

Measuring Producer Engagement with Google Analytics: Evidence from a Climate-Smart Agriculture Initiative

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Introduction

Environmental issues like climate change threaten sustainable agriculture. Under the broader category of climate-smart agriculture, conservation practices can help combat such issues. These include improving food security (Lipper et al., 2014), reducing environmental impacts, and improving farm system optimization (Mizik, 2021), which can enhance food supply chain efficiency and resilience in the food system. Steenwerth et al. (2014) wrote that developed nations like the United States tend to focus more on environmental efforts to fight climate change, yet Rosenstock et al. (2016) indicated a lack of adoption of climate-smart practices in highly industrialized countries, which creates a challenge for recruiting and engaging producers into climate-smart initiatives. This gap highlights the need for extended and prolonged outreach initiatives that foster understanding, participation, and adoption. Furthermore, recent changes in federal priorities, including the reduction or restructuring of climate-smart agriculture initiatives, have affected producers' access to information and support (USDA, 2025). Digital trace analytics through web analytics platforms such as Google Analytics can provide a valuable technological approach for measuring engagement and participation and for informing implementation strategies at a global scale. Analytics-based approaches offer a more objective, and cost-effective solution. Web analytics has gained attention in business and digital marketing performance (Chaffey & Patron, 2012) as they seek to help identify human behavior information seeking patterns and provide data driven decision-making evidence (Kamki, 2016). Additionally, they provide real-time engagement simultaneously and are cost effective when compared to traditional survey-based data. In this pilot study, one research question guided our study: What are the engagement patterns of producers based on Google Analytics?

Conceptual Framework

Diffusion of Innovations explains the process by which ideas, practices, or technologies spread over time within a society (Rogers et al, 2019). This study conceptualizes digital engagement as an early behavioral indicator of producers' interest in climate-smart agriculture participation and practice adoption, with web analytics enabling the capture of engagement patterns.

Methods

The Texas Climate-Smart Initiative (TCSI) was designed to encourage conservation and sustainable practices while expanding market opportunities for agricultural commodities in Texas. The pilot study, which was part of a larger study to understand recruitment and marketing strategies, sought to engage producers (i.e., farmers, ranchers, small forest owners) through a two-stage outreach process. In stage one, postcards with one of three strategically framed recruitment messages (i.e., environmental benefits, economic benefits, general information control) (Ma et al., 2024) and a link to the project website (QR code and URL) were sent to the program's 12 ambassadors across Texas, who served as communication intermediaries. In stage two, the ambassadors distributed the postcards containing the recruitment message and QR code to producers they interacted with through on-farm visits and project informational meetings. The front of each postcard displayed the framed message and a QR code with the back including an extended message. We used Google Analytics to track online engagement and digital traces. We conducted digital trace analytics using third-party web intelligence data from Google Analytics.

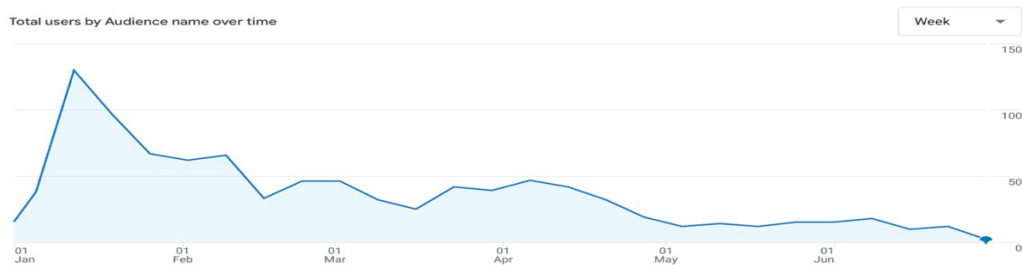
The observation period spanned January 1 to June 30, 2025. The project was suspended in April 2025 by the funding agency, but we chose to monitor website traffic beyond the suspension date. We identified engagement patterns based on the website analytics through descriptive statistics.

Results

The website recorded 775 users, averaging 2 views per session. A total of 2,900 page views and 8,100 events were captured, with an average session duration of 3 minutes and 55 seconds. Engagement was highest in early January and then gradually declined over the remaining months. The engagement trend suggested early momentum matters. This demonstrated the announcement effect, indicating strong initial engagement in the early stages, but the declining trend suggested the need to sustain continuous attention and engagement. Most users accessed the site via desktop ($n = 471$), followed by mobile ($n = 299$) and tablet ($n = 2$). Geographically, the largest number of active users were located in Dallas, followed by College Station, Houston, Ashburn, San Jose, Austin, and Bryan. By country, the majority of users were from the United States ($n = 711$), with smaller numbers from France ($n = 27$), Ireland ($n = 15$), Germany ($n = 8$), South Korea ($n = 4$), India ($n = 3$), Japan ($n = 3$), and Bangladesh ($n = 2$). Figure 1 shows the digital engagement identified by Google Analytics. “Total users by audience name” refers to user activity tracked and aggregated based on the unique participant identifiers (i.e., names).

Figure 1

Website Engagement Patterns From January to June 2025



Conclusions and Implications

The website showed moderate engagement. Engagement peaked early and declined over time, with most users accessing via desktop and primarily located in the United States, especially cities like Dallas and College Station. First, A one-time launch or promotion is not enough to sustain behavior change. Future efforts can target continuous promotion and planned reinforcement from time to time, such as reminders, follow-ups, and continuous content releases. Second, most participants accessed the website through desktop and then mobile phones, indicating the materials designed for promoting the program should be suited for display in a workplace or professional context, including readable and downloadable, comparatively longer content rather than mobile-friendly short formats. Notably, our initial design aimed at examining message effects across different groups (environmental, economics, and control groups). However, due to the initial setup, we were only able to view the digital traces of the website, which does not account for those who came to the website through other materials or those who came across the three conditions. Future research can modify the initial setup to create three individual groups would help identify group behavior pattern differences. Future research can also add a mixed message of environmental and economic benefit and test the message effect.

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