

**Mapping Intention to Outcomes: Gauging the Impact of UVTA Programs Across
Socioeconomic Status**

Research Proposal for the Upper Valley Trails Alliance

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March 15, 2021

Literature Review

Natural outdoor spaces are far more than geographical places away from the technology and infrastructure of our increasingly industrialized world. Rather, these spaces are directly linked to our health and happiness. Research has shown that time in the outdoors can increase our mental health, sense of self (Hanna 1995) and our physical wellness (Frumkin et al., 2017). Moreover, the more time a person spends outside, the more likely they are to care for and want to protect that area, which has implications for environmentalism at a time when our world is in crisis from climate change and increasing land use (Berns and Simpson, 2009). For the purpose of this study, these positive outcomes have been conceptualized into well-being and attitudes toward nature/stewardship. Well-being refers to a person's sense of belonging and community, their physical and mental health, and their cultural capital (social networks and support). Attitudes toward nature and stewardship refer to a person's comfort in nature, desire to protect the environment, and perceived access to the outdoors.

However, in order to gain all of these benefits for humans and for nature, people need to be able to access the outdoors in a safe and comfortable way. Such access has been shown to vary by socioeconomic status (SES). Research has shown that low SES individuals are less likely to participate in organized outdoor recreation (Sessoms, 1963, Nielsen et al. 2011, Nyström, 2019). When looking into youth specifically, low SES children have been found to spend less time outside than their higher SES peers (Nyström et al. 2019). Spending time outside requires access to transportation and gear resources, time, and knowledge of the available opportunities, all of which can be harder to obtain for people of lower SES and can lead to lower physical activity (Stockie 2009). Household income has been associated with outdoor access and park visitation (Stockie 2009, Ghimire 2014, Tierney et al. 1998), while parental education is tied to awareness and use of outdoor resources (Stockie 2009, Mikus 2020) and is a measure of the

cultural and social impact of SES (Mikus 2020, Ghimire 2014). With less access comes fewer mental and physical benefits for low SES youth and a possible failure to develop a comfort with nature and stewardship mindset that contribute to the continued care for the outdoors (Larson et al., 2013).

The Effect of Outdoor Programs on Reducing SES Disparities in Outdoor Recreation

One way of reducing these disparities in nature-oriented outcomes by SES is through outdoor programming. Outdoor programs can eliminate gear and knowledge barriers and have been shown to impact the well-being of low SES young people specifically. Regarding a sense of belonging, outdoor adventure programming implemented in a college access program for underserved high school students gave students a chance to deepen their existing community relationships (Richmond and Sibthorp, 2019). Low SES Black and Hispanic children who participated in a nature-based education program experienced positive changes in both "STEM capacity" items such as leadership, teamwork, and science interest, and health-related quality-of-life indicators such as physical and emotional health (Sprague et al. 2020). As for cultural capital, a sports program meant to increase social mobility for urban youth found that the program fostered social connections that helped participants later on in life (Spaaij, 2009). Through these examples, it is apparent that various kinds of outdoor programs can overcome the barriers to outdoor recreation that low SES youth face and expose them to the positive benefits of the outdoors.

Outdoor programming has also helped young people develop an increased comfort in and sense of care for nature, though there is a gap in the research for whether outdoor programs reduce disparities in these outcomes for low SES children. Participation in multiple types of outdoor programs have increased participant's sense of environmental connection and increased

their likelihood to become a member of a conservation or environmental organization. In addition, the participants in a conservation-focused program reported more program impacts on conservation activities than regular wilderness experience programs (Chawla et al. 2012). On a broader scale, place attachment, or bonding to environmental settings, has been shown to increase concern for specific environmentally destructive initiatives and increase overall concern for the environment (Vorkinn and Riese 2001). However, research has not been conclusive on what specific aspects of outdoor recreation participation lead to increased environmental concern (Berns and Simpson 2009). Regarding comfort in and access to nature, a study of youth participating in outdoor activities over a span of years showed that participants expressed less fear, more preparation for the physical and mental challenges of the outdoors, and a greater love for outdoor recreation after exposure to the program (Lekies et al. 2015). Childhood play in natural environments has also been associated with later preferences for outdoor recreation activities (Bixler et al. 2002). Since there are known links between outdoor programs and environmental comfort and concern and between low SES and outdoor access, there is reason to think that these environmental outcomes would vary by SES. Our study can add to the research on how SES influences young people's stewardship/conservation mindset and comfort in nature when participating in outdoor programs.

The UVTA

The Upper Valley Trails Alliance is an organization based in Norwich, Vermont that runs programs and leads a regional network of people, organizations, and towns to connect people and trails in the region. The organization helps provide equitable access to and the physical and mental health benefits of trails to all residents and visitors to the Upper Valley. It also facilitates

conservation and stewardship and promotes economic development through outdoor recreation to help the communities of the region. Its main programs include the Passport to Winter Fun that helps elementary school students find ways to have fun outside in the winter and the High School Trail Corps that introduces high school students to trail work in their local area. The UVTA operates in 31 towns in the Upper Valley (Anon. n.d. “Mission & Vision – UVTA.”). Some of the communities the UVTA is most active in are Hartford, Lebanon, Sharon, Thetford, and Fairlee, for whom 20-26% of the population is under the 200% federal poverty level (Dartmouth-Hitchcock 2019). The UVTA’s mission and its involvement in underserved communities position it well to reduce the disparities in outdoor recreation that affect low SES young people. However, the UVTA does not currently collect data on SES. This means that the organization has not been able to identify how they are serving low SES populations or conclusively prove that their program reduces the SES disparities in outdoor-related outcomes of wellbeing and attitude towards nature/stewardship in the areas that it serves. Our research proposal aims to make the connection between intention and impact for the UVTA.

Research Question

Our research question is: how does SES impact young people’s attitudes towards nature and stewardship and their well-being in UVTA programs? Our proposed research question revolves around the impact of SES on youth through the UVTA programs; thus making socioeconomic status (SES) our independent variable. One main issue of the research surrounds the need to assess SES while considering participants’ vulnerable social positions and the possibility of shame arising from any SES- focused questionnaire. Prior research has often measured SES through a combination of income and parental education (Ghimire 2014, Li et al. 2021, Mikus et al. 2020, Stockie 2009). In this study we take on a third and only modestly

explored trend in SES measurement: the broader approach to SES measurement, in which we attribute great importance to cultural and social prestige in addition to the measurement of possession both of knowledge and physical belongings. We take into consideration Gary Marks' (1999) study measuring social class and socioeconomic status as well as the need to make our research inclusive of the different social groups and their vulnerability due to their young ages. Therefore, in order to assess SES without directly asking about income, we focus our analysis on occupation, education and possessions at home. Education allows for a broader analysis of cultural and social capital within households. Whereas possessions allow us to analyze how wealth might be reflected across students' households. In addition, given the necessity to acquire parental consent as our respondents are minors, all the SES related surveys will be answered by parents or guardians. By doing this we ensure that the research will have more informed responses on SES and that students will be less likely to feel shame from participation in the study.

In order to analyze how SES plays a role in outdoor participation outcomes, we will consider the UVTA programs as a mediating variable, specifically the Trail Corps and Passport to Winter Fun programs. The goal of our research is to demonstrate whether the UVTA programs are resulting in increased wellbeing and positive attitudes toward nature and stewardship for participants across socioeconomic backgrounds and whether participants of low SES experience different outcomes from those of higher SES. We expect to find that youth of low SES income will benefit more broadly from participation than those of higher SES. That is primarily because these students are often left out of participation in such programs and due to their enhanced expected benefits from interaction.

The ultimate goal of the research is, therefore, to assess the outcomes of the UVTA programs, which we have divided into two categories with subcategories. Thus, making these outcomes our dependent variables. Through analyses of prior research our team has established several indicators for each of those categories. Given that the research is being operationalized through surveys all questions asked to participants target our indicators. The indicators for wellbeing are sense of belonging/community, physical and mental health, and cultural capital; while the indicators for attitude toward nature and stewardship are comfort in nature, attitude toward conservation, and access to the outdoors. Table 1 shows these indicators alongside their correspondent dependent variable and conceptualizations for this study.

Methods

Considering the goals and scope of the research, a quantitative approach better suits our proposed design, which should be operationalized through the use of surveys across the two programs analyzed: High School Trail Corps and Passport to Winter Fun. We are, hence, using a deductive method to our research question, since we draw from theory about the impacts of nature-based programs on children and how that might vary by SES in order to guide our hypotheses and data collection. In addition, the research proposes that students' SES will cause varying outcomes through participation in the UVTA programs. As such, the study assumes a causal relationship between our variables. The association between our variables reflects our expectation that as SES changes, program outcomes are expected to change. Moreover, we will assess for direction of influence through our application of pre- and post-programs surveys, which should also ensure non-spuriousness given that the repeated test rules out any spurious variables. That is, an unknown variable that renders our expected association incorrect.

Therefore, we assess student wellbeing and positive attitudes towards nature and stewardship before and after the program relative to students' SES. With that in mind, our design is suited for basic research as it is aimed at expanding knowledge upon the impact of outdoor programs onto youth. And our research is also explanatory as our team aims at explaining the causal phenomena that we observe in order to increase understanding on the influence of SES into positive outcomes from outdoor recreation.

Research Instruments

In order to develop the research, we will run a longitudinal study exploring pre- and post-program response from participants. Thus, we will need to collect survey data from participants before and after their experience with the UVTA. The UVTA already does pre- and post- surveys for both the Trail Corps and Passport to Winter Fun, so we anticipate that we will be able to integrate our questions into existing structures of data collection. Our respondents are the people who participate in the UVTA youth programs as well as their parents, and we will reach them by adding components to existing surveys that they are asked to respond to. Thus making them our unit of analysis. In addition to participant surveys, we will also create a parental survey that exclusively assesses SES. The separate survey is necessary as it allows for a comprehensive understanding of participants' SES while reducing the odds of harm for participants who belong to a vulnerable age group and who might belong to a vulnerable SES. The purpose of this separate survey is, therefore, to promote inclusiveness while ensuring greater likelihood of accurate responses, as students might not be fully able to answer SES-related questions. The aforementioned methods allow for the generalization of our population, require minimal resources, and quantify the broad range of data necessary for the research – personal

opinions, attitudes, changes in behavior etc. In addition, the chosen method allows for the surveying of the entire population through convenience sampling.

Our research design seeks to attribute internal consistency reliability, as we believe that our multiple survey questions allow for the assessment of the same variable through multiple perspectives, ensuring their consistency as a concept. Furthermore, the study will also work with face validity. That is, our variables are aligned with overall understandings of their meaning as ensured through prior research.

Proposed Survey Modifications

As previously stated our team has come up with a few suggestions for change in the UVTA surveys. For the Passport to Winter Fun we suggest the addition of a few research questions to the paper surveys given to participants. Additions are few and target the indicators that we deem more relevant for participants' age group: sense of belonging, physical and mental health, and comfort in nature. We then ask for student assent to participate, pending parental consent. Finally, we suggest adding a QR code or short url on back flap that links to a parental consent form and optional SES questions. The digital parental survey provides convenience, and youth shall continue with the paper surveys due to their young ages.

With regards to the High School Trail Corps program we have proposed the addition of a few questions that measure all indicators in our study. We also provide a template for asking for student assent, pending parental consent, to use these questions in a study run by the UVTA to help gauge its program impacts and be used in grant applications. If it is not already, we suggest that students are asked to input a parent email address in the survey, and a separate email with the parental consent form and the optional SES questions should be sent to parents. The digital

aspect of the Trail Corps surveys should aim at increased convenience for the UVTA to assess data and parents/students to complete the survey.

Analyzing and interpreting results

Our team has proposed the consideration of three measures of SES: occupation, education and possession of knowledge about outdoor recreation. The last measures are simply assessed through survey responses, with the first one requiring some extra work. In order to measure it we must assess the mean income for a given occupation in order to estimate approximate income levels. The federal poverty levels will then guide our division of a family's SES in regards to expected income.

In order to interpret our results we will look at our respondents as a whole to estimate how our three measures of SES have interacted with our indicators individually. Data from the parent and child surveys will be collected separately but can be merged in Excel using the VLOOKUP function and merging by child's name (for Trail Corps, data could also be merged by parent email). Instructions on how to merge data in Excel can be found [here](#), or a software such as R can be used to do the same thing (R would use the `full_join` function). The most convenient method to analyze results would be to graph how each of our measures of SES has impacted indicators individually. Thus, looking into the impact of estimated income onto comfort in nature, sense of belonging and so on. Subsequently repeating the process for level of education and possession of knowledge. By doing this, the UVTA can conveniently have a solid idea of its impact.

If the UVTA is able, we also see potential in running a multivariate regression analysis of our results as it allows us to estimate the relationship between multiple independent variables

with one dependent variable. The advantage of running a regression is that it would allow us to look at the partial effects of each SES indicator or the interactions between income, education level and level of participation in the outdoors on a given indicator. For instance, running a regression with sense of belonging as the outcome variable and estimated income and education level as the explanatory variables would reveal the partial effects of each measure of SES on sense of belonging. Therefore, we can estimate how each of our measures of SES interact with our individual indicators of expected outcome.

Finally, we will analyze how or whether survey answers between pre- and post- program surveys vary and conduct a comparison study between changes found over time, before and after the mediation of the UVTA program. We will also compare answers to see how each expected outcome varies by levels of SES. Attention will be given both to the level of change per SES between pre- and post-program surveys as well as the final outcomes achieved by all students.

Overall design strengths and weaknesses

As expected, our study comes with some strengths as well as weaknesses. In regards to the latter, our team has identified a few primarily resulting from our chosen sampling method of convenience sampling, as we attempt to survey the entire population. This choice might lead to errors in our research, as people might choose to answer either only the pre- or the post-program surveys, thus generating nonresponse bias. Another possible conflict is that people might choose to skip questions, specifically more sensitive ones. This becomes an even greater possibility with the Passport to Winter Fun survey, which is operationalized as a paper survey and, therefore, more difficult for the UVTA to exert control over obligatory questions. We have developed surveys that are conveniently short while efficiently targeting our indicators as a means to offset

this possible attrition, nonetheless our team must still accept its risk. Curiously, this same weakness might be a strength of our study if we successfully manage to offset possible attrition from our convenience sampling. That is, by surveying the entire population, our study can produce an exact understanding of how SES influences students outcomes from the UVTA programs. This opens up the possibilities for a thorough understanding of UVTA's impact as well as their indispensability in the community.

Another simultaneous strength and weakness of our study is our broad conceptualization of SES. While this enables our study to assess SES without directly asking about income, this lack of information might somehow limit our understanding of participant's SES, as the inclusion of income alongside other measures of SES has the potential to create a more comprehensive understanding of participants' situations that is more easily comparable to population-level SES data for the region. Nonetheless, our conceptualization and operationalization of SES beyond income allows us to explore the broadness of the concept while ensuring that participants will not be hurt by their participation in the research. The latter reason is of utmost importance as one of our main goals is to maintain participants' integrity and minimize any possibility of harm from participation in the study.

Ethical Considerations

Before undertaking our research, a systematic assessment of the risks and benefits was utilized in response to our vulnerable population, that being minors. Those who fall below the age of 18 are legally denoted as minors and are therefore a protected class of people. By law, minors cannot provide consent even if it's explicit and informed. Therefore, surveying minors in the context of our research requires parental consent for all youth under the age of 18. The

implications that surround surveying minors are plentiful, meaning we have a great deal to take into consideration in order to maintain respect for our respondents, beneficence, and justice.

In order to safeguard our survey population of minors, it is imperative that none of the survey procedures we use or questions we ask expose the children to harmful conditions or induce psychological harm. It is our job as investigators to distribute a survey that is the least stressful, does the least amount of harm, and maximizes possible benefits and minimizes possible harms. Careful deliberation was given to each survey question we posed to the respondents. Due to the fact we are researching an objectively sensitive topic, socio-economic status, it is of the utmost importance that the questions we ask the children do not generate feelings of stress or shame. Socio-economic status is a difficult topic to approach in two respects: lack of child understanding and risk of harming the child psychologically. There is a reasonable expectation that a minor is not informed of their parent's occupation and educational background or where they stand financially in respect to others. This consideration is important to note because it could influence the accuracy of the data we collect. Secondly, asking a child about SES could elicit an adverse response. A minor labeling oneself as low-income and answering a series of questions regarding their low-income status could induce feelings of shame and cause psychological damage. In an effort to avoid placing minors, especially low-income minors, in a position where they risk feeling stressed, our research team has made the decision to ask the parents financially related questions instead of the child respondents. The phrasing of our survey questions have been carefully deliberated and distributed in order to ensure that our vulnerable population remains protected and respected.

Before we seek consent from our child participants, it is our role as researchers to inform the child and parents of all features of the research they will be participating in. This includes but

is not limited to the research procedure, their purposes, risks and anticipated benefits, alternative procedures, and a statement offering the subject the opportunity to ask questions and to withdraw at any time from the research. With this, we will ensure the respondents confidentiality throughout the entire survey and guarantee that there will be no foreseeable negative consequences to the participant. Low SES respondents face additional vulnerability in terms of participating in the survey, which is why the emphasis on confidentiality is so imperative. Due to the fact our target audience is minors, it is crucial that our consent forms and survey questions are worded simply and are understandable to the reader in order to avoid barriers to comprehension of the consent. The phrasing of our consent forms and survey questions are vitally important to sufficiently protect autonomy and attain viable consent.

Protecting autonomy is one of the primary ethical convictions associated with respect for persons. In dealing with minors, we have the complex task of treating respondents as autonomous agents while simultaneously understanding that their diminished autonomy from age and assent makes them entitled to protection. We will ensure protection of respondents by administering a confidential survey and safeguarding a respondents identity. As investigators, we will also prioritize protection by assuring respondents can enter into the research voluntarily and with adequate information.

Finally, to prevent against discrimination or injustice, the survey will be administered equally to each child respondent. This means that each respondent will have equal access to the same survey, consent, and assent forms. There will be no unequal distribution to a particular sector of respondents or variation of questions depending on the respondent.

Feasibility and Significance

Following our meeting with UVTA's Randy and conducting thorough research, it was evident that the UVTA is an extremely philosophically driven organization. The organization and its members pride themselves on providing access to public outdoor settings and trails. They currently have a sound sense of their mission and the intangible impact it has on the community and its participants through a plethora of personal statements. With this, the majority of the data they've collected is anecdotal: while this data validates their mission, it fails to provide quantitative evidence they can use to leverage themselves in a position to receive grants and appeal to donors. The quantitative data they are seeking in order to earn essential funding is accompanied by a series of issues. Randy expressed to us that the primary reason the organization is missing such data is because the UVTA feels it is too sensitive to ask questions regarding socioeconomic status to minors on applications and surveys. Along with feeling that these questions are too sensitive, they are wary of the fact they also may come off as discriminatory towards minors and might make their programs feel less inclusive rather than more so. While they need this quantitative data to prove their value to donors and foundations, asking such questions goes against their philosophical and moral foundations. Our research team was therefore tasked with creating a survey that produces effective quantitative data without infringing on both the UVTA's mission and the well-being of the child respondents.

Low SES individuals are less likely to participate in organized outdoor recreation due to accessibility inequities. With less access comes fewer mental and physical benefits for the low SES youth and a failure to develop a deep-rooted connection with the outdoors and foster lifelong leadership skills. Programs like the UVTA have been effective in reducing these disparities for low SES students, but this proof is primarily qualitative. In order to demonstrate

the lasting impacts programs like the UVTA have on low SES students, we will test whether the UVTA Passport to Winter Fun and Trail Corps programs do increase student well-being and their attitudes toward nature and stewardship for participants of varying SES backgrounds. By conducting such research, we expect to find that low SES youth will be more greatly impacted by the UVTA than higher SES students, given their diminished likelihood at acquiring the expected benefits of outdoor participation. This research will first aid the UVTA organization by providing concrete quantitative data that substantiates their mission and qualitative testimonials. This data can be used by the UVTA to appeal to foundations, donors, and potential investors, incentivizing them to donate to the organization. From a practical standpoint, we are aiding the UVTA by collecting quantitative data that substantiates the impacts of their organization on the Upper Valley low SES community and enables them to secure more grant funding for their work. Broadly, our research will also contribute to the growing body of knowledge surrounding low income students and the benefits of outdoor programs. It would also add to the literature around how outdoor programs specifically help low SES youth develop a leadership and stewardship mindset.

References

Anon. n.d. "Mission & Vision – UVTA." Retrieved January 19, 2021 (<https://www.uvtrails.org/about/mission-vision/>).

Berns, Gretchen Newhouse, and Steven Simpson. 2009. "Outdoor Recreation Participation and Environmental Concern: A Research Summary." *Journal of Experiential Education* 32(1):79–91. doi: [10.5193/JEE.32.1.79](https://doi.org/10.5193/JEE.32.1.79).

Bixler, Robert D., Myron F. Floyd, and William E. Hammitt. 2002. "Environmental Socialization: Quantitative Tests of the Childhood Play Hypothesis." *Environment and Behavior* 34(6):795–818. doi: [10.1177/001391602237248](https://doi.org/10.1177/001391602237248).

Chawla, Louise, and Victoria Derr. 2012. "The Development of Conservation Behaviors in Childhood and Youth." Pp. 527–55 in *The Oxford handbook of environmental and conservation psychology, Oxford library of psychology*. New York, NY, US: Oxford University Press.

Dartmouth-Hitchcock, Alice Peck Day Memorial Hospital, and Visiting Nurse and Hospice for VT and NH. 2019. *Community Health Needs Assessment*.

Frumkin Howard, Bratman Gregory N., Breslow Sara Jo, Cochran Bobby, Kahn Jr Peter H., Lawler Joshua J., Levin Phillip S., Tandon Pooja S., Varanasi Usha, Wolf Kathleen L., and Wood Spencer A. n.d. "Nature Contact and Human Health: A Research Agenda." *Environmental Health Perspectives* 125(7):075001. doi: [10.1289/EHP1663](https://doi.org/10.1289/EHP1663).

Ghimire, Ramesh, Gary T. Green, Neelam C. Poudyal, and H. Ken Cordell. 2014. "An Analysis of Perceived Constraints to Outdoor Recreation." *Journal of Park and Recreation Administration* 32(4).

Hanna, Glenda. 1995. "Wilderness-Related Environmental Outcomes of Adventure and Ecology Education Programming." *Journal of Environmental Education* 27(1):21. doi: [10.1080/00958964.1995.9941968](https://doi.org/10.1080/00958964.1995.9941968).

Lekies, Kristi S., Greg Yost, and John Rode. 2015. "Urban Youth's Experiences of Nature: Implications for Outdoor Adventure Recreation." *Journal of Outdoor Recreation and Tourism* 9:1–10. doi: [10.1016/j.jort.2015.03.002](https://doi.org/10.1016/j.jort.2015.03.002).

Macdonald. Margherita, Carson McGuire and Robert J. Havighurst. 1949. "Leisure Activities and the Socioeconomic Status of Children" *American Journal of Sociology* Vol. 54, No. 6, pp. 505-519

Marks, G. N. 1999. "The Measurement of Socioeconomic Status and Social Class in the LSAY" *Technical Paper* No. 14. https://research.acer.edu.au/lsay_technical/28

- Mikus, Karoline, Nicole Tieben, and Pia S. Schober. 2020. "Concerted Cultivation in Early Childhood and Social Inequalities in Cognitive Skills: Evidence from a German Panel Study." *Research in Social Stratification and Mobility* 100547. doi: [10.1016/j.rssm.2020.100547](https://doi.org/10.1016/j.rssm.2020.100547).
- Nielsen, Glen, Vivian Grønfeldt, Jan Toftegaard-Støckeland and Lars Bo Andersen. 2011. "Predisposed to participate? The influence of family socio-economic background on children's sports participation and daily amount of physical activity" *Sport in Society* Vol. 15, No. 1, 1-27
- Nyström, Christine Delisle, Joel D. Barnes, Sébastien Blanchette, Guy Faulkner, Geneviève Leduc, Negin A. Riazi, Mark S. Tremblay, François Trudeau, and Richard Larouche. 2019. "Relationships between Area-Level Socioeconomic Status and Urbanization with Active Transportation, Independent Mobility, Outdoor Time, and Physical Activity among Canadian Children." *BMC Public Health* 19
- Larson, Lincoln, Jason Whiting, and Gary Green. 2013. "Young People's Outdoor Recreation and State Park Use: Perceived Benefits from the Parent/Guardian Perspective." *Children, Youth and Environments* 23:89–118. doi: [10.7721/chilyoutenvi.23.3.0089](https://doi.org/10.7721/chilyoutenvi.23.3.0089).
- Li, Weiwei, Xihua Zeng, Yun Wang, Robin Curtis, and Erin Sparks. 2021. "Does School Matter for Students' Self-Esteem? Associations of Family SES, Peer SES, and School Resources with Chinese Students' Self-Esteem." *Research in Social Stratification and Mobility* 71:100565. doi: [10.1016/j.rssm.2020.100565](https://doi.org/10.1016/j.rssm.2020.100565).
- "Read the Belmont Report." *HHS.Gov*, 15 Jan. 2018, <https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.html>.
- Richmond, Dan, and Jim Sibthorp. 2019. "Bridging the Opportunity Gap: College Access Programs and Outdoor Adventure Education." *Journal of Outdoor Recreation, Education, and Leadership* 11(4):301–19. doi: [10.18666/JOREL-2019-V11-I4-9646](https://doi.org/10.18666/JOREL-2019-V11-I4-9646).
- Spaaij, Ramón. 2009. "Sport as a Vehicle for Social Mobility and Regulation of Disadvantaged Urban Youth: Lessons from Rotterdam." *International Review for the Sociology of Sport* 44(2–3):247–64.
- Sessoms, H. Douglas. 1963. "An Analysis of Selected Variables Affecting Outdoor Recreation Patterns." *Social Forces* Vol. 42, No. 1, pp. 112-115
- Sprague, Nadav, David Berrigan, and Christine C. Ekenga. 2020. "An Analysis of the Educational and Health-Related Benefits of Nature-Based Environmental Education in Low-Income Black and Hispanic Children." *Health Equity* 4(1):198–210. doi: [10.1089/heq.2019.0118](https://doi.org/10.1089/heq.2019.0118).
- Stockie, Meredith Laurel. 2009. "The Relationship between Socioeconomic Status and Physical Activity among Adolescents." M.Sc., Wilfrid Laurier University (Canada), Canada.

Tierney, Patrick T., Rene F. Dahl, and Deborah J. Chavez. 1998. "Cultural Diversity of Los Angeles County Residents Using Undeveloped Natural Areas." 85.

Vorkinn, Marit, and Hanne Riese. 2001. "Environmental Concern in a Local Context: The Significance of Place Attachment." *Environment & Behavior* 33(2):249.

Appendix: Models, Tables, and Surveys

Appendix A: Conceptualization

Conceptual Model:

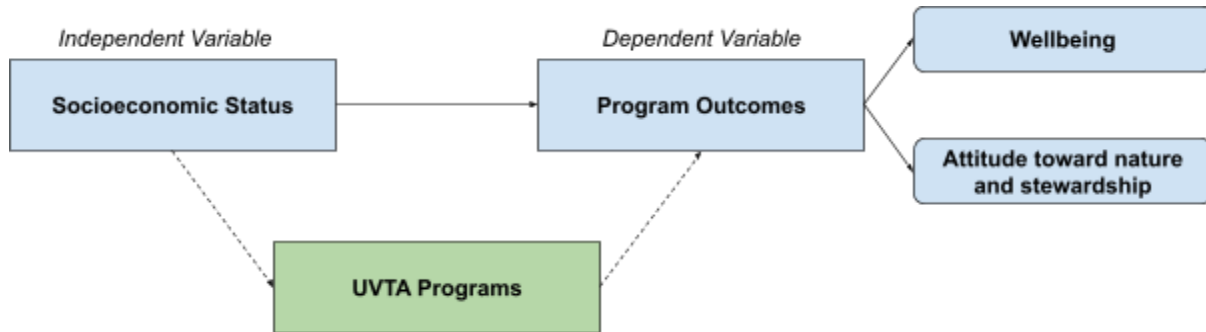


Table 1: indicators and conceptualization of the dependent variables

Variable	Indicators	Conceptualization
Wellbeing	Sense of Belonging/community	Degree to which someone feels welcomed and acknowledged in a given community
	Physical and mental health	Complete physical, emotional and social wellbeing as shown through degrees of happiness and participation in physical activities.
	Cultural capital	One’s social network constructed through interaction between people of varying levels of SES
	Comfort in nature	Degree to which someone feels at ease while in the outdoors

Attitudes towards nature and stewardship	Conservation attitudes	One's explicit desire to engage in conservation activities
	Access to the outdoors	Degree to which someone has access to engage in outdoor activities

Appendix B: Surveys and Consent/Assent Forms

- Additions/suggested changes to the original survey are made in purple
- Relevant indicators that a question addresses are italicized and summarized in the tables at the end of this section
- Assent and consent forms follow the template recommended by the Dartmouth Center for the Protection of Human Subjects and can be modified to fit the needs of the UVTA

Survey 1: UVTA Trail Corps Modified Survey and Assent Form

ASSENT TO PARTICIPATE IN RESEARCH

UVTA Youth Impact Survey

Gauging the Impact of UVTA Programs Across Socioeconomic Status

If you want to, you can be a part of this research study. People do research to try to find answers to questions.

Why and how are we doing our research?

The reason we are doing this research to learn more about how the UVTA program you participated in has impacted you. During this study, you will answer a series of questions about the UVTA program and yourself. We will specifically ask about the Trail Corps Program. This will last for approximately 15 minutes. The survey will be answered online, and there will be no follow up or recordings.

About the study:

The benefits of this study to you might be supporting the UVTA programs you love and being able to share your experience. We hope to find benefits for people in the future. Some problems that might happen during this study are some questions could be sensitive and make you feel odd. Not all of these problems will happen to you. Some problems might happen that the researchers don't know about. It is important to let the researchers and your parents know if there is anything that you don't like about the research study right away. Sometimes things that bother one person don't bother another person at all, so you need to let us know when something is bothering you.

Who will be told the things we learn about you in this study?

Your name will not be in any report of the results of this study. This study is confidential, which means no one will be able to see your answers except the survey team and UVTA. Every question you answer will be kept private and your name will not be associated with your survey when reporting results.

- c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
2. I enjoy spending time outside and on trails -- *Comfort in nature*
 - a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
 3. I feel confident in my trail building and maintenance skills -- *Comfort in nature*
 - a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
 4. I feel comfortable using trail-building tools safely and effectively -- *Comfort in nature*
 - a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
 5. I am interested in seeking future employment related to conservation or trails --
Stewardship mindset
 - a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
 6. I feel prepared and qualified to apply for a future job or program -- *Cultural capital*
 - a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
 7. I feel comfortable working on a team to complete tasks and achieve goals -- *Mental health, sense of belonging/community, cultural capital*
 - a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
 8. I feel comfortable sharing my ideas and opinions in a group to help solve problems --
Sense of belonging/community

- a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
9. I am comfortable taking on a leadership role in a group of my peers -- *Mental health and sense of belonging/community*
- a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
10. I want to be involved in activities that will help and improve my community -- *Sense of belonging/community and stewardship mindset*
- a. Strongly agree
 - b. Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly disagree
11. Approximately how many minutes a day are you exercising? -- *Physical health*
- 1. 0-15 minutes
 - 2. 16-30 minutes
 - 3. 31-45 minutes
 - 4. 46-60 minutes
 - 5. 61-120 minutes
 - 6. More than 120 minutes
12. How often do you engage in outdoor recreation? -- *Physical health*
- a. Almost daily
 - b. Several times a week
 - c. Once a week
 - d. A couple times a month
 - e. Almost never
13. How would you rate your academic achievement? -- *Cultural capital*
- a. Above average
 - b. Average
 - c. Below average
14. Rate the strength of the bonds you made with other UVTA program participants -- *Cultural capital and sense of belonging/community*
- a. Very Strong/will last after the program ends
 - b. Strong/might last after the program ends
 - c. Neither strong nor weak/may or may not last after the program ends
 - d. Weak/will probably not last after the program ends
 - e. Very Weak/will not last after the program ends

Survey 2: Passport To Winter Fun Modified Front Flap

1. Your Name
2. Age
3. Gender
 - a. Male
 - b. Female
4. School
5. Parent/Guardian email
6. Primary Teacher
7. In the last 7 days, how many days were you physically active for at least one hour? --
Physical health
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. 6
 - g. 7
8. Did you do any activities with your family?
 - a. Yes
 - b. No
9. How does playing outside make you feel? -- *Mental health and comfort in nature*
 10. Very happy
 11. Happy
 12. A little unhappy
 13. Unhappy

Survey 3: Passport to Winter Fun Back Flap with Assent Form

ASSENT TO PARTICIPATE IN RESEARCH

UVTA Youth Impact Survey

Gauging the Impact of UVTA Programs Across Socioeconomic Status

If you want to, you can be a part of this research study. People do research to try to find answers to questions.

Why and how are we doing our research?

The reason we are doing this research is to learn more about how the UVTA program you participated in has impacted you. During this study, you will answer a series of questions about the UVTA Passport to Winter Fun program and yourself. This will last for approximately 10 minutes. The survey will be answered on paper, and there will be no follow up or recordings.

About the study:

People may have good things happen to them because they are in research studies. These good things are called “benefits.” The benefits of this study to you might be supporting the UVTA programs you love and being able to share your experience. We hope to find benefits for people in the future. Some problems that might happen during this study are some questions could be sensitive and make you feel odd. Not all of these problems will happen to you. Some problems might happen that the researchers don’t know about. It is important to let the researchers and your parents know if there is anything that you don’t like about the research study right away. Sometimes things that bother one person don’t bother another person at all, so you need to let us know when something is bothering you.

Who will be told the things we learn about you in this study?

Your name will be associated with your survey to link it to your parent’s survey. Your name will not be in any report of the results of this study and will be excluded from the final study. This study is confidential, which means no one will be able to see your answers except the survey team and UVTA. Every question you answer will be kept private.

Will you get any money or gifts for being in this research study?

You will not receive any money or gifts for being in this research study.

Who should you ask if you have any questions?

If you have questions you should ask us. If you or your parents have other questions, worries, or complaints you should call the CPHS Office at Dartmouth College (603) 646-6482 or contact the UVTA @randy.richardson@uvtrails.org

What if you or your parents don’t want you to be in this study?

Your parent needs to give us permission for you to be in this study. You do not have to be in this study if you don’t want to, even if your parent has already given us permission.

If you or your parents don’t want you to be in this study, some other things that you may be able to do are provide a testimonial for the UVTA.

What if you change your mind?

You may stop answering questions at any time. If you decide to stop, no one will be angry or upset with you. You can ask questions at any time.

Title of Study: UVTA Youth Impact Survey

Principal Investigator: UVTA Staff

If you sign your name on this page, it means that you agree to take part in this research study. You may change your mind any time for any reason.

Sign your name here if you want to be in the study _____ Date _____

Print your name here if you want to be in the study _____

1. Your Name:
2. Age:
3. Your School:
4. Your Teacher:
5. In the last 7 days, how many days were you physically active for at least one hour? --
Physical health
 - a. 0
 - b. 1
 - c. 2
 - d. 3
 - e. 4
 - f. 5
 - g. 6
 - h. 7
6. Did you do any of the activities with your family?
 - a. Yes
 - b. No
7. How does playing outside make you feel? -- *Mental health and comfort in nature*
 - a. Very happy
 - b. Happy
 - c. A little unhappy

- d. Unhappy
- 8. Did you do any of the activities with friends you met through the Passport to Winter Fun?
-- *sense of belonging/community*
 - a. Yes
 - b. No
- 9. ~~Did the Passport to Winter Fun change your physical activity this winter?~~
 - ~~a. Yes, I was a lot more active~~
 - ~~b. Yes, I was a little bit more active~~
 - ~~c. No, there was no change~~
- 10. How much of your Passport activity did you do outside? -- *Comfort in nature*
 - a. Most of my activity was outside
 - b. Half of my activity was outside, half inside
 - c. Most of my activity was inside
- 11. How many activity boxes did you fill in? (1-30)
- 12. My Signature:
- 13. Parent/Guardian Signature:

Survey 4: UVTA Parent Consent Form and SES Questions

Parental Informed Consent

You and your child are being asked to take part in a research study. Taking part in research is voluntary.

We would like to learn more about your child's experiences with the specific UVTA program they participated in. We would also like to learn about your family and child. We will ask your child some questions about their day-to-day life and involvement with the UVTA, and in this survey we will ask you some questions about your socioeconomic background. Participation in the study will take approximately 10 minutes.

As a parent, we will need you to consent that your child is informed and able to take part in this study and to use your answers to the questions below as part of this research.

Your child's participation in this study is completely voluntary. You may withdraw your consent and discontinue your child's participation at any time with no consequences to you.

There is little chance you will personally benefit from being in this research study. We hope to gather information that may help people in the future.

There are no known risks of participation in this study. A possible risk that's associated with our survey is that it may provoke unwanted feelings. If it does at any point, please alert our survey team and feel free to discontinue your child's participation.

The information collected for this study will be kept secure and confidential. Your child's name will be used to link information from this survey to their survey responses. We are asking that you disclose your child's name so we can make accurate connections between parent and child respondents. Only the research team and UVTA will have access to your data and name.

If you have questions about this study, you can contact the research director for this study, randy.richardson@uvtrails.org.

CONSENT

I have read the above information and agree to take part in this study.

Name (Print) _____

Child's Name (Print) _____

Signature _____

1. What is your education level?
 - a. Didn't finish high school
 - b. Didn't finish high school, but completed a technical/vocational program
 - c. High school Graduate or GED
 - d. Completed high school and a technical/vocational program
 - e. Less than 2 years of college
 - f. 2 years of college or more/including associate degree or equivalent
 - g. College graduate
 - h. Master's degree (or other post-graduate training)
 - i. Doctoral degree
2. Current employment status?
 - a. Employed full time
 - b. Employed part time
 - c. Self employed
 - d. Unemployed
 - e. Retired
 - f. Other
3. How many people INCLUDING yourself live in your home?

- a. Numeric response
- 4. How many bedrooms are there in your home?
 - a. Numeric response
- 5. How often do you use outdoor trails?
 - a. Almost daily
 - b. Several times a week
 - c. Once a week
 - d. A couple times a month
 - e. Almost never

Appendix C: Indicator to Question Tables

Trail Corps Indicator to Question Table

Sense of belonging/community	<ul style="list-style-type: none">● I feel comfortable working on a team to complete tasks and achieve goals● I feel comfortable sharing my ideas and opinions in a group to help solve problems● I am comfortable taking on a leadership role in a group of my peers● I want to be involved in activities that will help and improve my community● Rate the strength of the bonds you made at the UVTA with counselors, volunteers, students, etc.
Physical health	<ul style="list-style-type: none">● Approximately how many minutes a day are you exercising?● How often do you engage in outdoor recreation?
Mental health	<ul style="list-style-type: none">● I feel comfortable working on a team to complete tasks and achieve goals● I am comfortable taking on a leadership role in a group of my peers
Cultural capital	<ul style="list-style-type: none">● I feel prepared and qualified to apply for a future job or program● I feel comfortable working on a team to complete tasks and achieve goals● How would you rate your academic achievement?● Rate the strength of the bonds you made at the UVTA with counselors, volunteers, students, etc.

Access to nature	<ul style="list-style-type: none"> ● I feel connected to the natural world and the outdoors in the Upper Valley
Comfort in nature	<ul style="list-style-type: none"> ● I feel connected to the natural world and the outdoors in the Upper Valley ● I enjoy spending time outside and on trails ● I feel confident in my trail building and maintenance skills ● I feel comfortable using trail-building tools safely and effectively
Stewardship mindset	<ul style="list-style-type: none"> ● I am interested in seeking future employment related to conservation or trails ● I want to be involved in activities that will help and improve my community

Passport to Winter Fun Indicator to Question Table

Sense of belonging/community	<ul style="list-style-type: none"> ● Did you do any of the activities with friends you met through the Passport to Winter Fun?
Physical health	<ul style="list-style-type: none"> ● In the last 7 days, how many days were you physically active for at least one hour?
Mental health	<ul style="list-style-type: none"> ● How does playing outside make you feel?
Comfort in nature	<ul style="list-style-type: none"> ● How does playing outside make you feel? ● How much of your Passport activity did you do outside?

