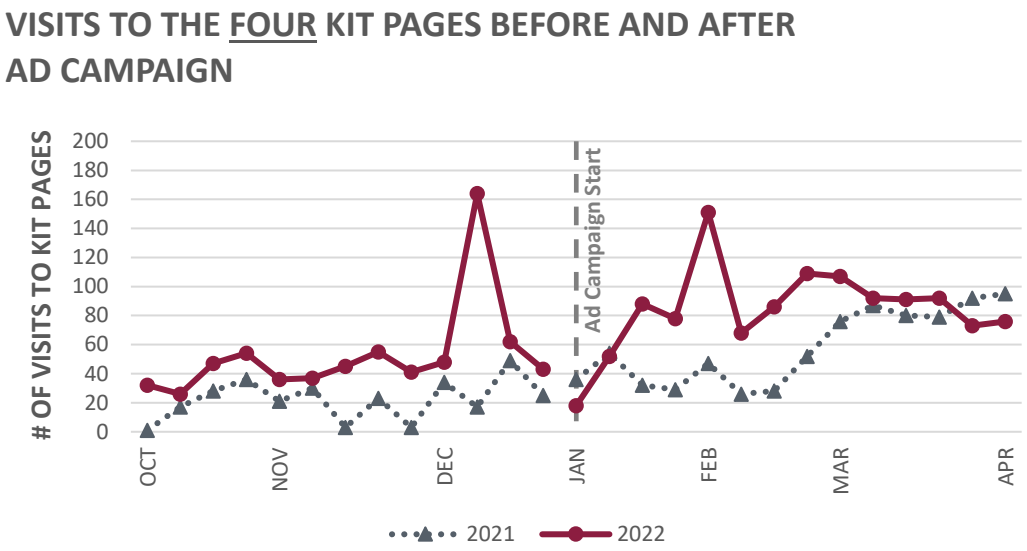


Figure 34. SciStarter.org/library-kits Analytics for Visits to the Exploring Biodiversity Kit Page

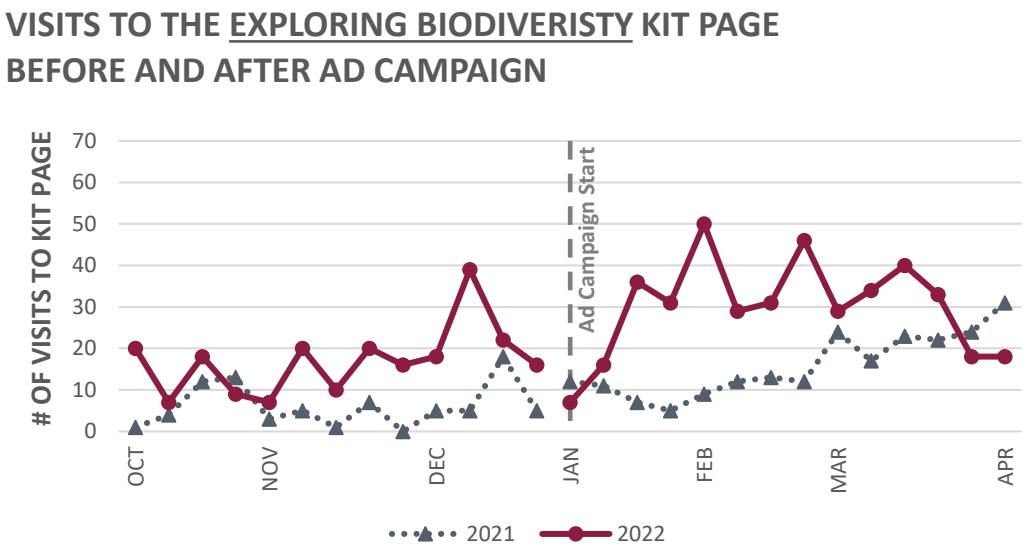


Figure 35. SciStarter.org/library-kits Analytics for Visits to the Observing Pollinators Kit Page

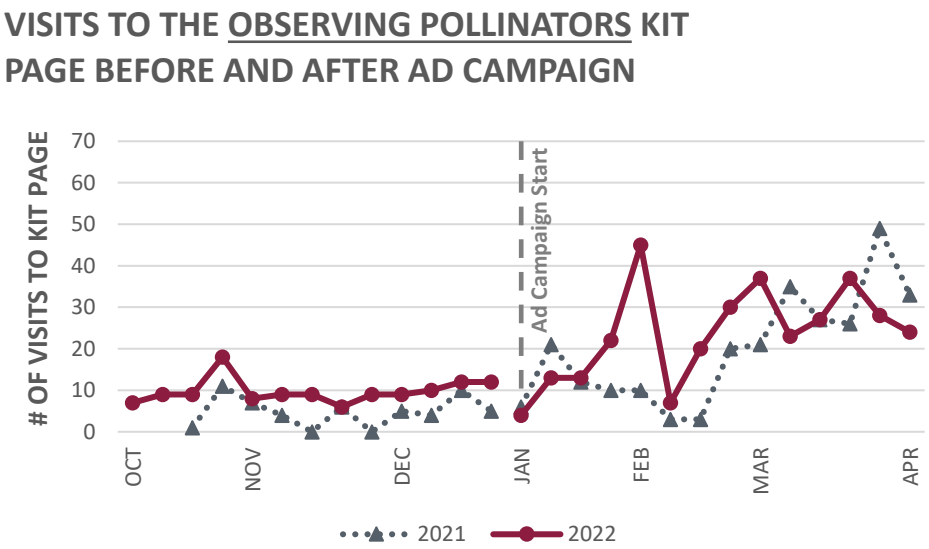


Figure 36. SciStarter.org/library-kits Analytics for Visits to the Measuring Light in the Night Kit Page

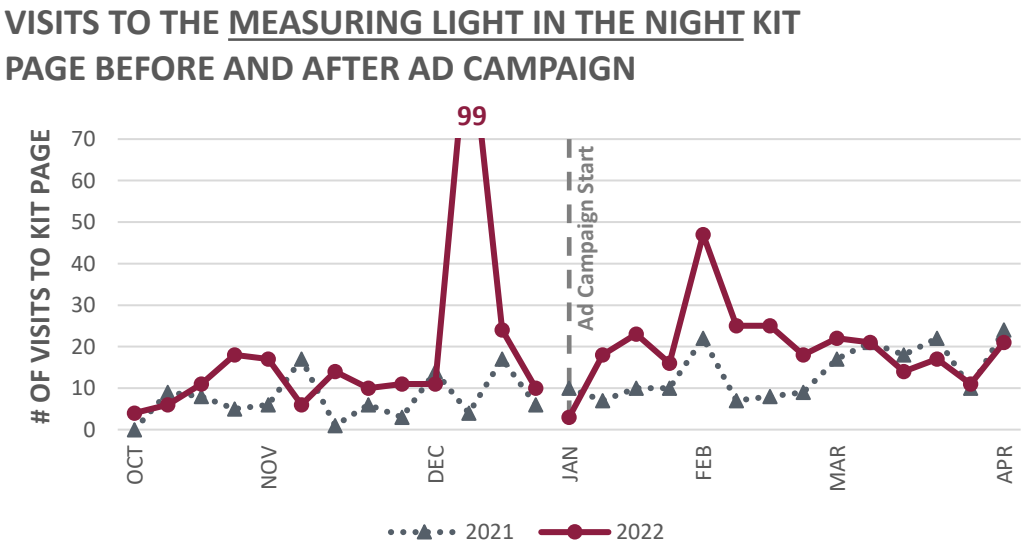
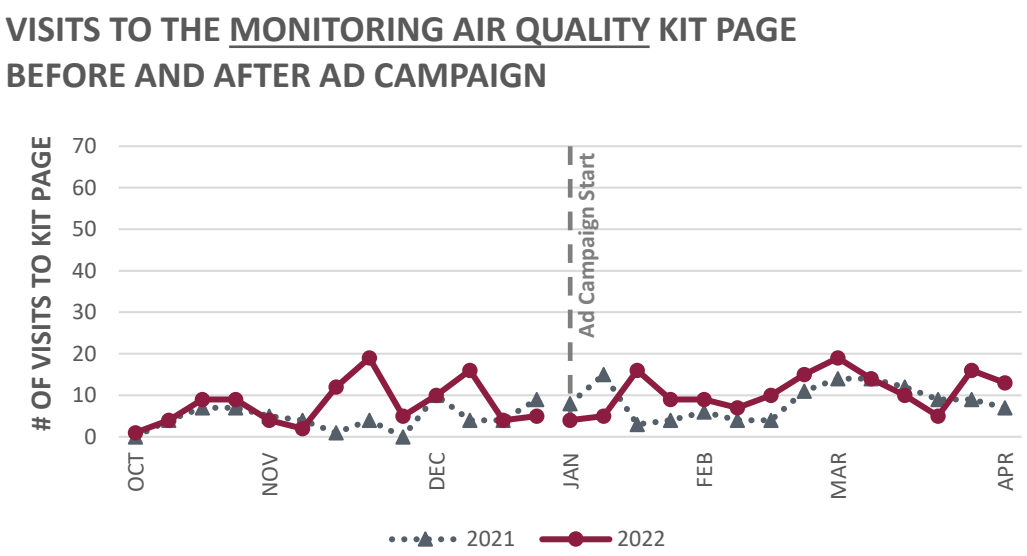


Figure 37. SciStarter.org/library-kits Analytics for Visits to the Monitoring Air Quality Kit Page



APPENDIX E. AZ CIRCULATION DATA BEFORE AND DURING AD CAMPAIGN

Kit circulation data for Arizona libraries from before and during the ad campaign was reviewed to determine whether circulation trends were consistent with the ad campaign having an impact. Findings are summarized in Table 9, and kit circulation and kit availability for each Arizona library are presented in Figures 38 – 58 and Tables 10 – 29.

Key Findings

- Across the reporting Arizona libraries, there was quite a bit of evidence that kit circulation increased during the ad campaign. While data are not sufficient to say that kit circulation increased *as a result of the ad campaign*, circulation overall did increase, which would be consistent with a positive impact of the ad campaign. That is, the evidence is consistent with the ad campaign contributing to increased kit usage.
- Just over one-half of the 20 reporting libraries (55.0%) experienced an increase in kit circulation during compared to before the ad campaign.

Table 9. Summary of Evidence, if any, that Kit Circulation Increased During the Ad Campaign at AZ Libraries

Library	Evidence that Kit Circulation Increased During Ad Campaign Compared to Before?
All (Reporting) AZ Libraries Participating in Ad Campaign	Quite a bit
Maricopa County Library District	
Aguila Branch	None
Asante Branch	Some
Ed Robson Branch	A little
El Mirage Branch	Some
Fairway Branch	Some
Fountain Hills Branch	Some
Gila Bend Branch	None
Goodyear Branch	Some
Guadalupe Branch	None
Hollyhock Branch	None
Litchfield Park Branch	None
North Valley Branch	None
Northwest Branch	None
Perry Branch	Some
Queen Creek Branch	Some
Southeast	A little
Sun City	A little
White Tank	None
Avondale Library	None
Scottsdale Library	Some

Figure 38

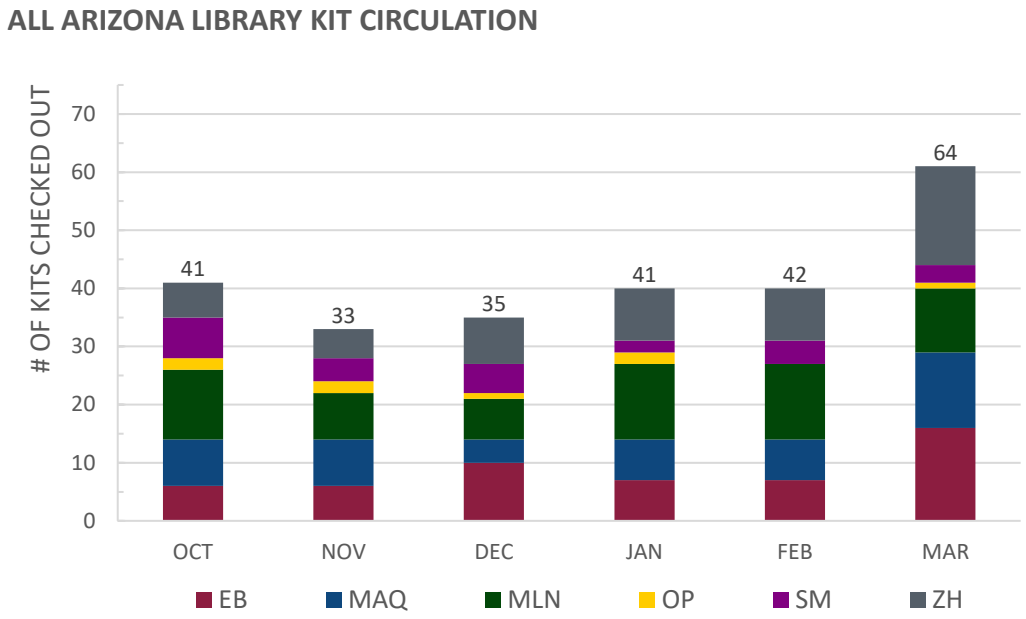
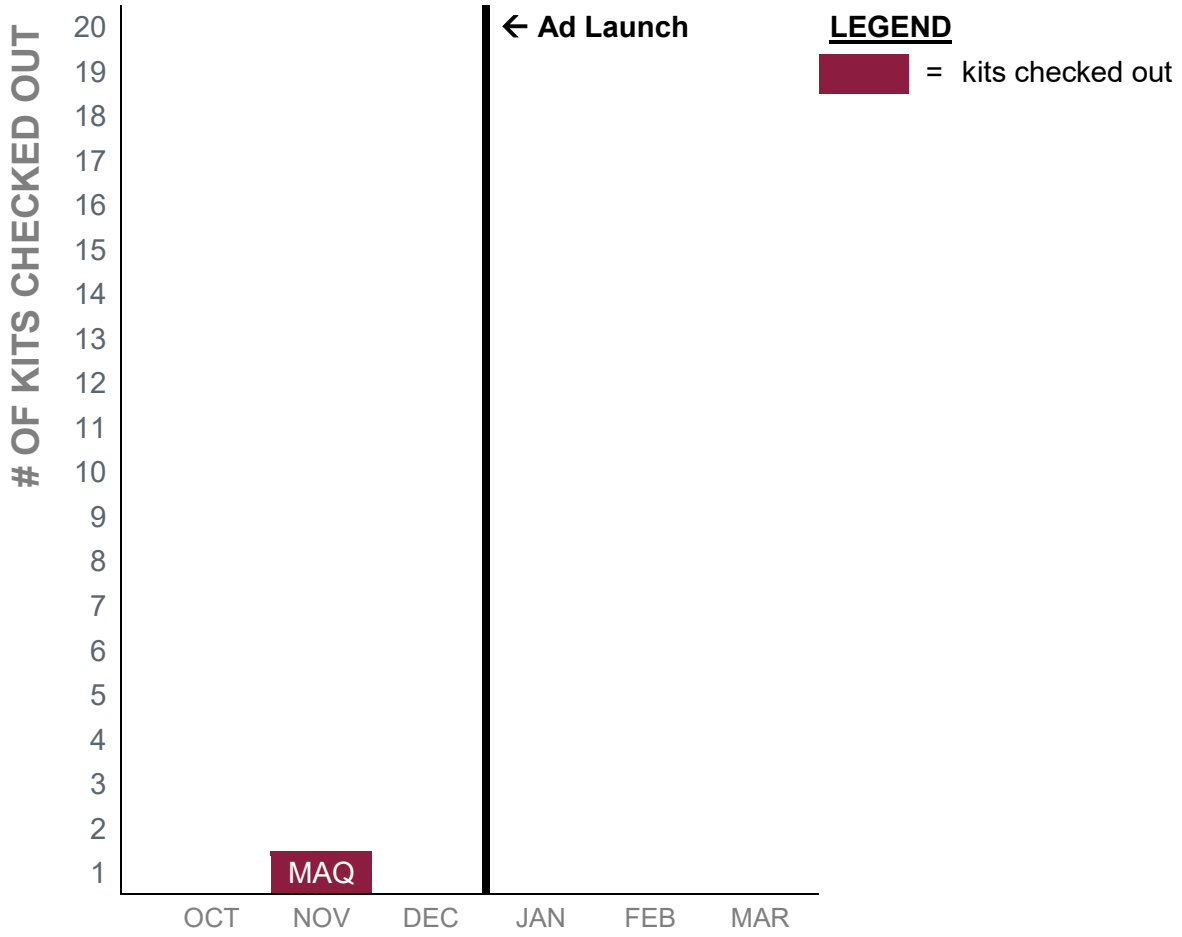

ALL ARIZONA LIBRARY KIT CIRCULATION
OF KITS CHECKED OUT
70
60
50
40
30
20
10
0
41
33
35
41
42
64
OCT
NOV
DEC
JAN
FEB
MAR
EB
MAQ
MLN
OP
SM
ZH

Figure 39

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: AGUILA BRANCH



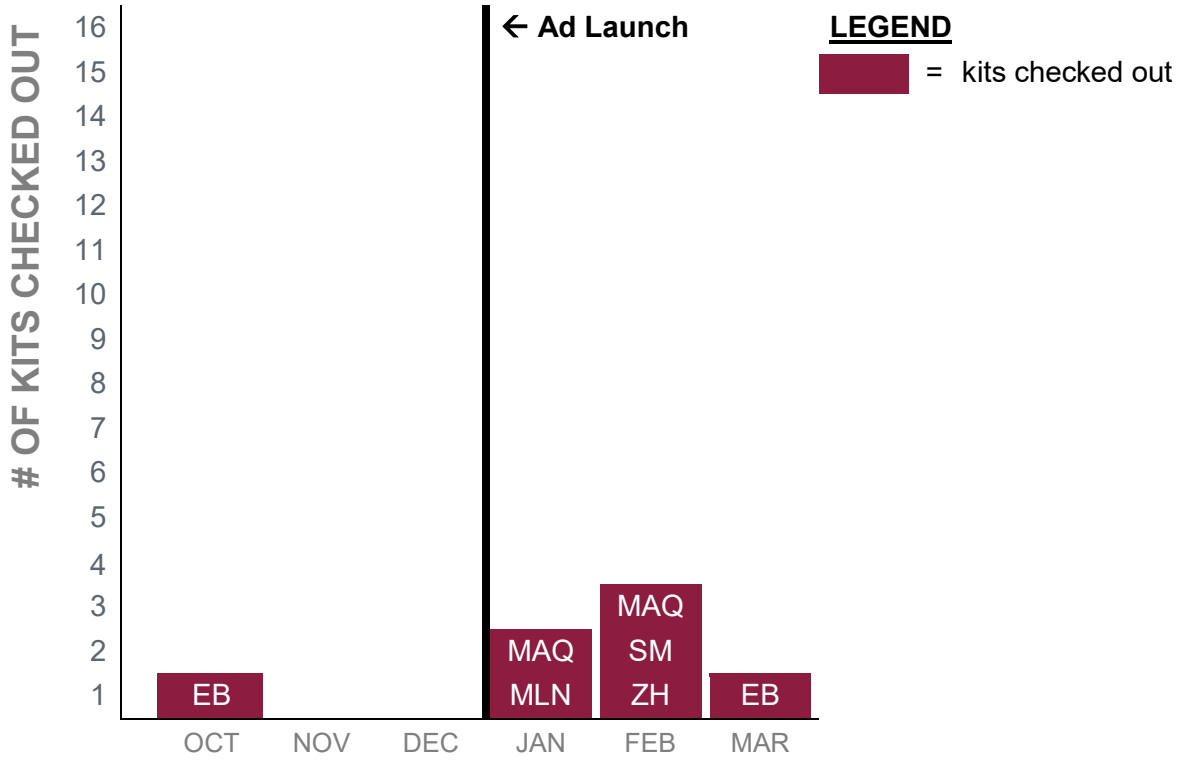
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 10. Reported Availability of Kits at the Aguila Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 40

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: ASANTE BRANCH



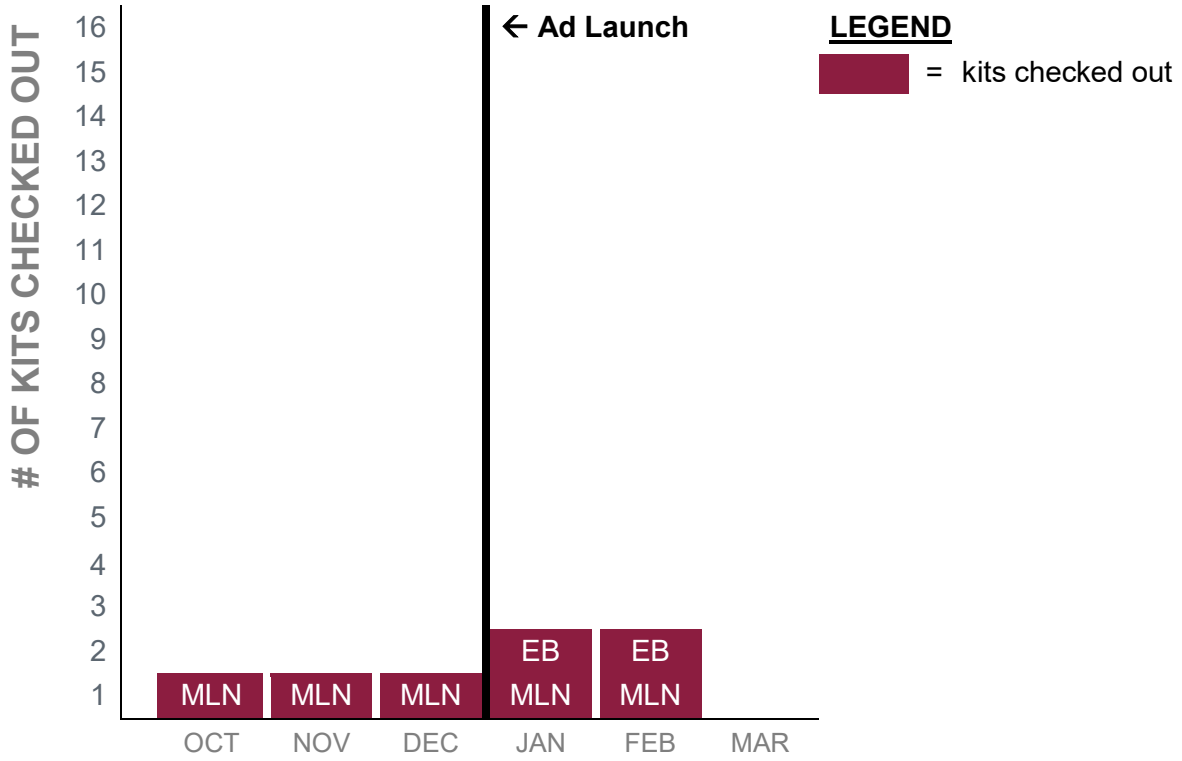
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 11. Reported Availability of Kits at the Asante Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	2
MLN	-	-	-	-	1	2
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 41

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: ED ROBSON BRANCH



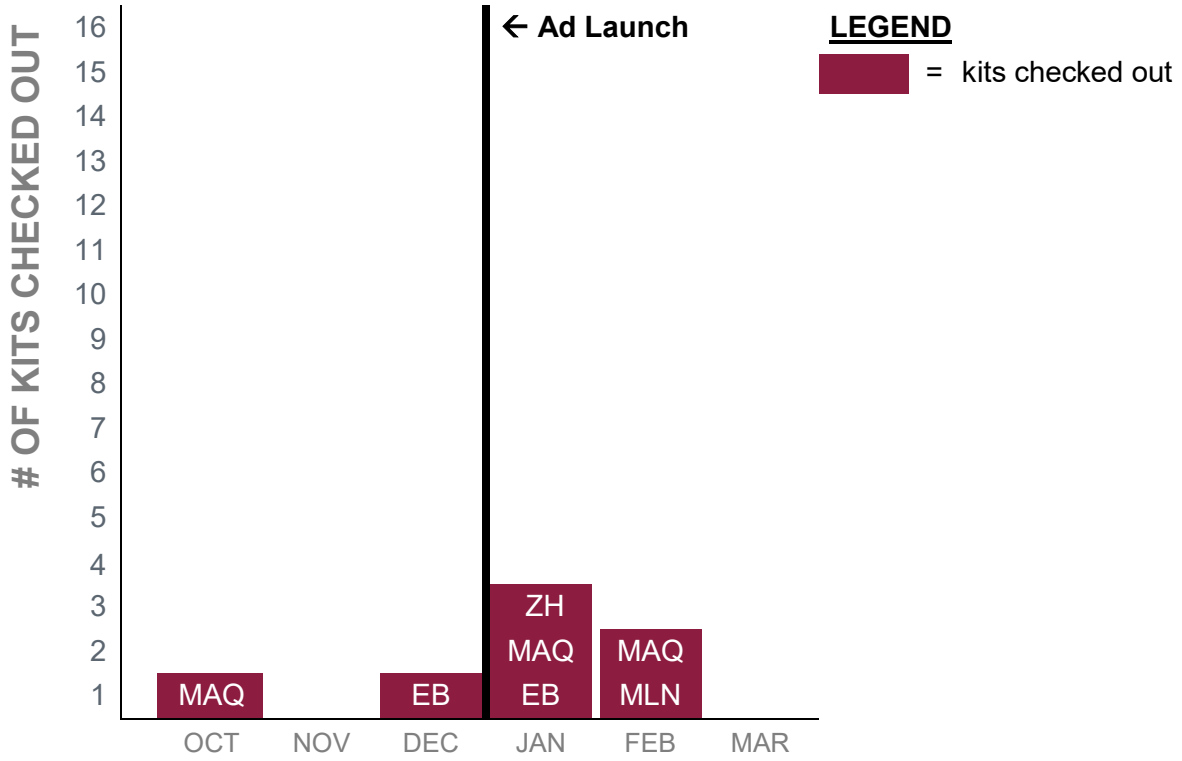
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 12. Reported Availability of Kits at the Ed Robson Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	0	0
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	0	0

Figure 42

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: El Mirage Branch



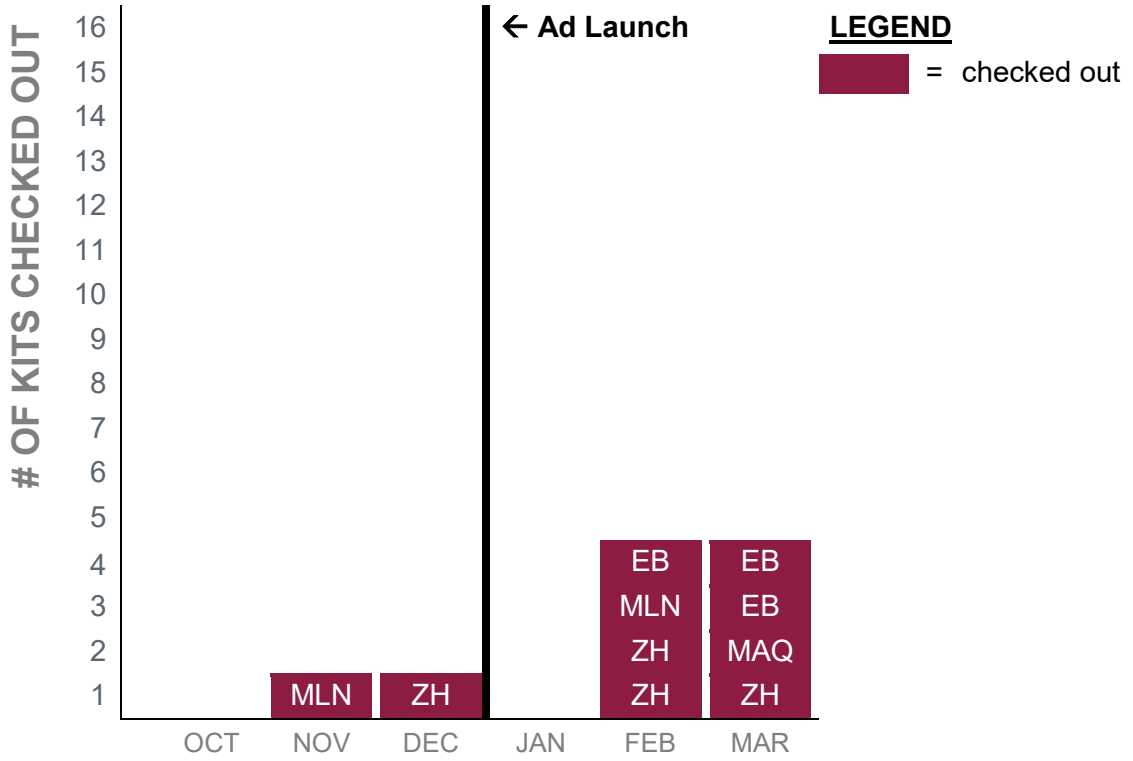
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 13. Reported Availability of Kits at the El Mirage Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	0	0
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	0	0
SM	-	-	-	-	1	1

Figure 43

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: FAIRWAY BRANCH



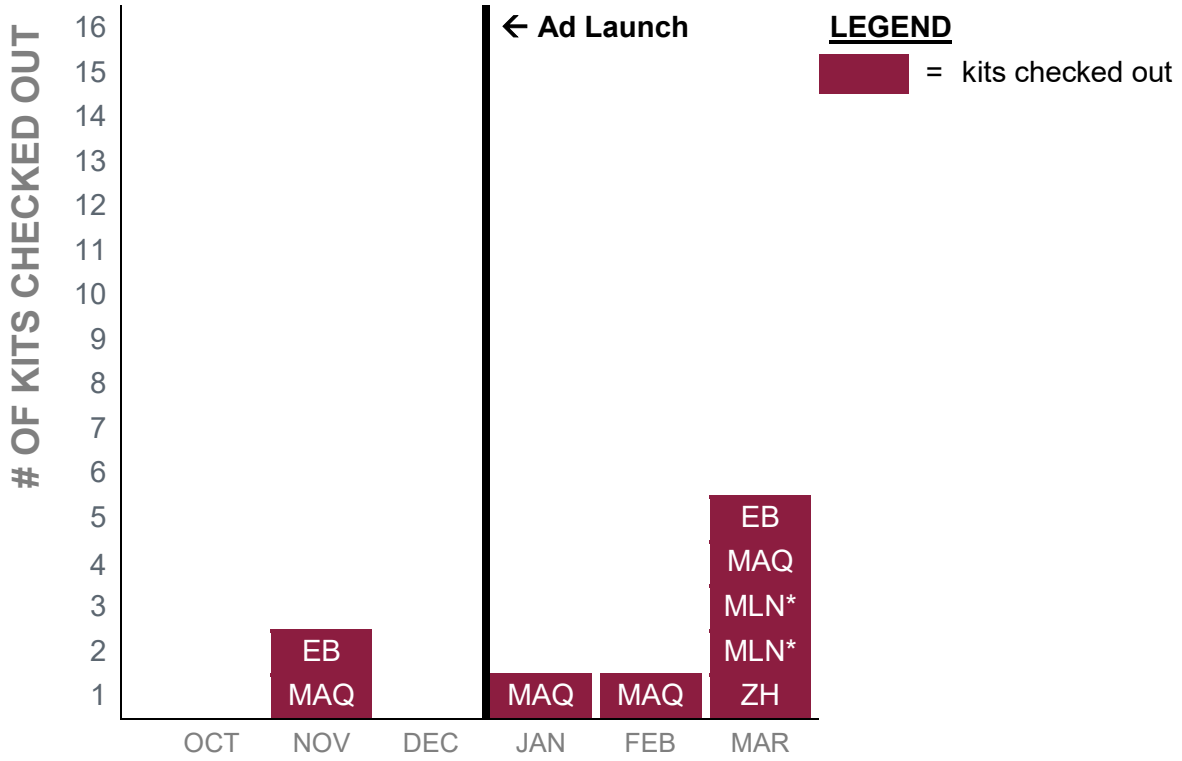
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 14. Reported Availability of Kits at the Fairway Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 44

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: FOUNTAIN HILLS



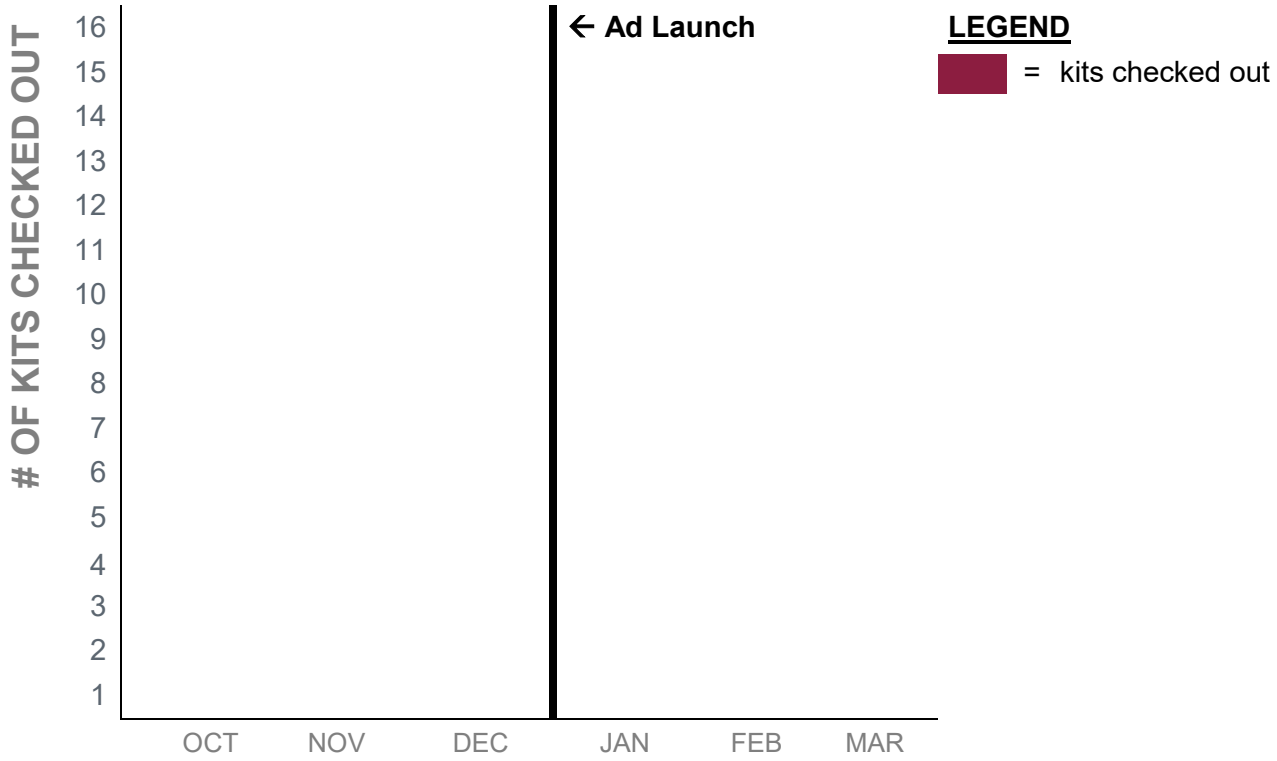
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 15. Reported Availability of Kits at the Fountain Hills Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	2	2
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 45

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: GILA BEND



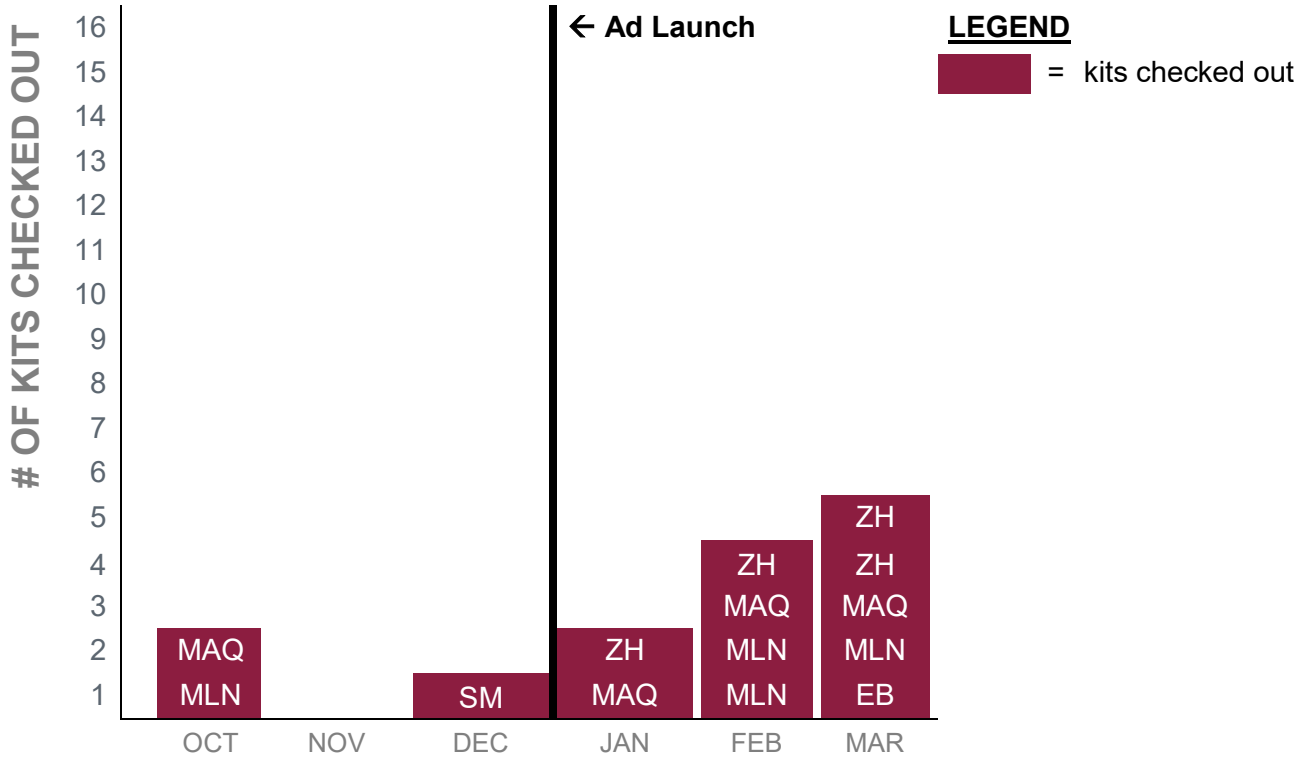
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 16. Reported Availability of Kits at the Gila Bend Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 46

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: GOODYEAR



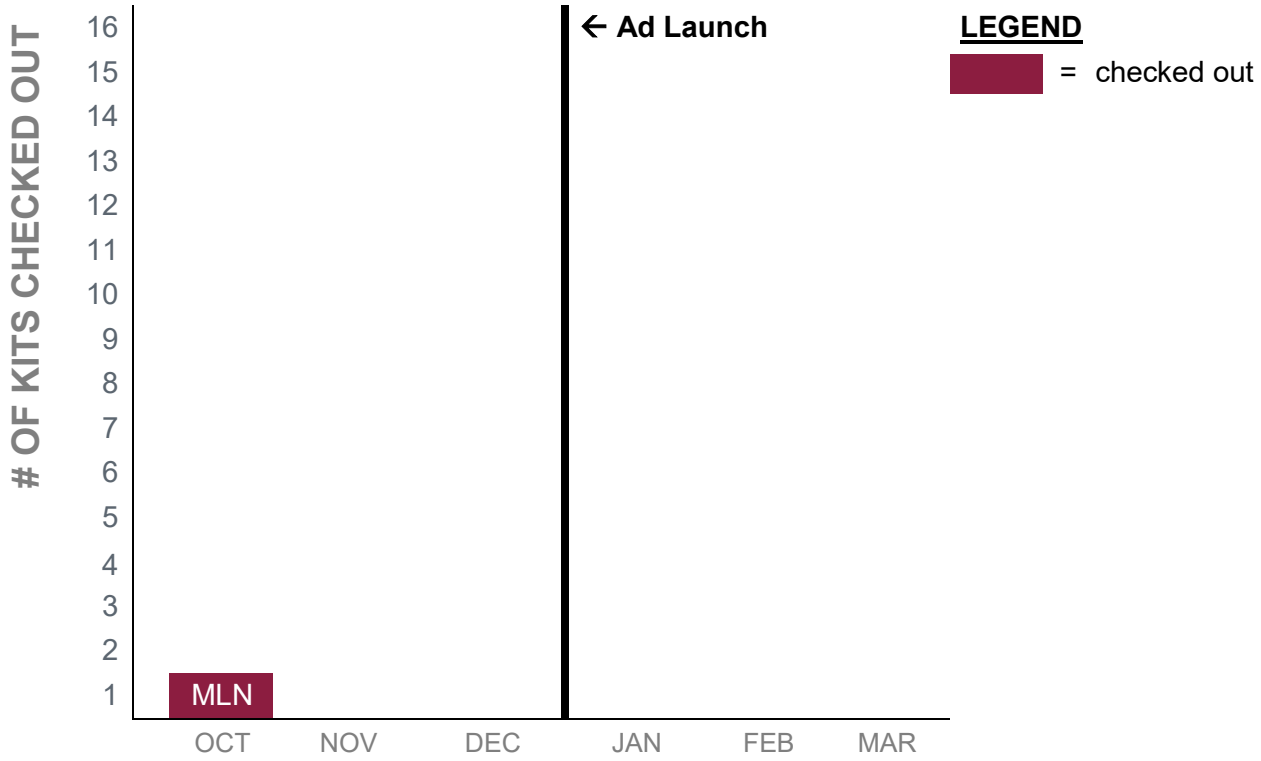
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 17. Reported Availability of Kits at the Goodyear Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	2	2
SM	-	-	-	-	1	1

Figure 47

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: GUADALUPE



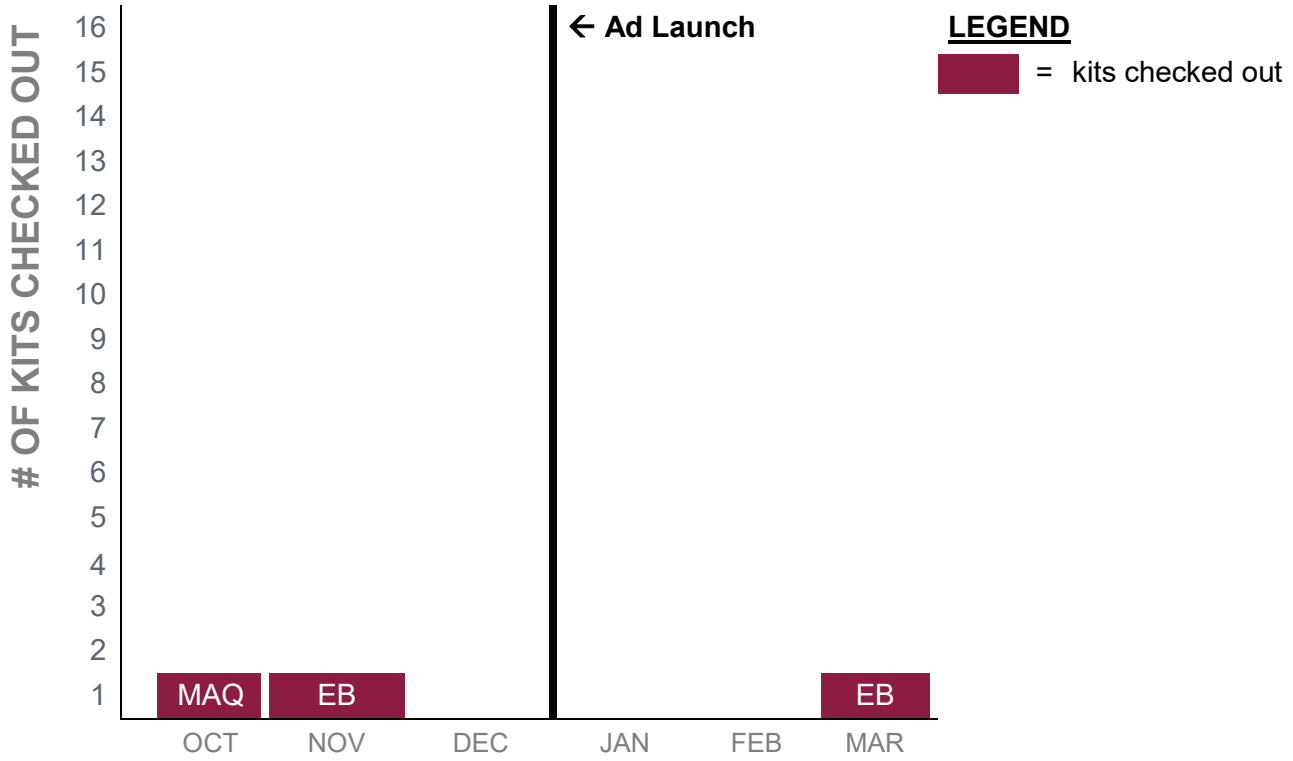
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 18. Reported Availability of Kits at the Guadalupe Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 48

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: HOLLYHOCK



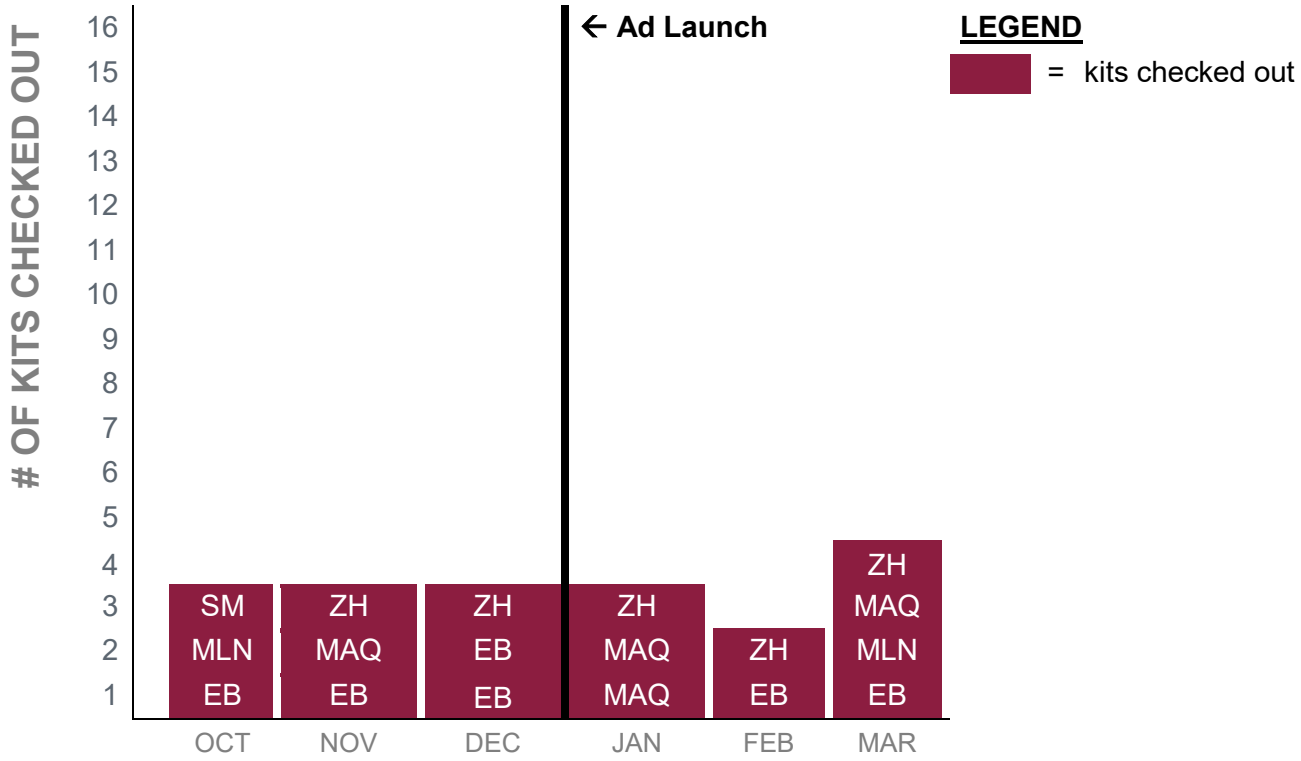
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 19. Reported Availability of Kits at the Hollyhock Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	2	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 49

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: LITCHFIELD PARK



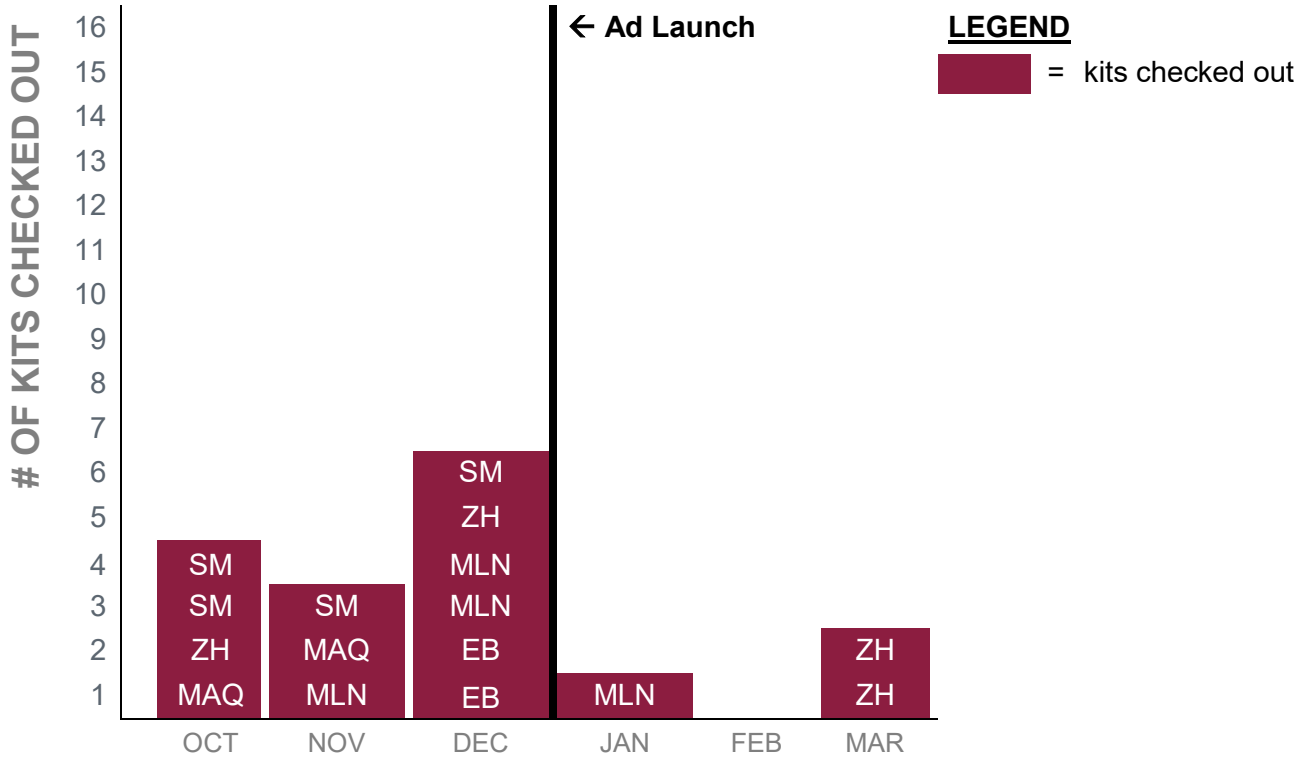
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 20. Reported Availability of Kits at the Litchfield Park Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 50

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: NORTH VALLEY



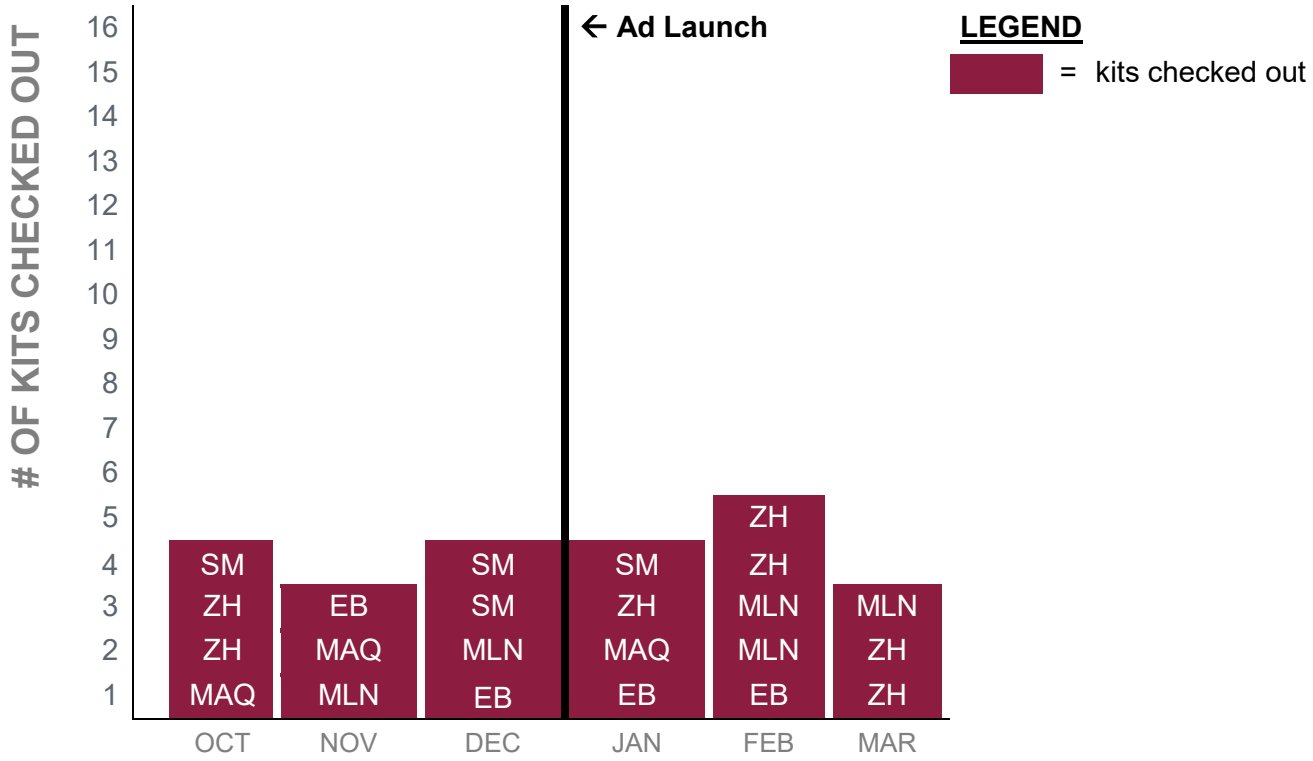
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 21. Reported Availability of Kits at the North Valley Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 51

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: NORTHWEST



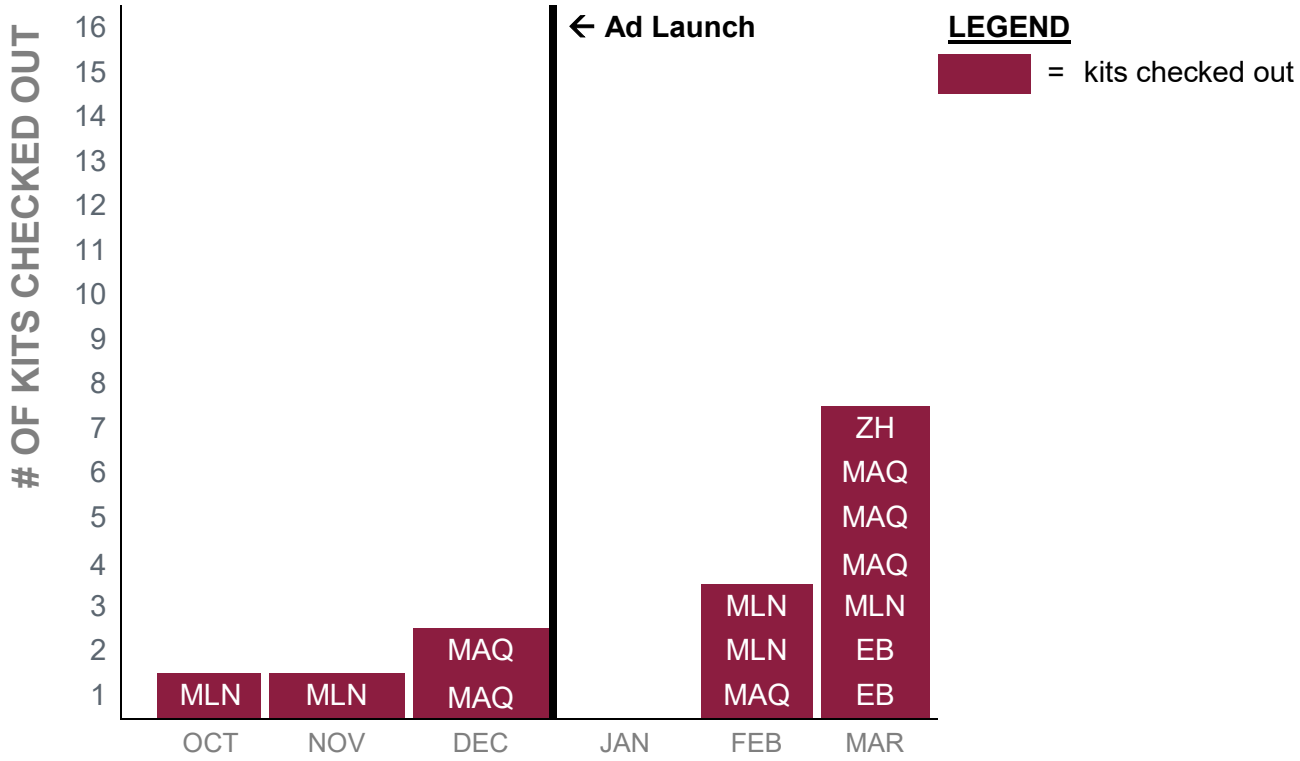
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 22. Reported Availability of Kits at the Northwest Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	0	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 52

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: PERRY



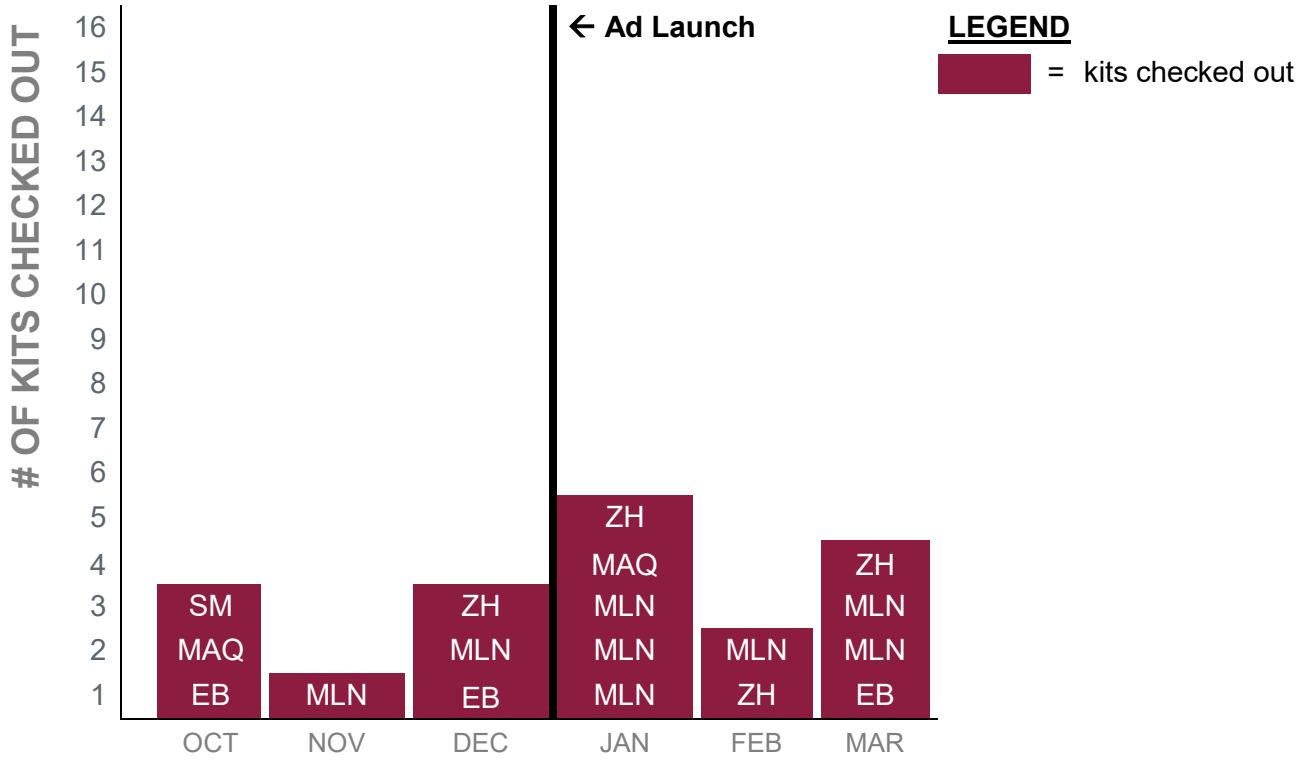
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 23. Reported Availability of Kits at the Perry Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	2	2
MLN	-	-	-	-	2	2
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 53

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: QUEEN CREEK



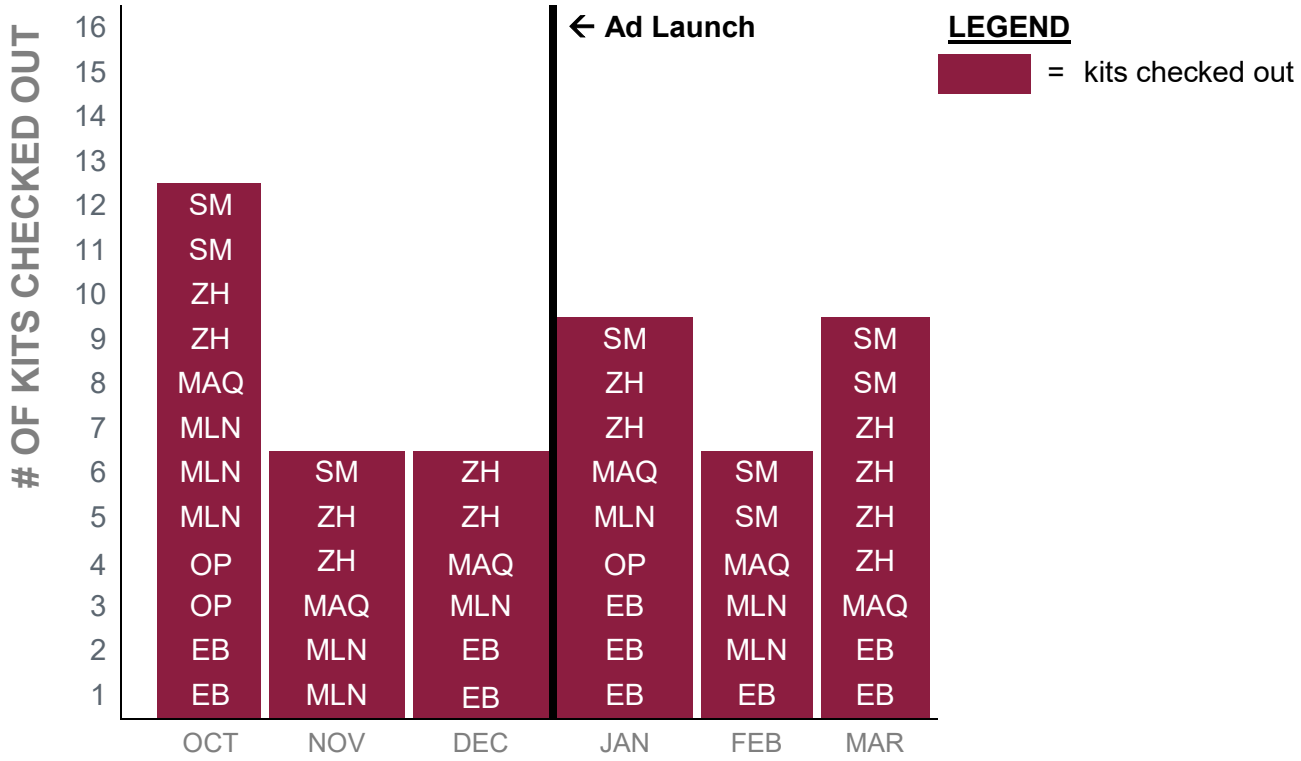
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 24. Reported Availability of Kits at the Queen Creek Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	0	0
MLN	-	-	-	-	2	2
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 54

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: SOUTHEAST



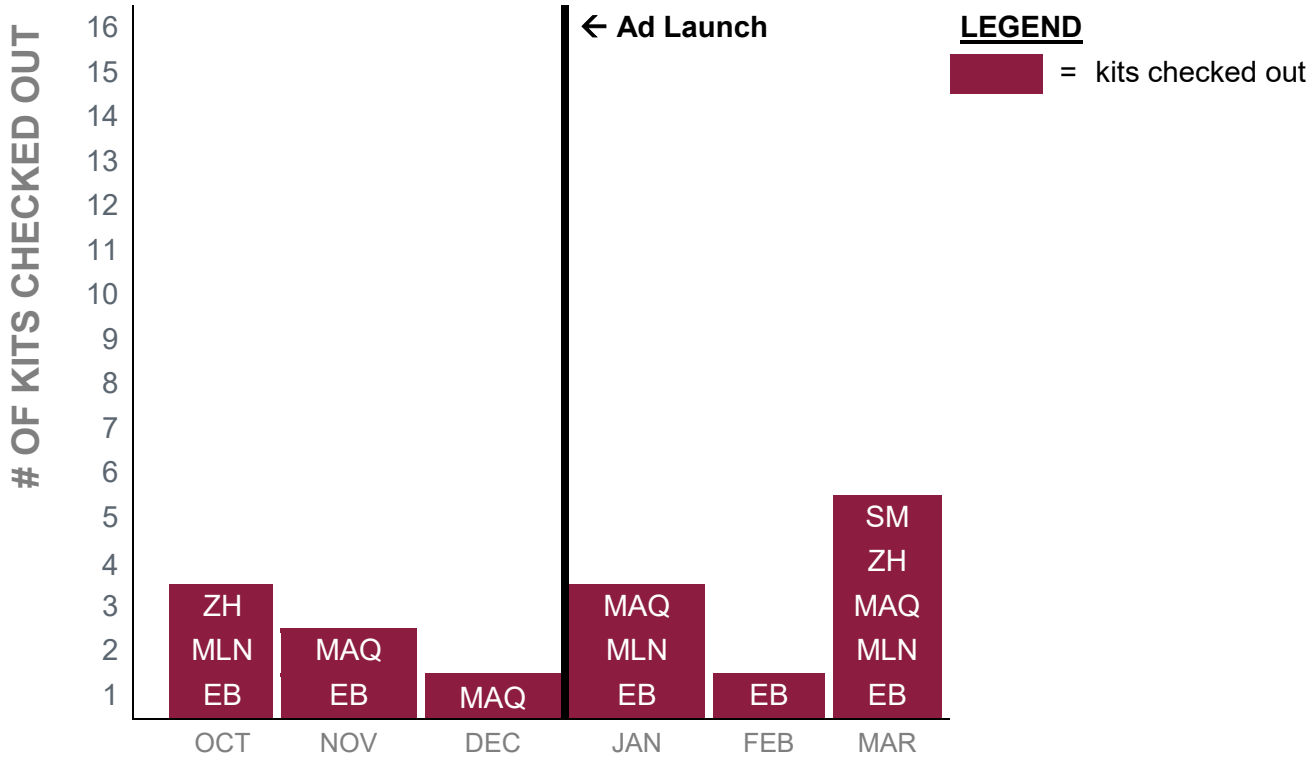
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 25. Reported Availability of Kits at the Southeast Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	2	2
OP	-	-	-	-	0	0
ZH	-	-	-	-	2	2
SM	-	-	-	-	2	2

Figure 55

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: SUN CITY



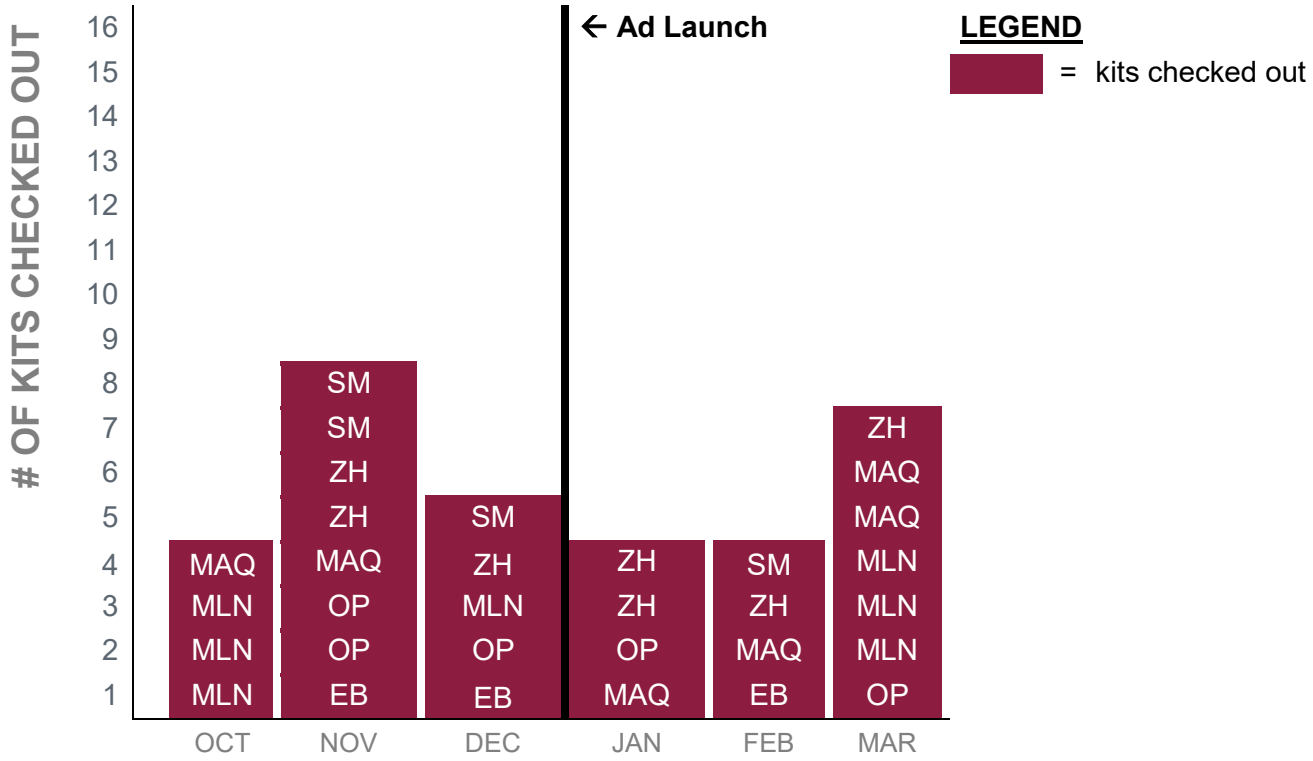
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 26. Reported Availability of Kits at the Sun City Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	1	1
OP	-	-	-	-	0	0
ZH	-	-	-	-	1	1
SM	-	-	-	-	1	1

Figure 56

KIT CIRCULATION OVER TIME FOR MARICOPA COUNTY LIBRARY DISTRICT: WHITE TANK



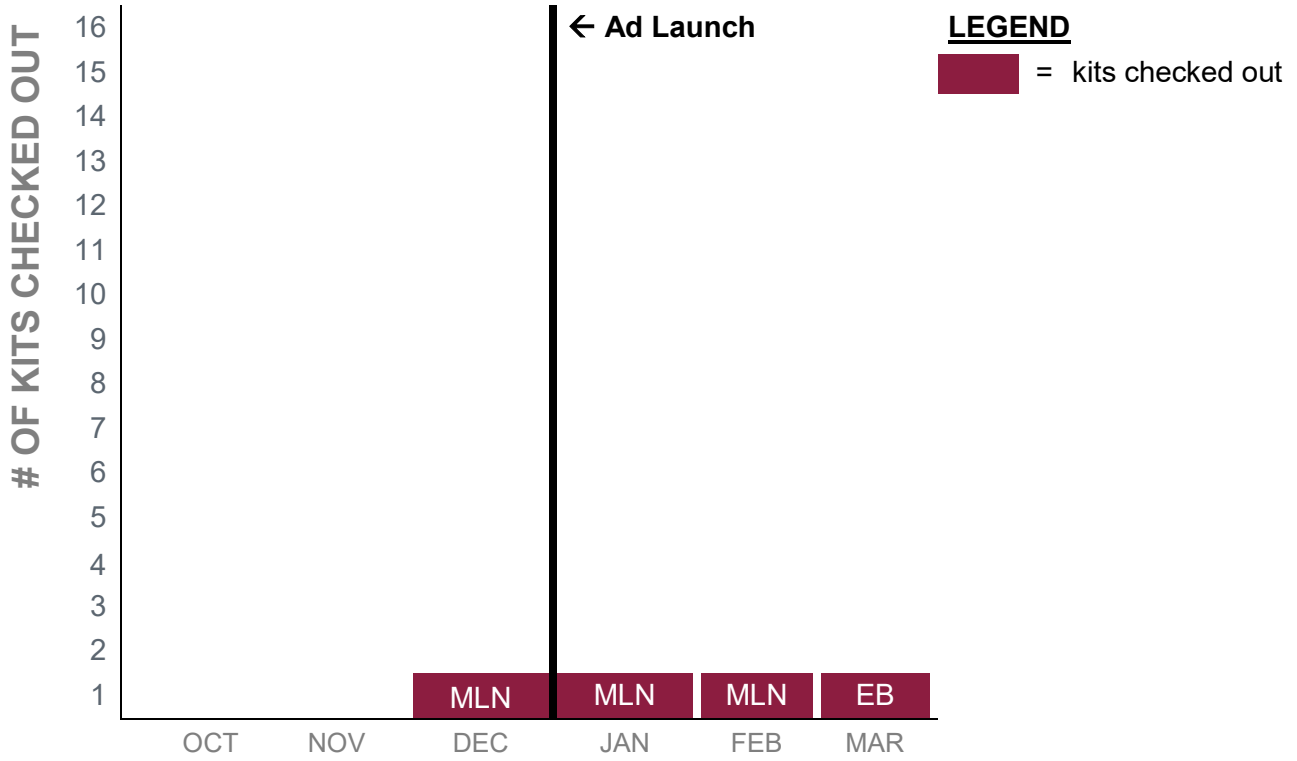
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 27. Reported Availability of Kits at the White Tank Branch

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	No	No	No	No	Yes	Yes
EB	-	-	-	-	1	1
MAQ	-	-	-	-	1	1
MLN	-	-	-	-	2	2
OP	-	-	-	-	1	1
ZH	-	-	-	-	1	1
SM	-	-	-	-	2	2

Figure 57

KIT CIRCULATION OVER TIME FOR AVONDALE LIBRARY



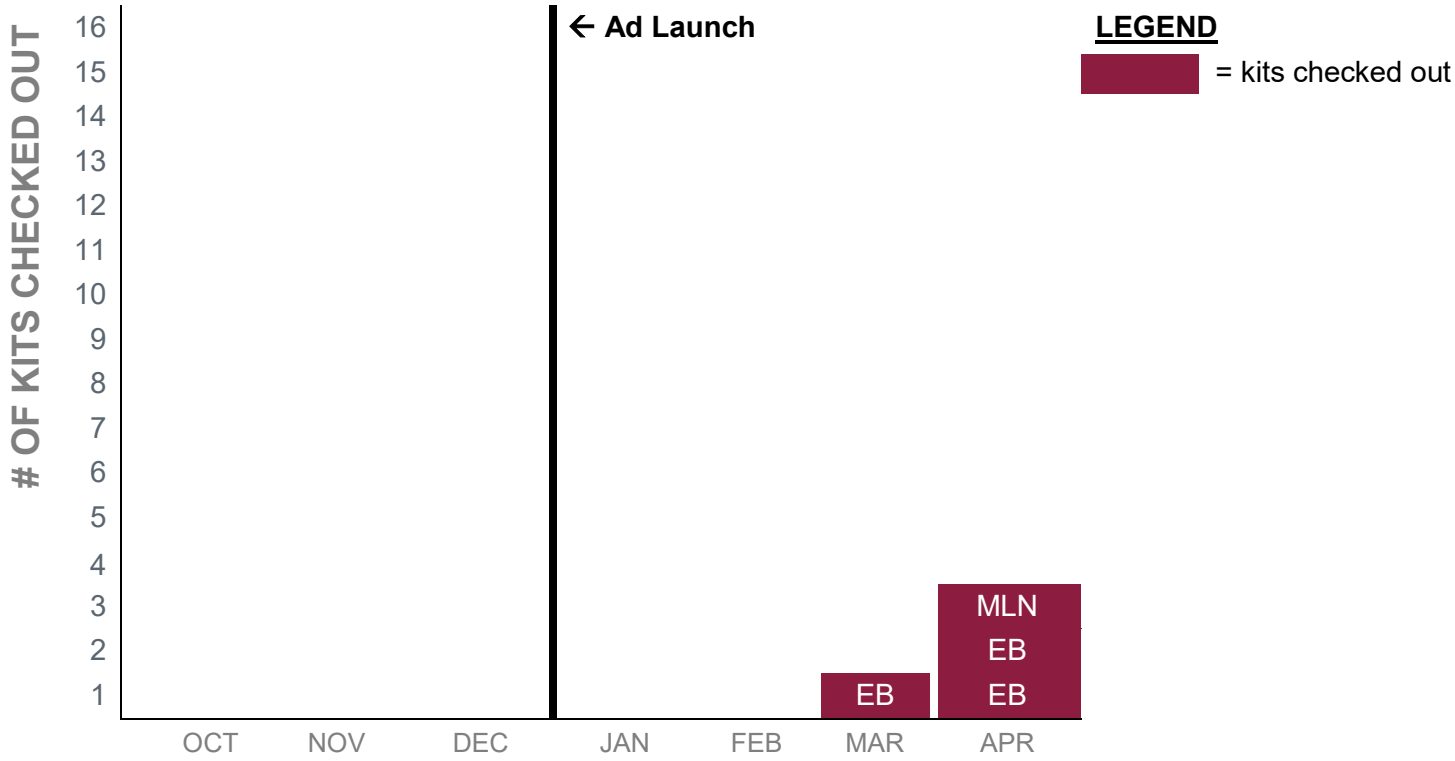
Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 28. Reported Availability of Kits at the Avondale Library

Kit	OCT	NOV	DEC	JAN	FEB	MAR
Availability Reported?	Yes	No	No	Yes	Yes	Yes
EB	1	-	-	1	1	1
MAQ	1	-	-	1	1	1
MLN	1	-	-	1	1	1
OP	1	-	-	1	1	1
ZH	1	-	-	1	1	1
SM	1	-	-	1	1	1

Figure 58

KIT CIRCULATION OVER TIME FOR: SCOTTSDALE LIBRARY



Note. EB = Exploring Biodiversity; MAQ = Monitoring Air Quality; MLN = Measuring Light in the Night; OP = Observing Pollinators; SM = Stream Mapping; ZH = Zombee Hunting; O = Other; Kits may have multiple copies in circulation and may be checked out more than once.

Table 29. Reported Availability of Kits at the Scottsdale Library

Kit	OCT*	NOV	DEC	JAN	FEB	MAR
Availability Reported?	Yes	No	No	Yes	Yes	Yes
EB	0	-	-	0	0	2
MAQ	0	-	-	0	0	1
MLN	0	-	-	0	0	1
OP	0	-	-	0	0	0
ZH	0	-	-	0	0	1
SM	0	-	-	0	0	1

*50 Grab N' Go Squirrel Watch kits given out

APPENDIX F. NATIONAL PILOT LIBRARIES CIRCULATION DATA DURING AD CAMPAIGN

Monthly circulation data was collected for libraries participating in a national pilot of citizen science and citizen science kits. Some libraries participated in the ad campaign. While random assignment to participation/participation status would be necessary to make a causal claim, evaluators examined whether the trend in data collection for libraries participating in the ad campaign compared to those who did not was consistent with the ad campaign contributing to circulation in the participating pilot libraries. That is, it would be expected that libraries participating in the ad campaign may see increased circulation over time as awareness of the kits grew. Monthly circulation data are reported in Figures 59 – 67. Note that while the figures included circulation data for April, only data from January through March were considered in the analysis.

Key Findings

- All five of the pilot libraries that participated in the ad campaign and provided monthly circulation data experienced at least slightly increased circulation during the campaign (i.e., through March). In contrast, only two of the four pilot libraries that did ***not*** participate in the ad campaign but provided monthly circulation data reported increased circulation during the campaign.
- Because pilot libraries were not randomly assigned to participate in the ad campaign and likely differed in terms of their preparedness to participate in the ad campaign, caution should be used when interpreting this finding. That being said, the finding that the pilot libraries that participated in the ad campaign may have seen increased circulation suggests that the campaign may have contributed to the circulation at those libraries.

LIBRARIES PARTICIPATING IN THE AD CAMPAIGN

Circulation for the Arkansas River Valley Regional Library System was not included in the analysis because circulation data was not reported on a monthly basis.

Figure 59

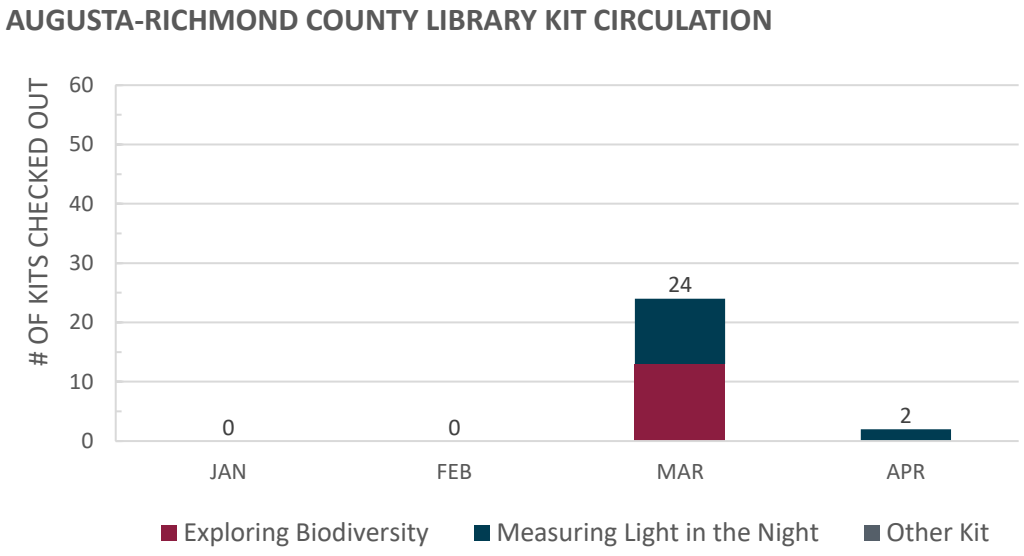


Figure 60

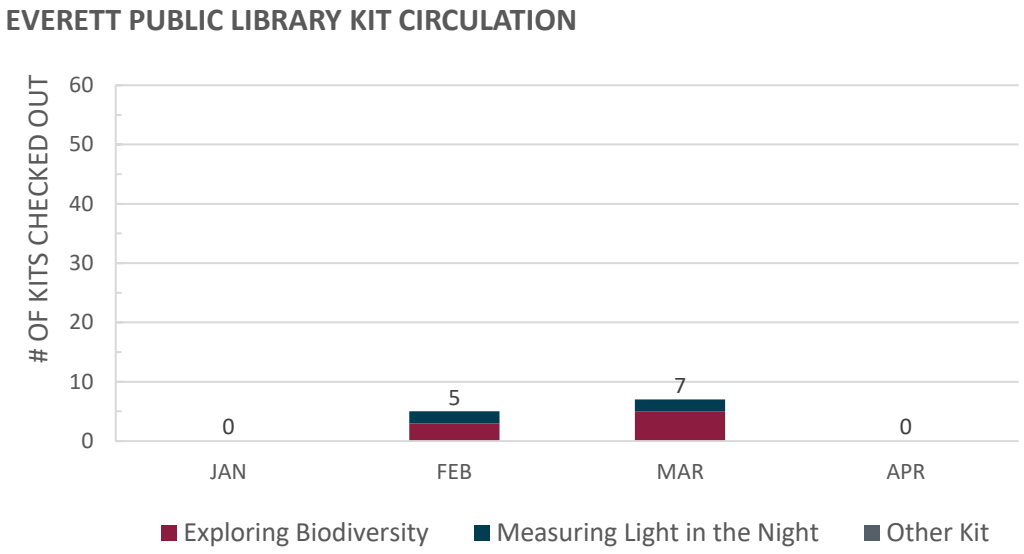


Figure 61

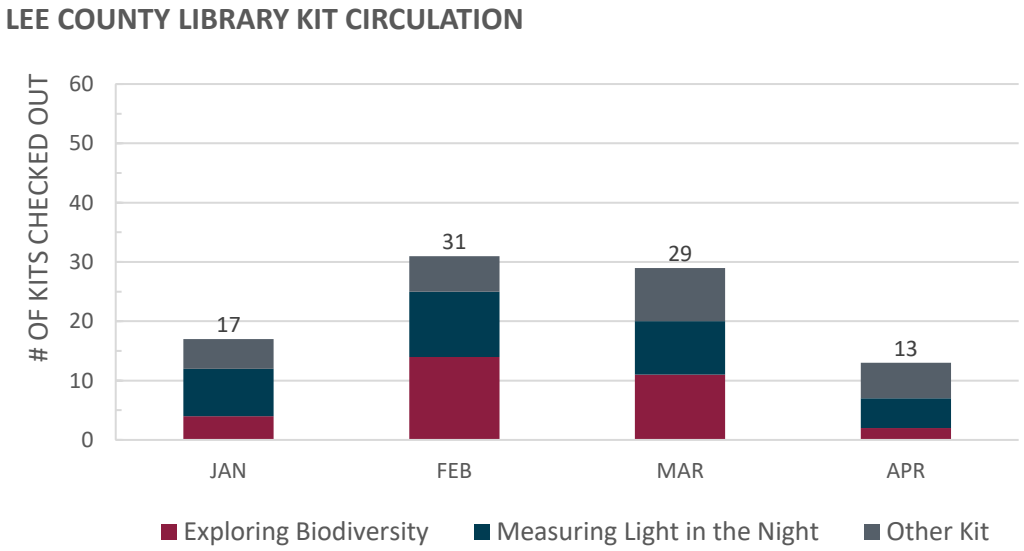


Figure 62

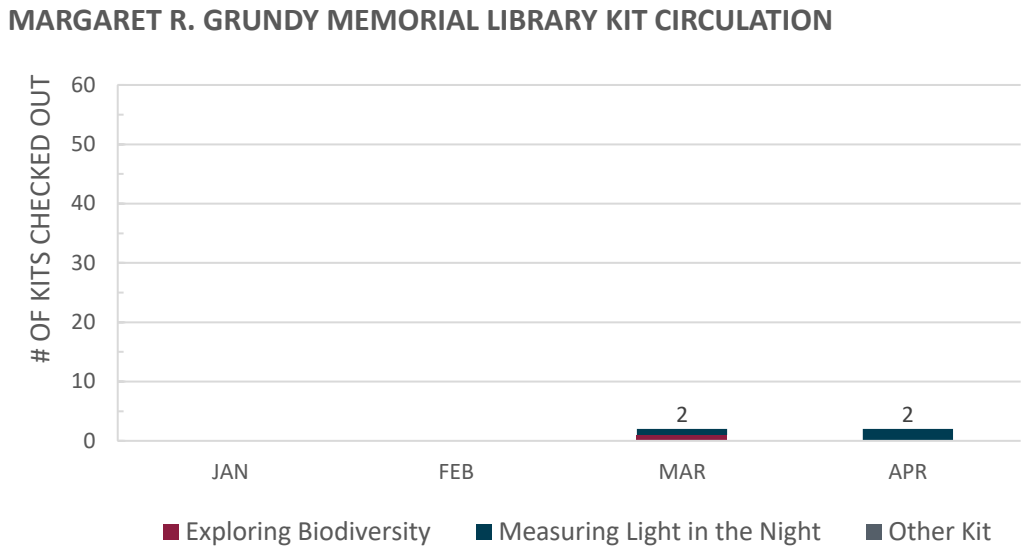
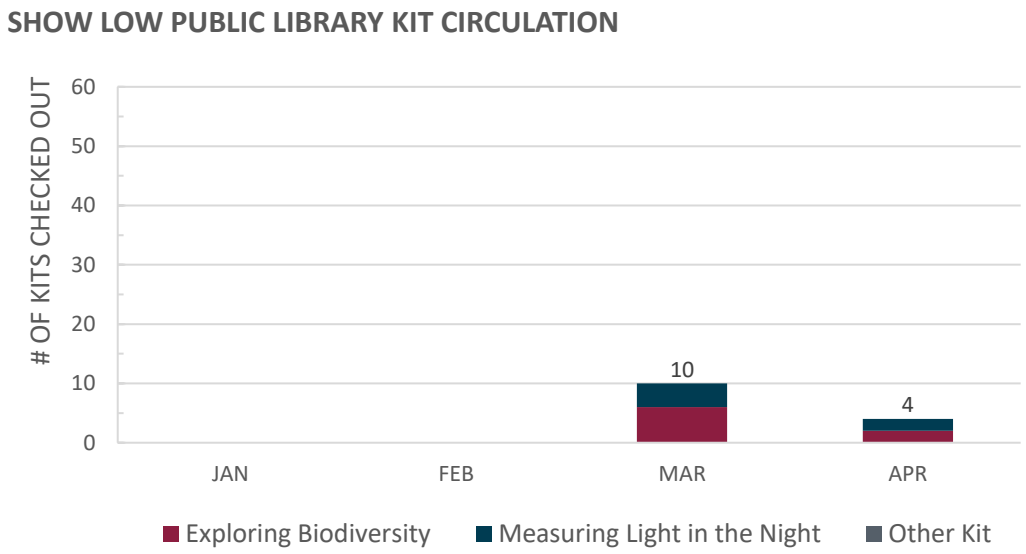


Figure 63



LIBRARIES NOT PARTICIPATING IN THE AD CAMPAIGN

Figure 64

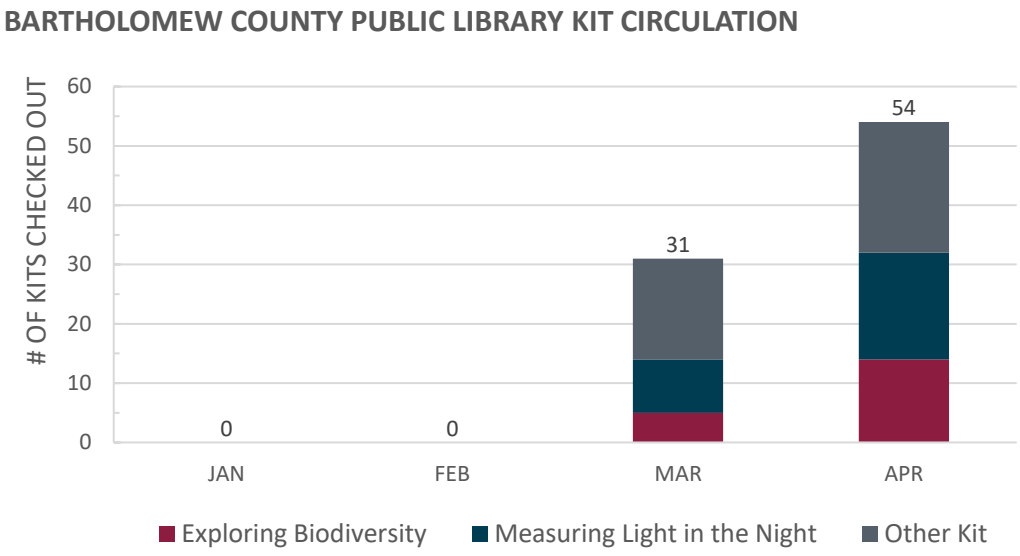


Figure 65

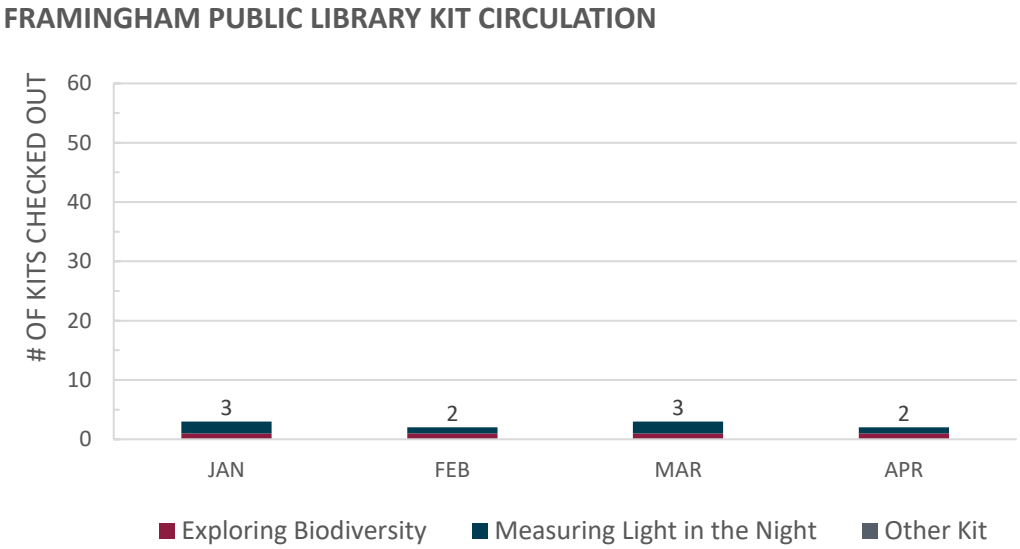


Figure 66

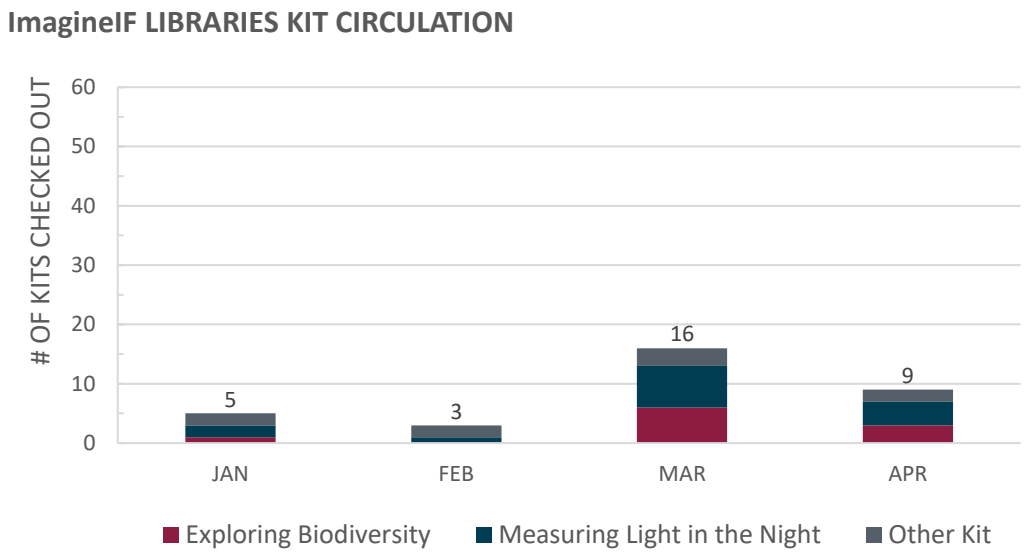
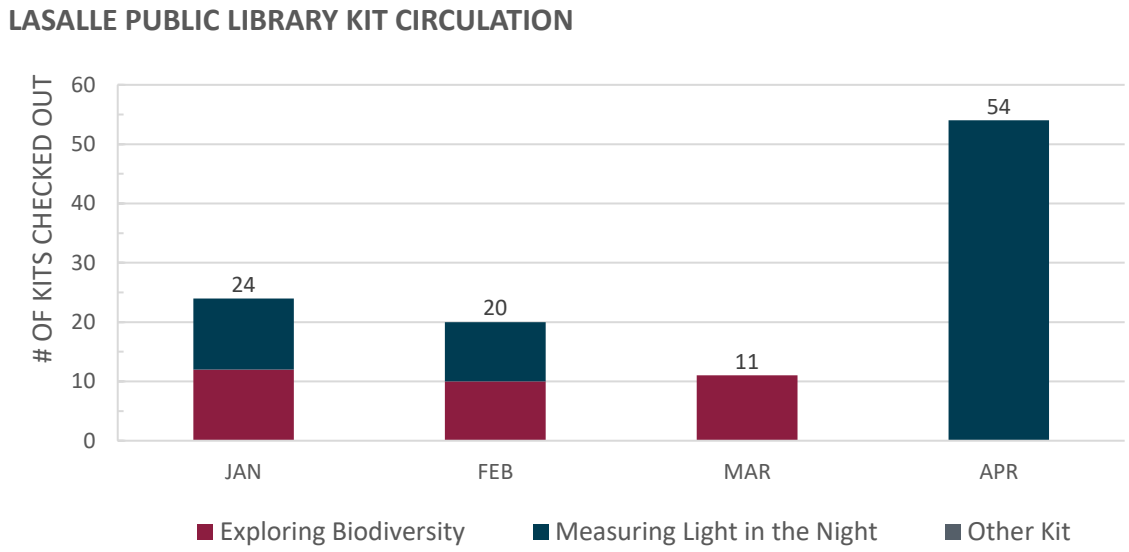


Figure 67



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ACKNOWLEDGMENTS

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