Exploring the Goals and Motivations of Citizen Scientists in the Chesapeake Bay Watershed

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Collaboration between Chesapeake Bay Program scientists and citizen science groups is key to filling data gaps and developing a comprehensive understanding of Chesapeake Bay watershed health; however, the monitoring motivations and research goals of agency scientists and citizen scientists often differ. This perceived misalignment of priorities can negatively impact the relationship between these groups and discourage citizen scientists from engaging with professional scientists. Therefore, it is important that citizen scientists and professional scientists understand each other's motivations and goals in order to sustain an effective and engaging program that encourages volunteer participation over the long-term. We distributed an online survey to monitoring groups across the Chesapeake Bay watershed in order to investigate their motivations and goals. Preliminary analyses conclude that citizen science groups have some goals that initially appear to be unrelated to the goals of traditional scientists; however, further analysis reveals that these differing goals and research questions can be addressed with the same re-purposed data. Consequently, it is important to actively foster dialogue, acknowledge citizen goals, and connect citizen goals to the goals of Chesapeake Bay Program. This facilitates communication that is essential to creating and maintaining mutually beneficial collaborative relationships. This presentation will discuss some of the goals and motivations of citizen science groups within the watershed, and will highlight areas where citizen and professional scientists can work together to answer their questions and fulfill their needs.

Instant-gratification Citizen Science

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Instant gratification, related to congratulatory hits of dopamine and other neurotransmitters, is the mechanism behind motivations for participating in citizen science including selfish or personal interest and enjoyment of gamification and games [1]. But beyond the immediate sensation of feeling "good," longer-term motivations such as altruism are also linked to similar neurochemical processes [2]. Citizens may be classified into three types: (1) people who care about and contribute to place-based communities converging around a shared, social concern; (2) people, not included in type-1, for whom public discourse, social media including games, and citizen science all run through the same router; (3) people not included in the first two types. This work focuses on type-2 citizens. We define "immediate civic response" (ICR) as the response generated in cases in which instant gratification is linked to participation in citizen science, which is often blunted by significant requirements of long-term commitment: type-2 citizens may not want to go through the trouble of membership of the communities that type-1 people appreciate. We now have digital tools fast enough to keep up with citizens' empathy trigger. If people want to help, they take part in a specific, one-off action and suddenly they are part of the solution. ICR potential will be analyzed through a neurochemical perspective, and presented together with a description of socio-technological advances empowering citizens to act as a decentralized super-organism: a pan-humanity sensor-array capable of sensing where problematic issues are, and collecting responses in real time.
Quantitative Predictors of Participant Retention: Survival Analysis of the CoCoRaHS Dataset

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We quantified participation patterns in 18 years of observation records from CoCoRaHS, a nationwide volunteer rain monitoring network. We used survival analysis to evaluate early predictors of long-term participant retention. As previous research on online crowdsourcing systems has found, participant activity levels within the first week are highly predictive of eventual retention. We also studied the effect that participant demographics, local weather patterns, and technology use (website vs. mobile app) affect retention. We found that participants who are older, live in warmer climates, or who use a mix of technologies are more likely to stick around for several years than other participants. The results are statistically significant, though the effect sizes vary. As is often the case for citizen science, the implications of this study are not necessarily straightforward. Some predictors of retention are amenable to intervention, while others are not. But more fundamentally, there is a potential tension between different recruitment strategies. If robust data collection is prioritized, a project might focus recruitment on participants who are more able to stick around long term. On the other hand, if educational and inclusion goals are prioritized, projects might target recruitment at students and under-represented groups. Regardless, survival analysis is useful as one tool for evaluating the success and stability of a long-term citizen science project. The results and source code of this analysis will be published online before the conference.