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**IDENTIFYING THE IMPACT OF COVID-19 ON ARCHAEOLOGY – A
COMPARISON IN ACADEMIC AND COMMERCIAL FIELD WORK**

A Thesis in

Anthropology

by

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ABSTRACT

Since the World Health Organization declared COVID-19 a bonafide global pandemic on March 11, 2020, the world has continued to stagger in its wake. Emanating from China, with first cases being reported December 31, 2019, the virus spread across the globe at an alarming rate despite the implementation of stringent courses of action enacted by most world governments. Now much of humanity knows the plagues' origin story and has lived nearly two years in a world of social distancing, religious handwashing, mask wearing and vaccinations to give some form of protection against novel coronavirus. However, what we are not yet entirely aware of is the damage such an outbreak has caused to the core of our lifestyles and economy. The field of archaeology is certainly not immune to the impact virus nor the fallout surrounding the pandemic and has certainly been shaken to some extent just as many hundreds of unrelated professions and academic pursuits have been, if not more so. In this paper, I will briefly summarize the effects of coronavirus in America and throughout the world for future continuity and to build a basic understanding of its devastating effects. Primarily, this thesis examines the data collected from voluntary participants of a Qualtrics survey. The purpose of this thesis and survey is to identify the impacts of the COVID-19 pandemic during the year of 2020 in the field of archaeology. It is meant to reveal the economic, methodological, and physical impacts of coronavirus on the field of archaeology and on archaeologists as well. The survey inquires upon the experiences of 153 individuals that work within the field of archaeology during 2020, the first year of the pandemic. Participant's identities were kept confidential but were asked basic demographic questions to gain insight as to whom

within the field was impacted the most or if at all. Participants were separated into two categories midway through the survey via preloaded branch chain logistics hosted through Qualtrics: commercial/contract archaeologists and academic or scholastic archaeologist. In doing so the field of archaeology is permitted a comparison between these two generalized paths archaeologists take and provides insight to their motivations, restrictions, and ability to adapt during the tumultuous events in the year of 2020. This thesis will acknowledge specific elements of archaeology, such as fieldwork and academic work, to record how they have been impacted. Although this subject is a current on-going event, it is important to analyze the current situation to begin searching for points of failure and new ways to upgrade, or simply rethink, archaeological processes in these unprecedented times.

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This thesis is a result of nearly five years of study at Pennsylvania State University at University Park. Since I was a child roaming the halls of the Carnegie Museum of Natural History in my hometown of Pittsburgh, PA, I had always been fascinated by the displays of ancient humans and the cultures around the globe. Though their professional study was a thought far from mind at the time, I now recognize the significance of the opportunity provided to me by Penn State, the professors within the anthropology department and the efforts of its support staff as well. Though the years blew by like a whirlwind I believe that Penn State Anthropology provides a well-rounded outlook on the field and as allowed me to not only achieve the goals of obtaining a graduate degree in five-year time but also has provided me the chance to live out my childhood dream of becoming an archaeologist so that I may give back to the historical institutions that provided me a passion for past and present-day people. Although cultures from Mesoamerica to Mongolia had caught my attention during my studies at Penn State, it was due to one of many talks with my advisor, Dr. Kirk French, that the pandemic and its effects on our chosen field needed to be further understood and ultimately through his guidance and experience I was able to carry out a low impact research project during one of, if not the most chaotic year to occur in my lifetime. For this opportunity and many others you have my distinct gratitude. Furthermore, I would like to thank my parents for instilling a love of the sciences and history as well as my wife, Amanda, for sticking by my side while I achieved my goals despite their difficulty. Without any of you I simply would not be where I am today. Thank you.

Chapter 1

The Arrival of COVID-19 and its effects on the Global Stage

For the sake of future continuity, this chapter discusses the emergence of COVID-19 and how it rapidly made its way across the globe. Since the having shut down many countries in the spring of 2020, a significant proportion of regional areas and economies continues to remain bogged down by the virus. The field of archaeology shares in the challenges presented by “the new normal” and demands the ability to adapt and overcome its obstacles. To achieve this, there is much groundwork which first must be laid down and researchers need to reassess the affect their presence may have in at risk and risky communities both abroad and within the United States. This chapter also urges individuals to lean into technology in order to minimize risk and upgrade their practices.

Emergence

Since the WHO declared COVID-19 a bonafide global pandemic on March 11, 2020, the world continues to stagger in its wake. Emanating from China, with first cases being reported December 31, 2019, the virus spread across the globe at an alarming rate despite the implementation of strict and stringent courses of action enacted by most world governments. By now most of humanity knows the virus’ origin story and we have lived nearly two years in a world of social distancing, religious handwashing and mask wearing. However, what we are not yet entirely aware of is the damage such an outbreak has caused to the core of our lifestyles and economy. Negative impacts have varied from the decrease in GDP in many countries to multidimensional environmental and social issues across all strata of society. For many, both social and economic activities came to a

screaming halt (and continue to do so). As of now millions have been quarantined, borders shut, schools closed, travel bans have subsequently jostled travel industries from cars, airlines, and cruise ships. Furthermore, with the holds on recreational activities and restrictions on food industries unemployment claims funneled in by the millions while sports stadiums, restaurants and tourist locations became deserted (Ibn-Mohammed, 2021). It took only six months for the global economy to become sapped of trillions of dollars lost with the prediction that global GDP may reach upwards of nine trillion dollars by the end of 2021. Consequently, leading to a decrease in world trade projected at a 32 percent decline (Fernandes 2020). An impact on trade is correlated to an impact on global poverty, which, for the first time in two decades, is rising with approximately 49 million people being pushed into extreme poverty who were not in such a state pre-coronavirus (IMF, 2020). As people continue to struggle in to maintain their livelihoods as recessions and depressions strike nations around the globe (Naidoo & Fisher, 2020). And that's only coming from the economic perspective.

As of December 6th, 2020, the total COVID cases experienced in America reached 14,255,535. In the first week of December 2020, there were nearly 55 cases on average for every 100,000 people across the United States. The total death toll surpassed at least 277,825 deaths (CDC, 2020). Those numbers have continued to rise after the first year and as of October 20, 2021, sit at 45,149,234 infected and 730,368 of those individuals dying due to the virus. More than half the country, some 189,924,447 people or 57.2%, are considered fully vaccinated after receiving two doses of the vaccine and the first 6% of the nation has begun to receive booster shots, totaling 11,607,334 people (CDC Covid Data tracker 2021).

Cultural Resource Management and Commercial Archaeology

So, what does this mean for archaeologists? How exactly does this impact the career field?

Although numbers continue to fluctuate and restrictions change on a daily basis, one study through Heritage Business International (HBI) has surveyed Cultural Resource Management (CRM) offices since 2017 in order to gain insight on economic conditions within the career field. Data appears to be a mix of quantitative figures in the expression of previous earnings as well as qualitative opinions based on how organizational managers believe their future business outlooks appear. In this study, managers were asked to anticipate incoming business proposals in increments of the next quarter, six months and one year with the intent on predicting growth or decline. In the last week of March 2020, a sample of 72 offices from 27 states indicated at a 90 percent confidence interval that CRM businesses would be taking a considerable financial hit amongst all quarters for the current year (Dore, 2020). Unlike previous economic recessions (such as in 2007- 2009) that have resulted in the loss of monetary capital and the inability to invest in infrastructure projects, the impact through COVID-19 has adding another underlying factor. Instead of a top-down crisis based on wealth, we are experiencing a bottom-up health crisis that is in turn causing an economic crisis. In terms of finances, there is money to be invested in construction projects. As CRM work is tied to infrastructure projects it is reliant on the frequency of these projects in order to stay afloat.

Ethical Considerations on Travel and Work Abroad

What is an archaeologist to do? We should not just dig our heads in the sand and wait for all of this to blow over. This is especially apparent as we grow closer to the two-year mark of living with coronavirus. Instead, there is wisdom in using this time to think strategically about how we

can reshape the way archaeologists and field research operates as a science. Radically, if need be. Perhaps being forced to face these demands and attack field work from a different angle we may also solve other issues that we have been faced with in anthropology; the dependence on travel (cheaper and greener), increased likelihoods of equitable research partnerships while also reducing collaborations forged by careers and prestige rather than data and usefulness. This is especially so for academic archaeologist. Given archaeology's history – seen by many as looting, treasure seeking, and at times grave robbing – identifying and acknowledging potential ethical considerations is, or should be, at the front of each field archaeologist's or project manager's mind. As the effects of COVID-19 continue to play out, how we as researchers, fieldworkers and professionals are expected to continue in the upcoming seasons is a primary obstacle for all. Universities and cultural resource management firms alike must be aware that they, as well as their partners have obligations to the communities they work in if any project is permitted to begin or resume. What needs to be understood is that the pandemic will continue to display rapid increases and decreases in infection rates temporally as well as geographically (Ogundiran, 2020). Complicating this is the fact that affected countries and some areas within the United States are not consistent in their public health decisions and application of World Health Organization (WHO) guidance. Regional and country-based variations in the availability and quality of appropriate healthcare also underlines the importance of protecting at risk communities. Thus, an ethical model of a remote science could be one way that archaeologists can change their field in order to upgrade the field to mitigate the risks of an event like coronavirus to paralyze our work and our studies (Ogundiran, 2020). For the first year of the pandemic, only short-term strategies such as postponing fieldwork and meeting online have been the prime response, leading to the assumption that the archaeological profession is only interested in resuming business as usual before the pandemic hit. Unfortunately, it is this style of archaeology that got the field here in the first place and it must begin to alter those practices.

Some researchers like Eleanor Scerri have already begun to pose the question as to what should be done if a region or community of interest has few rules or norms to provide protection for not only the workers and students of potential projects but for the local communities of the area as well. If an outbreak would occur in the work site or if an outbreak would be caused by the work site how exactly can the project contain its proliferation? Furthermore, are there any mechanisms in place to ensure that institutions are not overlooking or blatantly ignoring risks while chasing the incentives to pursue fieldwork before it is wise to do so? Scerri suggests that it is imperative to ensure that host countries research partners maintain some form of leadership at work sites should they reopen. This is especially so for work being enacted by countries of "colonialist legacies" pursuing research in traditional or native communities (Scerri et al., 2020). Although knowledge and the pursuit of knowledge are certainly a virtue, safety and respect for the very human beings and cultures we find fascinating should be the utmost importance.

To achieve this, there is much groundwork which first must be laid down. Starting with making risk assessments that are facilitated and virtually attended by professionals at global and local levels. It is key to understand exactly how to balance safety for all parties involved and acknowledging what future risks and possibilities may yet be on the horizon. Secondly, autonomous agency should be held by in site, local personnel and not by the principal investigator (Scerri et al., 2020). Ultimately this would, provide leadership opportunities with individuals of the host country. Christina Douglass represents this dissolving of asymmetrical power dynamics between principal investigators, the community partners she works with and how work is delegated. By sharing that power dynamic, she states that much of her foreign archaeological work has remained unaffected during the chaos of COVID-19 (Douglass, 2020).

Lean into Technology

Another opportunity the COVID-19 pandemic has provided archaeological science with is considering what potential solutions we can find in technology. Again, these solutions do not have to exist only during these "unprecedented times." Instead, in this world of global communication and digital sharing we can provide feedback and guidance, when necessary, to local field crews from our very own homes and offices. There is no reason this idea should come to a surprise to anyone especially since there are numerous projects that have pursued this option for some time. In order to accomplish this, program leaders or institutions themselves need to find ways to develop a shared and accessible digital archive (Scerri, 2020). This should be followed up with instruction on the creation of high-resolution photographic databases for photogrammetry. Although this solution is relatively cheap and easy to teach, the collection of reliably information about the physicality of the site, its features through the process of recording, measuring, and interpreting photographic images and electromagnetic imagery is an effective way to provide support remotely (Marwick et. al; 2017). Not only is this method more accurate than tradition by eye accounts but it also provides a historically organized data bank of the project as it happens when it happens (Kruger et al., 2016). By creating these digital renditions, future archaeologists may be able to revisit the site and re-assess its previous conditions compared to whatever stage or presentation it would be in at that time. The same principle goes for the training and use of drones to collect landscape data from Light Detection and Ranging (Lidar) and other remote sensing technologies.

Archaeology has many uses for technology like Lidar. By creating high resolution elevation models (DEMs) of sites that are archaeologically relevant, researchers and CRM contractors alike can reveal microtopography that would be otherwise hidden to the human eye, even though forest canopies and vegetation (Bewley, 2003). We can also use Lidar in order to plan field campaigns in the off season. Ultimately, Lidar can produce high-resolution datasets in a

fast and efficient manner without ever putting boots on the ground or traveling en masse to distant locations. Furthermore, scans completed with lidar are easily assimilated into can be into Geographic Information Systems (GIS) for analysis (Bewley, 2003).

This type of remote work does not have to disappear after the world has dealt with COVID-19. No, instead we can alter the seasonality of field research and make one or two summerlong trips out of the year. Archaeologists and other field researchers can delegate work to individuals living close to the site providing a stable gathering of information rather than attempting to pick up where fieldwork left off months – or even likelier a year later. For sites that are hard to reach or programs with smaller budgets, this could be a way to conduct research in a far more cost-efficient manner (Breeze et al., 2015). Unfortunately, the level of accuracy of these techniques may need further assessments conducted by specialists on the ground. For as much as technology may be used to solve some of our remote data collecting issues it opens a new can of worms as far as training concerned. However, as previously stated much of the training in order to operate and conduct research with these technologies should be relatively easy to perform.

In Summary

As coronavirus continues to hinder our daily lives, we cannot be focused on biding our time and waiting for a new year coronavirus free year. These issues that we face are not leaving until we attack them head on. Archaeologically speaking, for us to do that we need to begin fostering better relationships within the communities of our academic interest. Archaeologist must be willing to dissolve asymmetrical power dynamics and get comfortable with handing over responsibilities to research partners within those communities so that they may have their agency to conduct research and collect data when and how they see fit. This does not mean that modern archaeologists must adopt a completely hands-off approach. From homes and offices, we can

provide professional insight and wisdom to those in the field. We can also collect data through UAVs equipped with Lidar and photogrammetry equipment. From that data we can then begin to compile digital data banks of information that can then be used at home and abroad not to mention the educational applications of such a system for archaeological students in training. Though the future remains uncertain, what is quite apparent is that archaeological practices have met a scenario where they are no longer practical. The silver lining to this is that we have the time and the resources to change our practices and methodologies to mitigate risk of such crises paralyzing our field in the future. To better illustrate how the field of archaeology has been challenged during the pandemic, this thesis will reveal in detail the results of a survey sent to both academic archaeologists and commercial archaeologists throughout the United States. It will express how the pandemic affected their research and their livelihoods. This work is divided into X chapters. The following chapter will discuss the creation of the survey used to obtain the data provided by research participants, the theory behind its questions, and its dissemination.

Chapter 2

Structuring the Survey

In the face of the pandemic, gathering data for a social science regarding human research subjects can seem like a major impasse. However, thanks to the immense technological advances in communication and information sharing, it is easier than ever to collect data by host interviews online or issuing surveys en masse all while acting in accordance with CDC guidance. While creating this survey, my main concerns were providing an effective method of written communication to ensure accurate data collection, to construct the survey in such a way that it was easy to access, took only a few minutes to complete but spanned a wide breath of issues relating to the pandemic, and the ability to reach a vast audience of confirmed and credible subject matter experts all while maintaining their confidentiality. Though each task was simple to complete separately, bringing each of the three objectives together to form a smooth, cohesive product took a more thought, required multiple versions and a few test runs. This chapter will discuss the survey and its creation.

Formulating a Credible, Confidential and Cohesive Survey

In short, I wanted my survey to be three things: Credible, Confidential and Cohesive. Prior to its construction I needed to find a way to disperse my survey to a large quantity of professionals and students within the field of archaeology. The trick to this however was refraining from coming into physical contact with them and collecting any personally identifiable information from participants in accordance with Penn State University's Institutional Review Board's regulations. To overcome this obstacle and maintain the balance of credibility and confidentiality I used websites such as AnthroGuide and LinkedIn to establish reliable points of contact with multiple collegiate anthropology programs and commercial archaeological consulting firms. Furthermore,

I reached out to several State Historic Preservation Offices (SHPO) to ensure that there was a desire and the ability to assist in issuing the survey to a credible pool of potential participants. In delegating the dispersal of the survey to an authority of a credible institution I was able to separate myself from the participants. The next step of the process was ensuring that participants data was collected in such a way that allowed them to remain confidential to not only me as the principal investigator but also the institutions that employed them. In doing so, participants could answer with candor in safety. Thus, I decided the survey needed to be issued through a verified online entity where data would be pooled and only be available to the principal investigator.

The Role of Branched Chain Logic in Data Collection

Fortunately, such a system existed within Penn State's network infrastructure through Qualtrics XM. Using this platform, I was able to rapidly create an organized survey that would allow me to merge the questions I had for academic and commercial archaeologists. I was concerned questions would not have meaning to certain individuals depending on their specific track of archaeology and originally believed two surveys may be needed. However, through Qualtrics, I was able to use a technique known as branched chain logic which would allow me to send each participant the exact same survey without participants answering question that did not apply to them. This is achieved by preprogramming specific questions to act as a fork in the road of the survey. Though this mechanic allows questionnaire cohesion and benefits the user experience while ensuring participants were not answering questions unrelated to them, I did not want to overuse this mechanic and thus I incorporated it sparingly; reserved for very particular questions. The very first example of this can be found within the participant consent form. Upon entering the survey, participants were greeted with the consent form which outlined the surveys' purpose, acknowledged its confidentiality and the freedom of the participant to leave the survey

at any time. Following this brief outline, participants were asked for their consent. Any individual who provided consent was allowed to proceed to the first true question of the survey, individuals who chose not to provide consent skipped all 31 questions and were sent to the ‘survey end’ screen marking completion of the survey. Out of 153 participants no participants refused to provide consent. Though this may seem insignificant protecting the privacy and the free will of volunteers is of the utmost importance in ethical human research. This specific use of branched chain logic provided certainty that on those willing to give consent were exposed to the survey and thus ensured the research conducted would remain in accordance with IRB regulations. The second use of branched chain logic that I found to be appropriate was seven questions into the survey, directly after a short demographic portion to be describe in the next section. Ultimately, this question was designed to dictate which branch of survey participants would see and asked the participant to specify what type of employer best matched their work experience in 2020: CRM or contract archaeology; or a university or academic institution. As specified earlier, I did not expect nor desire for professors or students within academic institutions to answer questions pertaining to CRM archaeologists or vice-versa. Although there is an argument to be had that there could be individuals who fit both roles in 2020, I programmed the question to allow multiple answers which permitted responses from both tracks if selected. In turn this would provide a fair chance for all participants to accurately depict their experience rather than be forced into one category. In total 143 responses were collected in this section with an uncanny 50.35% of individuals representing CRM and 49.65% of individuals representing academic institutions. I continued to use branch chain logic to streamline the survey for any binary choice provided. In total, this mechanic affected six questions out of a complete total of 31 questions. Figure 2-1 illustrates how question 11 of the survey is presented due to a participants answers.

Q11

Display this question

If During the 2020 Pandemic did you experience a loss of work? Yes Is Selected

For what reason did you experience a loss of work during the pandemic? Select all that apply.

Furloughed, expectation of returning to work / returned to work.

Permanent termination

Experienced reduction in work but remained on payroll

Personal exposure to coronavirus

Other (please describe)

Prefer not to answer

Figure 2-1: The presentation of Question 11 due branch chain logic.

Formulating Research Questions and Organizing Blocks.

After finding a suitable platform to host the survey and figuring out the mechanics of branch chain logic, the next order of business was drafting the first iteration of questions and understanding how best to organize those questions. To ensure the survey remained organized and each participant was answering questions related to their experience, the survey was divided into five sections or “blocks”: the consent form, demographics, CRM or commercial work, academic institutions, and the end of survey. As I have discussed the consent form in detail in the previous section, the following will primarily contain information regarding the later sections. It was the surveys intent to keep each question short and to the point while providing a broad enough spectrum of multiple-choice answers so that participants would be able to relate their experiences to the answers. This is extremely important for the sake of having reliable data pools rather than a wide array of independent responses that vary in relatedness. However, to ensure that each participant could add their own voice if the need arose, the survey did incorporate an answer of “other.” In the event “other” was selected participants were able to respond in their own way. This decision proved valuable, it is highly advisable whether it a researchers first

survey or hundredth to allow participants a way to elaborate upon their answers if the need should arise. In some instances, participants were also presented the ability to select multiple answers if applicable. In all instances participants were able to remain neutral and select “prefer not to answer” if desirable.

Question Formats

To provide an organized, understandable, and visually appealing research questionnaire, various questioning techniques and answer forms were utilized. This section briefly provides information on the question forms used and the reasoning behind those forms. The following will be discussed: multiple choice, sliding scale, drop-down menu, and Likert-type questions. I was aware that my decisions in formulation appropriate survey questions could invite objections based on phrasing or the lack of options. Thus, this research survey is framed to use as simple and unambiguous language as often as possible while allowing multiple opportunities for individuals to write in answers.

Multiple Choice

The majority of the survey employs multiple choice questions as they provide the ability to discover a large breadth of options for participants as well as reveal the various levels of impact a solitary question may have on the participant. Wherever possible the survey allows multiple answers to be selected if participants were likely to be affected in two or more selections. Questions which permitted only a solitary answer but were limited to questions where only one answer was likely, possible, or pertained to some form of quantification. Few multiple-choice questions provided a binary choice. Figure 2-2 represents a question from the survey that

provides the participant with a multiple choice question and allows multiple selections whereas figure 2-3 only allows one choice.

Q14

Did your employer adopt any new practices during the 2020 Pandemic? What changes did the pandemic bring to your work place?

- Mandatory Social Distancing practices; limitation on number of workers per site.
- Travel Restrictions; Factored travel distance into work site selection.
- Mandatory use Personal Protective Equipment (PPE); masks or face coverings.
- Closure of work sites
- No new strategies or practices.
- Other (please describe)
- Prefer not to answer

Figure 2-2: An example of a question that permits multiple selections.

Q19

In a normal year, approximately how many weeks a year do you work?

- All 52 weeks (full year)
- 47-51 weeks
- 42-46 weeks
- 41 weeks or less
- Prefer not to answer

Figure 2-3: An example of a question which permits a single choice

Sliding Scale

The usage of a sliding scale was to cover large spans of numerical answers without taking up much space within the survey. If multiple choice were employed here, up to 82 options would need to be provided or options would have to be group which would reduce the specificity of

answers provided. Questions using sliding scale answer forms related to time based in weeks or years. Figure 2-4 provides an example of question that utilizes a sliding scale for participants to submit their answers.

Q2
What is your current age?

18 26 34 43 51 59 67 75 84 92 100

Current Age

Prefer not to answer

18

Figure 2-4: An example of a question utilizing sliding scale.

Drop-down Menu

Drop down menus were used as another option in providing a large number of options within one question. Whereas sliding scale provides a great alternative for answers regarding quantitative values they are limited to those styles of questions. In this survey, drop down menus were only used to select one option of the 50 United States of America, D.C. or Puerto Rico, in questions relating to home of record, office of employment, or location of study. Figure 2-5 provides an example of a question that utilizes a drop down menu containing a large list of choices.

Q9 | 50 States, D.C. and Puerto Rico

In which state is your employer located?

Colorado

Figure 2-5: An example of a question which utilizes a drop-down menu.

Likert-type

Likert-type scales combine the simplicity and familiarity of multiple-choice questions while providing a type of scaling effect which is found in sliding scale questions. The purpose of a Likert scale within this survey is to primarily measure attitudes. Here the advantage, in comparison to simply using binary questions which offer only ‘yes’ or ‘no’ type answers, is that Likert-type questions offers degrees of agreement or disagreement. The intent being that offering varying degrees of opinion, this research survey would be able to receive relevant qualitative information regarding more psychological or opinionated effects of the 2020 pandemic on archaeologist. This question form utilizes five degrees of impact to include: extremely negative, mildly negative, neutral, mildly positive, and extremely positive. Figure 2-6 provides an example of a Likert-type question which provides qualitative data on how a participant feels they were affected financially during the 2020 pandemic.

Q12

How significantly was your financial situation impacted by the 2020 pandemic.

	Severe negative impact	Mild negative impact	Financially unaffected	Mild positive impact	Major positive impacts	Prefer not to answer
financial impact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 2-6: An example of a Likert-type question utilizing five degrees of effect.

Demographics

Since this survey was conducted in such a way that keep participant identities confidential, it was necessary to ask some basic questions in order to better understand the who these people are beyond archaeologist. Though the questions within this section may seem as

though they have little to do with the pandemic, what these questions provide is insight as to how the pandemic has affected different groups around the United States. It allows a deeper look into who is providing answers and depending on that who, investigators can acquire information that may reveal differing experiences based on a variety of metrics. To ensure effective communication, this portion of the survey took influence from the 2020 United States census particularly in ensuring answers based on ethnicity or race were represented in a way that groups would be familiar with and made logical sense. However, to ensure individuals were able to represent themselves accurately the survey allows participants a selection of self-entry. This choice proved wise as one individual did find the need to represent themselves as no selection worked for them. In total this section contains six questions with the final question sending participants down one of three branches, CRM, academic archaeology, or both. In total six questions are prompted within this section.

CRM and Contract Archaeology

Individuals who elected this section were provided with questions which are geared toward archaeological technicians, crew chiefs, field directors, primary investigators and other archaeological roles who conduct phase I, II, and III archaeological surveys, conduct lab work, write field reports or other related tasks. While this thesis attempts to compare the two outlined forms of archaeology, providing CRM archaeologists their own section allows questions to centralize on their experience and thus provide higher quality data rather than broad and generic information. Despite the differences in how each question is worded, the intent of discovering the pandemic's impact is meant to be equivalent between both sections. This section contains a landing statement revealing that this portion of the survey relates only to work participants have conducted as an employee for a CRM firm during the 2020 pandemic. In total it contains twelve

questions, two greater than the academic archaeology portion. The additional questions related to work and out of state work frequency. This form of question was deemed unnecessary for the academic survey portion.

Academic Archaeology

Individuals who elected this section were provided with questions which are geared toward undergraduate and graduate students, professors, and researchers affiliated with anthropology or archaeology department at colleges and universities. While this thesis attempts to compare the two outlined forms of archaeology, providing the archaeologists aligned with collegiate institutions their own section allows questions to centralize on their experience and thus provide higher quality data rather than broad and generic information. Despite the differences in how each question is worded, the intent of discovering the pandemic's impact is meant to be equivalent between both sections. This section contains a landing statement revealing that this portion of the survey relates only to work participants have conducted as a member of an academic institution or university during the 2020 pandemic. In total it contains ten questions, two fewer than the CRM portion. The additional questions were deemed unnecessary for the academic survey portion due to the nature of the academic schedule.

End of Survey

This section allows participants to know that they have completed all questions pertaining to them due to the answers they have provided. Furthermore, it confirms their answers have been recorded. Though seemingly insignificant this portion's intent is to have participants feel their voice has been heard and give some feedback so that individuals do not have an urge to retake the

survey to ensure their answers were logged. The most difficult part of conducting this type of research is the fact that there is no real dialogue, and all communication is conducted in one way. Thus, providing guidance or at the very least assurances when necessary.

Chapter 3

Survey Results

This thesis's research survey was sent began collecting responses on March 30, 2021 and continued to collect responses until May 27, 2021. Although data collection initially was planned to last for two weeks, participants were entering and completing the survey into May. My first response was collected within a few days of the survey being posted, April 2, 2021. However, there was a lull in responses soon after, likely due to the Easter holiday. Response became more frequent and steadier starting April 12, 2021 and remained flowing in regularly until May 7, 2021. I decided to alter my decision from two weeks to two months to allow any stragglers the chance to participate. Further, any student archaeologist would likely be entering summer break and likely not receive any responses. In total responses totaled 153.

This section will begin with an overview of the findings of the research survey, then turn to interpretation of the data and any meaningful patterns that the data unveils. To ensure a thorough examination this thesis will cover each question to provide statements on their usefulness and highlight any important findings. This chapter will be divided into three sections: Demographics, CRM Archaeology, and Academic Archaeology.

Data within Demography

This section included questions to provide information on what type of person is taking the survey. Questions relating to demographic data allows researchers the ability to add layers to their research questions.

The first real data driven question participants were to answer related to age. This question was chosen to reveal if any specific age group was affected harshly by the pandemic than others. Research has shown that coronavirus has greatly affected individuals of advanced age. Thus, by collecting ages we can see how greatly that has affected the archaeological community. In total 139 participants elected to provide their age. The youngest participant recorded was revealed to be 19 years of age, the oldest participant was revealed to be 80 years of age, and mean age to be 39.33 years of age. With the highest count of individuals (9) achieving 32 years of age. Results resemble a normal bell curve when considering most individuals retire within their 60's as seen in Figure 3-1.

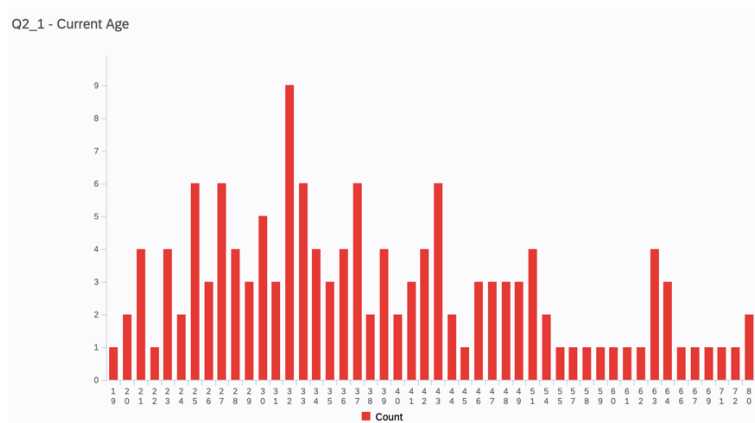


Figure 3-1: Bar graph representing ages of research participants.

Participants were then asked to reveal their self-identified genders with a provision for a non-binary or third-gender option. A total count of 141 individuals elected to provide their

genders with 58.16% identifying as female, 39.01% as male and 2.84% identifying as non-binary or third gendered.

When collecting participant data for race and ethnicity, the results proved to be staggering. Out of 147 participant responses, 87.76% or 129 participants identified themselves as “White (German, Irish, English, Italian, Polish, French).” The next closest ethnicity to was “Black or African American (African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian)” making up 4.76% of participants. This may be indicative of the career field in general or may have been caused by my sampling strategies. Though it is not known which universities or CRM firms decided to participate in the research survey, the institutions that chose to participate may have a predominantly white population. Other responses are as follows: Hispanic, Latino or Spanish origin (Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian) 2.74%, Asian 2.04%, Middle Eastern or North African (Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian) .68%, and Other (Ashkenazi Jewish) .68%. 1.36% of responses elected to not answer and zero responses reflected American Indian or Alaska Native (Navajo nation, Blackfeet tribe, Mayan, Aztec, Native Village or Barrow Inupiat Traditional Government, Nome Eskimo Community) or Native Hawaiian or Other Pacific Islander (Native Hawaiian, Samoan, Chamorro, Tongan, Fijian). Considering that a sizeable amount of American archaeology is engaged with Native material culture and potential human remains, it is unfortunate to see no representation of Indigenous Americans within this survey. Table 3-1 presents this data in order of most represented to least represented self-identified ethnicities.

Table 3-1: Table representing total responses regarding self-identified ethnicity.

#	Field	Choice Count
1	White (Eg: German, Irish, English, Italian, Polish, French, etc)	87.76% 129
2	Hispanic, Latino or Spanish origin (Eg: Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, etc)	2.72% 4
3	Black or African American (Eg: African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian, etc)	4.76% 7
4	Asian (Eg: Chinese, Filipino, Asian Indian, Vietnamese, Korean, Japanese, etc)	2.04% 3
5	American Indian or Alaska Native (Eg: Navajo nation, Blackfeet tribe, Mayan, Aztec, Native Village or Barrow Inupiat Traditional Government, Nome Eskimo Community, etc)	0.00% 0
6	Middle Eastern or North African (Eg: Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian, etc)	0.68% 1
7	Native Hawaiian or Other Pacific Islander (Eg: Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, etc)	0.00% 0
8	Some other race, ethnicity or origin	0.68% 1
9	Prefer not to answer	1.36% 2
		147

When participants were asked about their highest level of schooling responses overwhelming resembled some form of graduate level education. Out of a total of 141 responses, individuals with master's and doctorate degrees made up 42.55% and 34.75% respectively, bachelor's degree accounted for 17.02%, and high school diplomas or GED's representing 5.67%. Due to this lopsided representation of education levels, one can assume that most individuals who have taken part in this survey represent administrative or supervisory roles. Though many field positions within CRM do demand graduate-level training, there is room for individuals with undergraduate degrees or even field school certifications. Further details on this piece of information can be gained by reviewing the next question within the survey.

Education is only one metric of skill and knowledge within the archaeology field, cumulative experience is another. In total 137 participants supplied answers this question and those responses ranged widely. On the lower end of the scale three participants revealed they were still obtaining their first year of experience. The most experienced individual logged 45

years' worth of experience. However, the majority of individuals occupied between 5-15 years' worth of experience with the median score falling at 16.12 years as represented in Figure 3-2.

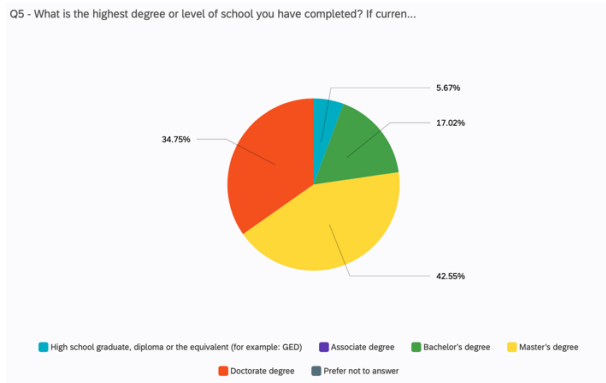


Figure 3-2: Pie Graph representing education level of participants.

The final question of the demographics portion relates to which branch of archaeology the participant is involved in, CRM or academic. Though both branches perform the science in comparable ways and must adhere to similar rules and regulations when conducting field work the institutions they work for and the goals those institutions set out to achieve may have had differing effects on the limitations, restrictions and precautions CRM and academic archaeologist had to take. This research was fortunate enough to have participants representing each side in nearly equal amounts with CRM at 50.35% of applicants and academic archaeologists representing 49.65% as represented in Figure 3-3.

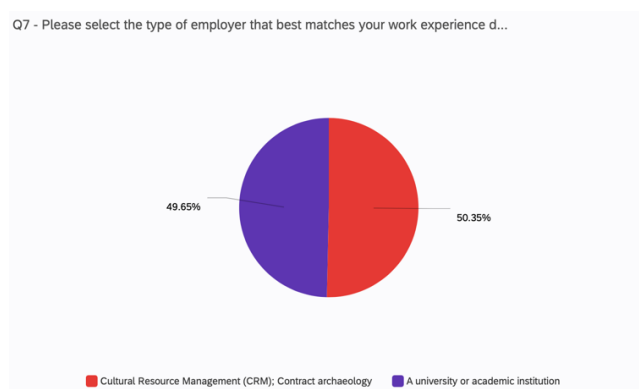


Figure 3-3: Pie Graph representing percentages of participants representing CRM firms and academic institutions.

Data within Cultural Resource Management

This section contains questions which provide further insight into the individuals operating in Cultural Resource Management career fields who participated in the survey while also recording the effects of the pandemic on their livelihoods.

The first question in this portion deals with the location of participating archaeologists' office of employment. Originally, this question was to be in the demographic portion of the survey asking where an archaeologist's home state of record was. However, as many archaeologists work in offices not located within their state, I decided it would be best to focus on the employer. It is my assumption that any state or county regulation would be extended to the employer and those regulations would then be carried out by the employer effecting the individual and would be more impactful. By doing so I could use this question as a clue to point at which states had the harshest coronavirus regulations or worst outbreaks if multiple individuals from a particular part of the country were experiencing loss of work due to furloughs or exposure. Out of 72 CRM participants 66 elected to answer this question. Although the 50 states as well as the District of Columbia and Puerto Rico were not entirely represented within this survey,

responses from 21 separate states were recorded in this section. Where most states totaled 1-5 different participants, the state of Maryland had an absolute majority of participants making up 27.27% of CRM participants as seen in Table 3-2. This is important to recognize because it will cause data to be representative of Maryland above all others in the CRM section. With that said, it is simple enough to cross reference individual surveys with the answers participants provided. By doing that, it can be discerned if regulations specific to Maryland are affecting results. This did not appear to be the case as the location of the employer did not have any statistically significant effect on categories such as loss of work in week (p-value = .140). However, in relation to how individuals viewed their economic impact, statistical relation models indicate that state of employer may be statistically relevant via a p-value of .0000411 and a Cramer’s V score of .747 indicate a large effect size. Though a small sample size could be affecting these scores.

Table 3-2: Table depicting location of employer’s office

In which state is your employer located?		
#	Field	Choice Count
1	Alabama	1.52% 1
3	Arizona	1.52% 1
4	Arkansas	1.52% 1
5	California	3.03% 2
6	Colorado	7.58% 5
10	Florida	3.03% 2
11	Georgia	6.06% 4
13	Idaho	1.52% 1
17	Kansas	4.55% 3
18	Kentucky	1.52% 1
19	Louisiana	6.06% 4
21	Maryland	27.27% 18
24	Minnesota	1.52% 1
29	Nevada	1.52% 1
33	New York	3.03% 2
34	North Carolina	3.03% 2
39	Pennsylvania	3.03% 2
45	Texas	7.58% 5
46	Utah	6.06% 4
48	Virginia	3.03% 2
51	Wisconsin	4.55% 3
		66

In the case of work loss, 53 CRM representatives out of 66 responded they had not experienced any loss of work during the pandemic of 2020 with only 13 acknowledging work loss as represented in Figure 3-4. I found this result surprising as archaeology is a science with physical components requiring workers to be present in the field and labs. The fact most responses indicate no loss of work points to CRM firms having some response, evolution, or coping mechanisms to continue research and providing services to their customers.

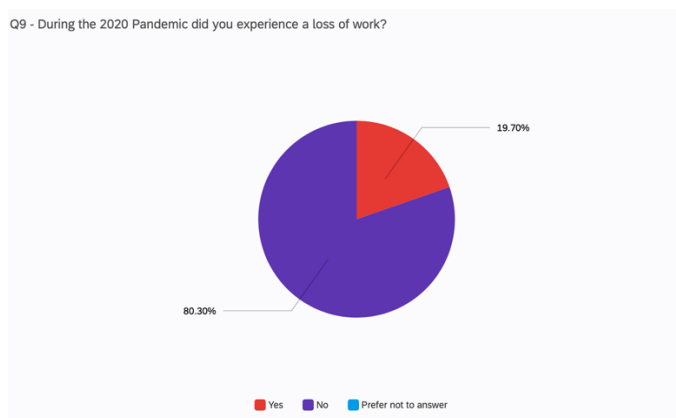


Figure 3-4: Pie Graph representing percentages of participants representing work loss amongst CRM participants.

Relating to those that had acknowledged a loss of work, 38.89% revealed that during the pandemic they were furloughed with the expectation of returning to work or had eventually returned to work. An equal number of participants experienced some reduction in work but remained on payroll. No participants experienced permanent terminations due to the pandemic. One response indicating 5.56% experience personal exposure to coronavirus. Three participants, representing 16.67%, opted to enter their own responses. A visual representation of these statics can be found below in Figure 3-5. One participant elaborated on their furlough stating they were originally assured they would not be affected but received word three days later that they were

pack up their hotel rooms and return home within the next day. Another response stated there were no contracts to be had. CRM firms were struggling to find funding for projects as those projects required increased expenses in order to remain COVID-19 safe. This participant stated that work increased by year's end but not significantly on the east coast. A third response was logged but claimed a university issued travel restrictions. Upon closer inspection this individual represented themselves as an archaeologist for both CRM and graduate student at a university. Provided they represent a CRM pathway at a university this answer makes sense though was not necessarily accounted for when I had originally constructed this thesis, believing there would be a definitive line between the two career tracks. This is one example of where in person communication could have provided more information on this individual's personal experience.

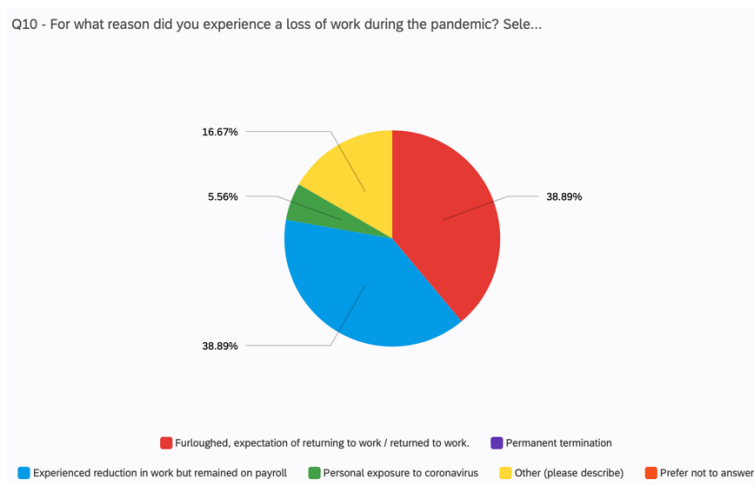


Figure 3-5: Pie Graph representing reasons for work loss amongst participants in CRM work.

Another interesting metric relating to work loss relates to gender of individuals. When comparing how males and females related to experiencing work loss 8.3% of females indicated some form of work loss due to the pandemic whereas 29.6% of individuals in CRM who identify as male indicated some form of work loss. In order to evaluate whether these two variables are

statistically related, I selected to use a Fisher's Exact test since the population size is quite small, 63 participants, and I elected to only evaluate males versus females as non-binary or third-gendered made up three total participants and thus did I did not have enough statistical power to accurately represent them. The p-value of this test resulted in a statistical significance of .0432. A p-value of less than 0.05 is considered as statistically significant and beyond mere coincidence. Using the measure of association known as Cramér's V, the effect size of a relationship between two variables is considered moderately significant with a measurement greater than .2 but below .6. Using Cramér's V gender and work loss measured at .278 and falls within those standards.

In the same realm of work loss, participants were then asked to report if their financial positions were impacted by the pandemic by using Likert scale. The majority of participants, totaling 43.94%, revealed they had not experienced any impact, whether it be negative or positive, to their finances. 40.91% indicated some mild negative impact and 3.03% indicated a severe negative impact to their finances. Inversely, 9.09% reported some positive impact to their situations and 3.03% indicating major positive impacts. Upon further inspection, there seemed to be no connecting pattern as to why individuals indicated reported an increase to their financial situation. After examining items such as experience, education level, location of employer and frequency of out of state travel seven out of eight individuals that had positive financial impacts achieved graduate level degrees. In relation to their degree, 71.4% of individuals with bachelor's degree reported some form of negative impact to their finances and only 7.1% reported a positive impact. Those with master's degrees had a substantially better financial experience with only 37.1% reporting a negative state and 16.1 % reporting some form of positive state. Doctorate level degrees resemble master's levels with 35.3% claiming negative impacts and only 5.9% claiming positive impacts. There is some evidence here to assume greater levels of education had some impact on financial well-being during the pandemic for archaeologists within the CRM community, but it is weak and should not be considered statistically significant as seen in Table

3-3.

Table 3-3: Table depicting relation of education level with reported financial impact of the 2020 Pandemic.

Q5: What is the highest degree or level of school you have completed? If currentl... ↕

financial impact	Bachelor's degree	Master's degree	Doctorate degree
Severe negative impact	0.0%	0.0%	11.8%
Mild negative impact	71.4%	37.1%	23.5%
Financially unaffected	21.4%	45.7%	58.8%
Mild positive impact	7.1%	11.4%	5.9%
Major positive impacts	0.0%	5.7%	0.0%
Total	100.0%	100.0%	100.0%

As represented in Table 3-4, there was also seemingly no statistical relationship between financial impact and years of experience as no obvious trend could be observed. This may be due to a relatively small sample size in general with only a handful of answers representing multiple degrees of financial impact. However, with a p-value of .528 this is a relation that may need further study at a higher statistical power to truly gain a better insight.

Table 3-4: Table depicting relation of years of experience with reported financial impact of the 2020 pandemic.

financial impact	Count	Average	Median	%	N
Severe negative impact	2	15.0	15.0		
Mild negative impact	27	14.7	9.0		
Financially unaffected	29	18.4	15.0		
Mild positive impact	5	18.0	14.0		
Major positive impacts	2	11.0	11.0		
Total (5)	65	16.5	15.0		

One relation that does prove applicable is negative financial impact and frequency of work-related out-of-state travel. Half of the participants that must travel out of state more than

75% of the time for work indicated negative financial impacts while half claimed to have remained financially unaffected as seen in Table 3-5. Of those who travel out of state 50-75% of the time 57.1% claimed some form of negative impact and those who travel 25-50% of the time represented a similar percentage; 54.5%. These numbers differed greatly from those who traveled less than 25% of the time as 41% report a negative impact and with 48.7% claiming no financial impact. This makes sense as individuals who do not travel for work at all would fall in this group and would be able to perform some desk-based duties while in quarantine. This group also represents the best financial status compared to others within CRM.

Table 3-5: Table depicting out of state travel with reported financial impact of the 2020 pandemic.

Q17: In a normal year how often does work take you out of state?

financial impact	Less than 25% of ...	25-50% of my work	50-75% of my work	More than 75% of ...
Severe negative impact	5.1%	0.0%	0.0%	0.0%
Mild negative impact	35.9%	54.5%	57.1%	50.0%
Financially unaffected	48.7%	27.3%	28.6%	50.0%
Mild positive impact	7.7%	9.1%	14.3%	0.0%
Major positive impacts	2.6%	9.1%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%

Of the 13 participants that indicated a loss of work, 12 of those participants provided an estimate in weeks regarding how long they had to wait before they were able to find work back in the field. The fastest return to work indicated was after 4 weeks, about a month, while the longest wait to receive work was 38 weeks, or 9.5 months, providing a mean result of 12.92 weeks amongst those reporting a loss of work as seen in Table 3-6.

Table 3-6: Table depicting loss of work in weeks for CRM individuals during the 2020 pandemic.

Weeks of work loss						
#	Field	Minimum	Maximum	Mean	Std Deviation	Count
1	Weeks of work loss	4.00	38.00	12.92	9.71	12

Since some CRM archaeologists are considered part time, as needed or even seasonal employees, participants were asked to reveal approximately how many weeks they work within the archaeological field during a normal year and can be seen in Figure 3-6. 59.09% archaeologists who completed the survey responded that, during a normal year, they worked a full, 52-week year. Nearly a quarter of participants, 24.24% indicated that they worked nearly a full year estimating approximately 47-51 weeks. 4.55% estimated archaeological work spanning 42-46 weeks and 9.09% indicated field work lasting 41 weeks or less. 3.03% preferred not to reveal their estimated annual work schedules.

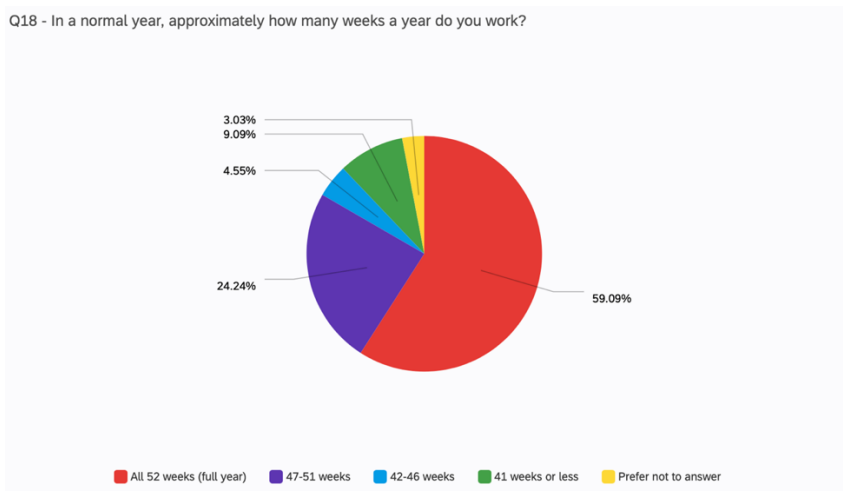


Figure 3-6: Pie graph representing CRM archaeologist's expected amount of work in weeks during a normal year.

One of the largest challenges for employers was finding ways to comply with CDC social distancing regulations while allowing their employees to continue working. In order to better understand exactly how CRM offices evolved to work with these standards I included a question that prompted several common tactics employed throughout Americas work force and large-scale institutions. Of 72 CRM participants 87% indicated mandatory social distancing practices and the limiting of the number of workers per site was implemented. This tactic comes as no surprise. As previously discussed, 62% of individuals indicated some form of travel restriction or travel distance had some effect on site selection for work. 86% of CRM workers revealed that personal protective equipment (PPE) such as masks or face coverings were considered mandatory in their work environments and closure of worksite entirely affected 39% of participants. There were no individuals who experienced no new safety strategies or practices during this time. When constructing this question, I knew I was not fully aware of all the new safety practices that CRM firms had come up with during 2020. With that in mind, I opted to include an “Other” answer in case there were further details participants wanted to share, of that, there were 14 in total. Most responses I consider to be changes to fieldwork logistics. Primarily resulting in changes to transportation, housing, and per diem. Five participants indicated there were restrictions on ride sharing. Responses vary but indicate that archaeologists either received their own rental or company trucks or had to drive their personal vehicles to site. Some indicated ride sharing was possible if limited to two people. In this instance both archaeologists needed to wear masks with the passenger sitting in the back seat. Another individual indicated CRM firms avoided using hotels and switched to single room cabins in order to minimize exposure from hotel guests. Furthermore, some field archaeologists were allotted increased supplemental per diem as well as two-weeks of additional paid leave for coronavirus related reasons if they exceeded their accrued paid sick or vacation days. 4 individuals stated that they were able to work from home in some capacity if unable to work in field or desk work was necessary.

Three individuals revealed some form of heightened involvement of their safety offices. In these specific cases, one individual had weekly COVID-19 nasal testing performed, though did not specify a how long this procedure endured. Another individual clarified that it was mandatory to self-report COVID-19 exposure or COVID-19-like symptoms when appropriate. Lastly, one participant stated that their place of work developed not only a COVID-19 safety plan but a “task force” as well. Throughout this combined effort individuals with said office received instructions as well as updates to CDC guidance as it was issued.

Another category is over all changes to daily work practices. Although it is not uncommon for archaeologists to perform some duties on their own, many prefer to work as a team such as during Phase I archaeology duties. An example of this is performing small excavations known as shovel test pits or STPs. STPs provide archaeologists a way to conduct rapid ground survey in a test area by excavating a series of 50centimeter to less than 50-centimeter holes and subsequently sifting the soil that was excavated in search for artifacts and features that present themselves in soil strata. This task is often done in teams of two archaeologists. However, under COVID-19 social distancing guidelines, some archaeologists had to perform these tasks alone. Furthermore, some crews began to operate as “a bubble” where teams became more cohesive, and individuals would work with the same coworkers more consistently and work on the same projects for longer periods of time rather than being displaced over the field season. One company took the opportunity during the pandemic to switch from analog paperwork to a digitized processing in the field to further limit exposure to the virus. Lastly, deep cleaning of tools, equipment and vehicle was also implemented during this time. Crews were given sanitizer kits and were instructed to avoid sharing tools with one another. Although some of these procedures, such as the avoidance of ride sharing, weekly testing and religious deep cleaning are likely to disappear after we as humans learn how to live life amongst

the virus, I believe the pandemic has shown CRM firms alternate ways and perhaps better ways to perform archaeological duties that may continue.

Participants were then asked to rate their experiences with these changes to the workplace using a Likert-type scale. This question was broken down into five areas of change: workflow and consistency, safety, travel procedures, and overall organization of work conduction as seen in Figure 3-7. In total, 67 participants responded to this portion of the survey. Beginning with changes to workflow consistency, 8.96% of individuals experienced sever negative impacts. The outstanding majority representing 50.75% of individuals experienced a mild negative impact. 26.87% of individuals claim to have experience no effect to workflow consistency. On the other end of the spectrum, 7.46% of individuals experienced a mild positive impact during the pandemic while 5.97% of individuals experienced a major positive impact to workflow. No individuals refused this question.

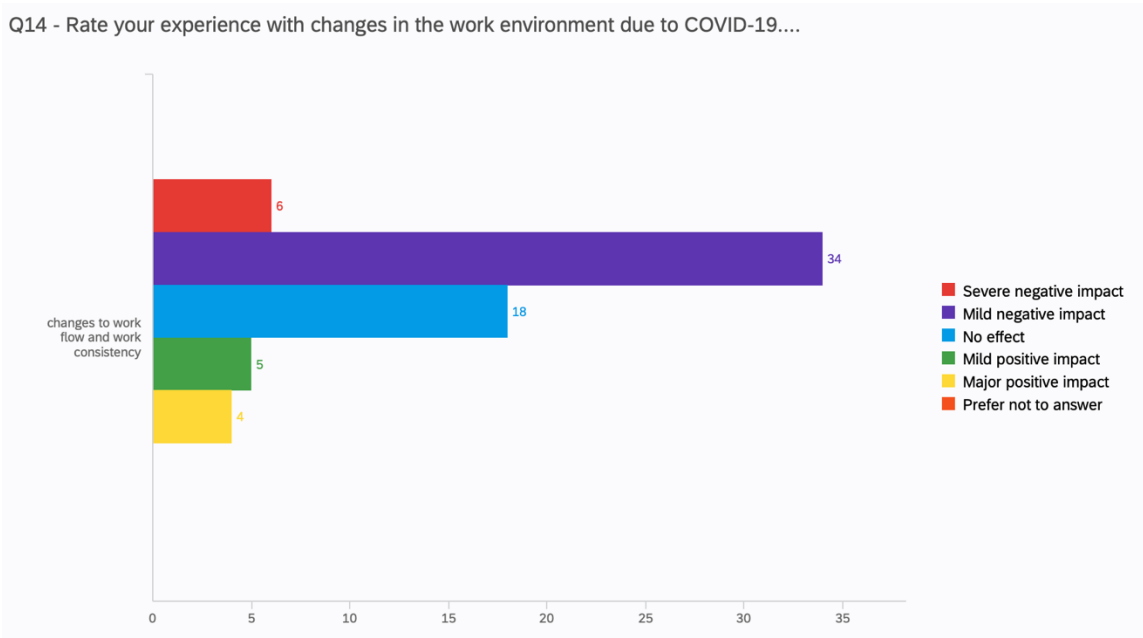


Figure 3-7: Bar graph representing CRM archaeologist's experiences with changes to workflow and consistency during the pandemic.

Regarding safety related changes, no individuals felt that they were experiencing major negative impacts to their health and wellness. However, 19.40 % did express some form of mild negative impact while 28.36% expressed neither negative nor positive experiences to safety during the pandemic. Most individuals expressed a mild positive impact to safety changes during this time representing 40.30% and 10.45% of individuals experiencing major positive impacts. One individual elected to not answer this portion of the question as seen in Figure 3-8.

Q14 - Rate your experience with changes in the work environment due to COVID-19...

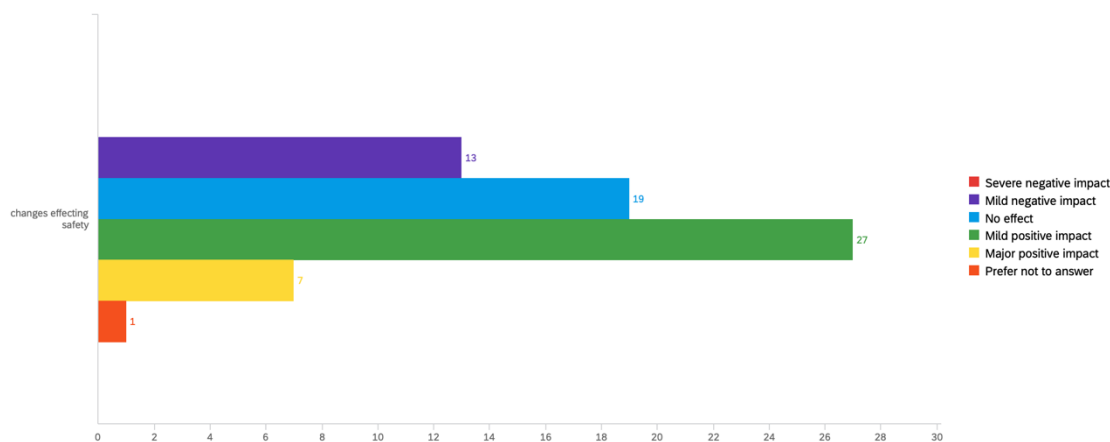


Figure 3-8: Bar graph representing CRM archaeologist’s experiences with changes to safety during the pandemic.

Changes affecting travel were largely viewed in a negative light. 11.94% of participants expressed severe negative impacts to travel and 47.76% of participants expressed mild negative impacts to travel during this time as well. 16.42% did not experience any effect to these changes. In total 17.91% of participants experienced a mild positive impact and 4.48% experienced a major positive impact to travel as seen in Figure 3-9. One individual chose not to answer this portion of the question.

Q14 - Rate your experience with changes in the work environment due to COVID-19....

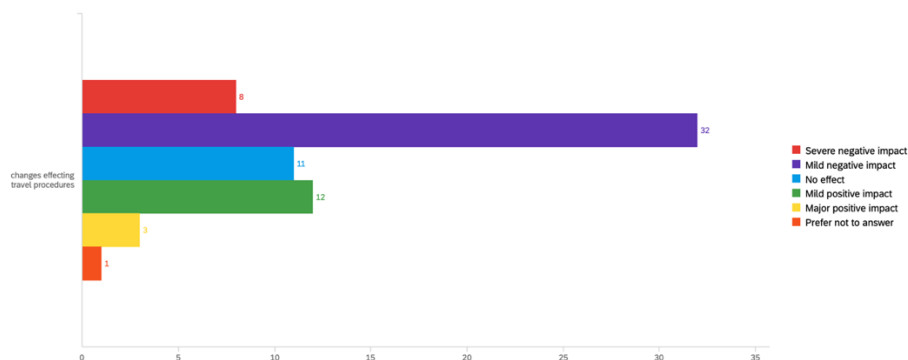


Figure 3-9: Bar graph representing CRM archaeologist's experiences with changes to travel during the pandemic.

Changes affecting the overall organization of how work was conducted on site was also viewed largely in a negative way as seen in Figure 3-10. Although only 1.49% of CRM archaeologists felt the work organization was severely impacted, 55.22% of archaeologists agreed that they faced mildly negative impacts to organization. 19.40% felt they face no impact to organization, an additional 19.40 % felt that the pandemic provided a mild positive impact to organization and 2.99% believed that organization was impacted in a majorly positive way. One individual chose not to share their experience.

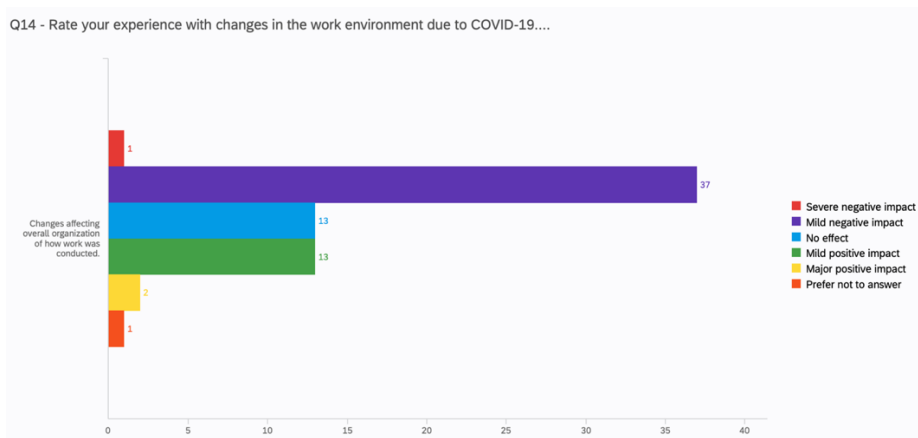


Figure 3-10: Bar graph representing CRM archaeologist's experiences with changes to overall organization of how work was conducted.

A major element of CRM work is travel. Few archaeologists within this profession are fortunate enough to have a steady stream of sites located near their place of residence. Thus, many must travel to distant counties within their own state or to other states all together in search of work. To illustrate this, participating archaeologists were asked how often work takes them out of state. Of 66 responses, 60.61% of responses indicated that less than 25% of work took CRM archaeologists out of state. 16.67% indicated that work had them cross state boundaries 25-50% of the time. An additional 10.61% answered 50-75% of their work was conducted out of state and only 9.09% indicated out of state work was conducted more than 75% of the time. 3.03% preferred not to answer. Prior to the pandemic travel was easily accomplished by being assigned a company truck or driving a personal vehicle to the site in question and getting to work. However due to the pandemic some states based on need and rate of infection. States like California, Connecticut, New York, and Hawaii were more aggressive and announced travelers who returned or were visiting from states with high infection rates must adhere to the 14-day quarantine in addition to periods of mandatory directives discouraging if not banning non-essential travel. In contrast, Alabama issued no travel restrictions or advisories during the year of 2020. For

archaeologists in the commercial sector, 6.45% of participants experienced travel restrictions that limited their ability to work outside of the United States. 22.58% of archaeologist were unable to perform work due to out-of-state travel restrictions. Significantly fewer, totaling 6.45%, experienced out-of-county travel restrictions. In conjunction with state travel, 24.73% of participants were issued a regional “Stay-at-Home” order and 13.98% were issued mandatory quarantines after work related travel. 13 individuals provided further statements regarding their own experiences with travel. In addition to the restrictions mentioned in the paragraphs above, two participants declared air travel was restricted for a period during 2020. At the time of the survey, one individual revealed that restrictions had eased but some restrictions still lingered while on the job. Two others said that work resulting in out-of-state overnight stays was limited by increasing the work the day and having archaeologist return to their place of residence at the end of day. The distance travelled to achieve this was not specified. The final two participants said that state guidance was considered ambiguous or provided no limitations to their work. The remaining comments reflected experiences that were declared earlier in this thesis such as individual travel and use of personal vehicles.

To better understand what type of work allowed a portion of archaeologists to remain employed when they could not perform field excavations, participants were asked what work was permitted to be performed during those down weeks. Options provided were as follows: data entry, surveying, data analysis, lab work, other, and the option to provide no answer. As seen in Figure 3-11, responses from 65 individuals were spread out amongst these options, but 38 participants used the “other” option indicating something other than was provided originally. I believe this is primarily due to the width and breadth of tasks performed by archaeologists and due to my own narrow understanding of responsibilities commercial archaeologist are trusted with while on the job. Beginning with the options originally provided, 20.33% of participants engaged in data entry, 11.38% participated in surveying, 20.33% performed data analysis,

15.45% conducted lab work and 1.63% preferred not to answer. For the individuals who volunteered further information, a total of 14 individuals indicated that the question did not pertain to them as work was not affected during the pandemic, with no noticeable sign of slowing or stoppage. 18 participants indicated that they conducted various forms of research and report writing for upcoming or on-going projects. Two SHPO officials indicated that they remained involved in compliance reviews and their associated tasks such as project reviews, negotiating agreements and completing administrative work in accordance with those tasks. Other responses included clearing backlogs of office work from previous projects, performing remote sensing and providing data recovery. One other individual revealed that after all lab work was completed, they were subsequently terminated from employment.

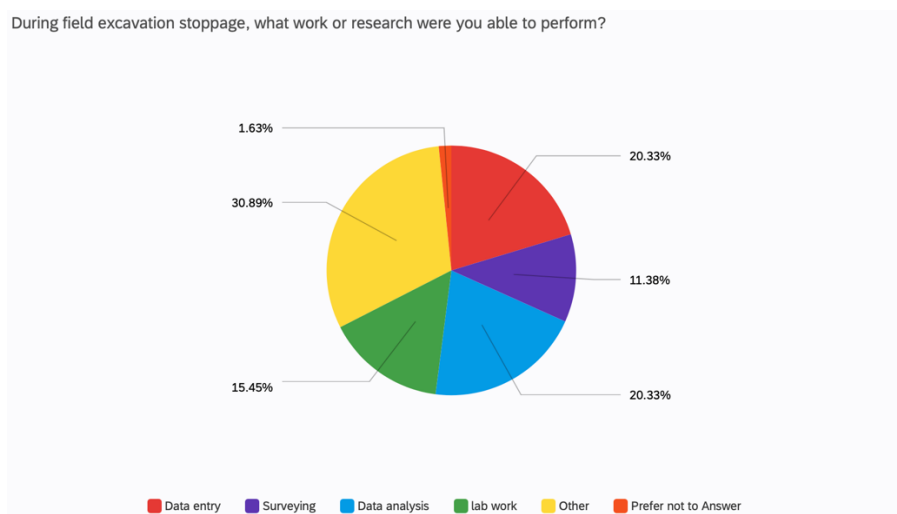


Figure 3-11: Pie graph representing what work and research CRM archaeologists were able to perform during pandemic.

Beyond the effects the pandemic had on the archaeologists themselves, the welfare of historic sites they work to preserve and understand are in question as well. Provided that many

individuals within this survey described the interruption to their work as brief or non-existent, it is logical to assume most sites were largely undamaged as well. As seen in Figure 3-12, 66 total respondents, 55.42% witnessed no significant damage or loss to their sites. Although this number does reveal the majority, many sites were indeed compromised in various ways. Regarding damage or loss of material remains, data or other site features, 12.05% of participants acknowledged damage due to inclement weather, 9.64% witnessed damages due to looting, an additional 9.64% recorded some form of vandalism within their sites. Along with physical site damage, loss of remains and data due to the abrupt work stoppage and the filing errors that came with it were reported by 3.64% of participating CRM archaeologists. Five participants volunteered further responses. Three stated the question did not apply to them, one reported that the damage to their sites was largely due to weather during the outbreak but also due to the social justice movements that also swept the country during this time and largely affected their museums and historic properties. One other, at the time of the survey, had yet to return to their site to see its effects.

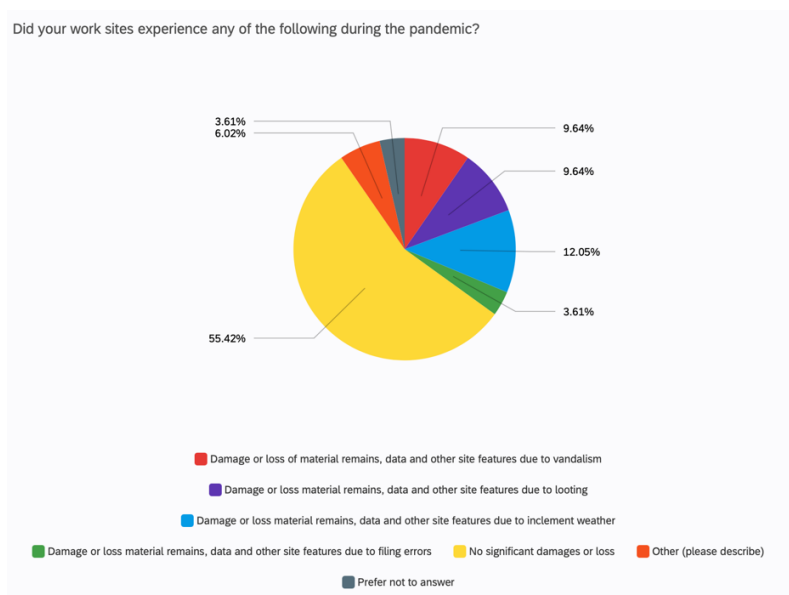


Figure 3-12: Pie graph representing how historic sites and their findings were affected in CRM archaeology during the 2020 pandemic.

Data within Academic Archaeology

This section contains questions which provide further insight into the individuals operating in academic career fields and as undergraduate and graduate level students at academic institutions who participated in the survey while also recording the effects of the pandemic on their livelihoods.

The first question within this section was removed from the demographic portion as I was more concerned with how the home location of academic archaeologists and archaeological students. Like the prior section I assumed any state or county regulation would be extended to the academic institution or university these individuals represented and those regulations would then be carried out by the institution effecting the individual. By doing so I could use this question as a clue to point at which states had the harshest coronavirus regulations or worst outbreaks if multiple individuals from a particular part of the country were experiencing loss of work due to closures or exposure.

As portrayed by Table 3-7, 63 participants out of 71 elected to answer this question. Although the 50 states as well as the District of Columbia and Puerto Rico were not entirely represented within this survey, responses from 17 separate states were recorded in this section. Where most states totaled 1-3 independent participants, the states of Pennsylvania and New York stood out representing 23.81% and 19.05% of responses respectively. This is important to note as responses may be skewed due to the overwhelming representation of these two neighboring states over the 15 others participating state as well as the states that were not represented.

Table 3-7: Table depicting states represented by survey participants in academic archaeology careers or at the student level.

#	Field	Choice Count
52	Wyoming	1.59% 1
51	Wisconsin	6.35% 4
49	Washington	3.17% 2
46	Utah	1.59% 1
53	Prefer Not to Answer	1.59% 1
39	Pennsylvania	23.81% 15
36	Ohio	1.59% 1
33	New York	19.05% 12
24	Minnesota	1.59% 1
22	Massachusetts	9.52% 6
21	Maryland	9.52% 6
17	Kansas	3.17% 2
15	Indiana	1.59% 1
14	Illinois	1.59% 1
10	Florida	1.59% 1
6	Colorado	4.76% 3
5	California	6.35% 4
3	Arizona	1.59% 1
		63

To understand exactly which levels and to what intensity of academia were affected in archaeology, participants we asked to reveal their current position. Of 60 participants 11.67% were undergraduates, 40% were graduate students, 8.33% were lecturers or teaching professors, 13.33% were assistant professors, 6.67% associate professors and 11.67% participants had reached the title of professor. 8.33% participants preferred not to answer.

Regarding work stoppage and loss of work results overwhelmingly confirmed some break in work to totaling 81.54%. Of the 16.92% that did not experience a work stoppage there was no statistically significant relationship regarding the individuals representing academic institution nor was their position within in those institutions a relevant factor as both relations-

maintained p-values well above .05. Only one individual chose not to answer this portion of the questionnaire.

Participants also were asked the specific reasons as to why their field work experienced stoppage during the pandemic. Out of 52 responses, 41.96% indicated the inability to conduct fieldwork due to travel bans and restrictions (see next paragraph for specific restrictions). 36.41% were restricted by policies enacted by their representing academic institution, 7.14% of participants reported field work was postponed due to withheld grant funds caused by the pandemic, 6.25% experienced direct exposure to coronavirus and less than 1% of individuals experienced no effect to their fieldwork. Eight participants elected to write in responses. For one participant it primarily depended on the project in question. However, for others their complications were far more specific. One individual reported that the severe lack of funding and impact on mental health prevented them from being able to pull a project together. Another individual two-month long field project was cleared provided they did not use volunteers resulting in a loss of 40% of their work force. Similarly, a graduate student indicated that housing for participants was deemed unsafe due to coronavirus's high transmission rate. Other responses involve the closure of field lab facilities, factoring in caring for children as school remained closed, finding new employment and ethical considerations such as affecting vulnerable populations while conducting research.

Participants were then asked to consider what work-related travel restrictions they may have experienced and may have continued to experience during the time of the questionnaire. As seen in Figure 3-13, of 42 responses 22.22% of individuals experienced a stay-at-home order, 16.67% were not permitted to travel out of state, 5.56% experienced restrictions on out-of-county travel, 33.33% indicated they were personally impacted by restrictions on out of-country-travel and 16.67% experienced a mandated quarantine after work/school related travel. Three participants elaborated on their experiences stating that for one professor from Arizona "permits

for travel were contingent on vaccines”. One Wisconsin professor indicated “exemptions for travel restrictions were possible when research could not be delayed” and one graduate student stated even after travel bans were lifted it was their personal decision not to travel to their research sites as case numbers continued to rise in their home state of Oregon.

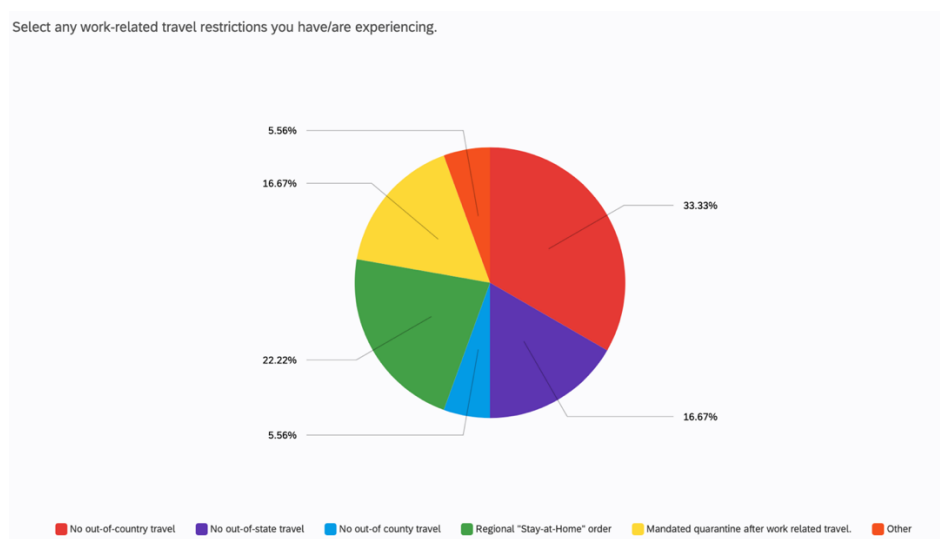


Figure 3-13: Pie graph representing how academic archaeologist and archaeology students were affected by various travel restrictions during the 2020 pandemic.

For how long were these individuals unable to conduct fieldwork? The most fortunate academics indicated their work experienced no interruption. As seen in Figure 3-14, those most affected indicated an interruption of 53 weeks; indicating a total shut down for the entire year of 2020. In an observation of total responses, a mean score of 20.27 weeks was recorded indicating a little more than 4.5 months. What is interesting in this data set is that the standard deviation is quite large XX. After examining the counts of each response this reason became quite clear – responses were largely on one end of the spectrum or the other. Out of 58 responses, 11 participants indicated 0 weeks of interruption while another 12 indicated total shut down for a year. All other responses totaled between 1-4 for other week selections. This dichotomy of data is

largely representative to the division within the United States as to how COVID-19 should be handled and continues to be a topic of debate within the country into 2022.

Q25 - How long were you unable to conduct field work during the pandemic in 2020?

Page Options ▾

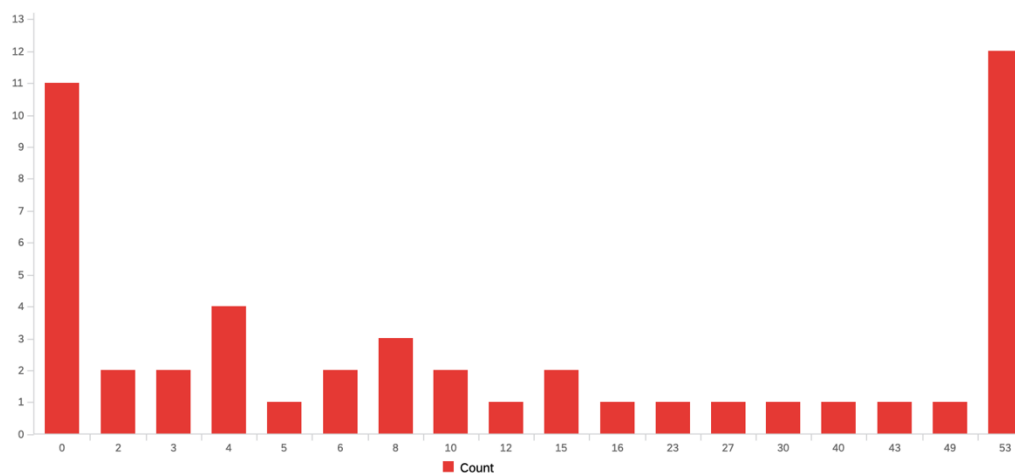


Figure 3-14: bar graph representing how academic archaeologist and archaeology students experienced field work interruption in weeks during 2020.

Participants were asked to recall what type of work they could complete during that downtime to further their research while awaiting to return to field excavations. As seen in Table 3-8, out of 51 participants, 19.61% indicated data entry, 21.57% engaged in grant writing, 1.96% were able to survey sites, 31.37% analyzed previous recorded data, 25.49% engaged in lab work and 5.88% preferred not to answer. 22 individuals answered “other” providing further examples than the ones the survey provided. Within these responses, two participants indicated they were unable to select multiple choices and indicated “all of the above.” 8 responses indicated this question was not applicable to their experience with a few indicating they did not participate in excavation. 7 revealed that they used the downtime in fieldwork to engage in writing reports, dissertations, grants or for publication. 4 focused on research, 1 indicated excavations continued

and another indicated they remained present in excavation while working remotely with community partners. Lastly, 1 indicated they were focused on literature review.

Table 3-8: Table of activities participant archaeologists engaged in during field work shut down.

Q26 - During field excavation stoppage, what work or research were you able to pe...			
#	Field	Choice Count	
1	Data entry	19.61%	10
2	Grant writing	21.57%	11
3	Surveying	1.96%	1
4	Data analysis	31.37%	16
5	Lab work	25.49%	13
6	Other	43.14%	22
7	Prefer not to Answer	5.88%	3
			51

When asked if their respective field sites adopted new practices during the pandemic 37.04% said that they closed their work sites, 11.11% increased the utilization of the local community for a sites excavation and maintenance, 35.19% limited the number of workers per site and mandated social distancing practices, 44.44% mandated the use of Personal Protective Equipment (PPE) such as masks and face coverings while 14.81% answered that no new policies were adopted 9.25% preferred not to answer. 13 participants added to their responses. 7 indicated since field sites were closed no new policies needed to be adopted. 2 indicated that travel was restricted to Personally owned vehicles, and another extended upon that idea by saying all excavation kits were designated to one person as well to avoid contact and potential spread of the virus.

For those who were able to return to their sites after the initial lock downs or had stewards of sites in place prior to lockdown, archaeologists were asked if their sites suffered any damages, theft, or vandalism while they were unable to tend to them. Fortunately, 60% confirmed

that no significant damages or loss had been identified, as seen in Figure 3-15. One individual identified damage to, or loss of material remains, data or site features due to vandalism and another recorded damages or loss due to looting. While inclement weather is something unrelated to the coronavirus pandemic, it may have presented difficulties to archaeologists or care takers of sites that had to be abandoned. Five survey takers indicated this was this case as inclement weather as the culprit to damages or losses relating to their site. None indicated damage or loss due to filing errors and 6 preferred not to answer. A further nine survey participants indicated that the answer to this question remained unknown until as late as May 27, 2021, as they had not gone into the field due to travel bans and health concerns caused by the pandemic. In addition, one archaeologist expects damage or loss due to observed weather conditions while one other indicated that a significant loss of income could be observed in the local community of their site as this community relies on archaeology as a source of income.

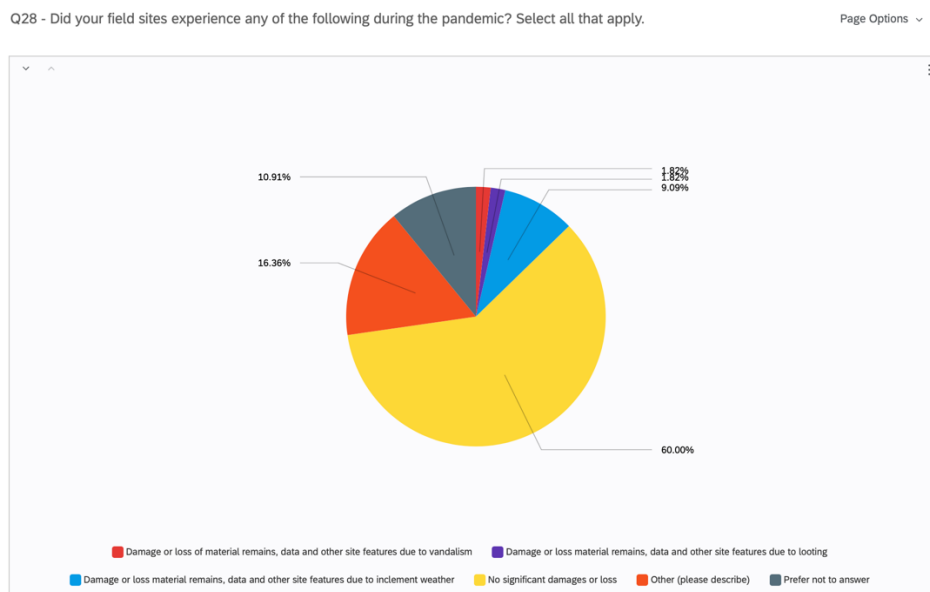


Figure 3-15: Pie graph representing damages or losses academic archaeologists and archaeology students experienced to their work sites during the 2020 pandemic.

To finalize this section, archaeologist and archaeology students were asked a qualitative question to gauge their attitudes regarding how significantly their research and studies were impacted during the pandemic in 2020 using a Likert-type scale. This question was broken down into five areas of impact and change: impacts to research, workflow and consistency, safety, travel procedures and overall organization of work as seen in Figure 3-16. In total, 54 participants responded to this portion of the survey. Beginning with impacts to research, 18.52% of individuals experienced severe negative impacts. The outstanding majority representing 62.96% of individuals experienced a mild negative impact. 9.26% of individuals claim to have experience no effect to workflow consistency. On the other end of the spectrum, 5.56% of individuals experienced a mild positive impact during the pandemic while 3.70% of individuals experienced a major positive impact to workflow. No individuals refused this question.

Changes to workflow and work consistency had similarly negative outlooks with 40.74% experiencing severe negative impacts and a matching 40.74% experiencing mild negative impacts. 9.26% maintain their research remained unaffected in the metric. 3.70% experienced a mild positive impact and 5.56% experienced a major positive impact. No individuals refused to answer this question.

Changes affecting safety were more diffused with only 11.11% claiming a severe negative impact to their research or studies and 31.48% claiming a mild negative impact. The bulk of responses were represented in safety procedures having no impact on their research. 14.81% claim that safety changes had a mild positive impact toward their research and 1.85% state that they experienced a major positive impact. Two individuals, making up 3.70% of responses, preferred not to provide an answer to this question.

Experiences with travel procedures trended on the negative side of the scale with 53.70% being majorly affected and 35.19% being mildly affected. Only 7.41% revealed their research

remained unaffected. Those that believed their research and studies were positively impacted were singular in number. Both categories were represented by one individual each making up the final 3.70% in this category. No individuals refused to answer this question.

Change affecting overall organization of how work was conducted trended similarly negative as well with 20.37% claiming a severe negative impact and 55.56% claiming a mildly negative impact to their research and studies. 14.81% claimed their research was unaffected in this metric. Regarding positive impacts, 7.41% participants claimed mild positive impacts and 1.85% claimed major positive impacts. No individuals refused to answer this question.

Q29 - How significantly was your research or studies impacted by the 2020 pandemi...

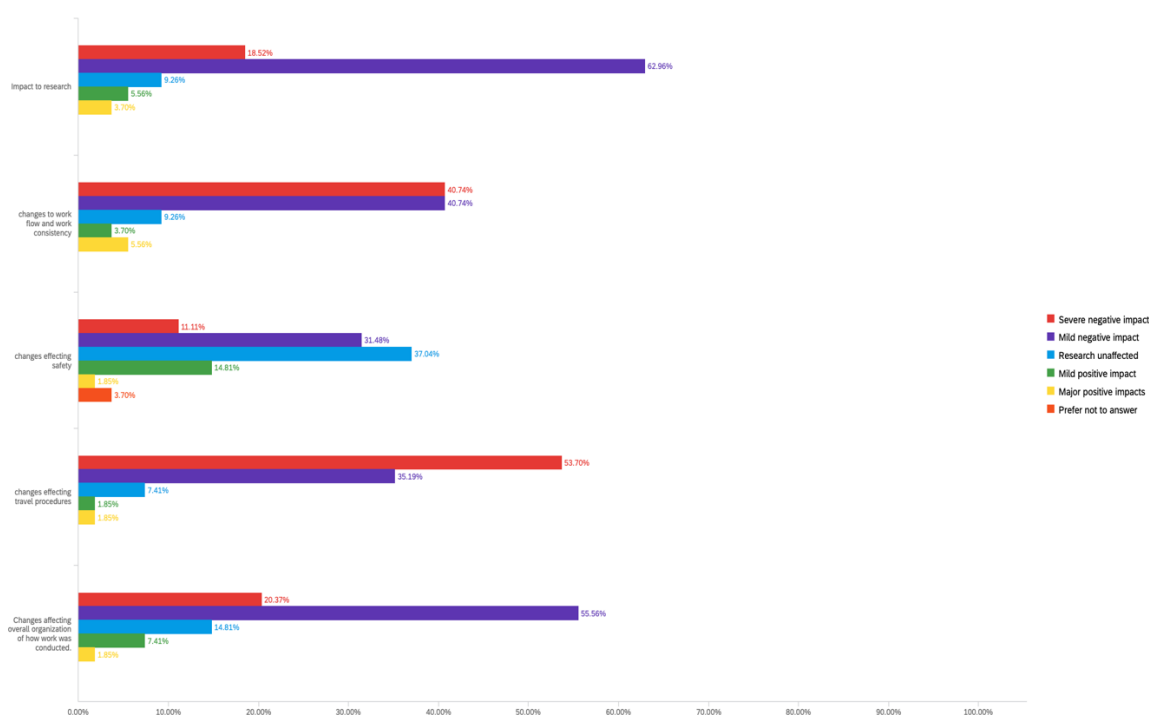


Figure 3-16: Bar graphs representing How significantly was your research or studies impacted by the 2020 pandemic?

Chapter 4

Conclusion

The historic nature of the COVID-19 pandemic became all too real the end of 2020 as my peers and I continued to log into Zoom rooms for lecture instead of classrooms nearly a year after our initial exodus. In addition, the ability to study abroad and attend summer programs was still withheld from many students. It was at this point that I began formulating my own questions about students around the country and if the commercial field was affected similarly. Although formulating questions and collecting data pertains to the bulk of performing a scientific study, the goal is to synthesize the data, and extrapolate meaning. It comes down too identifying what we have learned and sharing that knowledge with the scientific community as well as with the public. This chapter is dedicated to the results of my survey and comparing the experiences between CRM and academic archaeologists in response to the pandemic. This section will also include an acknowledgment on the faults I encountered while overseeing this study, how those faults can be improved and what can be done to build upon this thesis.

Analysis

With the information between both branches of archaeology revealed the next step is comparing the data sets. Beginning with the simplest question, who was more effected in work loss during the pandemic? Whereas 19.7% of CRM archaeologist indicated loss of work the data shows a complete turn in the academic track with 81.54% of individuals acknowledging their ability to work. For CRM personnel only 9.7% of total responses indicated furlough and a matching 9.7% indicated at worst a reduction in work. This differs profoundly from academics as paying students are unlikely to be outed from their programs and professors, especially those with tenure, are unlikely to be furloughed. With those culture differences aside. The biggest impact on

work loss for academics came down to travel bans (41.96%) and the institutional policies that were enforced by the schools they represented (36.61%). As an example, archaeological programs abroad led by The Pennsylvania State University were shut down during the summer of 2020 and its labs were closed to most if not all personnel. CRM and academic archaeologists also experienced how long they experienced time out of the field as well. The academic branch of archaeology experienced longer down times with a median of 20.27 weeks while CRM was only out of the field for a median of 12.92 weeks during 2020. It is important to note that only 12 individuals from CRM indicated weeks of work loss with 38 weeks being the longest time frame someone in CRM was without field work. This is starkly contrasted by academic archaeologists where 49 participants indicated field work loss. Another important contrast is that academic archaeologists were unable to return to fieldwork at a maximum of 53 weeks, in other words the entire year of 2020. Again, this illustrates just how at risk the academic world of archaeology is over that of CRM. I would argue this is largely in part to CRM firms being a required service. Due to Section 106 of the National Historic Preservation Act of 1966 CRMs absence can influence the upkeep of vital infrastructure and industrial progression thus making it imperative to find ways to return CRM archaeologists to work. Where academic archaeologists also provide important services to the historic record, science, and humanity, their absence in the field is felt only by communities who are deeply reliant on archaeological work. Furthermore, archaeology students are likely to continue attending classes online regardless of the opportunity to experience hands on archaeological training. In turn this removes pressure from university officials from reinstating classes that provide hands on training while potentially risking an outbreak of coronavirus.

As far as travel is concerned, both CRM and academic archaeologists seemed to experience the same trends. This is especially so in the case of regional stay at home orders which represented 24.73% and 22% of participants respectively. The most significant difference was

noticed in out of country travel. About 33% of academic archaeologists experienced travel bans when attempting to leave the United States. The most likely scenario is that this number infer 33% of participants attempted to leave rather than only 33% were impeded by travel (a question relating to plans out of country would have been useful here). CRM recorded significantly fewer participants encounter issues when traveling out of country (about 18%). This shouldn't have been too surprising as 60.41% of CRM archaeologist reported leaving their home state for work less than 25% of the time and the majority of North American CRM firms assume contracts within the United States. I would like to comment my own surprise at how infrequently the data depicts CRM from traveling out of state and I hypothesize that this is due to a flaw in how I sampled CRM archaeologists. It is my belief that the survey reached primarily full-time employees that operate as principal investigators and reached very few, CRM field technicians that operate entirely in the field.

While observing the differences in field work stoppage and its reasons for each branch, the qualitative data representing the attitudes of survey participants. When CRM archaeologists were asked to rate their overall work environment using a Likert-like scale, responses largely representative of a mild negative impact (For example: changes effecting workflow/consistency, organization, and travel procedures). This was the case for all sections of question 14 except in relation to changes effecting safety in which 40.30% of archaeologists believed the changes to be mildly positive (followed by no effect 28.36%). Academics had a similar experience to CRM personnel when sharing the impact to their research during the pandemic with most responses split between mild and sever negative impacts. Primarily academic archaeologists were deeply impacted by travel procedures (notably bans issued out by their states or university officials). They also experienced severe impacts to their workflows and consistency with about 80% of individuals indicating a negative experience compared to CRM.

Flaws Identified

Though no one truly enjoys pointing out flaws in their arguments or items they overlooked during a scientific study, I believe for the sake of those reading that it is one of the most important elements to a study.

One of the largest flaws in my thesis is derived from my understanding of the responsibilities held by SHPOs. While formulating my questionnaire I was under the assumption that SHPOs operated largely as government employed archaeological technicians. While they are archaeologists and provide an invaluable service to the field, my survey was not truly built for the services they provide. Furthermore, several SHPO participants found themselves stuck between worlds of CRM and academic archaeology. And in a sense, they certainly are a link between the two worlds. While SHPO personnel may not as active as a CRM field technician working a 10-day schedule, they are involved in aspects such as identifying and nominating eligible properties to the National Historic Register, preparing and implementing statewide historic preservation plans, provides public information, education, training and technical assistance, provide consultation for Federal undertakings under the Section 106 provision of the National Historic Preservation Act and ultimately promotes historic preservation efforts within state government (National Conference of State Historic Preservation Officers, n.d.). Unfortunately, my survey prioritized field work rather than the administrative and community relations work that SHPOs are often involved with. If provided with a second opportunity to follow up with a more recent study of the effects of COVID-19 on archaeology, it would be imperative to include a SHPO focused portion to better represent their services to the field. Although it was only explicitly recorded in a few questions (Questions 19 and 26) some SHPOs and other historians identified that the questions did not apply to them using the “other” option for their answers. Although few the critiques that have been brought to my awareness lead me to believe that there are an equal portion if not more left unsaid.

I also recognized early during my survey that I had initially made question 26 a flawed question. This question was directed at academic archaeologists and asked, “During field excavation stoppage, what work or research were you able to perform?” I provided five unique answers, the ability to select “other” and the ability to “prefer not to answer.” My intent was to allow all participants the ability to select as many of the options as they would like. However, when forming the survey, I disabled their ability to select multiple choices. This led to three respondents selecting “other” and writing in which answers pertained to them. After being informed that the question was indeed flawed, I made the choice to enable future participants to select multiple answers. Normally, I would take pause on altering a survey after it is released as I want everyone to have the same experience to collect accurate data. But seeing as the current state of the survey was providing in accurate results and at this point still in the early stages of data collection I opted for the change.

Another item that may not necessarily be defined as a flaw rather than a quirk of online surveys and data collection is the disproportionate number of participants from Pennsylvania and Maryland that was previously mentioned (page 41). In all surveys there is rarely a perfect spread of representation unless it is directly built into the survey. However, in my survey the two states made up more than 40% of responses compared to the other 17 states that were represented. To add to this issue, Pennsylvania and Maryland are geographic neighbors in the United States and due to that spatial similarity could have been similarly affected by the pandemic. For example, Maryland and Pennsylvania both enacted states of emergencies within hours of each other (March 5 and 6 respectively) whereas some states like North Dakota and Wyoming took until March 13, 2020. Maryland and Pennsylvania also began closing non-essential businesses and enacting regional stay at home orders around that time and delivered amendments to those orders later in March to extend those orders on March 23 to April 3, 2020. Maryland and Pennsylvania continued updating and reissuing states of emergency throughout 2020 and into the latter half of

2021 (*2020-2021 State Executive Orders – COVID-19 Resources for State Leaders*, 2020). As these states operated in similar ways to one another and make up the bulk of the survey's responses. The potential for this study to inaccurately portray archaeologists from unrepresented or under-represented states should be observed.

When recording damages cause by vandalism, looting or weather the majority both CRM and academics archaeologist fortunately experienced no significant damages or loss (55.42% and 60% respectively). However, where these two perspectives differ is some academic archaeologists are still awaiting to return to their sites and are unsure the extent of the damage. Those that have returned and report some form of loss indicate that weather is the prime suspect influencing their sites in their absence while weather, looting and vandalism seem to be closely represented in the world of CRM. It is unclear why this is the case but may be due to the academic branch working in established heritage sites with their own forms of security or grounds keepers rather than CRM whose sites could be a few meters off busy roads or in within the confines of industrial areas.

How to Improve

Although this one project analyzed a small segment of archaeologists as they adapted to the pandemic in 2020, one must ask "where do we go from here?" COVID- 19 has stuck around far longer than most initially suspected, lasting the entirety of 2020 breaching the subsequent year of 2021 and is still a present force in 2022 with the most recent Omicron variant. For the next step forward, I would suggest a researcher to submit a similar survey to the one used in this study. I would recommend patience in the initial gathering of participants in addition to sending a few reminder emails denoting a proposed end of survey date. That way anyone who did wish to volunteer and forgot would have a second chance to provide their experience. It would also behoove future studies to get in contact with the schedulers of CRM firms to ensure the survey is

reaching seasonal and part time archaeologists rather than only the full-time employees. Furthermore, the principal investigator needs to be diligent in recognizing where responses are lacking. Again, it is not necessary to get equal representation from every state and from all branches of archaeology but as this is about understanding the holistic experience of archaeologists during the pandemic, it is preferable some representation at multiple levels: geographic location, experience, age etc...

Secondly, a larger sample of participants would have allowed for greater accuracy on running statistical analysis such as relations and regression models. With such a small pool yet wide variety of individuals and individual answers it was difficult if not futile to run regression formulas using multiple choice answers.

Thirdly, I would highly encourage future principal investigators to make a few changes to the initial survey. Primarily, SHPOs must receive their own section, where questions are calibrated more sufficiently to their line of work. I would suggest future researchers to ask CRM archaeologists what their status is as an employee. I believe it is important to distinguish if a participant is considered a full-time, seasonal, or a part time employee. An additional question indicating how many CRM firms the participant is employed by should be added. This is due to part time and seasonal archaeologists being "on roster" for multiple firms. Being on roster for multiple firms may affect metrics like work loss, travel, and participants may have conflicting terms of work based on employers' policies.

This short list of ideas with the intent to make this study stronger comes from my own experience and frustrations while analyzing participant responses and the desire to achieve more reliable results. Veteran demographers and polling professionals potentially may have a fix for small participation sizes, but nothing can compensate for ineffective communication within a survey. It is paramount to ensure the right questions are being asked. Ensure that participants are guided into understanding what types of data the study is interested in but always allow an outlet

for their own personal experience to be shared. It is through those shared personal experiences that researchers can begin to think outside of the box and formulate new answers to old questions.

Appendix

Full Survey

COVID-19 Archaeology Survey

Start of Block: Consent Form

Q1 The purpose of this questionnaire is to identify the impacts of the 2020 COVID-19 pandemic in the field of archaeology. The survey you are about to participate in will aid in revealing the economic, methodological, and physical impacts of coronavirus on the field of archaeology and on archaeologists as well. If this survey has reached you, you have been identified as an individual working in the archaeological field and your experience is unique and valuable to this study. If you have received this questionnaire and do not actively work in an archaeological capacity, please disregard as your answers may skew data.

This study is completely voluntary and, if you choose to participate, will complete a confidential survey on your experience with fieldwork during the first year of the coronavirus pandemic (2020). This survey should take no longer than 10 minutes of your time.

There are no foreseeable risks to completing this survey as it is entirely confidential. If you are uncomfortable with answering any of the following questions, you will be able to submit the survey by selecting “no answer” for any of the following questions.

Confidentiality is maintained by the technology being used. Risks involved are equivalent to any person's daily use of the internet. It is the studies intent for your information to stay confidential and individual questionnaires will only be shared between active investigators of this study.

For any questions or concerns, feel free to contact Jeffrey Grossi, the primary investigator, at jl5501@psu.edu.

You are free to continue or stop participating in this survey at any time. No information about you will be collected until you submit your answers. Once answers are submitted, there is no way to accurately remove those answers without breaching confidentiality.

Do you give consent for your answers to be used as part of this research study? (You must respond to this question to continue the survey.)

- Yes, I consent.
- No, I do not consent.

Skip To: End of Survey If The purpose of this questionnaire is to identify the impacts of the 2020 COVID-19 pandemic in the... = No, I do not consent.

End of Block: Consent Form

Start of Block: Demographics

Q2 What is your current age?

Prefer not to answer

18 26 34 43 51 59 67 75 84 92 100

Current Age	
-------------	---

Q3 What is your self-identified gender?

- Male
- Female
- Non-binary / third gender
- Prefer not to answer
-

Q4 Which category best describes your ethnicity and or race? (Select all that apply)

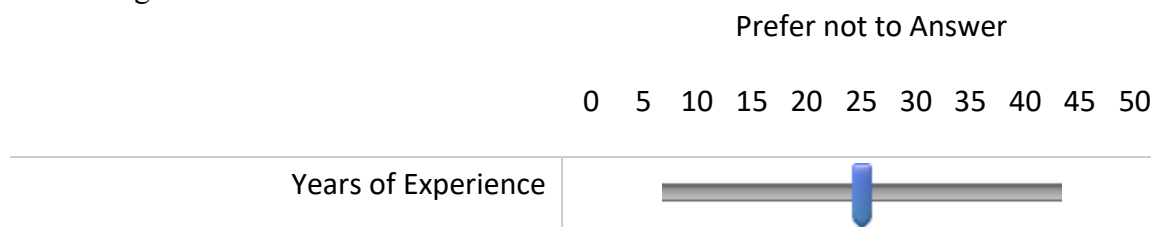
- White (Eg: German, Irish, English, Italian, Polish, French, etc)
- Hispanic, Latino or Spanish origin (Eg: Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, etc)
- Black or African American (Eg: African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian, etc)
- Asian (Eg: Chinese, Filipino, Asian Indian, Vietnamese, Korean, Japanese, etc)
- American Indian or Alaska Native (Eg: Navajo nation, Blackfeet tribe, Mayan, Aztec, Native Village or Barrow Inupiat Traditional Government, Nome Eskimo Community, etc)
- Middle Eastern or North African (Eg: Lebanese, Iranian, Egyptian, Syrian, Moroccan, Algerian, etc)
- Native Hawaiian or Other Pacific Islander (Eg: Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, etc)
- Some other race, ethnicity, or origin
-
- Prefer not to answer
-

Q5

What is the highest degree or level of school you have completed? *If currently enrolled, highest degree received.*

- High school graduate, diploma, or the equivalent (for example: GED)
 - Trade/technical/vocational training
 - Associate degree
 - Bachelor's degree
 - Master's degree
 - Doctorate degree
 - Prefer not to answer
-

Q6 Approximately how many years of professional experience do you have in the archaeological field.



Q7

Please select the type of employer that best matches your work experience during the 2020 pandemic. (Select all that apply)

- Cultural Resource Management (CRM); Contract archaeology
- A university or academic institution

End of Block: Demographics

Start of Block: CRM

Q8 This portion of the survey relates only to work you have conducted as an employee for a CRM firm during the 2020 pandemic.

Q9 In which state is your employer located?

▼ Alabama ... Prefer Not to Answer

Q10 During the 2020 Pandemic did you experience a loss of work?

- Yes
- No
- Prefer not to answer
-

Display This Question:

If During the 2020 Pandemic did you experience a loss of work? = Yes

Q11 For what reason did you experience a loss of work during the pandemic? Select all that apply.

- Furloughed, expectation of returning to work / returned to work.
- Permanent termination
- Experienced reduction in work but remained on payroll
- Personal exposure to coronavirus
- Other (please describe)
-
- Prefer not to answer

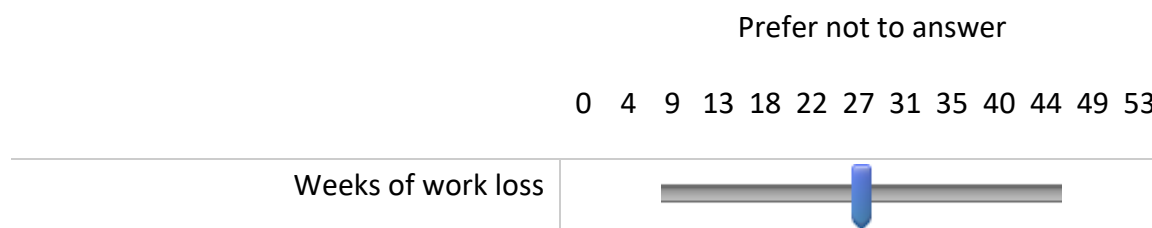
Q12 How significantly was your financial situation impacted by the 2020 pandemic.

	Severe negative impact	Mild negative impact	Financially unaffected	Mild positive impact	Major positive impacts	Prefer not to answer
financial impact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If During the 2020 Pandemic did you experience a loss of work? = Yes

Q13 During the 2020 pandemic, approximately how long did you experience loss of work in weeks?



Q14 Did your employer adopt any new practices during the 2020 Pandemic? What changes did the pandemic bring to your workplace?

- Mandatory Social Distancing practices; limitation on number of workers per site.
- Travel Restrictions; Factored travel distance into work site selection.
- Mandatory use Personal Protective Equipment (PPE); masks or face coverings.
- Closure of work sites
- No new strategies or practices.
- Other (please describe)
-
- Prefer not to answer

Q15 Rate your experience with changes in the work environment due to COVID-19. Do you believe they were over all positive or negative?

	Severe negative impact	Mild negative impact	No effect	Mild positive impact	Major positive impact	Prefer not to answer
changes to work flow and work consistency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
changes effecting safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
changes effecting travel procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Changes affecting overall organization of how work was conducted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Display This Question:

If Did your employer adopt any new practices during the 2020 Pandemic? What changes did the pandemic... = Travel Restrictions; Factored travel distance into work site selection.

Q16 Select any work-related travel restrictions you have/are experiencing.

- No out-of-country travel
 - No out-of-state travel
 - No out-of county travel
 - Regional "Stay-at-Home" order
 - Mandated quarantine after work related travel.
 - Other _____
 - Prefer not to answer
-

Q17 During field excavation stoppage, what work or research were you able to perform?

- Data entry
 - Surveying
 - Data analysis
 - lab work
 - Other _____
 - Prefer not to Answer
-

Q18 In a normal year how often does work take you out of state?

- Less than 25% of my work
 - 25-50% of my work
 - 50-75% of my work
 - More than 75% of my work
 - Prefer not to answer
-

Q19 In a normal year, approximately how many weeks a year do you work?

- All 52 weeks (full year)
 - 47-51 weeks
 - 42-46 weeks
 - 41 weeks or less
 - Prefer not to answer
-

Q20 Did your work sites experience any of the following during the pandemic? Select all that apply.

- Damage or loss of material remains, data and other site features due to vandalism
- Damage or loss material remains, data and other site features due to looting
- Damage or loss material remains, data and other site features due to inclement weather
- Damage or loss material remains, data and other site features due to filing errors
- No significant damages or loss
- Other (please describe)
-
- Prefer not to answer

End of Block: CRM

Start of Block: Academic

Q21 This portion of the survey relates only to work you have conducted as an employee for a university or academic institution during the 2020 pandemic.

Q22 In which state is your employer located?

▼ Alabama ... Prefer Not to Answer

Q23 At your current institution which position do you represent?

- Undergraduate Student
 - Graduate Student
 - Lecturer or Teaching Professor
 - Assistant Professor
 - Associate Professor
 - Professor
 - Prefer not to answer
-

Q24 Due to the 2020 pandemic did your feild work experience any work stoppage or loss of work?

- Yes
 - No
 - Prefer not to answer
-

Display This Question:

If Due to the 2020 pandemic did your feild work experience any work stoppage or loss of work? = Yes

Q25 For what reason did your field work experience work stoppage or loss during the pandemic? Select all that apply.

- Personal exposure to coronavirus
- Unable to conduct field work due to travel bans or restrictions
- Unable to conduct field work due withheld grant funds
- Unable to conduct field work due to institutional policies
- No affect to field work
- Other _____
- Prefer not to answer

Display This Question:

*If For what reason did your field work experience work stoppage or loss during the pandemic?
Select... = Unable to conduct field work due to travel bans or restrictions*

Q26 Select any work-related travel restrictions you have/are experiencing.

- No out-of-country travel
- No out-of-state travel
- No out-of county travel
- Regional "Stay-at-Home" order
- Mandated quarantine after work related travel.
- Other _____
- Prefer not to answer

Q27 In weeks, how long were you unable to conduct field work during the 2020 pandemic?

Prefer not to answer

0 4 9 13 18 22 27 31 35 40 44 49 53



Q28 During field excavation stoppage, what work or research were you able to perform?

- Data entry
 - Grant writing
 - Surveying
 - Data analysis
 - Lab work
 - Other _____
 - Prefer not to Answer
-

Q29 Did your field site adopt any new practices during the 2020 Pandemic?

Mandatory Social Distancing practices; limitation on number of workers per site.

Increased employment of local community for site's excavation and maintenance

Mandatory use Personal Protective Equipment (PPE) such as masks or face coverings.

Closure of work sites

No new strategies or practices.

Other (please describe)

Prefer not to answer

Q30 Did your field sites experience any of the following during the pandemic? Select all that apply.

Damage or loss of material remains, data and other site features due to vandalism

Damage or loss material remains, data and other site features due to looting

Damage or loss material remains, data and other site features due to inclement weather

Damage or loss material remains, data and other site features due to filing errors

No significant damages or loss

Other (please describe)

Prefer not to answer

Q31 How significantly was your research or studies impacted by the 2020 pandemic?

	Severe negative impact	Mild negative impact	Research unaffected	Mild positive impact	Major positive impacts	Prefer not to answer
Impact to research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
changes to work flow and work consistency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
changes effecting safety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
changes effecting travel procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Changes affecting overall organization of how work was conducted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Academic

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