



MeadoWatch Project

Importance of Ethnic and Racial Diversity in Citizen Science

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Introduction

A. Background

The MeadoWatch Project uses a citizen science approach to engage Mt. Rainier visitors in scientific research to track the biological impacts of climate change. Volunteers are essential to the success of the overall goal. Volunteers monitor wildflowers along an established trail and note four phenological stages and conditions of the plants. This program is run by the Hille Ris Lambers Lab at the Department of Biology at the University of Washington, working collaboratively with Mt Rainier National Park.

B. Study Goal

The goal of this study is to

- Provide an understanding of the typical demographics of MeadoWatch volunteers, of their opinions on climate change and experience of the program.
- Help in developing a plan to increase outreach to a much more diverse group of people with the goal of increasing diversity within the MeadoWatch program.
- Help explain the importance of diversity and inclusion in outdoor spaces.
- Illuminate barriers that limit diversity of participants and what steps can be taken to increase outreach.

Ethnic diversity and inclusion in outdoor spaces is also beneficial for programs such as MeadoWatch. Citizen science programs like MeadoWatch can increase public understanding of science and engagement with critical issues, such as climate change and conservation. These programs can also help create opportunities for further training in STEM fields. Public involvement in research also can enhance research progress through new insights participants bring to the research effort. My hope is that the results of this study will be used to better understand our volunteers and improve our program, and develop a plan to increase outreach in the MeadoWatch program to build a broad community of citizen scientists fully representative of our region's diversity.

Methods

For data analysis, I used both qualitative and quantitative methods in my research. Survey and interview responses were analyzed using RStudio and other programs to gather data and create visual models that explain the study questions. The study design consists of various versions of online surveys followed by in-person interviews. The subjects of the study include adult users of Rainier National Park, members of outdoor clubs, and citizen scientist volunteers. All respondents were self-selected, the surveys and in-person interviews open to all subjects in above selections. Subjects decide whether to participate (participation is voluntary).

The purpose of the research topic is guided by the following questions:

- Who are the MeadoWatch volunteers? What are their demographics? How diverse is MeadoWatch as a program?
- Do their experiences with MeadoWatch relate to their opinions about climate change or engagement in the outdoors? By using the survey questions as well as the in person interview, I can determine the volunteer's experience with MeadoWatch.
- How can we progress to a more diverse program of citizen scientists?

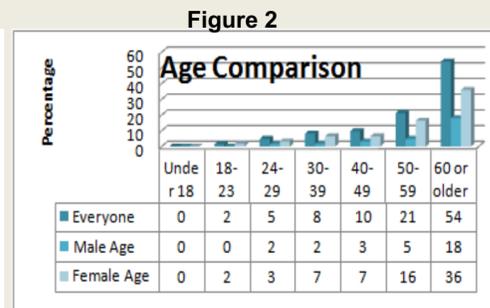
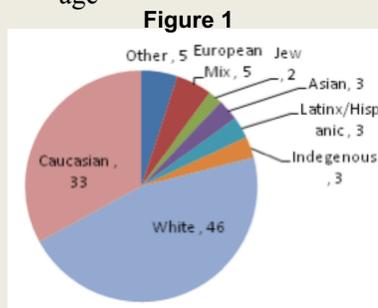
Results and Analysis

Similar trends between the MeadoWatch volunteers and Park visitors can be identified from the data retrieved. A 2008-09 NPS Comprehensive Survey of the American Public found that the U.S. visitors to National Parks, National Monuments and other National Park System are predominantly non-Hispanic whites, and this has yet to change despite NPS efforts (Taylor, 2011).

Figure 1 shows that a majority of MeadoWatch volunteers are either White or Caucasian. Latinx/Hispanic, Indigenous and Asian are underrepresented ethnic groups.

Figure 2 shows age comparison. Data concludes

- 54% of volunteers are over 60 years of age
- 21% are 50-59 years of age
- A combined 7% of the volunteers in the sample are under 30 years of age



We took time into consideration, times spent hiking/outdoors and employment status

- 43% are retired
- 62% of participants hike very often (more than 11 times a year)
- 44% visit National Park very often (more than 11 times a year).

The research was guided by a set of questions, one of the questions involved MeadoWatch experiences and their engagement with the outdoors and perspective on climate change.

Survey responses showed a few things:

- Majority strongly agree that climate change is occurring and are aware of the impacts
- less confidence in their knowledge on climate change impacts in their communities

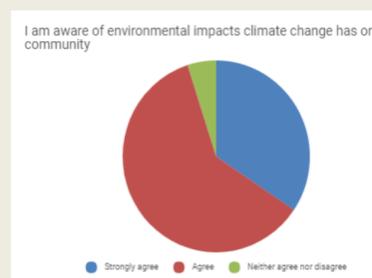
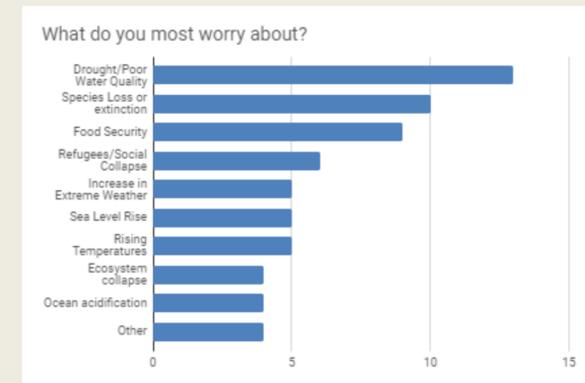


Figure 4.3 shows what subjects are most concerned about occurring in their community. There was multiple submissions, and each answer was categorized into 10 categories. Categories were made to best fit responses. The largest category included drought/water quality at 20%, followed by species loss at 15% and then food security at 14%. These results show what most of the MeadoWatch volunteers surveyed worry will happen to their community due to climate change



Conclusion

In conclusion, there is higher representation of white and caucasian volunteers than other ethnic groups, a reflection of the typical park visitor.

From the data, I can conclude that a barrier to the lack of diversity in the MeadoWatch program is time. Most of the volunteers surveyed are older than 50 years of age ~75%.

The data gives me an understanding of who the volunteers are. With this information, I was able to interview volunteers and understand what they value and their experiences volunteering at the MeadoWatch program.

Lack of diversity stems from the the lack of outreach to poor communities and with a large population of marginalized people.

My plans for the future is to continue to gather data from surveys and complete my research. Gain a larger population size and getting data that includes all volunteers, not just 2017.



References

Taylor, Patricia A., Burke D. Grandjean, and James H. Gramann. "National Park Service comprehensive survey of the American public 2008-2009: Racial and ethnic diversity of national park system visitors and non-visitors." *Natural Resource Report NPS/NRSS/SSD/NRR-2011/432*. Fort Collins, CO: National Park Service (2011).