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JUSTICE AND THE RIVER: COMMUNITY CONNECTIONS TO AN IMPAIRED
URBAN RIVER IN SALT LAKE CITY

by

Taya L. Carothers

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Environment and Society

Approved:

Mark Brunson, Ph.D.
Major Professor

Claudia Radel, Ph.D.
Committee Member

Jessica Lucero, Ph.D.
Committee Member

Joanna Endter-Wada, Ph.D.
Committee Member

Sara Yeo, Ph.D.
Committee Member

Laurens H. Smith, Ph.D.
Interim Vice President for Research and
Interim Dean of the School of Graduate
Studies

UTAH STATE UNIVERSITY
Logan, Utah

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ABSTRACT

JUSTICE AND THE RIVER: COMMUNITY CONNECTIONS TO AN IMPAIRED
URBAN RIVER IN SALT LAKE CITY

by

Taya L. Carothers, Doctor of Philosophy

Utah State University, 2018

Major Professor: Dr. Mark Brunson
Department: Environment and Society

This dissertation assesses how a predominantly minority community in Salt Lake City perceives, interacts with, and relates to the Jordan River. The neighborhoods that comprise this community intersect the river, which is a defining geographical feature of the area. The Jordan River is considered impaired with water quality problems and the city has undertaken various strategies to improve this environment. This research will fill key gaps in public participation by seeking input from community members. This dissertation was designed to elevate underrepresented community opinions, including those of children, to ensure a higher degree of representation by this majority-minority community. This research assesses data from two surveys, analyzes children's perspectives as conveyed through art, writing and interviews, and synthesizes interview responses from community residents.

Results from this research demonstrate that, though community members are concerned about several social and environmental problems and have some negative

perceptions of the river, the community values the Jordan River. The river is highlighted as a place for relaxation, nature, and various activities. Experience at the river is a more robust predictor than demographics for concerns about the river. Social policies outside the river neighborhoods impacted how community members viewed and interacted with the river environment. Community members, including children, want a more active role in river management and policy and have several ideas of how to improve the area. This dissertation project provides evidence that community-engaged research in river-adjacent communities experiencing environmental justice problems is an appropriate research approach that allows for flexible and responsive methods, and helps to achieve more representative research participation.

(213 pages)

PUBLIC ABSTRACT

JUSTICE AND THE RIVER: COMMUNITY CONNECTIONS TO AN IMPAIRED
URBAN RIVER IN SALT LAKE CITY

Taya L. Carothers

Local communities have the right to participate in decision-making about environmental resources near where they live. Local governments have tried to gather feedback from communities to help improve the decisions they make, but have not always done a good job getting feedback from minority or urban communities. This dissertation provides one step toward obtaining this kind of public input in a majority-minority community surrounding the Jordan River in Salt Lake City. Children and adults participated in this research. I present findings from two surveys, from work with children, and from adult interviews to understand how this community relates to their local river, what they like and do not like about it, and what they would like to see improved.

This research revealed that communities have both positive and negative views of the river, but overall see it as an important community resource that is highly valued. Communities would like to participate more in river decision-making and have suggestions for how they would like to see that happen. The results in this dissertation can help bridge the gap between local city government officials and this minority community to help improve the river environmental quality and connections to the community.

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My committee members provided incredibly valuable insight and guidance at all stages of my degree process. My major professor, Mark Brunson, was flexible and supportive and provided me with a research home after a challenging first year. I am extremely grateful for that opportunity. I especially appreciated having a group of strong and supportive women as committee members and mentors who gave me support personally and academically.

Taya Carothers

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CHAPTER I

INTRODUCTION

The research presented in this dissertation provides insight as to how people who live near the Jordan River in Salt Lake City perceive and connect with that river and identifies community priorities for the river. This research will help fill gaps in public engagement efforts about river planning and management activities while advancing understanding of urban river perceptions. This three-part project reveals local knowledge and perceptions based on the idea that representative public participation in environmental decision-making helps improve decisions and can lead to more positive organizational and social outcomes (Petts, 2006; Tapsell, Tunstall, House, Whomsley & Macnaghten, 2001). Additionally, this research adheres to the idea that underrepresented communities have the right to, and should, actively participate in environmental decision-making that directly influences their lives (Corburn, 2002).

There is a general lack of perception research around urban waterways (Gobster & Westphal, 2004; Yocom, 2014). However, understanding local knowledge, priorities, and perceptions is particularly important in urban river management (Petts, 2006; Ryan, 1998) because rivers in cities are directly related to and defined by the human population surrounding them (Yocom, 2014). The very definition of rivers in rehabilitation projects, which are becoming more common, should include social objectives and human perspectives to increase the success of these projects (Eden & Tunstall, 2006; Ryan, 1998). Including public preferences for river projects and management helps increase democracy and provides opportunities for public learning and engagement (Irvin & Stansbury, 2004; Petts, 2007; Rydin & Pennington, 2000). Including the public and local

communities surrounding rivers ensures that projects are generally more acceptable to the public and generate less opposition (Williams & Florez, 2002). There are more positive outcomes in river projects and policies when local knowledge is considered, as the inclusion of local expertise increases procedural democracy for community voices that have previously gone unheard (Corburn, 2002). Environmental justice research has revealed many inequalities around rivers. This same vein of research also demonstrates that increased public participation in river planning, community engagement efforts, and recognizing the importance of diverse social perspectives of urban waterways can mitigate negative social consequences sometimes associated with river projects (Jennings, Gaither, & Gragg, 2012).

As with most urban rivers that have supported industrial growth and urbanization, the Jordan River has been negatively impacted by development processes and efforts to make the river fit within the urban environment (Walsh et al., 2005). The Jordan River, which runs through Salt Lake City's western side, is classified today as an impaired urban river with organic matter and total maximum daily load (TMDL) water quality problems (Epstein, Kelso, & Baker, 2016). Continual dredging, channelizing, and diverting the river in response to development demands have degraded the river since the settlement of the Salt Lake Valley (Jordan River Commission, 2008; 2013).

In response to water quality problems and a recognition that this important resource has been negatively impacted over time, several planning initiatives have placed the Jordan River in the spotlight. In 2008, the Blueprint Jordan River plan was created, which has been the largest planning effort around the river to date. Blueprint Jordan River emphasized public participation with workshops, focus groups, and an online

survey. Surveys were administered online, but also at every focus group and public workshop, providing a measure of participation. Results show that survey respondents were mostly white and middle aged, with only 8% of respondents identifying as Latinx¹. Unfortunately, efforts to reach out to Latinx and other minority constituencies fell short. Additionally, results show that 42% of the participants in the planning process lived more than two miles from the river. In 2013, the Jordan River Commission, which was established as a result of the Blueprint process to help coordinate efforts along the river, created a document called “Best Practices for Riverfront Communities.” This planning document emphasized many ecological issues. The only social consideration in this document was reference to recreation opportunities, despite the inclusion of the word “communities” in the title and use of data from the 2008 Blueprint report. Additionally, most of the examples provided in that document are from the non-urban sections of the river outside of Salt Lake City.

Blueprint Jordan River’s results, like other planning processes around the river corridor, did not adequately represent minority populations living in close proximity to the river. Taking into account that the Jordan River corridor has both higher rates of poverty and higher concentrations of minorities than the county as a whole, the 2015 Salt Lake County Integrated Watershed Plan attempted to incorporate environmental justice language despite a lack of environmental justice policies or programs on the part of the State of Utah, Salt Lake County, and City. It is unclear whether any river projects to date take an environmental justice approach to solving community river problems.

¹ The term “Latinx” is a new gender-neutral term identifying people of Latin American origin, mostly used to describe these populations residing outside of that region (Salinas & Lozano, 2017).

Research Objective

The primary goal of this research is to reveal local knowledge, perceptions, and experiences of the Jordan River for those who live in close proximity to the river, while paying particular attention to elevating minority perceptions of this resource.

Additionally, this research will explore community connections to the river to understand how residents of these neighborhoods relate to the river and perceive it as part of community identity. Utilizing a multi-method approach and working with a variety of community partners, this research attempts to provide a more holistic view of west side community perceptions of the river. I have found no research project that assesses perceptions of an urban river in this way by focusing on both adults' and children's perspectives with both qualitative and quantitative methods, without assessing opinions of a specific river project or policy.

Study Site: Salt Lake City's "West Side"

Since the founding of Salt Lake City by Mormon religious migrants in the mid-1800s, there has been a "social divide" between the eastern and western parts of the city (Bradley, 2004). After the establishment of Temple Square as the center of the city, church leaders designated lands to the east of the square to high ranking members. The western side of the city, home of the Jordan River, was not considered desirable. This area is still considered undesirable today in a city that is "segregated along east west lines of exclusion" (Cahill, Gutiérrez, & Cerecer, 2016, p. 129). The first railroad was established in 1869 and with it came the migration of non-Mormons, mostly foreign-born immigrants, to work in mining and other industries (Bradley, 2004). Immigrants

populated what we know of today as the west side after rail lines created a physical barrier between the east and west. Inexpensive multi-family housing units, warehouses, and other working-class areas were established in the west. This began the long history of segregation between an ethnically and racially diverse population and the relatively homogenously White other side of the city. Segregation also created the spaces to form strong community ties among west side residents that were “apart from the Mormon hegemony of the eastern side of the city.... It was more than home to the Japanese or Greek Americans who lived there: it was proof positive that they could survive in even the most inhospitable places” (Bradley, 2004, p. 70). Today, the railroad is not the only physical barrier between the east and west. A major interstate highway forms a wall between sections of the city, with limited connecting roads to travel from one side to the other. Segregation remains, though the inhabitants of the west side today mostly represent a newer wave of immigrants. The 2010 Census and 2015 American Community Survey revealed today’s unique characteristics of the neighborhoods intersecting the Jordan River. While the west side of Salt Lake City comprises about 30% of the total city’s population, these neighborhoods account for the largest proportion of youth of any other part of the city (Downen & Perlich, 2013). Minority populations are geographically concentrated in the west side neighborhoods, much as they have been for generations, with nearly 60% of the city’s total minorities residing there. More strikingly, nearly 70% of the city’s residents who identify as Latinx reside in the west side, a number that some suggest continues to increase (Cahill et al., 2016; Downen & Perlich, 2013). Currently, there are significant increases in refugee populations who have settled in this community as well.

The social context of the west side is unique in a state that is overwhelmingly white and relatively homogenous, at the heart of the Mormon Culture Region (Cahill, 2010; Meinig, 1965). The environmental context revolves around the Jordan River, a prominent natural feature unique to the west side. Despite the river's impairment, a series of riverside parks and the Jordan River Parkway Trail contribute significantly to Salt Lake City's greenspace. With connections to two similar multi-purpose trails at its north and south ends beyond the city's borders, the Jordan River Parkway provides more than 100 miles of continuous, off-street paved trail. In Salt Lake City, parks adjacent to the river offer 325 acres of green space. Thus, the area can be characterized as a blue-green corridor with an extensive greenway surrounding an urban waterway, or blue space (Kati & Jari 2015; Völker & Kistemann, 2013).

Though urban rivers are often associated with blight and decline, Salt Lake City's Jordan River is unusual in that, in Utah, urban rivers are positively associated with better-perceived quality of life despite lower socio-economic status individuals living closer to these resources (Haeffner, Jackson-Smith, Buchert, & Rrisley, 2017). Today, the west side community is comprised of five neighborhoods with geographic boundaries recognized by the city government (Salt Lake City, 2018). I suggest that these neighborhoods comprise the west side community that is geographically defined by the river because it is clear that residents from these different neighborhoods share many social and cultural ties, as well as comradery associated by living in this marginalized place.

Literature Review

Community-Based Research

This research was designed in line with the methodological approach of community-based participatory research (CBPR), which emphasizes community participation in research and promoting social change (Anguiano, Milstein, Larkin, Chen, & Sandoval, 2012). The rise of community-based research is a result of recognizing that multiple, diverse perspectives are key in addressing complex problems (Isler & Corbie-Smith, 2012). Particularly in public health, community-based research has proven to be highly useful in identifying solutions, more appropriate research methods, representative samples, and a deeper understanding of problems. This dissertation research adheres to the value orientations of CBPR and engages with various methodologies encouraged by CBPR, rather than following any methodological guidelines of this approach (Baumann, Domenech Rodríguez & Parra-Cardona, 2011).

Community-based participatory research is well suited to guide the project presented here as CBPR specifically considers local residents as experts, helps address issues of power in public participation, and is action-oriented (Israel, Schulz, & Parker, 1998). CBPR emphasizes research collaboration, participation from the community impacted by the issue, co-learning and equal power among participants (Israel et al., 1998; Minkler & Wallerstein, 2011). CBPR has explicit action-oriented goals including community capacity building (Minkler & Wallerstein, 2011). This research approach has an overarching goal of increasing social justice and participation in research and decision-making (Brydon-Miller, Greenwood, & Maguire, 2003). CBPR and other forms of action research “challenge the claims of a positivistic view of knowledge which holds

that in order to be credible, research must remain objective and value-free” (ibid p. 11). Values are brought to the forefront of research in CBPR and knowledge comes from the process itself. This style of research has effectively been used in many urban settings in order to bridge the divide between university-based researchers and communities that have traditionally been “studied,” and whose opinions and concerns are not always equally considered. For researchers who want to help foster change and understand that research quality can be improved by recognizing and acknowledging that communities have the capacity to respond to complex research challenges, this is a good approach (Israel et al. 1998). The “community” is defined not necessarily by geographic boundaries, but as “a group of individuals who share social, cultural, or economic ties, and who may share a physical location” (Cheadle, Kristal, Wagner, Patrick, & Koepsell, 1992, p. 345). In my research, I define the community by physical location as west side residents in neighborhoods intersecting the Jordan River, who also share social and cultural ties beyond the city’s official neighborhood boundaries. As stated previously, the west side of Salt Lake City is both geographically and socially distinct and, for this study, geographically defined by the river.

An important part, often a first step, in CBPR is to identify a community partner (Minkler & Wallerstein, 2011). Community partnerships have been essential to past CBPR project successes and provide important knowledge and understanding of their local communities (Minkler, Vasquez, Tajik, & Petersen, 2008). I partnered with a local elementary school, community councils, one small nonprofit organization, and a local government office at various stages of the research. Because the research focus area was already chosen, fully implementing a CBPR project in which the community chooses all

research questions to address their issue of concern from the beginning was not possible. This project can be characterized as “community engaged” rather than full community-based participatory research (Chan-Golston, Friedlander, Glik, & Prelip, 2016; Nyden & Wiewel, 1992), because I used many CBPR principles surrounding a pre-determined research topic.

Environmental Justice

The concept of environmental justice is dynamic and constantly evolving as scholars and community activists have discovered new ways that environmental injustices are experienced. In the past, environmental injustices were thought of mainly as distributional problems in which environmental burdens were unequally distributed in marginalized communities, therefore causing negative health impacts (Holifield, Porter, & Walker, 2010; Jennings et al., 2012; Mohai, Pellow, & Roberts, 2009; Schlosberg, 2004). For this reason, environmental justice research typically concerned spatially locating toxic and hazardous sites and comparing that location to socio-demographic data revealing who lives near those places. Often, this research revealed not only issues of social justice, but also environmental racism concerns because non-white communities were the most impacted by hazards (Holifield, 2001). Public health research focused on documenting health disparities in these communities affected by environmental injustice in order to link declining health to people’s exposure to contamination. Modern environmental justice, however, often goes beyond the distribution of environmental risks to include participation in political processes and environmental decision-making, and recognition of diversity in communities and experiences (Schlosberg, 2004).

Environmental justice now includes distributive justice in terms of unequal impacts, burdens, and responsibilities of environmental problems. Additionally, it includes, “justice as recognition in terms of the processes of disrespect, insult and degradation that devalue some people and some place identities...[and] justice as participation and procedure in terms of how geography plays into the inclusions and exclusions of environmental decision-making” (Walker, 2010, p. 25). This broadening is based on an understanding that power relations and social structures impact how decisions are made that ultimately lead to environmental injustice in communities (Holifield, 2001).

Furthering the concept of environmental justice even more, scholars have begun to address issues of well-being, or the distribution of environmental benefits and the quality of those benefits (Holifield et al., 2010; Madsen, Radel, & Endter-Wada, 2014). Though this vein of research has become more robust, some argue that environmental justice scholarship should also make a point to address issues of cultural recognition (Anguiano et al., 2012; Carter, 2016; Lynch, 1993; Zwarteven & Boelens, 2014). This includes understanding how local communities experience and understand injustices as well as recognizing different ways of knowing (Zwarteven & Boelens, 2014). Recognizing different ways of relating to nature and explicitly valuing these diverse perspectives is fundamental to justice (Schlosberg, 2004). Previous environmental justice work has pointed out the lack of minority representation and participation in the mainstream environmental movement (Anguiano et al., 2012; Taylor, 2000). Environmental justice organizations and scholarship have made representation a key issue in their work, ensuring that community voices are heard and represented. Additionally, environmental justice remains separate from the mainstream environmental

movement in that justice advocates continue to challenge decision-makers to recognize that scientific knowledge is not enough to address issues of environmental justice (Corburn, 2002). Communities must be involved. Participatory democratic decision-making processes have been promoted as a way to achieve recognition and representation while struggling for environmental justice. I use environmental justice theory to analyze and understand the results presented in this dissertation at all phases of the research.

Urban River Studies

Few studies assess how near-river residents perceive their local waterway to identify community priorities and reveal local knowledge. In the United States, the economic viability of once thriving river-based industrial zones is in decline, but river environments are being viewed as providing new opportunity (Kibel, 2007). Waterfront projects are often used in contemporary city planning as important components of re-defining and redeveloping previously neglected areas (Sairinen & Kumpulainen, 2006; Wakefield, 2007). In addition to city planning prospects, new public ideas about the value of rivers, including understanding ecological benefits for people, have encouraged many parts of the U.S. and Europe to spend billions of dollars on stream restoration and rehabilitation (Kibel, 2007; Yocom, 2014). As a result, scholars have assessed attitudes toward river restoration projects, and local knowledge and values associated with those specific projects (Buijs, 2009; Eden & Tunstall, 2006; Junker & Buchecker, 2008; Tunstall et al., 2000), but few studies exist assessing river perceptions beyond restoration projects.

Although water quality has improved in many urban rivers over the last several years, general public discourse about urban rivers tends to emphasize historical states as dirty and hazardous (Gobster & Westphal, 2004). While conducting a public engagement process for an urban river restoration, Petts (2007) concluded that “an ideal urban river is not characterized entirely in hydrological terms, but also in terms of human activity” (p. 307), highlighting the importance of understanding people’s experiences. Emotional ties to urban rivers stress that these areas should be different from the urban environment, a place that meets human needs for rest and relaxation and a sense of well-being (Petts, 2007). For the Chicago River, local residents valued the cleanliness of the river and its surrounding environment the most, followed by their ideas of naturalness, safety, access, and specific kinds of development along the river (Gobster & Westphal, 2004). River naturalness is not clearly defined in urban landscapes and individuals have different ideas of that concept. Exploration of preferences for river “naturalness” has been a key part of several studies, demonstrating these differing opinions. Some studies have shown that residents are concerned about landscapes around the river looking unmaintained or wild and therefore prefer well-maintained, park-like atmospheres (Sinclair, 2012). Others have shown that people tend to contrast what they see today with what they saw or heard about the river’s past and view a more "people-friendly" environment as natural and less hazardous (Petts, 2007, p. 305). There is little research to evaluate what the community benefits of stream restoration are and how those benefits can be best linked back to communities (Moran, 2007).

The presence of green spaces near or attached to urban rivers leads to stronger community attachment and a more positive neighborhood opinion (Arnberger & Eder,

2012; Völker & Kistemann, 2013). Urban river recreation zones and green spaces are more popular than ever, with people preferring more parks and open spaces along rivers in cities (Kibel, 2007; Völker & Kistemann, 2013). Tension between river managers' need for immediate information, scientists desire to conduct long-term studies on hydrologic processes, and communities' "more mundane and scientifically less glamorous goals of livable landscapes, safety, and control" often exist in urban river projects (Eden & Tunstall, 2006, p. 676). A Philadelphia study suggests that urban water features are sometimes viewed negatively and associated with fear or decline, especially in marginalized communities experiencing a variety of social problems (Brownlow, 2006). Despite this social information, river restoration projects have generally failed to include social values, cultural values, or aesthetic preferences of local residents (Spink, Hillman, Fryirs, Brierley, & Lloyd, 2010). Current river restoration projects have broader aims beyond water quality and landscape improvements and look at how to better integrate urban landscapes, rivers, and streams (Silva-Sánchez & Jacobi, 2016), and could better achieve those goals by integrating social perspectives of these places. We do not have a good understanding of how urban residents view their local rivers, nor is there a depth of research to assess local knowledge of these places (Gobster & Westphal, 2004; Yocom, 2014).

Overview of the Dissertation

To achieve the research goals of this dissertation, I completed three different research projects utilizing different methodologies to address similar questions about the Jordan River. This dissertation is organized in to three main content chapters, Chapters II,

III, and IV. Each chapter is designed to yield a publishable paper targeted at specific academic journals.

Chapter II assesses the results from two different surveys administered in Salt Lake City's west side. I isolated questions in those surveys that include information about the Jordan River. Survey results showed that locals viewed the river positively; however, respondents were also highly concerned about several social and environmental problems around the river. Utilizing nonparametric statistical analysis, this chapter reveals that survey methodology matters because each survey yielded different results. Additionally, few demographic characteristics accounted for differences in levels of concern. Experience with the river was an important predictor of survey question responses, though only for one of the surveys.

Chapter III assesses children's perceptions of the Jordan River. I analyzed drawings, writing, and interview responses from children in a fourth-grade class in collaboration with a community elementary school in close proximity to the Jordan River. I asked children to describe what they like to do at the river, their overall opinions of it, and what they would like to change in or around the river. Children used drawings and writing to answer those questions. I then divided the class into four groups and conducted group interviews asking questions to understand in more detail children's perceptions of the river. Children revealed simultaneously positive and negative views of the river. Children enjoy the river and viewed it as a place for peace and relaxation. However, they were also highly concerned with the cleanliness around the river and suggested several possible improvements.

Chapter IV assesses results from in-depth interviews I conducted with 14 community members. The findings in Chapter II and the community-engaged approach influenced how interview topics were identified and questions constructed. Interview participants also revealed simultaneously positive and negative opinions about the river. Adults enjoyed the recreation possibilities at the river and viewed it as a peaceful place but were highly concerned about social problems they associate with the river and the cleanliness of the area.

Results from this project were highly consistent and revealed similar concerns and positive perceptions for all community residents throughout this research. However, there were some key distinctions between children's views and adults' views. Children were more concerned about safety related to the possibility of drowning and were more concerned about animal welfare. Adults were concerned about safety related to personal security. Additionally, interview results were influenced by a city project to disperse a homeless population and provide more social services to that population in another part of the city. Interviewees perceived an increase in homeless people and therefore a decrease in personal safety around the river after the implementation of that program. Community members would like to feel more included in river management and maintenance and currently feel excluded and not communicated with about several river issues. This research reveals several opportunities for community engagement in addition to gaining a better understanding of urban residents' perceptions of their local river environment.

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CHAPTER II

ANALYSIS OF LOCAL RESIDENTS' PERCEPTIONS OF THE JORDAN RIVER:
RESULTS FROM TWO SURVEYS**Abstract**

Utilizing survey results from two different surveys, the research presented here will highlight key community perceptions of the Jordan River in Salt Lake City, Utah. We isolated survey results for residents who live in river-adjacent neighborhoods, part of Salt Lake City's west side community. The west side community in Salt Lake City is considered a majority-minority area that has been negatively stigmatized and is socially distinct from the rest of the city. Results from both surveys indicate that near-river residents value this resource and perceive it as contributing positively to quality of life in their area. Survey respondents were also highly concerned about social and environmental issues around the river. Results from one survey, a public-intercept tablet-based survey, indicate that gender, race, and immigrant status influence how survey respondents rank some concerns about the river. However, this same survey also reveals that experience at the river may have more of an influence in how survey respondents ranked concerns, particularly social concerns. The household drop-off/pick-up survey results were inconclusive and did not have any significantly correlated results between concern ranking, demographic characteristics, and experience at the river. Our results indicate that survey methodology may be particularly important in obtaining feedback in minority communities, and we make significant contributions to knowledge on urban river perceptions.

Introduction

Rivers are defining features of many cities that have contributed to industrial growth, urban development (Kibel, 2007; Wakefield, 2007), and have provided desirable transportation corridors for people and goods (Rice & Urban, 2009). Over time, however, rivers became associated with disease, danger and decline. As riverfronts experienced blight related to industry, runoff, sanitation practices, and slum-like residential conditions, urban rivers have become contested places in which local governments and communities negotiate responses to the degradation in and around these waterways. In the United States, the economic viability of once thriving river-based industrial zones is in decline, but river environments are being viewed in a new light (Kibel, 2007).

Waterfront projects are often used in contemporary city planning as important components of re-defining and redeveloping these previously neglected areas (Sairinen & Kumpulainen, 2006; Wakefield, 2007). In addition to city planning prospects, new public ideas about the value of rivers, including understanding ecological benefits for people, have encouraged many parts of the U.S. and Europe to spend billions of dollars on stream restoration and rehabilitation (Kibel, 2007; Yocom, 2014).

Salt Lake City, Utah, is no exception to these trends. Development processes and efforts to make the river fit within the urban environment have negatively impacted the city's Jordan River (Walsh et al., 2005). Continual dredging, channelizing, and diverting the river in response to development demands have degraded it since the settlement of the Salt Lake Valley (Jordan River Commission, 2008; Jordan River Commission, 2013). Today, this river is impaired with organic matter and total maximum daily load (TMDL) water quality problems (Epstein, Kelso, & Baker, 2016). There are also several social

problems increasingly associated with the river, including homeless and transient people and insecurity in a low socio-economic status area. In response to water quality challenges, and in recognition that this valuable resource has been negatively impacted over time, several planning initiatives have placed the Jordan River in the spotlight.

The community that surrounds the Jordan River, in the western half of the city, is composed of 5 neighborhoods with city-recognized boundaries that are noteworthy in several ways. These neighborhoods house about 30% of the city's population, however residents represent more diversity than other areas of the city (Downen & Perlich, 2013). Minority populations are geographically concentrated in the west side neighborhoods, much as they have been for generations, with over 56% of the city's total minority populations residing there. More strikingly, nearly 70% of the city's residents who identify as Latinx² reside in this part of the city, a proportion that continues to increase (Bradley, 2004; Cahill, Gutierrez, & Cerecer, 2016). These neighborhoods also house a significant portion of new immigrant groups, particularly refugee populations. As Salt Lake City negotiates different issues with the Jordan River, it is important to recognize the unique social context of the neighborhoods around the river.

With increased attention on urban environments, scholars and civil servants connect public participation in environmental decision-making to increased success in the subsequent projects (Petts, 2006; Tapsell, Tunstall, House, Whomsley, & Macnaghten, 2001). Environmental justice scholars have highlighted an array of inequalities around rivers. One issue is the potential for environmental gentrification as a result of river

² The term "Latinx" is a gender-neutral term identifying people of Latin American origin, mostly used to describe these populations residing outside of that region (Salinas & Lozano, 2017).

rehabilitation projects. Property value increases after re-development processes might push out long-time residents around rivers (Curran & Hamilton, 2012; Dooling, 2009). As the definition of environmental justice has broadened to include not only equal protection from environmental hazards, but also access to decision-making processes for a healthy environment (Environmental Protection Agency, 2017), scholars have pointed to the importance of access and inclusion of all communities in river planning (Corburn, 2002). Beyond issues of public participation, local knowledge and local priorities are particularly important to understand in urban river management, as residents who live close to these resources have knowledge and experience that can contribute unique expertise (Petts, 2006). However, this type of local knowledge is not always valued in scientific or planning communities (Corburn, 2002).

Using data from two surveys conducted in 2014 (see Appendix A for complete survey) and 2016 (see Appendix B for complete survey), we highlight responses from Salt Lake City residents who live in close proximity to the Jordan River. This analysis can provide a baseline understanding of neighborhood residents' perceptions and opinions of the Jordan River. We focus on questions about quality of life, concerns about social and environmental issues, and familiarity with the river area. Using a framework of environmental justice, which highlights the importance of inclusion and access to public participation, as well as calls for understanding local knowledge in urban river projects, this study contributes to literatures in urban environmental perception research as well as environmental justice.

Literature Review

Perceptions of Rivers

When public opinion and perceptions of natural spaces are included in environmental planning processes, success, societal acceptability and justice increase (Petts, 2006; Tapsell et al., 2001). Perceptions of rivers, whether urban or rural, are complex and multi-faceted. Some research suggests that public perceptions of rivers' aesthetic, recreational, and amenity values are similar to those of ecologists and conservationists, while others show that public perceptions of river corridors are different in important ways (Gregory & Davis, 1993; Junker & Buchecker, 2008). There is a general lack of perception research for urban waterways (Gobster & Westphal, 2004; Yocom, 2014), and the research presented here will contribute to understanding how urban residents perceive their local river.

Although water quality has improved in many urban rivers over the last 100 years, general public discourse about urban rivers tends to emphasize historical states of urban rivers as dirty and hazardous (Gobster & Westphal, 2004). While conducting a public engagement process for an urban river restoration, Petts (2007) concluded that “an ideal urban river is not characterized entirely in hydrological terms, but also in terms of human activity” (p. 307), highlighting the importance of meeting people's emotional and recreational needs in addition to rivers' ecological needs. Emotional ties to urban rivers stress that river areas should be different from the urban environment, a place that meets human needs for rest and relaxation and a sense of well-being in addition to ecological benefits (Petts, 2007). In a Japanese study, Asakawa et al. (2004) concluded that near-river residents viewed it with complexity. Residents' preferences indicated that the river's

ecology should be improved, including green space around it, but that there should also be attention paid to human recreation, water quality (mainly for human use), and safety considerations for that project. For the Chicago River, local residents valued the cleanliness of the river and its surrounding environment the most, followed by their ideas of naturalness, safety, access, and specific kinds of development along the river (Gobster and Westphal, 2004). The presence of green spaces near or attached to urban rivers are related to stronger community attachment and a more positive neighborhood opinion (Arnberger & Eder, 2012; Völker & Kistemann, 2013). Clarity of the water and cleanliness surrounding the area is often how individuals measure water quality, and desired level of “naturalness” can depend on how urban the section of the river.

River “Naturalness”

Exploration of preferences for river “naturalness” has been a key part of several studies, showing that there are differing opinions as to what natural means in an urban river context. Some studies have shown that residents are concerned with landscapes around the river looking unmaintained or wild and therefore prefer well-maintained, park-like atmospheres (Sinclair, 2012). Others have shown that people tend to contrast what they see today with what they saw or heard about the river’s past, and view a more “people-friendly” environment as natural and less hazardous (Petts, 2007 p. 305). Research on aesthetic preferences using photo-based surveys finds that people generally prefer scenes with water in both natural and built scenes (White et al., 2010), and that people prefer what they perceive as more natural river environments (Junker & Buchecker, 2008). A shift in public opinion indicates that urban rivers and green spaces

are more important than ever, with people preferring more parks and open spaces along rivers in cities (Kibel, 2007; Völker & Kistemann, 2013). Environmental psychology research links landscapes that have water to psychological restoration capacities, though most of this research does not look at urban scenes with water (White et al., 2010). In research that does look at urban scenes with water, people were more likely to view the scene positively, and were more willing to pay for a home or hotel room with a view of the water.

Ecological Gentrification and Urban Rivers

Considering the potential increase in property value as demonstrated by willingness to pay studies and the amount of urban river restoration projects developing today, there are concerns about environmental/ecological gentrification with green and blue space improvements in previously neglected parts of cities (Dooling, 2009; Curran & Hamilton, 2012). The transformation of urban river environments into places of leisure, recreation, and relaxation from their previous state of industry and related pollution is often cited as a first step in the gentrification process (Quastel, 2009). A significant amount of river restoration research has been dedicated to the social impact of gentrification, in which current residents are pushed out of their neighborhoods due to unaffordable housing associated with river-front improvements (Bunce, 2009; Chang & Huang, 2010; Curran & Hamilton, 2012; Davidson, 2007; Dooling, 2009; Kibel, 2007; Laidley, 2007; Pearsall, 2012; Sairinen & Kumpulainen, 2006; Wakefield, 2007). Some case studies suggest that including affected communities in revitalization and planning processes mitigates negative impacts of gentrification for current residents (Collins &

Loukaitou-Sideris, 2016; Curran & Hamilton, 2012). It is imperative to involve communities in any planning processes associated with rivers, starting first with understanding how communities are connected to their rivers, how they perceive them, their local knowledge, and views of river projects (Kibel, 2007; Moran, 2007). In our case, considering the social context of the Jordan River corridor, we pay particular attention to including the perspectives of diverse social groups.

Socio-demographic Differences in Perceptions of Rivers

Few studies specifically assess perceptions of urban rivers among different social strata. If values are culturally grounded then we can expect perspectives of the environment to differ among social groups (Lynch, 1993). The broader environmental perception literature highlights differences among demographic groups. For example, younger adults tend to show both higher concerns for environmental issues and greater support for environmental protections (Jones & Dunlap, 1992; Pampel & Hunter, 2012; Mohai & Twight, 1987). Differences between the gender binary (male/female) have been analyzed in several studies with marginally significant findings that women tend to be more environmentally concerned than men (Davidson & Freudenburg, 1996; Woodrum & Wolkomir, 1997; Xiao & McCright, 2012). Other studies, however, suggest that there is no difference between men's and women's environmental views (Hunter & Toney, 2005). There is significant debate regarding correlations between race or ethnicity and environmental perception (Kalof, Dietz, Guagnano, & Stern, 2000). The dominant view has been that minorities in the United States are less concerned about the environment because they have other more pressing social issues to contend with (Anguiano, Milstein,

Larkin, Chen, & Sandoval, 2012; Mohai & Bryant, 1998). This, however, has been disputed by several studies. Some research indicates that some non-white groups are more concerned about the environment (Mohai, 2003), particularly among men (Kalof et al., 2000). For Latinx groups, the largest minority in Salt Lake City, scholars have shown that there is not a lack of environmental concern, but simply different perceptions that may not be recognized by mainstream environmentalists (Pulido & Peña, 1998). In fact, for Latinxs in the U.S., the environment can be an important part of ethnic identity (Anguiano et al., 2012). Latinxs in the U.S. often view people as part of the land and have struggled for access to communal lands (Lynch, 1993; Peña, 2003). In general, social positionality indicators including gender, race, and ethnicity indicate key differences in environmental perceptions and values (Flint et al., 2017).

Considering the large financial investments in river restoration, there have not been equivalent studies assessing attitudes, perceptions, and values associated with those projects (Tunstall, Penning-Rowell, Tapsell, & Eden, 2000). In the research that does exist, scholars have highlighted some important demographic, social, and cultural differences in how rivers or other waterways are perceived. Much of this research involves assessing perceptions of water-related risks based on environmental justice research, which shows that minority communities often experience increased environmental risks. Some scholars suggest that specific racial/ethnic groups, e.g. Mexican-Americans (Williams & Florez, 2002), have a perception of much higher risk from different kinds of drinking water and water sources. This is possibly due to majority-minority neighborhoods' experiences with environmental justice problems. Other water quality perception research has shown that spatial factors such as proximity

to the river are more important than social variables in predicting public perceptions (Brody, Highfield, & Peck, 2005). Some studies show that while residents “may live close to the river, for most it was neither a day-to-day issue nor a priority concern” (Petts, 2007, p. 305), indicating possible indifference to river environments. If, however, neighborhood residents evaluate their local environment based on their personal experiences with it, they might have higher community attachment and therefore have stronger opinions on local environmental issues (Mesch & Manor, 1998). Beyond water quality perceptions, possible demographic differences in perceptions associated with urban rivers are not well understood, nor are community attachments to rivers. This study advances understanding of perceptions of urban rivers along demographic and experiential lines.

Methods

To understand Salt Lake City’s residents’ perceptions of the Jordan River, two surveys were administered at different times, for different purposes, and using different methodologies to account for the cross-section of residents who live in neighborhoods adjacent to the river. Survey instruments and methodologies were reviewed and approved by the Utah State University Institutional Review Board (Utah’s Water Future household survey protocols 5713 and 6496; Three Creeks survey protocol 7579).

Survey Instruments

The Utah’s Water Future household survey was conducted during the summer of 2014 with a paper questionnaire using the drop-off/pick-up methodology for randomly selected households (Jackson-Smith & Flint, 2016). The purpose of this survey was to

gather feedback and information about household water use and management, and to understand public perceptions and concerns regarding local and state water issues in Utah (Jackson-Smith et al., 2016). The household survey was administered in three counties in Utah with approximately 2,300 total responses. One section of one river-adjacent neighborhood in Salt Lake City was randomly selected for the household survey, and those survey responses are isolated for this analysis ($n = 111$). In this survey, residents in different neighborhoods, cities, and counties throughout the state were asked about a local river or stream that was close to where they live. For the neighborhood selected for this analysis, residents were asked about the Jordan River. This survey was administered at the household level, but responses were solicited from the adult with the nearest birthday in the household, therefore an individual respondent was meant to answer on behalf of their household. Surveys were available in both English and Spanish, with some of the implementation team bilingual in Spanish and English.

The Three Creeks survey was conducted during the summer of 2016 in collaboration with the city's Trails and Natural Lands Program to gather feedback about a proposed green infrastructure project along the Jordan River. All west side Salt Lake City neighborhoods were surveyed, as these neighborhoods are adjacent to the Jordan River ($n = 392$). The sampling methodology was a combination of convenience sampling, in which responses were solicited from any individual adult who was present where the researchers were administering surveys, and targeted sampling based on the location of desired survey respondents. Surveys were administered on iPad tablet computers in a variety of settings including local festivals, grocery stores, public libraries and public parks along the river. Because the researchers were frequently in an unenclosed

environment, it was impossible to calculate a true response rate (Flint, et al., 2016). The survey was implemented using a public-intercept, or street-intercept, methodology. To the extent that we were able, the research team attempted to solicit survey responses from every adult in the given location. This type of survey methodology has been successful in other studies that specifically target minority populations (Miller, Wilder, Stillman, & Becker, 1997; Moskell & Allred, 2013; Parker, Manan, & Urbanski, 2012). The survey team was bilingual in English and Spanish. We estimate that half of our surveys were taken as interviews, with the surveyor asking the respondent each question and inputting the answers into the iPad. This provided an opportunity for surveyors to explain questions when needed and have conversations with survey respondents. This also limited the ability to solicit more potential respondents due to the extra time associated with engaging with survey respondents and meeting their needs.

Analytical Approach

Because of differing survey methodology and some different question wording, results from each of the two surveys were analyzed separately. Both surveys asked for responses about similar issues along the Jordan River and had different purposes for soliciting this public opinion, however we value the comparison between these two surveys because of the similarity in questionnaire content and themes about the Jordan River specifically. The units of analysis in each survey also presented challenges to our analysis. The Utah's Water Future survey, individual respondents were answering questions for their household as described in the questionnaire instructions. For the Three Creeks survey, respondents were not directed to answer for their household or at the individual level. We

believe that most respondents in the Three Creeks survey were answering individually. In our assessment of this issue, we do not believe that our analysis of concerns about the river or quality of life questions were impacted by these potential differences in units of analysis.

We first looked at descriptive statistics to indicate overall perceptions, including how concerns about Jordan River issues were ranked. This analysis highlighted the nonparametric characteristics of our data. We then conducted statistical tests to analyze the skewness and kurtosis of our survey responses, which indicated that the responses in both the Three Creeks and the Utah's Water Future survey were non-normally distributed. We chose specific nonparametric comparative tests for our analysis to understand the relationship between several socio-demographic variables and ranking of several concerns as well as frequency of visiting the river or familiarity with the river and concern rankings. For ordinal variables with 3 or more answer choices, we used a Kruskal-Wallis H-test to compare results by various socio-demographic indicators and differing levels of experience with the river. For differences across groups with dichotomous predictor variables, we used a Mann-Whitney U-test. All the dependent variables were ordinal, measured with Likert-style scales including 5 answer choices.

Results

Sample

The analysis presented in this paper uses results from 395 residents who live in the western part of Salt Lake City in neighborhoods that are adjacent to the Jordan River. Each survey sample includes answers from respondents who are adults, over 18 years of age, and live in our target neighborhoods. For the Three Creeks Survey, 284 respondents

met our sample criteria and for the Utah's Water Future survey, 111 respondents met the criteria. Demographic characteristics of survey respondents are presented in Table 2.1. We paid particular attention to social and demographic characteristics in our analysis to ensure diversity and representativeness in our results. Results in Table 2.1 also address the external validity of both surveys because these results show how respondents in each survey compare along demographic lines to census data of these neighborhoods as discussed in the introduction of this paper.

In the Three Creeks survey, 63% of the sample identified as female. The majority of respondents identified as Latinx, with 27% completing the survey in the Spanish language. Eighty-six respondents were born in another country, representing 20 different countries of origin. One important feature of the Three Creeks sample is that about 30% of our respondents identified as White only. The most frequently selected age category for respondents is 18–34, including 44% of the sample. The majority of these respondents, 72%, have children living in their homes.

The Utah's Water Future survey sample is different in several ways from the Three Creeks sample. The gender distribution is more even, with slightly more male respondents at 50.5%. The majority of respondents in this sample identify as White. The age distribution is also more even for this sample, with 19% in the youngest age category and about 27% in the oldest age category. Other contrasts between the samples include that the Utah's Water Future respondents mostly do not have children living at home, at 57% of respondents. Sixty percent of respondents are from Utah.

Table 2.1

Demographic Characteristics of Survey Respondents

Variable	Three Creeks Survey		Utah's Water Future Survey	
	<i>n</i>	%	<i>n</i>	%
Sex/Gender				
Male	94	36.7	54	50.5
Female	161	62.9	53	49.5
Other	1	.4		
Race				
White (only)	76	29.8	63	61.8
Latino/Hispanic (only or in combination)	106	41.6	24	23.5
Other or More than One Race	73	28.6	15	14.7
Age				
18-34	113	43.9	19	19.4
35-49	82	31.9	29	29.6
50-64	39	15.2	24	24.5
65 or older	23	8.9	26	26.5
Children at Home				
Has Children in home	187	71.7	46	42.6
No Children in home	74	28.3	62	57.4
From Utah	103	39.5	64	60.3
Not from Utah	158	60.5	42	39.6
Born Outside U.S.	86			
Language of Survey				
English	192	73		
Spanish	71	27		
Length of Residence				
Less than 1 year	25	9.8	6	5.8
1-5 years	60	23.4	22	21.2
6-10 years	48	18.8	20	19.2
More than 11 years	121	47.3	56	53.8

There are a few differences in how the demographic questions were worded in both surveys, which should be noted. For the Utah's Water Future survey, respondents were asked to identify their sex/gender with the question "are you male or female?", while in the Three Creeks Survey, this question asked respondents to identify their gender with a third answer choice available in which the respondent could write-in their own

wording. In this sample, one person chose to identify as an “other” gender. To identify place of birth, the Utah’s Water Future survey asked, “are you originally from Utah?”, which could be interpreted not necessarily as place of birth. There was no place to identify where a person is “from” outside of this question. The Three Creeks Survey had a two-part question to identify those who were born in Utah, those who were born in a state other than Utah, and those who were born outside of the United States, which is how we are able to identify foreign-born immigrants in this study.

To measure how local residents perceive the Jordan River overall, surveys asked respondents to indicate how the Jordan River influences quality of life in their neighborhood, using a scale from 1–5. In both surveys, lower numbers indicate that the river has a negative influence on quality of life in their neighborhood, while larger numbers indicate a positive influence on quality of life. Assessing mean scores for each survey it is clear that west side Salt Lake City residents feel that the river has an overall positive influence on quality of life in their neighborhoods. Results for these questions, which were worded the same in both surveys, are presented in Table 2.2. Another important component of perceptions of the Jordan River includes how often survey respondents go to the river, and how familiar they are with it. These results ground our study further, by providing baseline information about experience with the river itself. The descriptive results are presented in Tables 2.3 and 2.4. The Three Creeks survey asked residents how frequently they go to the river where the higher the number from 1–5, the more frequently the respondent goes to the river. For the Utah’s Water Future survey, the question to address this was based on level of familiarity with the river. The higher the number from 1–5, the more familiarity with the river. The question wording

for these two survey questions are not equivalent, but they are comparable, and provide information related to experience with the river.

Table 2.2

Jordan River's Influence on Quality of Life in River Adjacent Neighborhoods

Survey	N	Mean	Standard Deviation	Range
Three Creeks	255	3.69	1.04	1-5
Utah's Water Future	93	3.97	1.06	1-5

Table 2.3

Three Creeks Survey Results for Frequency of Visiting the Jordan River (n = 260)

Answer Choice	Never (1)	A few times per year (2)	Monthly (3)	Weekly (4)	Daily (5)	Mean	Standard Deviation
# Of Respondents	24	67	32	96	41	3.24	1.25

Table 2.4

Utah's Water Future Survey Results for Level of Familiarity with the Jordan River (n = 102)

Answer Choice	Never knew it was there (1)	2	3	4	Very Familiar (5)	Mean	SD
# Of Respondents	3	4	20	21	54	4.17	1.06

The results in Table 2.3 indicate that local residents frequently visit the river and Table 2.4 shows that residents feel they are highly familiar with it. This experiential knowledge of the river suggests that questionnaire responses are likely grounded in those experiences. Table 2.5 describes how respondents in river-adjacent neighborhoods rated several social and environmental concerns associated with the Jordan River. Between the

two surveys, there are differences in how these questions were worded and the number of concerns assessed, as noted in Table 2.5. These differences are important when understanding the descriptive results. In the Three Creeks survey, flooding was ranked with the lowest level of concern whereas in the Utah’s Water Future survey the addition of the word “potential” may have had an impact; this was the second highest ranked concern. Differences in wording for questions about wildlife around the river should also be noted. The addition of the word “nuisance” in Utah’s Water Future survey may have influenced how this concern was rated, as this concern was ranked higher. Three Creeks respondents ranked wildlife concerns near last. Overall, respondents in both surveys are highly concerned with most issues presented in these surveys, as reflected in the mean scores for each concern.

Table 2.5

Concern Ratings for Social and Environmental Issues at the Jordan River

Three Creeks Survey				Utah’s Water Future Survey			
Concern	Mean	Standard Deviation	Range	Concern	Mean	Standard Deviation	Range
Safety	3.67	1.29	1-5	Safety	3.38	1.32	1-5
Flooding	2.54	1.33	1-5	Flooding Potential	3.06	1.39	1-5
Wildlife	3.12	1.48	1-5	Attracts Nuisance Wildlife	3.01	1.42	1-5
Water Quality	3.85	1.29	1-5	Smell	2.96	1.37	1-5
Homeless or Transient People	3.81	1.4	1-5				
Lighting	3.78	1.31	1-5				
Insects/Mosquitoes	3.69	1.29	1-5				

We next conducted comparative analyses to understand concerns about the Jordan River between respondents with different social characteristics. This is not because we inherently expect there to be important demographic differences in opinion, but previous social research demonstrates that people in differing social positions experience their environments differently (Anguiano et al., 2012; Lynch, 1993; Mohai, 2003; Pulido & Peña, 1998). Additionally, to further understand community connections to the river, we also assessed how experience with the river is related to perceptions of concern.

Comparative Results

For a better understanding of local residents' concern about social and environmental issues around the Jordan River, we compared how different people rated each concern based on various social and experiential characteristics. These tests measure mean rank differences between respondents separated by their demographic characteristics. After looking at socio-demographic comparisons, we then analyzed each concern rating in relation to respondents' experience of the river as measured by frequency of visitation or self-described familiarity. Results from the demographic analysis utilizing Kruskal-Wallis H and Mann-Whitney U-tests are presented in Tables 2.6–2.9. The results for each survey are presented in separate tables. Significant differences in mean ranks are measured at the .05 level. All results are rounded to three decimal places.

Table 2.6

Kruskal-Wallis H-Test Results for Concerns by Race and Age for Three Creeks Survey

Concern	Variable	Chi-Square	P-Value
Safety	Race	0.007	0.996
	Age	3.201	0.362
Wildlife	Race	1.086	0.581
	Age	6.682	0.083
Insects/Mosquitoes	Race	3.165	0.206
	Age	1.512	0.679
Water Quality	Race	1.058	0.589
	Age	0.761	0.859
Litter/Trash	Race	1.461	0.482
	Age	0.738	0.864
Lighting	Race	4.016	0.134
	Age	3.249	0.355
Homeless or Transient People	Race	3.244	0.198
	Age	6.854	0.077
Flooding	Race	7.391	0.025*
	Age	1.601	0.659

*Statistical Significance Denoted by Asterisks: * = $p \leq 0.05$, ** = $p \leq 0.01$, *** = $p \leq 0.001$*

Table 2.7

Mann-Whitney U-Test Results for Concerns by Birthplace and Gender for Three Creeks Survey

Concern	Variable	Z-Statistic	P-Value
Safety	Gender (1=female 0=male)	-1.799	0.072
	Utah Born (0=not Utah born 1=Utah born)	-0.256	0.798
	Immigrant (1=foreign-born immigrant 0=born in U.S.)	-0.576	0.565
Wildlife	Gender	0.968	0.333
	Utah Born	-0.836	0.403
	Immigrant	-0.178	0.859
Insects	Gender	-1.681	0.093
	Utah Born	-1.072	0.284
	Immigrant	0.523	0.601
Water Quality	Gender	1.951	0.051*
	Utah Born	0.108	0.914
	Immigrant	-0.833	0.405
Litter/Trash	Gender	0.902	0.367
	Utah Born	-1.493	0.135
	Immigrant	1.389	0.165
Lighting	Gender	-2.63	0.009**
	Utah Born	-1.324	0.186
	Immigrant	0.668	0.504
Homeless or Transient People	Gender	-1.027	0.305
	Utah Born	-0.408	0.684
	Immigrant	0.144	0.886
Flooding	Gender	-1.698	0.089
	Utah Born	1.098	0.272
	Immigrant	-3.492	0.001***

*Statistical Significance Denoted by Asterisks: * = $p \leq 0.05$, ** = $p \leq 0.01$, *** = $p \leq 0.001$*

Table 2.8

Kruskal-Wallis H-Test Results for Concerns by Age for Utah's Water Future Survey

Concern	Variable	Chi-Square	P-Value
Smell	Age	3.752	0.289
Flooding Potential	Age	2.935	0.402
Safety	Age	5.031	0.169
Attracts Nuisance Wildlife	Age	3.752	0.289

*Statistical Significance Denoted by Asterisks: * = $p \leq 0.05$, ** = $p \leq 0.01$, *** = $p \leq 0.001$*

Table 2.9

Mann-Whitney U-Test Results for Concerns by Gender, From Utah or Not, and Race for Utah's Water Future Survey

Concern	Variable	Z-Statistic	P-Value
Smell	Gender (1= Male 0=Female)	0.807	0.419
	From Utah (1= from Utah 0=Not from Utah)	1.440	0.149
	Race (0= White 1=Nonwhite)	0.470	0.638
Flooding Potential	Gender	1.132	0.258
	From Utah	0.172	0.864
	Race	-0.757	0.449
Safety	Gender	0.331	0.740
	From Utah	-0.207	0.836
	Race	-0.541	0.589
Attracts Nuisance Wildlife	Gender	0.102	0.919
	From Utah	-0.608	0.543
	Race	-0.946	0.344

*Statistical Significance Denoted by Asterisks: * = $p \leq 0.05$, ** = $p \leq 0.01$, *** = $p \leq 0.001$*

As indicated by Tables 2.6 and 2.7, for the Three Creeks survey results, there are some significant differences in mean ranks by survey respondents with different social characteristics. There are significant differences in levels of concern for flooding by different race categories ($p = .02$), with Latinx respondents ranking this concern higher on average. There is a marginally significant gender difference in how water quality

concern was ranked ($p = .05$). Females ranked concern about lighting significantly higher on average ($p = .01$). There is also a significant difference in flooding concern for those who were born in another country versus those who were not ($p = .001$). Results for Utah's Water Future survey, in Tables 2.8 and 2.9, show that there are no statistically significant differences in mean ranks on any of the concern variables by demographic characteristics. Results from the experiential analysis are presented in Tables 2.10 and 2.11.

Table 2.10

Kruskal-Wallis H-Test Results for Concerns by Experience with the River for Three Creeks Survey

Concern	Variable	Chi-Square	P-Value
Safety	Frequency of Vising the River	11.243	0.024*
Attracts Nuisance Wildlife	Frequency of Vising the River	9.750	0.045*
Insects	Frequency of Vising the River	6.544	0.1620
Water quality	Frequency of Vising the River	7.979	0.092
Litter/Trash	Frequency of Vising the River	10.917	0.028*
Lighting	Frequency of Vising the River	9.866	0.043*
Homeless or Transient People	Frequency of Vising the River	4.241	0.374
Flooding	Frequency of Vising the River	5.017	0.286

*Statistical Significance Denoted by Asterisks: * = $p \leq 0.05$, ** = $p \leq 0.01$, *** = $p \leq 0.001$*

Table 2.11

Kruskal-Wallis H-Test Results for Concerns by Experience with the River for Utah's Water Future Survey

Concern	Variable	Chi-Square	P-Value
Smell	Familiarity with River	4.007	0.405
Flooding Potential	Familiarity with River	1.491	0.828
Safety	Familiarity with River	3.030	0.553
Attracts Nuisance Wildlife	Familiarity with River	4.007	0.405

*Statistical Significance Denoted by Asterisks: * = $p \leq 0.05$, ** = $p \leq 0.01$, *** = $p \leq 0.001$*

Results in Table 2.9 indicate that experience with the Jordan River is significantly correlated with concerns about safety ($p = .02$), wildlife ($p = .05$), litter ($p = .03$), and lighting ($p = .04$) at the river for those who responded to the Three Creeks Survey. Responses about these concerns were more evenly distributed between all answer choices from “not at all concerned” (1) to “very concerned” (5) for those neighborhood residents who go to the river weekly or daily. Respondents who went less frequently to the river were more likely to feel concerned or highly concerned about safety, though, overall, respondents ranked this concern high. Respondents who went to the river weekly were slightly more likely to express lower levels of concern for safety at the Jordan River. For wildlife concern rankings, those who went less frequently to the river were more likely to be concerned or highly concerned about wildlife. Concern about lighting was ranked higher on average for those who go to the river less frequently. For respondents to the Utah's Water Future Survey, familiarity with the river was not a predictor of views about concerns at the Jordan River, as shown in Table 2.10.

Discussion and Conclusions

Results in Tables 2.2, 2.3 and 2.4 prompted further questions about community perceptions of the Jordan River. The river contributes positively to quality of life; residents frequently go to the river and are familiar with it. However, neighborhood residents are also highly concerned about several social and environmental issues in and around the river, which might signal negative perceptions. This seemingly contradictory view of the river reveals a complex neighborhood relationship with the river that warranted further investigation. Previous research shows several important differences in environmental concerns based on different social characteristics and experiences. Our analysis shows mixed results. For the Three Creeks public-intercept tablet-based survey, we found significant correlations between concerns about the river and some demographic characteristics. These differences were apparent for concerns about water quality, lighting, and flooding. There were no significant differences in concern ranking based on social characteristics for respondents to the Utah's Water Future survey. More strikingly, the Three Creeks survey highlighted the importance of experience in level of concern expressed by river-adjacent neighborhood residents for several social and environmental problems at the Jordan River. For the Utah's Water Future survey, again there were no significant differences in concern rating based on how familiar a respondent is with the river.

When assessing the results from the Three Creeks survey analysis alone, we can begin to understand the factors influencing views of and connections to the Jordan River. Women were slightly more concerned about water quality in the river and highly concerned about lighting around the river. These findings are in line with previous studies

analyzing environmental risk perceptions and general environmental concern in which women are more concerned about the environment than men (Davidson & Freudenburg, 1996; Woodrum & Wolkomir, 1997; Xiao & McCright, 2012). Lighting is often considered a safety issue in urban areas, and the gender difference in this concern ranking is no surprise based on the positionality of women in society. There are significant differences in how concern for flooding was ranked by race and immigrant status. Those who were born outside of the United States and those who identified as Latinx were more concerned about the river flooding. Further analysis might assess how these two variables interact because immigrant status and race are likely to be correlated in our sample. Based on anecdotal feedback obtained by the survey team, this difference might be influenced by previous flooding experienced in a respondents' home country or lack of information about the river's hydrology. This difference is significant and worth exploring more in future research or with additional qualitative data. We compared our survey results along singular demographic characteristics. We recognize that no single person can be characterized by one social or demographic characteristic alone. Further research to more deeply explore perceptions of this urban river should take in to account intersectionality, which can help us understand how people negotiate multiple identities, particularly when considering gender, race, and immigration status (Samuels & Ross-Sheriff, 2008) as we have in this analysis.

Results from the Three Creeks analysis indicate that experience with the Jordan River is highly influential in how residents perceive the river as indicated by their concerns about it. Experience at the Jordan River influenced how respondents ranked concerns about safety, wildlife, litter or trash, and lighting. Interestingly, time spent at the

Jordan River appears to have more of an influence on social concern rankings than environmental concerns. Previous research has highlighted the importance experience plays in understanding community attachment (Mesch & Manor, 1998), which might indicate something like neighborhood pride. Additionally, because survey respondents who go to the river area ranked these concerns higher on average than those who go to the river more frequently, efforts to encourage neighborhood residents to go more frequently might have a strong impact on how this river is perceived and valued both in this community and beyond. The Jordan River is a defining feature of the west side Salt Lake City community, a potential source of pride. However, it is also a place of social and environmental problems as reflected in the high levels of concern about these issues. We can conclude based on our survey results that neighborhood residents are connected to the river. As with previous research on environmental experience and community attachment, this might help us understand why neighborhood residents are also highly concerned about many social and environmental problems with the river.

The results of our analysis indicate that survey methodology might be a key factor in how perceptions of urban rivers are measured and therefore understood. The results for both surveys, though both administered in similar areas with similar target populations, were very different. The Three Creeks Survey was created for the west side Salt Lake City river neighborhoods alone, while the Utah's Water Future survey was created for statewide implementation. Each survey had different goals, and there are strengths and weaknesses for each approach. Utilizing a public-intercept methodology with convenience and intercept-point based sampling has been used in public health research to obtain better survey response rates from minority groups (Miller et al., 1997; Moskell

& Allred, 2013; Parker, Manan, & Urbanski, 2012). This sampling strategy, however, is frequently criticized among survey researchers. Our study highlights the importance of considering survey methodology when obtaining feedback about urban rivers in majority-minority neighborhoods. In the context of environmental justice and highlighting local knowledge, it is not just important to obtain input from local residents about environmental issues, it is also important to ensure the use of the best method to obtain input from minority and traditionally underrepresented groups. Isolating results from a survey that was not specifically targeted to our desired population, as with the Utah's Water Future survey, provides different results from a different sample population obtained using randomized sampling techniques. Understanding community context while selecting the appropriate survey method is key to understanding local residents' experiences with and perceptions of urban natural areas.

This research, in line with other studies on urban rivers, demonstrates these rivers are viewed with complexity, and perceptions of them include nuance and what might seem like contradictory views. We highlighted important differences in results based on survey methodology, a key finding for further public engagement in majority-minority river-adjacent neighborhoods. As Salt Lake City implements various river projects in and along the Jordan River, survey data provided here can help increase success of those projects. Planners can begin to understand neighborhood residents' priorities based on how survey respondents ranked their concerns. Our data make it clear that neighborhood residents value this urban natural resource, and feedback during the survey process indicated that residents were happy to share their opinions and concerns about the river. It is evident, however, that any planning process around the river that does not consider

social problems along with environmental problems might not be well received among river neighborhood residents because our survey results demonstrate that neighborhood residents are equally highly concerned about both social and environmental problems at the Jordan River. Additionally, our results indicate that encouraging neighborhood residents to go and interact with the river, trail, and surrounding park system will help improve the reputation of the river area and potentially increase neighborhood connectedness with the river. Further research should evaluate how intersectionality might influence perceptions of the urban environment by looking at social variable interactions between demographic characteristics. Additionally, assessing additional survey questions might help identify more perceptions of the Jordan River. Opportunity for engaging in qualitative research based on survey findings would bring greater meaning and help identify more details about our results.

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CHAPTER III
UNDERSTANDING CHILDREN'S PERSPECTIVES OF
AN URBAN RIVER CORRIDOR

Abstract

In collaboration with an elementary school, we analyzed children's drawings, writing, and interview responses to understand their perceptions of and connections to the urban Jordan River in Salt Lake City, Utah. The children who participated in this study are mostly from multicultural, multilingual families representing a diversity of backgrounds commonly found in this majority-minority community. Their school and neighborhood are in close proximity to the Jordan River, which is considered impaired. This research is grounded in environmental justice theory and we propose that to achieve procedural justice, recognizing children's perceptions and ways of knowing is key. We view children as full residents of their community who have not been viewed as active participants with opinions that matter in the past. Our research reveals that children in this neighborhood view the river positively as a place for peace and relaxation, as a home for animals, and a place to engage in many activities. Children were also highly concerned about several problems including water quality, smell, and litter along the corridor. The river is important in their neighborhood, but it is unclear if children view the river as important to community identity or feel highly connected to it themselves. Children were active participants in our study and revealed a lot of opinions and knowledge about their local environment in this urban multicultural community.

Introduction

Increasingly, social scientists are seeking to understand how urban residents view and interact with their local environments. Including children's perspectives is uncommon in this research; however, there are many reasons to include younger residents to learn how they perceive and interact with their local environments. Particularly, there is very little research looking at perceptions of children in low socio-economic status or multicultural communities (Adams & Savahl, 2015).

Children and youth are often the primary users of parks and natural spaces, and yet we do not often solicit their opinions or knowledge about those places (Tapsell, Tunstall, House, Whomsley, & Macnaghten, 2001). Children know a lot about their own lives and can be active participants in research processes (Abebe, 2009; Bonnett & Williams, 1998). Importantly, studies that have shown how children perceive nature demonstrate that children often have strong feelings and view local environments as important in their lives, both positively and negatively (Adams & Savahl, 2015; Bonnett & Williams, 1998). As Evans et al. (2007) determined, adults' perspectives do not always correlate with children's opinions of and attitudes toward natural places.

Our research is grounded in environmental justice theory, which highlights the importance of representation in environmental decision-making processes via procedural and recognition justice (Holifield, 2001; Jennings, Gaither, & Gragg, 2012; Walker, 2010). Additionally, environmental justice scholarship has advanced understanding of different ways of knowing and relating to the environment through cultural recognition and highlighting diverse views (Anguiano, Milstein, Larkin, Chen, & Sandoval, 2012; Carter, 2016; Lynch, 1993; Schlosberg, 2004; Zwartveen & Boelens, 2014). We suggest

that including children's perspectives increases justice by recognizing all members of a community, while understanding that children may have different ways of relating to their local environment, or might view it through different cultural lenses. Children should be viewed as full, active participants in their communities, whose opinions matter. Additionally, understanding how children perceive aspects of their environment can provide insight into social dynamics and cultural values that might influence community connections to and priorities for those environments.

The research presented in this paper was a key component of a three-part community-engaged research project in which we sought to understand local residents' perceptions, opinions, and priorities for the urban river corridor of the Jordan River in Salt Lake City, Utah. Our main community partner throughout this process was a local elementary school in a river-adjacent neighborhood. We designed a multi-method study with a 4th grade class, utilizing drawing, writing, group interviews (see Appendix C and D for complete interview protocols), and participant observation. We had several goals. First, we establish how children in this river-adjacent neighborhood already interact with and perceive their local river. We then seek to understand if, and how, children view the river as part of their neighborhood or community identity. Finally, we assess changes children would like to implement at the river to understand their priorities for the river.

Literature Review

Children's Environmental Perceptions

Scholars have highlighted many reasons why we should seek to understand children's environmental perceptions and opinions. When children are included in

participatory planning processes within their local environments, this can contribute positively to their self-esteem and allow children to position themselves within the democratic process (Johnson & Hurley, 2002). As children will be challenged with solving the environmental problems that are being created today, it may be helpful to understand how they perceive those problems (Vins et al., 2014). Some scholars have argued that children provide a different, more detailed view of natural places. Adults tend to think about natural areas on the landscape scale and view it as a whole entity, while children tend to focus on details and individual components of those spaces (Uzzell, 1976 *as cited in* Tapsell, 1997, p. 48). Especially relevant to this study, “water features tend to play an important role in children’s mental models of their own environments...major water bodies, such as rivers, are central to children’s understandings of their local environments” (Vins et al., 2014, p. 236).

One research discipline that regularly measures children’s environmental perceptions is environmental education. Our study does not involve environmental education nor does it have an intervention focus, but rather values children’s perspectives as full members of their communities. Environmental education research, however, has made valuable contributions to understanding children’s views of their environments. Some authors show that children are generally pessimistic or express uncertainty about their futures because they demonstrate a good understanding of environmental problems of today (Barraza, 1999; Strife, 2012). Keliher (1997) concluded that some urban children have a good understanding of environmental problems, and that they view nature as both “everywhere” and in far away, pristine “natural places” (p. 241). In one study, South Indian children were shown to be proud of their environmental knowledge and

understanding of the environmental “rules of the game” (de Hoop, 2017, p. 9-10).

Children care about nature whether they are familiar with it or not, and may consider nature in urban environments differently than outside cities (Chawla, 1988). Children in the United Kingdom would often evaluate places based on the possibility to participate in activities (Bonnett & Williams, 1998).

Assessment of children’s preferences for their neighborhood demonstrates that children want access to natural spaces, parks, trees, and water, though sometimes children in urban areas express fear or apathy about natural spaces (Derr & Lance, 2012). Keliher (1997) uncovered a similar result in that some children prefer to live in cities because they perceive danger with wild animals living in forested areas. Others show that children generally enjoy nature, feel empathy toward animals, and share a sense of responsibility toward their environment (Cheng & Monroe, 2012). Children sometimes view nature as peaceful and calm, a place for relaxation (Bonnett & Williams, 1998), and natural spaces can have a positive impact on children’s well-being (Adams & Savahl, 2015). One study of children in the Chicago Metropolitan area explains that children prefer environments that are most familiar to them (school grounds, parks), but are intrigued with more natural settings containing trees, water, and animals (Simmons, 1994). That same study demonstrated that young students are fearful about dangers natural spaces might present. Multiple studies point out gender differences in the ways girls and boys relate to and understand nature (Huang & Yore, 2003; Taylor, Kuo, & Sullivan, 2002; Vins et al., 2014). Urban girls’ self-discipline increases when they have access to and views of nature near their homes (Taylor et al., 2002), which might help explain why girls view those local spaces more positively.

The few existing studies specific to river environments demonstrate that children have a nuanced view of rivers. Children prefer scenes with water, including urban river scenes (Simmons, 1994). In a London study, children did not view their nearby river as very important to their regular life, but were excited about the possibility of having memorable experiences and participating in activities around the river (Tapsell et al., 2001). Children are sometimes fearful of urban rivers and consider them a dangerous, dirty place (Tapsell, 1997). When presented with a river restoration project idea, children were supportive of restoration for wildlife and safety outcomes rather than aesthetic purposes, a divergence from many adult perceptions of river restorations.

Very little research exists that specifically assesses environmental perceptions of minority children in the United States, with only a few examples of children outside of the United States. Researchers often refer to differences in urban and rural environments, but do not specifically address multicultural or minority perceptions. In an international comparative study, Huang and Yore (2003) reflected on the importance of considering cultural symbolism when analyzing children's drawings of their environments. These same types of considerations are lacking in studies of children in the United States who often live in multicultural environments. There is also a general lack of understanding of how children perceive rivers and spaces around rivers, especially in cities.

Overall, the studies presented in this review do not provide a conclusive or overall theory of children's perception of nature. Rather, they suggest that children's perceptions of nature are based on the context in which they understand and experience natural spaces. In many cases, children view nature and wildlife positively. However, children are aware of environmental problems and express fear of some natural spaces. The study

presented here will add an important contextual component in which we look at a specific part of Salt Lake City to understand how children perceive an urban river environment, while providing an important contribution to understanding minority and multicultural children's environmental perspectives. In addition to focusing on environmental perceptions of an urban natural resource, we go further in this study to understand how children perceive their neighborhood and community in relation to the river to reveal how the community is connected, or not, to the river.

Methods

Previous studies presented above suggest the value of allowing for multiple ways for children in middle childhood to express themselves. Some children may be more comfortable writing, drawing, or speaking and our multi-method approach ensured that we provided all of these options for students to respond how they felt most comfortable. Additionally, most participants in our study are from multi-lingual homes, some with varying levels of English language fluency. Our methods ensure the highest level of inclusion from our research participants. This research was reviewed and approved by the Utah State University Institutional Research Board (protocol 8504).

Children's Art and Writing

To understand children's environmental perceptions and their connections to natural spaces, analysis of artwork is used frequently. Analyses of children's drawings are common in research about a number of social and cognitive issues since the late 1800s (Kalvaitis, 2007). Using guided drawing and art activities as a form of data collection has many practical advantages and is commonly considered an appropriate and

robust way to identify children's values (Vins et al., 2014). Drawing and art allow for a relatively easy, low-stress, enjoyable way for children to express themselves (Barraza, 1999). Drawing is good for engaging students with different linguistic abilities (Chambers, 1983), so this method is good for mixed language settings. Importantly, "culture plays a fundamental role in the development of symbolic representations" (Barraza, 1999, p. 51, *referencing* Wales, 1990). Unique cultural symbolism can be expressed in artwork in ways that are significant to the children themselves. Cultural differences can play an important role in how children perceive and understand natural places (Huang & Yore, 2003), so providing an opportunity for children of various cultural backgrounds to express themselves in a way that values their perspectives is important.

Some studies suggest that limited drawing abilities might not reflect the depth of understanding that children have about their environments (Keliher, 1997). Others highlight that art-based research helps students express what they may be unable to put in to words (Bowker, 2007). Researchers have noted that girls provide more detailed drawings (Tapsell, 1997) and that gender plays a role in how children draw and represent different aspects of water (Vins et al., 2014). Though art can provide important insights into children's ideas, in middle childhood, art may not be enjoyable anymore as children become self-critical (Brooks & Sorin, 2011). Some scholars have asked students to write about their artwork in order to explain in their own words the meaning of their drawings (Tapsell, 1997). It is also common to use a mixed approach to guided drawings, called the draw-and-write technique (Kalvaitis, 2007). This method allows for children to use drawing and writing at the same time in order to allow children to express themselves

how they feel best represents their thoughts and feelings at that time. Analysis of children's writings is less common than art analysis, interviews, and surveys, and this research project can contribute in a significant way to advancing this type of mixed method.

Group Interviews

Interviews and discussion groups can be useful when working with children, as “a child can often be very observant and is able to give detailed descriptions and opinions, if given the opportunity” (Tapsell, 1997, p. 64). Additionally, small group discussions may be more relaxing to children, which encourages open discussion with children comparing their experiences to those of others in the group (Tapsell et al., 2001). Group interviews with children promote interaction with the researcher and each other in a relaxed setting that facilitates open communication (Adams & Savahl, 2015). Discussions with children allow for the researcher to ask follow-up questions in order to get more details and a better understanding of why children might feel the way they do about a particular space. Some researchers who work frequently with children suggest that a group interview or discussion group is more effective than one-on-one interviews, whether those interviews are structured or unstructured (Tapsell et al., 2001). This might be because group discussions can be more interactive and therefore interesting to students.

Research Setting

This research took place with a 4th grade class at an elementary school located about 0.7 miles from the Jordan River. We are particularly interested in the Jordan River corridor because currently there are several social and environmental challenges that the

city is negotiating after a large planning activity called “Blueprint Jordan River” was completed in 2008. The Jordan River has a pathway alongside it, called the Jordan River Parkway, that spans 100 miles along the entire length of the river through Salt Lake City and its suburbs. Increasingly, there is a notable homeless and transient population residing along the river within the city. Additionally, the river has had water quality problems for many years and is considered impaired (Epstein, Kelso, & Baker, 2016). General public discourse about the river, including media stories, stigmatizes the river and the neighborhoods surrounding it as dangerous, dirty, and full of social problems. Blueprint Jordan River addresses environmental problems associated with the river, but not social problems (Jordan River Commission, 2008). The neighborhoods surrounding the Jordan River in Salt Lake City have a large youth and school-aged population (Downen & Perlich, 2013). These communities are also home to a concentration of minority populations, with 67% of the city’s residents who identify as Latinx³ or Hispanic residing there (Cahill, Gutierrez, & Cerecer, 2016; Downen & Perlich, 2013). To be truly representative, research around the Jordan River should include children’s perceptions and highlight the diversity of residents’ racial, ethnic, and cultural backgrounds found in these neighborhoods.

Our partner elementary school is a Title 1 school, which indicates that the majority of its students receive free or reduced-price lunch (District, 2018). The student population is largely nonwhite, reflecting the social context of the neighborhoods surrounding the river. Additionally, the school uses a community school model and

³ The term “Latinx” is a gender-neutral term identifying people of Latin American origin, mostly used to describe these populations residing outside of that region (Salinas & Lozano, 2017).

strives to be a community center with a family health center, counseling services, and various community education services at the school (SLC School District, 2018). The community school concept expands the role of a school as an educational institution in which the school coordinates community partners and resources in order to provide comprehensive services to students and their families (Min, Anderson, & Chen, 2017). According to one administrator, the school incorporates environmental justice considerations into its approach to engaging with the school and community. This administration helped facilitate the research process in every way.

Study Design

This research took place over three months. The primary researcher obtained informed consent from children's parents mostly at an evening activity in which families were invited to share a meal and discuss the research. Additionally, children provided their assent to the research as they are old enough to decide their participation in this type of activity. First, the primary researcher established rapport and built trust among the research participants, who were ages 9–11. The first month of this research was dedicated to participant-observation in which the researcher became part of the class and provided extra assistance to the teacher as needed. Throughout the three months, the researcher attended field trips with the class, shared meals, and had many individual conversations with the 18 student-participants in this study. This participant-observation approach added a lot of context to this research, as we were able to understand how children communicated and interacted in detail by talking with the students and spending a lot of time together. After trust and rapport were established, the primary researcher distributed

notebook-style journals for the students to respond to research question prompts. For their responses in the journals, children were encouraged to use the draw-and-write approach (Kalvaitis, 2007) for most open responses. This method allows participants to use drawing, writing, or both, which helps children express themselves how they feel best represents their thoughts and feelings at that time. In one instance, children were encouraged to draw only, and in another prompt, they were encouraged to write only. They were asked first to identify themselves and their culture, in their own words or drawings, and to identify their preference for a pseudonym. Having children choose their own pseudonyms was not only a fun and engaging experience, it also ensured that the participants fully understood that their work would be used for research purposes. Our research participants are from diverse backgrounds, as demonstrated with the children's own explanations of their identities. In total, our student-participants were asked to respond to five different open-ended questions and six different targeted short-answer questions over four class periods. Responses in the notebook journals provided 64 pages of content for data analysis including 37 drawings.

The last phase of research included group interviews. The children were divided into two groups based on whether they stated in their journals that they had been to the Jordan River or not. Those groups were then divided in half to have four groups of 4–5 children each. There were eight interview questions (see Appendix C and Appendix D) and each group interview lasted between 15–20 minutes. The interview facilitator used incentives to keep the children motivated and moved through the questions quickly while ensuring every child had the opportunity to express themselves.

Data Analysis

Drawings and writings were analyzed using content analysis (Barraza, 1999; Vins et al., 2014). First, we grouped all of the content together for each question prompt. Then, we identified the content of each drawing or writing. Drawing content was categorized and counted to identify how often images and symbols were used in drawings about the Jordan River. This content was also used to identify themes, understand what was important to children, and make connections to other results. Writing results were analyzed in a similar way, first identifying how children described the river by identifying the content of their writing and then then categorizing and counting that content. Counting how often certain aspects of the river were written about or illustrated was a key part of this analysis to develop themes for the broader analysis.

Interviews were analyzed using a combination of content analysis similar to the drawings and writings, and thematic coding. Utilizing a method elaborated by Loftland et al. (2006), interview transcriptions were first open coded to identify general themes based on interview content. Then, we attempted more focused coding. Through this process, interview data were categorized and organized based on how children's responses advanced our research questions. Children's responses during our interviews were concise, and many had difficulties fully explaining why they responded in certain ways. Therefore, it was important for us to use two different methods to fully understand children's interview responses.

After each set of data was fully analyzed and/or coded, we began assessing these different forms of data in relation to each other. We identified a high level of consistency between what children were writing, saying, and drawing. Additionally, participant-

observation allowed the researchers to engage in conversation with the children as they were developing their responses in their notebooks. This added another layer of understanding to our analysis, and helped researchers interpret results.

Results

Participant Characteristics

As shown in Table 3.1, all of our participants were ages 9–11 and in the 4th grade. There were eight male and ten female children. When asked to describe their culture and identity, all participants identified their culture with a country or place in addition to or other than “Utah,” “United States,” or “America.” Participants did not often cite other aspects of culture such as beliefs, customs, ethnic/social group, religion, or language. One student identified with Chicago as part of her culture. Ten participants identified Mexico as part of their culture, and one identified Ecuador as part of her culture. Two students identified Somalia as part of their culture and both wear hijabs signaling a religious identity with Islam. One of the Somali-identifying students, who chose the pseudonym Ifrah, also identifies with “Hindi,” indicating a mixed background associated with both another religion and language. Two of the children identify as Burmese; both are refugees but have very different backgrounds. Both use the country name of “Burma” rather than the newer name of “Myanmar” to identify their heritage country. Kim arrived in the United States as a refugee one month before research began and wears a hijab, indicating that she identifies with the Muslim religion. Her English was extremely limited during the research process. She exclusively used drawing to communicate her answers and did not participate in the group interviews though she was present. Jessica has been in the

Table 3.1

Characteristics of Research Participants

Name (Pseudonym)	Age	Sex	Self- described Culture	Languages other than English	Known Immigrant Status	Housing Type
Rob		M	Mexico	Spanish		Apartment
Janel	9	F	Chicago/ United States			House
Garret	11	M	Mexico	Spanish		House
Quan	10	M	Mexico/Plan et Earth	Spanish		House
Isha	9	F	Somalia	Somalia		Apartment
Rosie	10	F	Mexico	Spanish		
Bob	10	M	Mexico and America	Spanish		
Ifrah	10	F	Hindi and Somalia	Hindi and Somali	Refugee	
Jessica	10	F	Burmese	Burmese	Refugee	
Ryan	10	M	Utah and Mexico			House
Bella	10	F	United States and Mexico	Learning Spanish (at home)		House
Danny	10	M	Tongan	Tongan		House
Jeffry		M	Latino/ Mexico	Spanish		House
Jerry	9	M	Mexico	Spanish		
Daisy	10	F	Mexico	Spanish		Apartment/ Townhome
Jennifer	10	F	Pakistan	Punjabi	Immigrant	Apartment
Karina	10	F	Utah and Ecuador	Spanish		Apartment
Kim		F	Burmese (Muslim)	Burmese	Refugee	Apartment

U.S. for several years, but also arrived in Utah with Refugee status. We do not know all of the languages Jessica and Kim speak, as it is common for people from Myanmar/Burma of different ethnic groups to speak different languages, however they can communicate with each other in the common language of Burmese. Jessica does not

wear a hijab and does not identify as Muslim. One student identified as Tongan, and another student identified Pakistan as part of her culture and speaks Punjabi at home. All but two of our student participants identified languages other than English that they speak at home or with family. It is possible that more than four of our participants are immigrants, however four participants identified or were identified by their teacher with a known immigrant status.

We did not collect other personal or potentially sensitive information from our participants such as income or family structure. However, we can deduce some of this from drawings or written information about their neighborhood. Several students also revealed details about their housing and family during the interviews. Housing type might indicate economic security, ability to obtain credit to purchase a home, or ability to pay higher rent prices outside of apartment complexes. It is uncommon to own an apartment in this area of Salt Lake City. Six of our participants drew apartment style buildings or features found in local apartment complexes, including mixed apartments and townhomes. Seven children indicated that they live in single-family houses. There was no identifiable information in the other five students' drawings, writings or interviews about their home. Jennifer, who lives in an apartment complex, referred to violence and insecurity she experiences in and around her home during the group interviews. Danny also expressed concern about violence or "*people getting hurt.*" However, all of the other students who talked or wrote about their home or neighborhood expressed more positive feelings than negative and were generally content with their neighborhoods. This is important to note, as it does not coincide with the general outsiders' view of these neighborhoods in Salt Lake City.

Children's Perceptions of the Jordan River

The first question that we asked our participants was whether or not they had been to the Jordan River previously. This was to understand if their responses were grounded in experiences at the river. Ten of the students said they have been to the river before, and eight of the children said they had not been to the river. However, during this research process, it was revealed that all of the children had been to the river before either during field trips at school, walking by the river, or to visit a local public library branch adjacent to the river that has an outdoor patio. It became clear that by answering that they had never been to the river, the children really meant that they do not frequently go to the river as a destination. All of our research participants do interact with the river at least marginally. During the interviews, participants were asked why they think they do not go to the river as a destination. One student stated that she had severe allergies and could not go; another child said that his house was too far from the river. Two students said that because they are newer to the neighborhood, their parents did not know about it. One student said that her family was concerned about the possibility of drowning and that is why they do not visit the river.

Our participants revealed mixed knowledge about rivers and were frequently confused with what they had previously learned about the Great Salt Lake. Researchers later found out that these students had taken a class field trip to the Great Salt Lake, which helped explain why students were sometimes unable to separate the two important bodies of water in this region. Danny, however, understood that the Jordan River “*carries water all over Utah.*” Most students included motion lines in their drawings of the Jordan River, indicating that they understood rivers are constantly flowing. However, several

students thought the river was “salty”, which is an attribute of the Great Salt Lake and not the river. Another child thought that there were brine shrimp in the river, which is another unique feature of the lake.

When participants drew the Jordan River, there were few identifying factors specifically depicting this river. Eight of the drawings had no defining features at all, these drawings were simple depictions of any body of water that looked similar to any river. When children drew cars, roads, a trail, bridges, green or brown water, benches, or any landmarks associated with the neighborhood we understood students were depicting the Jordan River. One student, Daisy, drew the Jordan River Parkway trail with a bench next to the Jordan River, which is a very distinct feature of this river, as shown in Figure 1. Jeffrey drew green water, a curvy river, a road intersecting the river and brown land surrounding the river, which are all features he identified as distinct to the Jordan River area. Jeffrey’s art is shown in Figure 2.

Water color was an important feature in several drawings, however not every child used a variety of colors. For those who did, four students depicted the water as green or brown, which according to these children is a more realistic image of the river’s color. Six colored the water blue, as is generally associated with water. One student, Jennifer, used green and blue together and included a label of “dirty water” with an arrow pointing to her river drawing. Depictions of cars, roads or a trail were drawn nine times. Bridges or overpasses going over the river were included in four children’s drawings of the Jordan River. Two examples are shown in Figures 3 and 4.

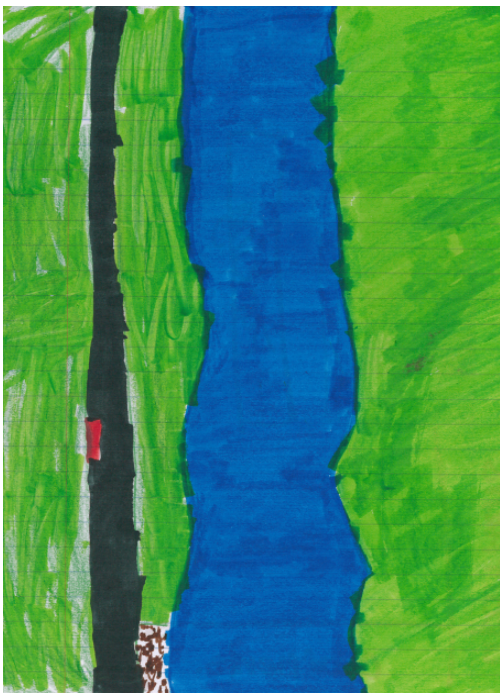


Figure 1. Daisy's drawing of the Jordan River



Figure 2. Jeffrey's drawing of the Jordan River



Figure 3. Rosie's drawing of the Jordan River



Figure 4. Jerry's drawing of the Jordan River

Only one student drew people, and there were some very distinct features of her drawings. Kim drew two pictures in response to prompts about the Jordan River; they are shown in Figures 5 and 6. Both of her images have unique characteristics that might be associated with her previous experiences with rivers. While speaking through a classmate

translator, Kim insisted that she does go to the Jordan River sometimes with her family; however, her drawings reflect scenes not normally found at this river. Kim shows all of her people as male and female by depicting a hijab in the form of a round circle over a person's head. Figure 5 shows what are possibly boats in a style commonly found in Southeast Asia, and Figure 6 shows an overhead river crossing similar to a zip line. Neither of these things are found in or around the Jordan River.

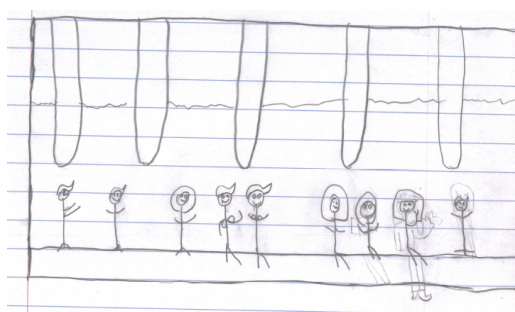


Figure 5. Kim's first drawing of the Jordan River

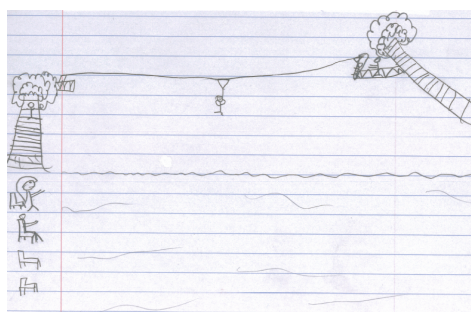


Figure 6. Kim's second drawing of the Jordan River (emphasizing activities)

During all phases in this research, children revealed simultaneously positive and negative feelings about the Jordan River. Children associate many positive emotions and activities with the Jordan River, but are also concerned about many issues. Mostly, children are concerned about water quality, litter, and personal safety concerns such as falling in or drowning. Participants show an affinity for animals, expressing positive feelings with viewing various animals or activities such as fishing. However, children are also highly concerned about animal welfare due to the possibility of eating litter and water pollution. They view the river as habitat for wildlife. When asked to describe the Jordan River in two words or phrases, eleven students used one positive and one negative descriptor. These children described the river as simultaneously “good and bad,” “cool and gross,” “fun, beautiful and dirty,” “calm and smelly,” or “dirty and kind of clean.”

Words or phrases used to describe the Jordan River for written responses are shown in Figures 7 and 8 below.

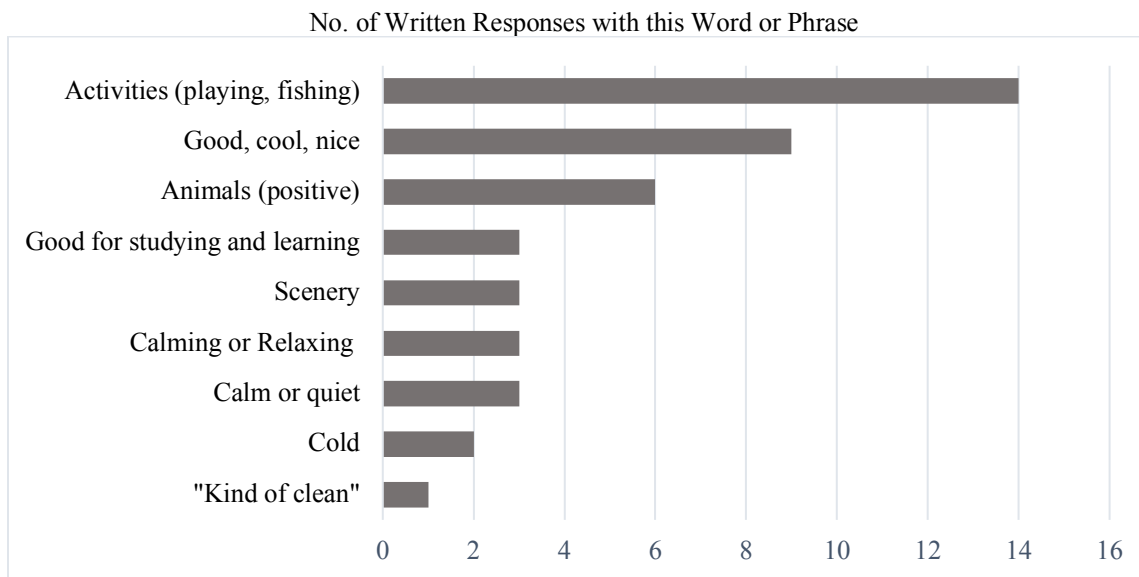


Figure 7. Positive or neutral words used to describe the Jordan River in writing

In total, there were 45 uses of positive descriptors and 41 uses of negative descriptors in children's written responses to questions about the Jordan River. During interviews, children continued expressing simultaneously positive and negative opinions of the river, but emphasized many more positive emotions than negative in their verbal communication. When asked to describe the Jordan River, children used positive words or phrases 18 times and used negative words or phrases 10 times. Children's negative descriptors of the river referred to perceived dirtiness of the water which children identified using the words "dirty" or "pollution," references to the color of the water, saltiness, and concerns about animal waste.

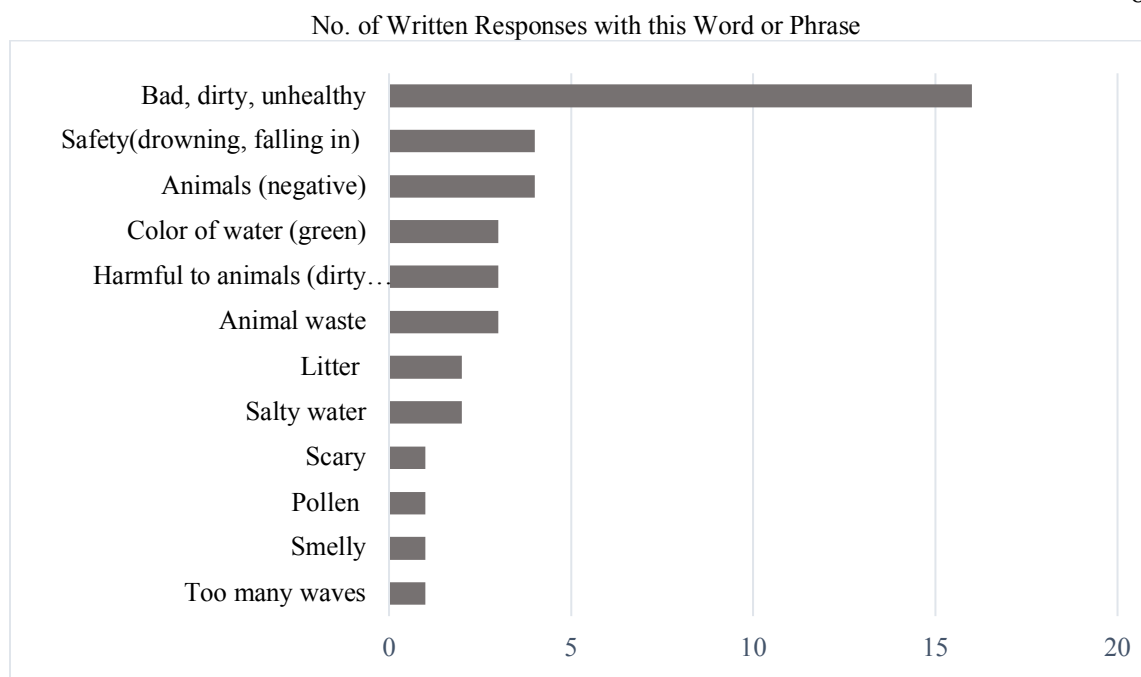


Figure 8. Negative words used to describe the Jordan River in writing

“People pollute in it, there are bad things” (Bob)

*“There’s animals that use the bathroom there sometimes, pollution”
(Janel)*

*“They’re salty because it collects all of the dirty stuff in the mountains
then it arrives to the Salt Lake” (Rob)*

“Dirty, because it’s green” (Bella)

One student described the Jordan River as *“A habitat where animals can live and you can go fishing there for food”* (Jessica). This highlights another theme in children’s descriptions of what the Jordan River is like: animals. Animals were mentioned six times in a positive way, and twice in a negative way, specifically with concerns about animal waste. While describing what they like to do at or around the river, watching the ducks or other animals and fishing were favorite activities for seven participants. Six children thought about the river as a good place to study or “investigate,” and a place they could

learn about water testing. Interviews took place shortly after a trip to the river in which students tested water quality, which likely influenced responses to this question. When asked what they would like to do at the Jordan River our respondents said,

“I would try to test the water” (Rob)

“Measure the temperature” (Isha)

“I would try to see if there was poop in there” (Garret)

“We could, like, go and investigate in it, you know how people investigate, it’s a good investigating spot” (Jessica)

Jennifer described the river in this way: *“It’s calming and you can study it, but otherwise it’s dirty. There’s trash in it and littering.”* Her statement reveals another thematic area of how children perceive the Jordan River. Many of our participants referred to the river area as calming, relaxing, and peaceful. These descriptors were most common in interview groups where students do go to the Jordan River more frequently. Two children in interview groups for those who do not go to the river frequently described the calming or relaxing aspects of the river in these ways,

“The reason I like the river is because it’s calming” (Rosie)

[I would like to] *“Sit down and read a book....because it would be relaxing”* (Janel)

In interview groups where students were more familiar with the river, children used words or phrases including calm/calming, peaceful, and relaxing 14 times. Figure 1 above shows that children also used these words or phrases in their written responses six times. Other descriptions including phrases like “it has a good view” and references to viewing wildlife or “watching the waves” were used frequently as well, which also might

contribute to children's views about relaxation and calmness at the river. Children referred to the river as calming or peaceful directly in these ways:

"...it can calm you down" (Bella)

[I like] *"The good view, because it's peace and quiet, with animals around it and plants"* (Jessica)

"A peaceful place and you can go fishing" (Jeffrey)

"It's peaceful" (Jerry)

"It's peaceful and relaxing and stuff like that" (Jennifer)

"Calming down" (Karina)

The Jordan River as Part of Neighborhood or Community Identity

When asked to draw or write about their neighborhood, no student included the Jordan River as part of those descriptions. However, when prompted with other questions and during the interviews, children revealed how they view the river and park system around the river as part of their neighborhood. When drawing the Jordan River, Jessica drew a map of her neighborhood and showed how she thought the river ran through it, as seen in Figure 9 below. During the interview, Jessica revealed that she thought rivers were *"like roads but it's water... just like that it's just like water instead of cement,"* which further elaborates her drawing.



Figure 9. Jessica's drawing of the Jordan River

In this drawing, we see many neighborhood features positioned in relation to the river. Also, Jessica understood that the Jordan River flows toward and drains in the Great Salt Lake. Rob also understood that the Jordan River flows into the Great Salt Lake; however, that is also why he thought the river contained salt water.

In response to a question about whether or not the river was important in their neighborhood, thirteen children responded “yes” immediately in their interviews. Two children responded “maybe” and “I don’t know” and three responded “no.” However, after listening to the reasoning of their peers, only one participant maintained their answer that the river is not important in their neighborhood. The reason this student provided for not thinking the river was important is that it is “dirty and can hurt trees.” When asked why and in what way the river was important in their neighborhood, 12 children mentioned how the river provides water for themselves, for animals and plants. Important to note, the Jordan River is not a source of drinking water for the city.

“...I think the Jordan River is the one that gives us water and stuff like that” (Rosie)

“...that’s the water we drink out of the water fountain, and it’s basically clean because other people clean it” (Rob)

“it gives water to plants” (Bob)

Other reasons include a place to spend time with family and a place to “calm you down.”

The following quotes further elaborate on why children view the Jordan River as important in their neighborhood:

“...it’s a nice place to spend time” (Danny)

“...because if your family is too busy and you don’t spend a lot of time with them and you have a day off and it’s in the summer, and the parks are full, and if you have a pet you can take them, and the Jordan River is free so you can have a little picnic by it and you could play, and have a fun time and a break” (Jessica)

“Yes, it’s important to have the Jordan River so it can help the community...help our community grow big and strong... help the plants grow” (Daisy)

“Even if it wasn’t important it would at least be something, like, peaceful to look at and that’s helpful” (Jennifer)

“It’s part of the neighborhood” (Janel)

When discussing their favorite places by the river, two children mentioned a popular pizza restaurant and two mentioned a local public library branch, both of which are directly adjacent to the river. Another student said “all of it” was his favorite, and three students reinforced the calming aspects of the river during the discussion of their favorite places.

Children's Proposed Changes to the Jordan River

We asked participants about changes they would like to make to the Jordan River during interviews and as a prompt for a written response. Most responses were directly related to children's identified dislikes or likes of the Jordan River area. Safety improvements identified by children included various signs about the potential to slip and fall and fencing to protect people from falling in the water. Mitigating litter was a key theme identified by children including adding "no littering/waste" signs. The following quotes demonstrate how children discussed litter and signs for no littering.

"People polluting... when people go past it they throw their trash and sometimes it goes to the river and then the ducks will eat it" (Danny)

"And they could die" (Jessica, in response to Danny)

"And there should be a sign by it not to waste" (Jessica)

"If they litter, echalo pa' fuera!" (throw them out!) (Jeffry)

Though, as one said,

"And when you put a no waste sign, they're still gonna put some waste." (Bella)

Another key theme was improvements to water quality and bad odors around the river. Children discussed cleaning the water in various ways. In one interview group, all of the children agreed that smell was a big part of what they would like to change at the river. However, they attributed bad smells to animal waste or "dead things like squirrels" decomposing.

"I would change it to clear water and you could swim in it and touch fishes" (Jeffry)

“The water, to make it see through” (Karina)

“Making it clean, and no littering, and put some signs” (Daisy)

Written responses were very similar to interview responses regarding children’s proposed changes to the river. Figures 10, 11, 12, and 13 demonstrate how children wrote about changes they would make to the Jordan River if they could. Ryan’s response in Figure 7 emphasizes warning signs. Bella’s response in Image 8 suggests adding cleaner water and ducks. Quan’s writing in Figure 9 suggests an innovative way to keep the river clean, and Karina’s response in Figure 10 suggests cleaning the water and getting rid of insects.

I would make
warning sign to keep
people safe

Figure 10. Ryan’s changes to the Jordan River

if I could change the
Jordan river I would
add cleaner water. I would add
ducks. :)

Figure 11. Bella’s changes to the Jordan River

like a force
field so it
can't be dirty

Figure 12. Quan’s changes to the Jordan River

cleaning the water and i would change
it by not letting any insects inside
or any spider webs because they
get dirty to .

Figure 13. Karina’s changes to the Jordan River

Figure 14 reflects a content analysis of both interview and written responses when children were asked what changes or improvements they would like to make to the Jordan River.

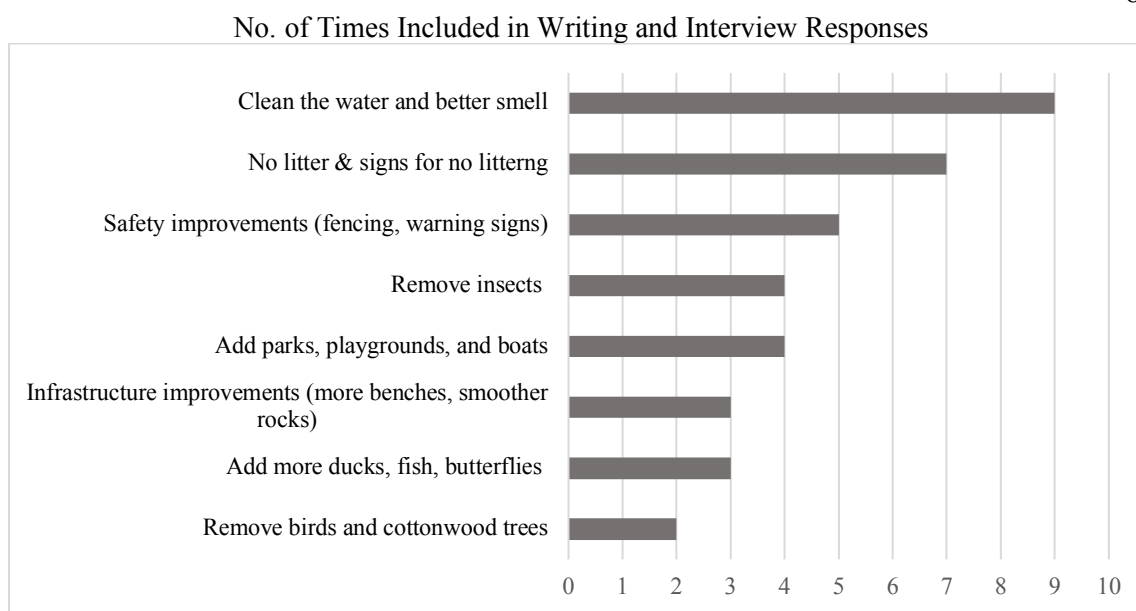


Figure 14. Changes to the Jordan River proposed by children

When analyzed together, written and interview responses highlight children's perceptions of the water in the river as dirty, and cleaning the water or improving the smell were the most frequently mentioned changes. Littering and signs to mitigate littering were the second most frequently mentioned change. One child wanted to get rid of the birds, and one wanted to specifically take away cottonwood trees around the river.

Discussion

Overall, the children in our study value the Jordan River. Though children express concern about various issues with the river including water quality, litter, and safety concerns (falling in the river/drowning), they expressed more positive images, writing, and words about the river than negative. The results presented in this study are similar to some past studies that assess different aspects of children's environmental perceptions (Abebe, 2009; Bonnett & Williams, 1998). We found that the children in our study do know a lot about their own lives and neighborhood and were active participants in the

research process. Our participants understood that their data would be used for research purposes and, hopefully, to help improve their neighborhood river and increase school interaction with the river. Most children in our study interact with the river often by going to the park system around the river, using the Jordan River Parkway Trail, and visiting places by the river including the local library branch. However, some children were confused about aspects they learned about the Great Salt Lake and their understanding of the river environment. Some participants thought the river was salty and had brine shrimp, which are not features of the Jordan River. However, this could mean that children understood the river was connected to the Great Salt Lake and had a hard time understanding how the ecological aspects of those two places could differ. Our study revealed that some students did understand that the river flowed into the lake, but it is unclear if everyone in the class understood this detail. Vins et al. (2014) highlighted that major water bodies were important in children's mental models of their own environments, and this neighborhood in Salt Lake City has the Jordan River and is in close proximity to the Great Salt Lake. Children in our study used both of these bodies of water to describe their local environment. Further exploration could help determine how children separate these two major water bodies close to where they live.

As previous studies have demonstrated (Adams & Savahl, 2015; Bonnett & Williams, 1998), our participants viewed their local river simultaneously positively and negatively. Positive associations with the river included activities children can or do participate in around the river, associations with animals such as thinking of the river as habitat and enjoyment viewing wildlife, and emotions such as happiness and calmness. Negative associations with the river included the perception of the river as dirty and

unclean, unhealthy for wildlife, and personal safety concerns mostly regarding the possibility of falling into the water. Children assessed the dirtiness of the river and river corridor by using their senses including visual aspects of the river and smell. Water color and smell were associated with dirtiness as well as the presence of litter around the area. Our participants did not discuss any of the social problems commonly thought of in the river corridor including homelessness, illegal narcotic use, and danger associated with those problems. We found it intriguing that children were concerned about the danger of falling in, and the danger that litter and dirty water can pose to animal welfare. It is possible that children are told by adults that they should not get too close to the water for fear of falling in, as Tapsell (1997) found, but no student mentioned this when asked what their parents have told them about the river. We did not find that our research participants were fearful of the river, as other urban river studies have found (Tapsell, 1997), but rather had some very concrete concerns about it.

Bonnett and Williams (1998) found that children view nature as calm and a place for relaxation. In our study, the calmness of the river was a key feature in children's perceptions of that environment. Our study participants also referred to many opportunities for relaxation, and enjoyed the quietness of the area. We suggest that having a place of calm, peacefulness, and relaxation can contribute positively to well-being, much as Adams and Savahl (2015) concluded regarding positive impacts of nature for children. Many of our participants have very complex lives in which they negotiate more than one culture and language, typically from lower socio-economic status. Children recognize the opportunities for rest and relaxation around the Jordan River, which they consider a highly positive aspect of this part of their local environment.

Recognizing the potential for relaxation, renewal, and peace in this urban river context should be a key component of river restoration projects and was highly valued by these young research participants.

Cultural Symbolism

We expected symbolism and imagery influenced by different cultural backgrounds to play a role in our interpretation of children's drawings in this research setting (Barraza, 1999; Huang & Yore, 2003). However, only one student, Kim, a new refugee with only a few months in the United States, used imagery possibly influenced by her unique cultural background. She was also the only child who regularly included people in her drawings. When asked to draw their neighborhood, three students (including Kim) from different cultures drew their neighbors or their family. Another student, Ifrah, wrote about her neighbors in her neighborhood description. Based on our data and interactions with participants, we are not able to associate drawing people in these scenes as a culturally influenced phenomenon. Another participant, Jessica, included self-portraits in all of her written responses, and her portraits always had rainbows around her image. It is unclear whether that might have been imagery associated with her culture. Overall, although our student participants identified with many different cultures, we did not find that unique cultural symbolism played an important role in understanding these children's drawings.

***The River as a Part of the Neighborhood,
but Marginal to Identity***

The results of this research revealed that the river is marginal in many of our participants' lives, but none of the children expressed apathy toward the river as studies in other cities suggest (Derr & Lance, 2012). Our participants valued the river, thought it was important in their neighborhood, and expressed many opinions about the river. When asked to elaborate why the river was important in their neighborhood, most children had a difficult time articulating their ideas. One student who felt that the river was not important in her neighborhood related her concerns about the water quality and the potential of negative implications to her response. Several children associated the Jordan River with potable water they use at home and school, or for plants and animals in the neighborhood. Though we do not have similar information for children, research with adults has shown that knowledge about the source of potable water is highly limited among the general public (de França Doria, 2010). Others associated the river with spending time with family, and one student highlighted the importance of having a peaceful place in the neighborhood. However, we assess the river as marginal in children's lives because none of them included the river in drawings or descriptions of their neighborhoods. One student included a map of her neighborhood when prompted to draw the Jordan River, revealing how she thought it was a part of the neighborhood. However, most of our assessment about whether children feel the river is part of neighborhood or community identity came from interviews.

It is not clear whether children feel that the river is part of their neighborhood or community identity. Jessica's map of her neighborhood when drawing the Jordan River

reveals that she might think of the river in terms of neighborhood identity. We do not have enough evidence to link children's view that the river is an important part of neighborhood or community identity. Children feel that the river contributes many positive aspects to their neighborhood including the possibility for leisure activities and spending time with family. Additionally, children value a place to view wildlife and experience a calm environment. Overall, children feel that the river is "*part of the neighborhood*" (Janel) and is generally important for various reasons. However, it is unclear whether the children view the river as a part of their community or neighborhood identity based on the information we obtained in this study.

River Improvements

Not all of our participants proposed changes for the Jordan River. However, for those who did, children proposed concrete and attainable changes they would like to see in the Jordan River corridor. Improvements proposed regarding littering and cleaning the water are directly associated with children's concerns about cleanliness and water quality at the river. To mitigate litter around the river, children propose signs encouraging people to not litter. None of our participants suggested other solutions such as more trashcans. Our participants wanted to "make it clean," but did not identify how they would clean the water or the area. Children generally understood that there was a need to make the area cleaner, and including signs against littering is a concrete and attainable goal, but might not generate the positive change they anticipate, as one student suggested. Other concrete changes children propose for the Jordan River include safety improvements. Children suggest fencing and warning signs to keep people safe from falling in the water. Another

safety suggestion related to improving the infrastructure components around the river includes making the “rocky rocks” smoother so children do not hurt themselves if they get close. Rocks are present in various locations along the river to fortify the riverbank and are not a naturally occurring feature of the river in those locations.

Most of the children in our study demonstrated an affinity toward animals, and were very sympathetic to perceived dangers for wildlife around the river. One student, however, suggested removing birds from the area because he does not like them around the river. That same student, however, revealed that one of his favorite past times is playing with his chickens that his family keeps on their property. Three children suggest improving the river by adding ducks, fish, and butterflies. Children also would like to see more opportunities for playing around the river including more parks, playgrounds, and boats. Overall, suggestions children make to improve the Jordan River are straightforward, easy to implement, and might provide a starting point for addressing problems.

Conclusions

This study demonstrates that children from diverse backgrounds in schools that do not have a formal environmental education program can also be active participants in the research process. Children in our study had many insights and opinions to share about their local river, including proposals for changes and solutions to the problems they identified. Though children’s solutions were limited in scope, they expressed a willingness to try to make positive changes to the river environment. Our study reveals that children have simultaneously positive and negative perceptions about their local river

corridor, but did not refer to the negative perceptions of the river that adults commonly associate with it such as a place to encounter homeless individuals. Children in this study were highly concerned about animal welfare and habitat around the river, showing an affinity toward animals. Our participants understood some of the problems around the river including water quality concerns and general cleanliness. They also valued the river as a place for calm, peace, and relaxation. Not surprisingly, children also valued the river based on activities they could do there including playing and fishing.

Though we highlighted the diverse and multicultural backgrounds of our student participants, we did not find many differences with results from our study and other similar research. We did find that two of the refugee students of Somali background were the most unfamiliar with the river area. One said that she does not frequently go out of her house at all. The other student said that her parents were unfamiliar with the river despite that they have lived in Salt Lake City for several years. The two other refugee children of Burmese heritage were highly familiar with the river and referred to activities they do with their families by the river. If cities are concerned with promoting local environmental amenities for all of its residents, these differences might suggest that special outreach and engagement considerations be made toward specific cultural groups including new refugees. Future research should analyze if and how new immigrant populations, including refugees, specifically interact with and view local environmental features such as rivers. Future research could highlight barriers to interaction with urban green spaces that particular cultural groups might experience.

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CHAPTER IV

LOCAL KNOWLEDGE AND COMMUNITY CONNECTIONS TO AN IMPAIRED
URBAN RIVER: A COMMUNITY ENGAGED APPROACH**Abstract**

In a case study of the urban Jordan River in Salt Lake City, Utah, we use a community-engaged research approach to understand community connections to, and perceptions of, the river. With collaboration from community partners, we interviewed 14 residents of river-adjacent neighborhoods. We elicited local knowledge about and experiences of the river and analyzed responses through a theoretical lens of environmental justice, which posits that under-represented local residents should have an active role in environmental management of resources close to where they live. Using an environmental justice and local knowledge framework with a community-engaged research approach, we reveal local knowledge, values and experiences of those who live in urban neighborhoods in close proximity to the Jordan River. Minority residents in these neighborhoods feel excluded from participation in river issues and in their communities generally. Residents near the river view the river as a place for nature, recreation, and relaxation in a highly urbanized area. However, local residents also reveal many negative perceptions including concerns about personal safety, water quality, and cleanliness of the area. An increase in homeless population around the river has greatly influenced how locals view the area, and many avoid it as a result. Our research shows that community members want to be more included in river management and we demonstrate how residents can make positive contributions to river management

decisions. This finding suggests that river-adjacent communities want to achieve environmental justice.

Introduction

Public participation in environmental decision-making is a prominent feature of urban river and environmental justice research, including gaps in public engagement, concerns about representation and unintended consequences associated with river projects (Gobster and Westphal, 2004; Jennings, Gaither, & Gragg, 2012; Petts, 2006, 2007; Tapsell, Tunstall, House, Whomsley, & McNaghten, 2001; Tunstall, Penning-Rowell, Tapsell, & Eden, 2000; Schlosberg, 2004; Walker, 2010; Williams & Florez, 2002; Yocom, 2014). Scholarship beyond environmental justice research has highlighted that including communities' local knowledge of natural resources can help cities and communities meet their goals during decision-making processes, as well as increase the success of project implementation (House & Fordham, 1997; Irvin and Stansbury, 2004; Petts, 2006; Tapsell et al., 2001; Ryan, 1998; Spink, Hillman, Fryirs, Brierley, & Lloyd, 2010). Advancement in the U.S. Environmental Protection Agency's definition of environmental justice now includes equal protection from environmental hazards as well as access to decision-making processes to ensure a healthy environment (Environmental Protection Agency, 2017). As cities have developed public engagement strategies to increase participation in environmental decision-making, many of their methods have been criticized for lack of diversity and inclusion, lack of accessibility to all members of a community, and processes that simply confirm already-made decisions (Chess &

Purcell, 1999; House & Fordham, 1997; Irvin & Stansbury, 2004; Rydin & Pennington, 2000).

Urban river environments are undergoing significant changes as cities look to restore previously impaired environments and potentially capitalize on economic gains associated with those changes (Kibel, 2007). Urban river restoration projects and improvement plans have been implemented in a vast number of cities with billions of dollars of investment (Yocom, 2014). Community involvement in urban river decision-making is imperative as cities negotiate how to improve impaired urban waterways that have become contested places. Additionally, river restoration efforts generally have failed to include social and cultural values or aesthetic preferences (Spink et al., 2010). We do not have a good understanding of how urban residents view their local rivers, nor is there a depth of research to assess local knowledge of these places (Gobster & Westphal, 2004; Yocom, 2014). Our study will advance understanding of how urban residents perceive and connect to their local river.

Salt Lake City's West Side and the Jordan River

The Jordan River runs through the western part of Salt Lake City. This section of the city has been home to the most racially and ethnically diverse populations of the area since the mid-late 1800s (Bradley, 2004). Minority populations in the city are concentrated in the west side neighborhoods, while currently being pushed beyond city boundaries due to rising housing costs. The 2015 American Community Survey suggests 58% of residents in these neighborhoods identify as minority. The 2010 census revealed

that nearly 70% of the city's Latinx⁴ population resides in these neighborhoods, a number that some suggest is increasing (Cahill, Gutierrez, & Cerecer, 2016; Downen & Perlich, 2013).

All the neighborhoods in this “West Side” area intersect the Jordan River, which is considered impaired with water quality problems (Epstein, Kelso, & Baker, 2016; Jordan River Commission, 2013). The river has been channelized, diverted, and altered to deal with flooding impacts starting in the 1920s, which has gradually degraded this resource (Jordan River Commission, 2008, 2013). In response to the degradation of the river over time, several planning initiatives have been initiated to address some of those issues. In 2008, the Blueprint Jordan River plan was created, which has been the largest planning effort around the river to date. Blueprint Jordan River emphasized public participation with workshops, focus groups, and an online survey. Surveys were administered online, but also at every focus group and public workshop. Results show that survey respondents were mostly white and middle aged, with only 8% of respondents identifying as Hispanic or Latinx. Unfortunately, efforts to reach out to non-white residents fell short. Additionally, results show that 42% of the participants in the planning process live more than two miles from the river. In 2013, the Jordan River Commission, which was established as a result of the Blueprint process, created a document called “Best Practices for Riverfront Communities.” This planning document emphasized many environmental and natural resources issues. The only social consideration in this document referenced recreation opportunities using data from the 2008 Blueprint efforts.

⁴ The term “Latinx” is a gender-neutral term identifying people of Latin American origin, mostly used to describe these populations residing outside of that region (Salinas & Lozano, 2017).

Additionally, most of the examples provided in that document are from the non-urban sections of the river. In both of these documents, which are among the most prominent planning efforts for the river, human considerations and community input from urban residents are not adequate.

Using an environmental justice and local knowledge framework with a community-engaged research approach, we reveal local knowledge, values and experiences of those who live in urban neighborhoods in close proximity to the Jordan River. This research is based on Corburn's (2002) assertion that "communities of color and the poor should have greater participation in research and decision making that affects their lives, partly to ensure that these processes combine science with social, economic, and political realities confronting disadvantaged populations" (p. 241). We also highlight Spink et al.'s (2010) assessment that river management should not be a top-down process, "rather, it is contingent upon understanding the existing perceptions and views of people who have a connection to rivers in one form or another-be it through residence, work, or recreation" (p. 400). We conducted in-depth interviews with 14 residents of one river-adjacent neighborhood in Salt Lake City to understand their connections to the river, how they interact and relate to it, and what they would like to prioritize in river management.

Literature Review

Environmental Justice

Current environmental justice research goes beyond assessing the distribution of environmental risks to include analysis of participation in political processes and

environmental decision-making, as well as questions related to recognizing diversity in communities and experiences (Schlosberg, 2004). Environmental justice theory includes distributive justice in terms of unequal impacts and burdens of environmental problems as well as identity recognition, and issues of inclusion and exclusion in decision-making (Walker, 2010). The expansion of environmental justice theory is based on an understanding that power relations and social structures influence how decisions are made, which can ultimately lead to environmental injustice in communities (Holifield, 2001). Participatory, democratic decision-making processes are promoted as a key component for achieving environmental justice (Jennings et al., 2012). Environmental justice scholars have highlighted inequalities around urban river environments including the potential for negative social consequences of river restoration projects such as gentrification (Bunce, 2009; Chang & Huang, 2010; Curran & Hamilton, 2012; Davidson, 2007; Dooling, 2009; Kibel, 2007; Laidley, 2007; Pearsall, 2012; Sairinen & Kumpulainen, 2006; Wakefield, 2007). Some studies demonstrate that including affected communities in revitalization and planning processes mitigates negative social impacts for current residents (Collins & Loukaitou-Sideris, 2016; Curran & Hamilton, 2012).

Many scholars have argued that environmental justice scholarship should go further to address issues of cultural recognition (Anguiano, Milstein, Larkin, Chen, & Sandoval, 2012; Carter, 2016; Lynch, 1993; Zwartveen & Boelens, 2014). This includes understanding how local communities experience and understand injustices as well as recognizing different ways of knowing (Zwartveen & Boelens, 2014). Recognizing different ways of relating to nature and explicitly valuing these diverse perspectives is fundamental to justice (Schlosberg, 2004). Previous environmental justice work has

pointed out the lack of minority representation and participation in the mainstream environmental movement (Anguiano et al. 2012; Taylor, 2000). Environmental justice organizations and scholars have made representation a key issue in their work, ensuring that community voices are heard and recognized. Additionally, environmental justice remains separate from the mainstream environmental movement in that justice advocates continue to challenge decision-makers to recognize that scientific knowledge is not enough to address environmental problems; affected peoples must have opportunities to provide their knowledge and experiences as well (Corburn, 2002).

Latinx Environmentalism

Advancement in cultural recognition through environmental justice work is beginning to shed light on specific Latinx environmentalism. Though we recognize that the Latinx populations in the United States should not be viewed as homogenous, since different cultures, ethnicities, and countries of origin are represented among this population, scholarship in this vein has identified some important information about Latinx environmentalism and environmental justice experiences. There is a strong link between the environment and ethnic identity for many U.S. Latinxs of different origins (Anguiano et al., 2012). In an analysis of U.S. Latinx literature and discourse of social movements, Lynch (1993) revealed that the dominant narrative includes people as a part of the land, not separate. Stewardship of the land is important, as opposed to wilderness values that view ideal landscapes as absent of people and needing human protection (Carter, 2016). Struggles for communal lands in Mexican American land-grant communities and urban park and public use areas have been important in the Latinx

environmental movement (Peña, 2003). Beyond value orientations, Latinxs tend to have preferences for outdoor spaces that support social and family activities, and do not necessarily prefer “wild” spaces, but usable natural spaces (Madsen, Radel, & Endter-Wada, 2014; Sasidharan, Willits, & Godbey, 2005). For these reasons, environmental justice scholarship has emphasized that environmental advocacy and cultural advocacy, or recognition or differing cultural values, cannot be separated for Latinx communities (Anguiano et al., 2012). The neighborhood we selected for this study has a large Latinx population, mostly of Mexican heritage. We seek to advance understanding of Latinx environmentalism in our case by highlighting how the Jordan River is valued and viewed by Latinx residents, as well as those from other backgrounds, in Salt Lake City. In this research, we will highlight the social characteristics of our participants, which will lead us to address any specific Latinx or other cultural differences in how the Jordan River is perceived.

Local Knowledge and Urban Rivers

Scholars have assessed attitudes toward river restoration projects, and local knowledge and values associated with those specific projects (Buijs, 2009; Eden & Tunstall, 2006; Junker & Buchecker, 2008; Tunstall et al., 2000). We also seek to understand local attitudes and values of an urban river, but in general terms rather than about a specific restoration project. In Utah, urban rivers are positively associated with better-perceived quality of life despite that lower socio-economic status individuals live closer to these resources (Haeffner, Jackson-Smith, Buchert, & Risley, 2017). We take a local knowledge approach to understanding experiences and values of the urban Jordan

River. “Local ecological knowledge is the knowledge of a particular group of people about local ecosystems, and in contrast to traditional ecological knowledge, does not assume a continuous historical and cultural connection with the ecosystem” (Robertson & McGee, 2003, p. 275). In river restoration projects, there is often a tension between river managers’ need for immediate information, scientists’ desire to conduct long-term studies on hydrologic processes, and communities’ “more mundane and scientifically less glamorous goals of livable landscapes, safety, and control” (Eden & Tunstall, 2006, p. 676). A British study demonstrated that near-river residents are concerned about safety specifically for children around rivers, and that often residents viewed rivers as safer after a restoration project (Tunstall et al., 2000). This same study showed that the public expects to be consulted about river changes and decisions. A Philadelphia study suggests that urban water features are sometimes viewed negatively and associated with fear or decline, especially in marginalized communities (Brownlow, 2006). Traditional scientific or engineering approaches to urban river restoration do not consider these social perspectives and local knowledge.

The conflict between types of knowledge complicates policy outcomes especially when restoration projects aim to include local communities’ opinions (Owens, Petts, & Bulkeley, 2006). However, including local knowledge in river restoration projects has shown positive outcomes in river management. Inclusion of local expertise increases procedural democracy for community voices that have previously gone unheard (Corburn, 2002; Spink et al., 2010). Elevating community perceptions and recognizing their capacity to contribute their expertise can increase recognition justice and help de-marginalize communities (Fraser, 1997). Increasing justice in marginalized communities

and ensuring that river policies consider the priorities of surrounding communities can decrease the potential for conflict during implementation (Junker & Buchecker, 2008). Current river restoration projects have broader aims beyond water quality and landscape improvements and look at how to better integrate urban landscapes, rivers, and streams (Silva-Sánchez & Jacobi, 2016). Elevating local knowledge, rather than consulting communities on planning processes, will help identify the nuanced views and community context of the Jordan River. Using a local knowledge framework, we also seek to understand community connections to this river and how it is valued among local residents.

Methods

Community-Engaged Research

This research is positioned within the methodological approach of community-based participatory research (CBPR), which emphasizes community engagement in research and promoting social change (Anguiano et al., 2012). Ideas that influence community-based research are rooted in an understanding that multiple, diverse perspectives are key in addressing complex problems (Isler & Corbie-Smith, 2012). Particularly in public health research, community-based research has proven to be highly successful in identifying community-based solutions, more appropriate research methods, representative samples, and a deeper understanding of problems. We adhere to the value orientations of CBPR, rather than following any methodological guidelines of this approach (Baumann, Domenech Rodríguez and Parra-Cardona, 2011).

A community-based approach is well suited to guide the research presented here, as CBPR specifically considers local residents as experts, helps address issues of power in public participation, and is action-oriented (Israel, Schulz, & Parker, 1998). CBPR emphasizes research collaboration, participation from the community impacted by the issue, co-learning and equal power among the participants (Israel et al., 1998; Minkler & Wallerstein, 2011). This approach has an overarching goal of increasing social justice and participation in research and decision-making (Brydon-Miller, Greenwood, & Maguire, 2003). CBPR has been used effectively in many urban settings in order to bridge the divide between university-based researchers and communities that have traditionally been “studied,” and whose opinions and concerns are not often equally considered.

This project can be characterized as “community engaged” rather than full community-based participatory research (Chan-Golston, Friedlander, Glik, & Prelip, 2016; Nyden & Wiewel, 1992), because we are using CBPR principles to understand a pre-determined research topic. An important part, often a first step, in community-engaged research is to identify a community partner (Minkler & Wallerstein, 2011). Community partnerships are essential to community-engaged research by providing important knowledge and understanding of their local communities (Minkler, Vasquez, Tajik, & Petersen, 2008). Our community partners include a local elementary school, a local government entity, and two community council groups. We define the community by physical location as west side residents in neighborhoods intersecting the Jordan River, who also share social and cultural ties (Cheadle, Kristal, Wagner, Patrick, & Koepsell, 1992). As stated previously, the west side of Salt Lake City is both

geographically and socially distinct and, for this study, geographically defined by the river.

Interview Protocol

Working with community partners, we solicited neighborhood residents to participate in semi-structured interviews. Over 25 people agreed to participate and were interested in contributing their views on the topic, however only 14 of those people were able to schedule interviews. Our semi-structured interview protocol was designed to promote discussion between interview participants and the researcher. Interview questions were developed in two ways. Some questions were based on a previous study, which gathered survey responses about the river using a public-intercept approach in this same community. Quantitative results left several unanswered questions, and interviews could help explain some of those results. Additional questions were developed after over 2.5 years of observation, participation, other research, and guidance from community partners about various relevant Jordan River topics that seemed to be important in this community. Interview participants were given opportunities throughout the interview process to contribute ideas and information about the river and their community beyond the specific questions.

Four participants were interviewed individually and ten were interviewed in groups of 2–3. Six participants were interviewed in Spanish while all of the other interviews were conducted in English. The lead researcher prepared 12 questions (Appendix E) and asked several follow-up questions based on responses. Additionally, all research participants asked questions of the researcher and interviews were highly

conversational as intended by the interview protocol. All interviews were audio recorded and transcribed verbatim. The interviewer also took notes during the interviews. Before beginning the interview, participants were asked to fill out a short survey asking for information such as age, race/ethnicity, immigrant status, and length of residence in their current neighborhood. Because researchers framed this project around environmental justice theory, representation and identity were a key component to analysis. This research protocol was approved by Utah State University's Internal Review Board (Protocol # 8753).

Analytical Approach

Interview analysis was guided by a method advanced by Lofland, et al. (2006). All interviews were transcribed verbatim and the transcriber listened to each interview recording at least twice to ensure reliability. Researchers first went line-by-line through interview transcripts open-coding responses. This process helped begin to categorize data and identify general themes. Next, we went through interview transcripts a second time and conducted focused-coding in which we developed codes for our data and distinct categories. In a third review of transcripts, we made theoretical connections, clarified coded categories, and identified how responses fit together. We also identified outlier or unique responses during the second and third coding processes.

Results

Participant Characteristics

Interviews were conducted over three months in 2017. Fourteen residents of our target neighborhoods participated in interviews, which ranged from 22 minutes to over

one hour. As shown in table 4.1, we had more female participants, 11, than male and one participant who identified with the traditional American Indian gender identifier “two-spirit,” which they described as roughly equivalent to the term “queer.” Two of our participants, Nicole and Sam⁵, identified ethnically with Indigenous groups. Five participants identified as White, and nine participants identified as Mexican, Latinx, or Hispanic. For our study, we use the term Latinx to describe participants who identify with Latin American ancestry. Participants’ ages ranged from 22–65. Two participants, Brenda and Matt, have lived in the Jordan River area for two years. They are a married couple who moved to this neighborhood specifically to be close to the river. Sofia has lived in her neighborhood for five years. The rest of the interviewees can be categorized as long-term residents of this community with over 10 years of residence. Two of our participants, David and Jamie, have lived near the river their entire lives. Dena grew up in the community, lived in a different part of Utah, and moved back. Dena’s adult children also live in this community, making them at least the third generation to reside there. Overall, the majority of our participants have strong ties to this community and to Utah. Six participants identified themselves as immigrants, all of whom are from Mexico originally. All six of these participants have not lived in any other city in Utah, and only one, Sofia, has lived in another state in the U.S.

⁵ All names are anonymized. Pseudonyms were assigned to all interview participants.

Table 4.1

Interview Participants

Name (Pseudonym)	Gender	Age	Self-described Racial Identity	Length of Residence in Neighborhood (Years)	Length of Residence in Utah (Years)	Country of Origin
Nicole	F	26	Mexican, Navajo	Unsure	26	USA
Sam	Two- Spirit	30-40	Indigenous, Mexican, Nahua, Navajo, Yakima	16	30+	USA
Nora	F	40	Hispanic	10	10	Mexico
Valery	F	37	Hispanic	12	12	Mexico
Christina	F	47	Latina	16	18	Mexico
Dena	F	54	White	34	54	USA
Rita	F	36	Mexico	10	10	Mexico
Rosa	F	36	Mexican	15	15	Mexico
Sofia	F	40	Hispanic	5	5	Mexico
Abby	F	47	Caucasian (White)	15	47	USA
David	M	22	Latinx	22	22	USA
Jamie	F	29	White	29	29	USA
Brenda	F	63	White	2	57	USA
Matt	M	65	Caucasian (White)	2	2	USA

Interactions with the River

Overall, interview participants were familiar with the river area and many of them interact with the river frequently. Rita, Sofia, and Nora go to the Jordan River almost daily during the summers. They each have children they take to play around the river and attend a free lunch program provided by Salt Lake City Public Schools at various parks around the river. Valery, Abby, Rosa and Sam do not currently go to the Jordan River or surrounding areas often, maybe once or twice a year. Rosa did not share many opinions

about the river. Abby and Sam stated that they previously went more frequently. Brenda and Dena go to the river at least monthly to bike, walk, or birdwatch. Dena participates in many family activities at the river area as well. Matt goes to the river 3–4 times per summer to bike on what he described as the “bike path,” or the Jordan River Parkway Trail. Brenda and Matt alluded to “evening strolls” they take on the trail, but they consider going to the river as a destination when they go biking. Christina said that she enjoys walking on the trail and takes her children to play around the river but did not specify how frequently she visits the river. Jamie and David both have very fond memories at the Jordan River as children and describe it as being a very important part of growing up in their neighborhood.

“That was a big thing back when I was little, it was definitely part of who I was, and growing up, and helping me in many, many things. It’s just basically, talking with different people and doing different things down there, even at the parks, I spent lots of time growing up there.” (Jamie)

“I used to go there a lot with my cousin...[there was] like a tall greenery and we would build these secret houses because it was all over the place. You could go there and build these secret huts or whatever and we would make these hideouts and stuff by the Jordan River and I thought it was really cool, but our parents would tell us not to go in the Jordan River because it was not very clean. So yeah, it’s been there since my childhood.” (David)

Jamie still walks the trail sometimes, and describes it as “*a nice place to reflect.*” David does not go frequently to the river as a destination as he did as a child. He regularly goes to a public library branch next to the river and described the river as “*in his pathway*” throughout daily transportation routes. Jamie and David’s experiences are not likely isolated. Older participants who have teenage or adult children described memories of taking their children to the river to feed the ducks, look at wildlife, have family activities,

and play. Nicole did not indicate how often she goes to the river in specific terms but goes several times per year. She has strong memories of going to the parks around the river a lot as a child. Nicole said that her parents told her not to go near the water and that the river itself was never the destination-it was the parks. David described the park system around the river in a similar way, as separate from the river, from his childhood memories.

Though many of our interview participants frequently go to the local river area, and all of our interviewees describe the river as important in their community, two participants identified a lack of use of the area.

“Usually, the Jordan River, nobody goes there, you don’t go there, nobody plays in it. There’s the trail, but nobody really walks it. We would go, my dad plays soccer...we would never go near the water, we would always stay away even though that didn’t make sense because that was the cooler place...we would stay on the maintained parts and not really go by the river. Hearing on the news finding bodies in the river and things like that just kind of fed into that ‘don’t go there’” (Nicole)

“Right now, you go out on the path, we see maybe 1 or 2 people. It’s not used.” (Matt)

Sofia described how she avoids the area now because of social problems such as smelling narcotic drugs that she associates with an increase in homeless population. Valery also said she avoids the area now because of similar concerns, and Nora no longer likes to go to the area alone. David described a lack of relationship with the river as an adult, and that he might unconsciously avoid the area now due to trauma, anxiety, and negative perceptions of the river.

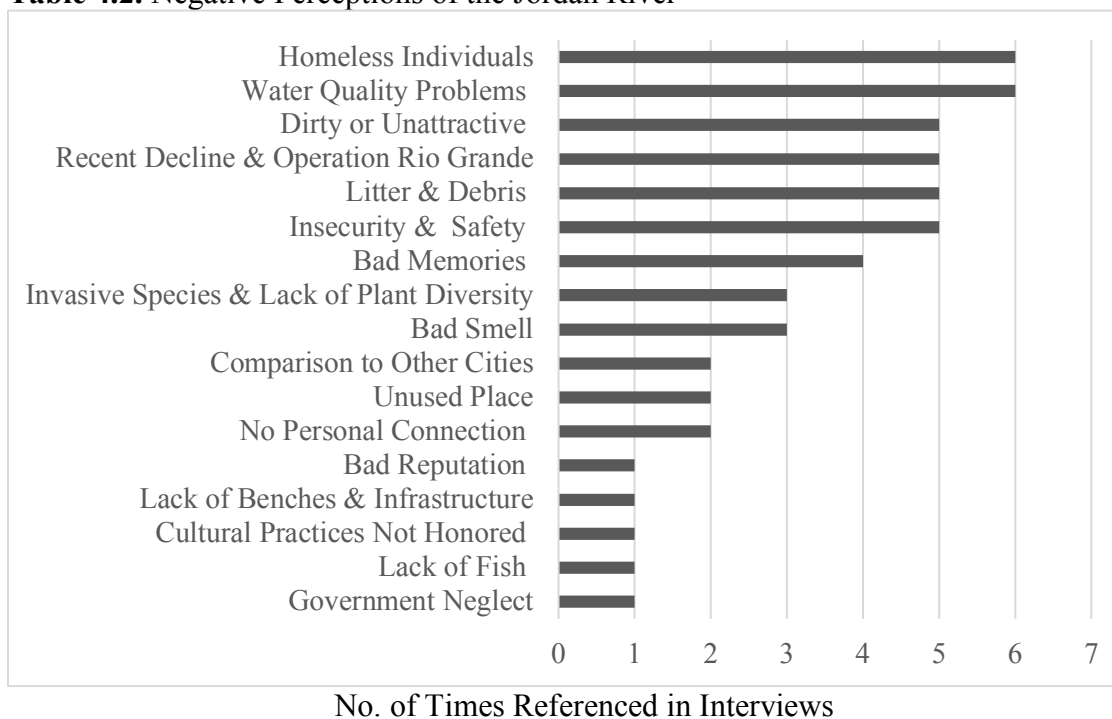
“I’m still trying to figure out how to build a relationship with my direct environment... [the river] it’s been definitely improved in terms of how it’s kept in terms of trash and stuff, like waste that was dumped. I think that even out of the corner of your eye, maybe subconsciously... you move

away. You don't come back because you know what's there...I think unconsciously there are things that are there that affect whether I go or not... Or by the library there's these apartments that are for specifically low income families...it kind of reminds me of my lived experience growing up...seeing families working hard and still living in very similar conditions and knowing that maybe they don't have as many of the opportunities that even I have had...the anxiety of it and stuff, reminders of, as a person of color, discrimination...seeing communities that I represent not being taken care of" (David)

In her statement above, Nicole mentioned hearing about dead bodies found in the river, which was a significant historical event that many people referred to during our interviews. Her statement highlights a common theme during our research in which people associated the river with previous events or states that they associate with negativity. David referred to negative aspects of the river including historical dumping, trash, and general lack of maintenance at the river. He also identified issues of social justice within the community as it relates to the river. We will explore some of these issues more as they were discussed by interview participants in the next section.

Negative Perceptions of the River

Interview participants talked about several negative aspects of the river during interviews. Table 4.2 shows all of the negative references that participants used describe the Jordan River. Based on those results, we identified three main themes that participants discussed the most and several other minor themes.

Table 4.2. Negative Perceptions of the Jordan River

Social Problems and Personal Safety Concerns

The most discussed issues were social problems interviewees associated with an increase in homeless population around the river as well as personal safety concerns. It is important to note that 12 interviews were conducted after initiation of “Operation Rio Grande,” a three-phase collaborative social services and law enforcement effort to minimize homelessness and improve a neighborhood in which a large concentration of homeless individuals resided. This took place in a different area of Salt Lake City, but affected our study site. Interview participants mentioned a more visible homeless population around the river after that operation was implemented in August 2017 (State of Utah, 2018). Many residents perceived problems with personal safety associated with the increase in homeless population and wanted the individuals to leave the river area. The two participants interviewed before that date did not discuss issues with

homelessness nor personal safety concerns. Six participants mentioned homeless people as a problem directly, and five individuals referred to safety concerns associated with the increase in homeless population. Five participants talked about a decline in the area related to Operation Rio Grande specifically, including issues with debris left by people camping by the river. Issues of recent decline were discussed including that the area is no longer as peaceful or calm, and issues of personal safety.

“There are a lot of homeless” (Sofia)

“Before it was calmer, but now it’s not anymore, and a lot of people come who live there. Then when you are walking sometimes you feel scared, there are people there, and for the children you feel scared. (Rita)

“And the problem is that they smoke a lot, but marijuana, and the smell gets to the parks when you are there with kids. And so what you do is you leave.” (Sofia)

“I don’t like to go alone with the kids because sometimes there are people there and you feel unsafe.” (Nora)

“...with the migration of people from the homeless shelter there’s camps all along and it’s scary because you could be riding your bike or whatever and just cruise along, I mean you could get snatched...that’s the sad part about it.” (Abby)

After discussing a “huge increase” in homeless people around the river, Dena discussed issues with public health.

“The problem isn’t the homeless living there, it’s that there’s no, they don’t want to poison the fish that’s in the river and...if there’s needles then they don’t want people stepping on those so that’s the big issue. It’s not necessarily that the homeless are there, it’s that there’s no place for them to go to the bathroom. And if they use [narcotic drugs]...” (Dena)

David referred to a recent encounter with a homeless family along the river. It made him reflect on social services, a unique perspective from all of our interviews.

“...walking on the trail I even saw a family living by the river; they were in tents and stuff. I’ve never seen that until recently so I’m wondering how we can use the Jordan River to provide services to all kinds of communities...” (David)

Water Quality Concerns

The next most discussed theme related to water quality concerns. Most interviewees perceived unhealthy and impaired water quality. Abby described the river as a “*grody...sick, toxic river*” and was concerned about legacy pollution from industrial factories in the area. Different interview participants identified different sources of pollution or poor water quality. The first word that came to mind for Valery when asked about the Jordan River was “*contamination.*” Participants described the river’s water quality as negative in the following ways:

“It’s gotten not as clean...we used to kayak in the Jordan River and I don’t recommend it now” (Jamie)

“The river has got a bad rap as a polluted, runoff, nasty stuff in the water, don’t go in. It’d be great to recover.” (Matt)

“They need to dredge it more so it’s cleaner because right now it’s fairly dirty and that’s just because people throw everything and anything in there. Animals that they don’t want... cars if they want to get rid of evidence. I just think it needs to be dredged and try to purify it in some way.” (Dena)

Another issue discussed by some participants that could relate to water quality was the smell of the river. Several participants discussed bad smells in and around the river, especially during the summer. Nora stated that there is sometimes a “*horrible smell*” that comes from the river area, but she and Christina stated that they were unsure if the smell comes from the water in the river or in the lake nearby. They were sure it was associated

with a local body of water. Dena described the bad smell as a deterrent for some family activities such as picnics by the rivers.

During a group interview, Nora, Valery, and Christina discussed memories they have growing up in Mexico near rivers and/or in rural areas. Nora talked about how her children ask her if the Jordan River is similar to a river by her house where she grew up in Mexico. This discussion revealed how they compared the water quality of the Jordan River as much better than the rivers near where they are from in Mexico.

“I tell them no, there are differences between the river there and the river here. Because I think that the water here, they are controlling it so that it’s not contaminated and the one there is really contaminated. Because in that river, all of the drains from the communities empty. So that water is really contaminated.” (Nora)

“Here, the rivers are more from the rainfall” (Valery)

“Or from the snow” (Christina)

“From the snow, from the mountains, the rivers are like that. And there [Mexico] no, it’s to get rid of waste.” (Valery)

“Dead animals pass by in the dirty water, they are really contaminated.” (Nora)

“In Mexico there isn’t a lot of control in the rivers. It’s sad, but it’s the truth.” (Valery)

A discussion between Brenda and Matt during an interview highlighted some uncertainty and lack of information about water quality.

“I really like the idea of making more gently sloping banks and making it more accessible. Go hang out on the beach.” (Brenda)

“You can’t get in to the water, but you can hang out on the beach...” (Matt)

“Well sometimes you can put your feet in. Why do you say you can’t get in the water?” (Brenda)

“Well, can you get in the water? I’ve always heard you can’t.” (Matt)

“Well, they were having boat trips down the river...” (Brenda)

“I heard it’s crappy... Yeah I guess the uncertainty with water quality, you know? I’m probably typical of most of the population that hears about the crappy water and the warnings, but nobody ever tells us.” (Matt)

This conversation highlights uncertainty regarding water quality and a less prominent theme during interviews in which participants discussed a lack of information about the river and a lack of inclusion in decision-making.

Lack of Information and Inclusion

Jamie and David discussed how they actively have to seek out information on their own about the river. David discussed looking up public meeting information on the public library website, and only one person in our interview groups discussed receiving any information by mail about the river. Matt, Brenda, and Dena are very involved in their neighborhoods and all three said that they do not receive information or communication about issues with the river, even at the community council⁶ meetings. Dena said that it is an issue more now because of increased social problems, and Matt and Brenda said that the police officer in attendance always talks about the river in terms of homelessness and security. David, who has lived in his neighborhood his whole life, did not know that a neighborhood council group existed, highlighting a potential disconnect with minorities. Notably, when referencing a recent toxic algal bloom that

⁶ Salt Lake City has designated official neighborhood names and boundaries, each of which is represented by an organized “community council” group. Community Councils are considered official bodies of local representation and liaisons between the city government and these neighborhoods. Councils have monthly meetings and elected officials. Councils have to approve many city initiatives including things like re-zoning and land-use in their neighborhoods.

migrated down the Jordan River from Utah Lake, all participants said that if they heard about it, they heard from the local news. No signs were posted around the river in their neighborhood and no one received information in the mail nor at community council meetings. Dena stressed the importance of including communities in decision-making specifically. She referred to community diversity and specifically non-English speaking populations.

“We’ve got to have our communities. It’s more than just White people now, it’s more than just Black people, it has to be everybody and if you don’t have somebody over those people that can speak to them then you’re lost.” (Dena)

All of our female Latinx participants discussed how they feel excluded based on language barriers. They do not often receive information in Spanish about any local events, activities, or important information. When they do receive information in Spanish through mail or word-of-mouth about meetings, they are not reassured that interpretation will be available at the meeting. All six of these Latinx women are heavily involved in their children’s school and have an organized “Latina Mom’s Group.” All of them said that they would love to participate more in their communities, but feel isolated from their neighbors outside of the Latinx population because of language barriers and a sense of discrimination.

“We are not informed” (Rita)

Following Rita’s comment, after discussing how they would like to participate and give their voice to neighborhood and river issues,

“If you received information in Spanish and you go to a public meeting or something, for example, and you say your opinions about the river, do you feel like your opinions or suggestions would be taken seriously?” (Interviewer)

“We would have to go, who knows...” (Nora)

“I hope so, but who knows.” (Rita)

“Because also, as a Latino, we are fearful that they don’t consider us, because we think, well, we are Latinos and we don’t count here.” (Nora)

Dena continued to express frustration about community inclusion around river issues when discussing specifically how to clean and improve the river area.

“Right now there’s tons of people wanting to do service and they just don’t know how to get involved. Especially if they can’t speak our language. We need someone that’s a Hispanic and we also have I think they’re Somalian, so we could have, if they could ask somebody that’s like a head of the main groups they have in the area to translate... I think we’d get more help that way. They’ve got to involve everybody or it isn’t going to get clean.” (Dena)

Further addressing community participation in river planning and issues, participants were asked if they had participated or heard anything about the Blueprint Jordan River plan, the Jordan River Commission, or if they had ever attended a public meeting about the river. None of our interview participants had participated in or were familiar with the Blueprint. One participant had heard of the Jordan River Commission, most likely through a community council meeting. None of our participants had attended public meetings. Nora received post cards in the mail advertising a public meeting for something about the river, but it was not translated and she was unclear what the meeting involved. Dena and Rita remember participating in surveys⁷ about the river area over the years.

⁷ iUTAH EPSCoR Researchers conducted three different surveys referencing the Jordan River during the course of the 5-year NSF project (<http://iutahepsc.org/>). It was not clear whether surveys these interviewees participated in were from our research efforts, or from other surveys related to the river or trail. We are aware of at least two additional surveys beyond iUTAH on other topics in the area during the same time period.

Cleanliness and Attractiveness

The third most prominent theme during interviews included issues of litter, general dirtiness and unattractiveness. At times, the issue of cleanliness overlapped with the theme of water quality; however, participants mostly discussed problems with trash, debris, and dirtiness around the river and not necessarily in the water.

“A lot of trash, a lot of pieces of clothing, carts from stores, and then they use it for camping. It’s really dirty.” (Rita)

“I’ve seen, like piles of trash, like carts and stuff” (David)

“Yeah, you see carts in the river.” (Jamie)

“I think unconsciously there are things that are there that affect whether I go or not...like the waste stuff...” (David)

“The trash” (Jamie)

Related to the issue of an increased homeless population, Dena and Rita referred to waste and debris caused by homeless camps or housing structures. Dena also referred to the issue of human fecal matter and waste several times during her interview in relation to both water quality and the cleanliness of the area. Both Sam and Abby compare the Jordan River to another river in a nearby city, Ogden, Utah. Their impression is that the other city has made their river more of a destination with amenities, as cleaner and better cared for.

“I think because the river itself doesn’t look so great to most people, I think that’s why they probably haven’t turned it into something more like Ogden’s, which is unfortunate.” (Sam)

“It’s not like a manicured pathway, a manicured river bed, it’s just whatever happens. Grocery carts... I’ve heard there’s only carp that you can catch there or catfish. I don’t know if they cleaned it out, maybe they dredge the whole river they could introduce more fish, like in Ogden. They have the river and you can catch fish, trout and everything.” (Abby)

Another issue with the general attractiveness of the area included problems associated with invasive species. Brenda, David, and Jamie referred to specific invasive species along the river and how those plants have contributed to a lack of biodiversity and a less attractive area. Brenda discussed “cleaning up” tamarisk, a non-native shrub that has invaded riverbanks across the southwestern U.S. Dena talked about a desire for more plant diversity in the area to attract more birds and butterflies. David discussed biodiversity as it relates to water quality in the river.

“That’s one of the questions I’ve had a lot- how would biodiversity affect even just the cleanliness of the water? We do have filtration systems and stuff like that, but I’m wondering how biodiversity can directly impact water quality and the species of plants and animals, that would get rid of waste. I used to see beavers all the time in there, I used to see fish once in a while...” (David)

“...like what I was saying earlier about how native species affect the environment, especially directly in the community, for example Chinese elms are an invasive species...” (David)

“Chinese elms are everywhere!...They grow so fast you just can’t keep up with them...they take up so much space” (Jamie)

“And if we had the natural native species- so it would be interesting to know what exactly happens there.” (David)

Overall, issues related to increased homeless individuals along the river, water quality concerns, and cleanliness of the area were prominent concerns among our interview participants. These concerns influenced negative perceptions of the river and revealed several other issues such as inclusion in decision-making and lack of information about the river.

Positive Perceptions of the River

Despite many strong negative perceptions of the river and concerns about social and environmental issues, there were also several positive associations with the Jordan River. Interview participants are glad the river is in their neighborhood and enjoy many aspects of the river and area. General positive references to the river include,

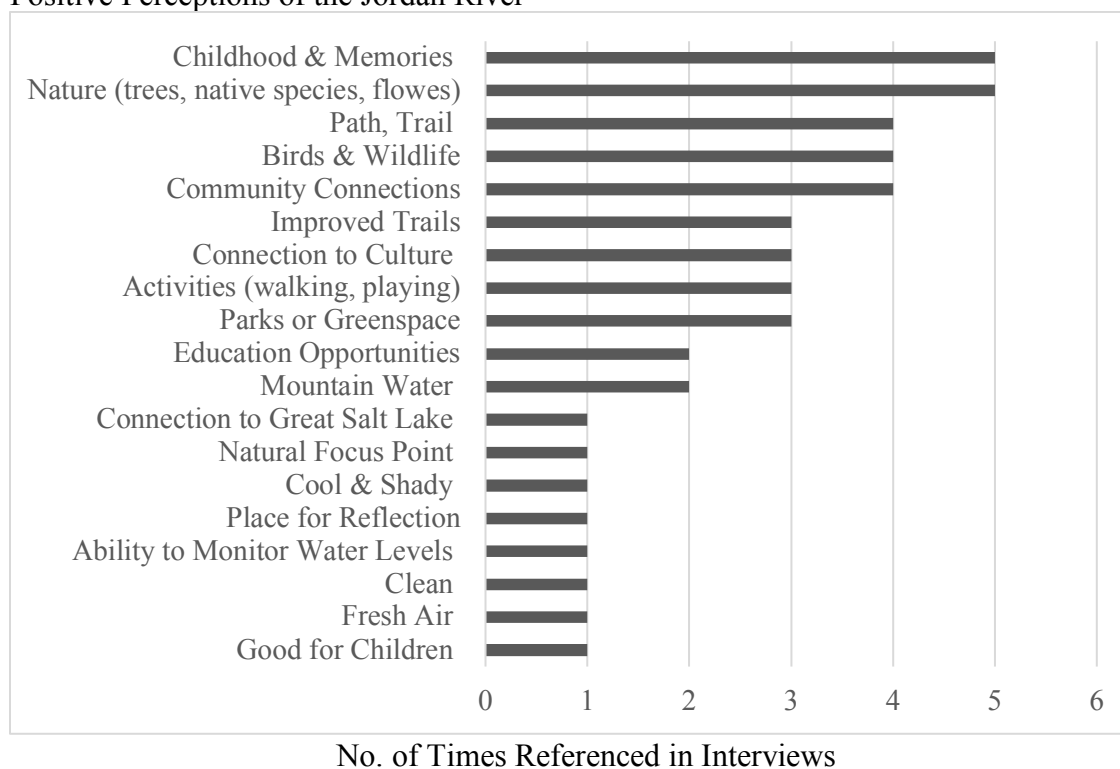
“For the most part, I love the Jordan River.” (Sam)

“It’s nice to have a [river] close, and the parks, it’s nice to have it.” (Rita)

Table 4.3 identifies all of the positive terms used to describe the Jordan River. With that information, we identified three main themes referring to positive aspects of the river and several minor themes.

Table 4.3

Positive Perceptions of the Jordan River



Nature and Wildlife

When discussing the river in a positive way, the most referenced theme involved nature and wildlife. Interview participants frequently referred to nature including trees, flowers, and plants as well as wildlife including birds and other species. We have also included Christina's reference to enjoying the "*fresh air*" around the river and Brenda's reference to the river as a "*cool and shady*" place in this theme. When discussing nature and wildlife, interview participants referred to the Jordan River in these ways:

"It's a wild piece of, somewhat wild piece of nature that's close by and being preserved, people are taking care of it." (Brenda)

"One of the few natural elements in an urban area." (Matt)

"...the trails and you can see so many different birds and butterflies sometimes with all the flowers, it's just gorgeous. So if you could subtract from all the rest..." (Dena)

"It's like when you want to get away, just go to the Jordan River and it's a place of nature that you can just go and reflect..." (Jamie)

"I like to listen to the water and watch the ducks, and I think there's muskrats out there or something, I think that's what they are, along the banks." (Abby)

References to wildlife and nature were important components of our participants' enjoyment in the river area, and also part of their stories and memories of the river. Interviewees enjoy having a natural environment close to their homes in which they can participate in many different activities, including reflection and time with their families. Sam and Dena both mentioned a lack of amenities that would allow people to enjoy the nature and wildlife in the area more, suggesting a desire to connect with this aspect of the river and make it more accessible.

“I have heard that there needs to be more benches because people who are older, a lot of people want to use that [trail] but there isn’t a place if they use a walker that they can sit down, too, so we need more benches.”
(Dena)

“I don’t think the municipal government has really done all that they could to turn it in to a place that people can really appreciate and experience. Though there are greenspaces and things like that...water should be an experience that we as human beings should be able to connect with, and so there should be benches alongside the river where you can sit, and there should be tables directly next to the river...I could see myself finding a quiet shaded area next to the river and doing my studies there or writing or reading, whatever sorts of experiences...”
(Sam)

Jordan River Parkway Trail

Another common theme during interviews involved the Jordan River Parkway Trail. Rita, Christina, Nora, Dena, Jamie and David talked about walking on the trail either as an activity they do currently, or as a positive memory in the past. Matt, Brenda, Abby, referred to the trail as a “bike trail.” Sam also mentioned biking along the trail as a favorite pastime.

“It [the trail] was a draw for us to purchase where we did. We were close to the Jordan River and the bike path, the nature trail.” (Brenda)

Jamie used the trail a lot growing up as a transportation route to her grandmother’s house. Dena and Abby have memories of taking their children along the trail to feed ducks and look at wildlife. Rita, Christina, Nora, and Valery use the trail a lot with their children to play and have a “distraction” during summer vacation. Brenda and Matt referred to a specific experience they had while biking on the trail that influenced their decision to buy a house in their current neighborhood. Additionally, they talked about several community council members who use the trail for transportation.

Dena, Jamie and David have long memories of their lives around the trail and the Jordan River because they all have strong family ties to the area. All three of these participants referred to positive improvements they have seen over time that have made the trail better and more desirable.

“They have opened it I’ve noticed, to have more people feel invited to explore, because it used to be restricted, or at least feel restricted. There wasn’t much trail in between the trees and plants and stuff, but I have definitely noticed by the library especially they keep it, they cut the grass down...” (David)

“Yeah like that, definitely much more open, more inviting.” (Jamie)
“And signs, too, I think there has been signs that say ‘come enjoy the river and explore’ and stuff so I think that’s cool that they’ve started doing that.” (David)

“The trails are getting better so you can go by the river... that’s been an improvement, the trails.” (Dena)

The trail was a prominent feature in interview conversations. When asking questions about the Jordan River, the interviewer simply used the term “Jordan River,” yet it was clear that the Jordan River Parkway Trail was included in this term by how our participants discussed it in reference to the river.

Memories of the River

The third most prominent theme for positive perceptions of the river involved positive memories. Jamie, David, and Nicole have strong positive memories from their childhoods growing up around the river area. Nicole remembers attending her father’s soccer games at the parks adjacent to the river and has positive family memories associated with those experiences. However, she also remembers as a child being told not to go near the water and that her family was fearful of the river itself. Jamie has

memories walking the trail to go to her grandmother's house, playing in the parks, feeding the ducks, and other childhood memories that she attributes to helping her grow-up. David has memories frequently playing with his cousin by the river and going to the area a lot because the house he grew-up in was four streets from the river.

Dena and Abby have positive memories taking their children to the river area for recreation, wildlife viewing, and family activities. Dena is a birdwatcher and remembers taking her children to the river to help them learn how to identify bird species. She also remembers being able to see through the water in the past and she and her children would look in the water to see what they could identify. Abby remembers taking her kids to the river to feed ducks and for biking. Rita, Sofia, Christina, Nora, and Valery all have children and currently take their children to the river area frequently to play and recreate, especially during the summer.

Interestingly, river discussions prompted Christina, Nora, and Valery to talk a lot about their childhoods and how they used to recreate outside. Nora lived in close proximity to a river in Mexico growing up, and she was the one who started the conversation about childhood memories. According to Valery, "*we were always outside*" in the countryside playing and inventing activities as children. She further expressed how these positive childhood memories help her connect her children with "*my culture, how one lives, childhood.*" Conversations about the river provoked many memories, childhood experiences, and historical events in the river that influenced respondents' perceptions. Throughout the interviews, we realized that references to cars and bodies found in the river were prominent past events reported widely in media outlets that influenced people's perceptions of the river today. References to the trail being isolated

were also part of past memories. Though these references were common and history was prominently in the minds of our participants, it is clear that mostly our interviewees were using their current knowledge and experiences with the river in their responses.

Changes or Improvements to the River

Based on their perceptions and experiences with the river, interview participants suggested changes or improvements that they would like to see in the area. Some suggestions were directly related to what was discussed about the river, and some were ideas unrelated to negative or positive perceptions of the Jordan River. Overall, there were 27 unique suggestions for changes or improvements to the river area. We identified the three most discussed themes that participants suggest as areas for improvement to the Jordan River. Each of these themes were discussed equally as much, there was no top issue. Participants suggested improvements to safety and security, litter and aesthetics, and infrastructure improvements.

Safety and Policing

Seven participants discussed a desire to feel more security and increased police patrols. Most of these references were related to perceptions of an increased homeless population around the river, but some were related to a general sense of insecurity around the river. Dena and Abby perceive that current laws for littering and overnight camping are not enforced. Rita, Christina, Valery, Dena, and Abby referred to a desire for security in broad terms and referenced policing or patrolling the area.

“At least if there were more police you would feel safer and then you feel like they’re doing something” (Rita)

Nora and Matt suggest putting up more fencing between the trail and houses. Matt went on to suggest an even bigger cement wall-like structure that *“systematically separates the neighborhood portion of the trail and keeps the escape route to a minimum.”* Matt also suggested installing cameras at certain access points to the trail.

The issue of policing or patrolling along the river provoked some concerns as well. Matt and Brenda said that the river is not discussed very often at the community council meetings except during the presentation by the local police officer assigned to their area.

“It’s always a feature on the Officer’s report, there’s always something”
(Brenda)

“The officer always brings up what’s going on by the river, that’s not necessarily very complimentary about the river or the trail, unfortunately it kind of reinforces the fact that oh I don’t want to go over there” (Matt)

Jamie and David suggested how an increase in police presence would have a negative impact on their personal experiences around the river.

“What I’m concerned about in terms of people living there is people who don’t know them will harass them in a way or abuse them or ask for more policing as if that’s the only solution” (David)

“Then it would get more policing and it would feel as, it wouldn’t be a place of reflection or peace. It would take away because it’s so close to the neighborhood and stuff.” (Jamie)

The issue of safety and security around the river brought up some negative memories for several interview participants. Dena referred to instances she remembers in which someone was mugged at the river and a sexual assault. Sam and Nicole remember hearing news stories and stories from their families about bodies found in the river. Rita was in a park next to the river one day and witnessed a shooting. David remembered one

of his friends was mugged on a bridge crossing the river, and Matt was reminded of a colleague's mugging along the trail as well. The instances participants referred to during interviews were uncommon occurrences but had a big impact on how they perceive the river. As one participant said,

“So you know those kinds of things probably don't happen but maybe once every two years or something like that, but it's what people remember. That's what they remember.” (Matt)

Matt's insight that negative events remain strong in people's memories is, in this case, correct. It is also clear that fears about the increase in homeless people around the river has had an impact on people's perception of safety and insecurity.

Infrastructure Improvements

The next theme discussed frequently during interviews involved improvements or changes to infrastructure around the river. Christina and Valery suggest putting up signs with sayings like “no littering” and “keep this area clean.” Dena, Brenda, Matt and Abby would like to see more lighting along the trail and near the river area. Dena would like to see more wildlife in the area and recognizes the impact lighting might have on those efforts. Matt had suggestions for lighting that would not impede his desired experiences on the trail.

“You're trying to get the wildlife in there so you're going to be impeding everything to get the lighting in...” (Dena)

“They have lights, but you know there's good and there's bad, If you wanted to be on a delightful evening stroll you don't want to have these glaring LED lights focused down on the pathway. You know they have kind of quaint light posts...they're not overly bright. And by the same token, you need a certain amount of light to make cameras effective. So what's the tradeoff?” (Matt)

Three participants suggested something similar to a river walk area around the river, with opportunities for local businesses to open locations along the river.

“I was thinking if they could make it so there were shops like what they’re doing now where they have street level shopping and above them are apartments along sections of the river that they can maintain and beautify...if it was cleaned up and nice, and there were shops and you could go to dinner, coffee, pizza, whatever along the river...it would give Salt Lake another little valley activity to do that’s outside...there’s huge potential because Salt Lake is growing so big they need activities.”
(Abby)

“If you look at where rivers go through downtowns...there’s generally a river walk. That doesn’t appear to exist here and what characterizes that is shops, carts, planned events, things like that where it’s a destination. I’ve never seen that here and I’ve never understood why because it would seem like a natural draw...just have this incredible statement about the river by virtue of the commerce in a certain stretch and use that as a focal point for development” (Matt)

David suggested having shops or spaces along the river dedicated to community education about the river that would help connect the community more to the river. David was among three participants that expressed concerns about gentrification in their neighborhood currently, and expressed fears that if improvements were made to the area gentrification would increase. He sees including the community as a way to mitigate those impacts. Sam shared similar concerns. Matt recognizes gentrification as a potential impact of his proposal for a river walk.

“Yes I want people to invest in the river and yes the river’s important. I’d love to see these amazing examples of recreation and places for people to be, but it breaks my heart that all of a sudden something else will come in because as soon as you invest in something other types of people come in...it’s just hard.” (Sam)

“I have been seeing a trend specifically with my direct community, like gentrification for example, I’m hearing...that a lot of our families are moving because they can’t afford their rents anymore” (David)

“Yeah that’s what I’m hearing is that the rent is skyrocketing” (Jamie)

“So if we were to imagine the Jordan River becoming this beautiful place...and schools improve, what kinds of communities are going to want to live here? What communities are going to be pushed out towards other places? Sort of patterns of gentrification that happen when communities improve. That’s another concern I think about.” (David)

“I could see that to be an element of gentrification that people would want to side-step.” (Matt)

River Cleanliness

Suggestions to clean the area, including removing litter, were another common theme during interviews. Some of these suggestions related to infrastructure improvements as well. Sam, Nora, Valery and Dena suggested placing more waste receptacles along the trail.

“I think there needs to be access to parking and also places for people to be able to recycle- I think that’s a big thing. Sometimes you see tangible pollution, physical pollution in the river, all those things. When you bring humans in to it all those things should be there.” (Sam)

Dena identified a need for more trash receptacles, but also identified another consideration for dealing with litter.

“There’s not enough trash cans. And more than not enough trash cans, if you’re going to put a trash can you better figure out a schedule for someone to pick up the trash because it’s not enough to have a trash can, you’ve got to have somebody pick it up.” (Dena)

Dena also identified the need for dealing with human waste for public health concerns, including having more bathroom access for homeless individuals. Seven respondents referred to cleaning the area and removing waste during interviews.

Community Connections to the River

We assessed how residents perceived community connections to the Jordan River. Issues of community came up at several points during our interviews in addition to our prepared questions. While making suggestions for changes to the river, six participants mentioned opportunities for community involvement. Abby suggested a community “*adopt-a-river*” program to involve local groups in helping to clean and maintain the river and trails. Dena had many ideas about how to involve the community in river clean up, management, and safety. She frequently said things like “*we’ve got to have our communities*” and “*the committees could do it*” referring to the community council. David also referred to community frequently during his interview. He said things like “*how are we including the direct communities*” and suggested using the local elementary school as a point of community gathering about river issues.

When asked directly whether the Jordan River was an important part of the community and community identity in this neighborhood, all of our respondents suggested that it is important in the community. Responses to questions about community identity were more nuanced, but overall respondents feel like the Jordan River is an important component of community and community identity. Some respondents had difficulty articulating why they thought it was important. Rita, Rosa, and Sofia responded “yes” to the question, and Rita could only say “*it’s nice to have it*” when asked why. Christina, Nora, and Valery also thought the river was important in the community and use the river area frequently. When they were asked more in detail why it is important, they started remembering their childhoods and connections to their home country while explaining to their children how and where they grew up. Though all three of these

women felt the same, Nora, who grew up in Mexico near a river, had the strongest positive emotional ties to the Jordan River as it relates to the river she lived near in Mexico. When discussing how the community is connected to the river, Sam, Abby, and Dena felt that the river is very important in the community and for community identity. They had very different reasons for viewing the river in this way.

“When you travel East and West in the neighborhood, all of the major intersections, streets, cross the river. And so people are definitely aware of it... there are people including myself who monitor the levels of the river... every time I do pass the river I’m always keenly aware of its level... I think that’s part of it that we are so close to it we have a direct indicator, observable indicator, to say ok this is going to be a good year and that kind of stuff. On Sundays, there are probably 200-300 people at [a park adjacent to the river] either doing soccer or baseball or other recreational activities so I see people constantly at that park, directly next to the river all the time.” (Sam)

“I think it is because in the Mormon religion they named it Jordan River, like the Jordan River in Jerusalem and all, yeah that’s why it got the Jordan from what I understand. So yeah, I think it’s big in regards to that.” (Abby)

“A lot of people still want to fish there even if they’re not, even if they throw the fish back. They want to be able to show their kids how to fish... I know a lot of people walk and they want to walk it in safety, which right now you can’t. I think it’s a big part of this area.” (Dena)

Brenda, Matt, Jamie, David, and Nicole had mixed views as to how the river is and is not connected to community identity.

“There’s that community identity. It would be nice to hear some stories from years past about the river.” (Brenda)

“Yeah, but I think the part of it that is interesting is how people define their community in relation to the river. Some people don’t have anything to do with it.” (Matt)

“It’s just... a focus point naturally... I want to say no, but I feel like there has to be a lot of people that feel that way if there’s you know, things, completing that trail...” (David)

“They completed the trail and all that, yeah” (Jamie)

“... especially the youth I think spend a lot of time next to the river. People who are studying or just going past the parks and stuff, it does feel like a sense of, like, there is this relationship. Whether it’s fading or not or growing even, I think there is a relationship.” (David)

“... it’s not so much now as it was back when I was little...” (Jamie)

“Do you talk about the river when you talk about your neighborhood?” (Interviewer)

“I don’t think I have in the past.” (David)

“No when I talk about [my neighborhood], I don’t talk about the river. I think I bring up the fairgrounds more than I do the river.” (Jamie)

“I’m thinking about the parks and everything and it just makes me laugh because I’ve never thought about how the river’s right next to it... it’s not something that I remember... that the river is part of those experiences.” (David)

[I hear people] “... talk about other bodies of water like Bear Lake and the ones that are kind of more maintained, but never really about the Jordan River. People would talk about Bear Lake before the Jordan River, which doesn’t really, because that’s like 2 hours away and the Jordan River is right here.” (Nicole)

Nicole continued to explain why she thought the river was not a part of people’s communications and thoughts,

“I think one big thing is there’s this disconnect between ideas of stewardship and trying to protect the water and clean the water, and the practices that communities of color have already been doing and already know about. There’s a disconnect, almost like they’re trying to assimilate the community. Like, here’s our idea about the river and you need to be with us or you’re not doing anything helpful... there’s a shame attached to that, like ‘we’re trying, I’m trying’ and there’s the shame, like, well if you’re not at the river picking up plastic bottles...” [you’re not being helpful]. (Nicole)

Though Dena insisted that the river was an important part of the community, she also recognized that,

“It just isn't high enough priority for some people. I think people don't know how to use it... and it's just a mess right now so they don't want to put money in to something that's a mess unless they can see it getting better and it's going to benefit them.” (Dena)

Discussion

The research presented in this paper revealed simultaneously positive and negative views of the Jordan River. Interview participants use the river for various recreation and family activities and highly value recreation and natural aspects of the river. They also recognize many problems with the river and have many negative perceptions of the river and area around the river. Participants had many suggestions for changes and improvements they would like to see and expressed a desire for more community involvement at the river and in river management.

The top themes for negative perceptions of the Jordan River include social problems and safety concerns, water quality, and cleanliness of the area. The main social problem highlighted by interview participants included an increase in homeless population around the river as a result of a city operation to disperse a concentration of homeless individuals from one neighborhood and provide services (Utah.gov). This city operation influenced the results of our research. The issue of homelessness around the river has greatly impacted residents' current perceptions of the river environment. Some other concerns about safety and security were not directly connected to homelessness including negative memories of acquaintances who were crime victims, or the shooting that Rita witnessed near the river. When assessing historical perceptions of the river and experiences around it presented during interviews, it is no surprise that this social problem exhibited itself in parts of this community that had seen few or no homeless

people prior to the Operation. Several participants identified issues of perceived neglect of the area, and a negative perception associated with their neighborhood by the rest of the city. As Dena said, “*we get a bum rap.*” The top priority identified to deal with homelessness included policing. The officer who attends the community council meeting in this area regularly addresses what is happening at the river in terms of homelessness, reinforcing the negative perception associated with this population. However, some participants in this research identified concerns with increased policing in the area, as it would negatively affect their experiences of peace, tranquility, and reflection at the river. The participants who were concerned about increased policing identified homelessness as a social problem and would rather see ways to address the problem with social services rather than policing.

Homelessness is a complex social problem and it is common for the general population to associate homeless individuals with insecurity and fear. This research, however, brings up several questions regarding ownership and rights to use and be around the river. Most interview participants viewed the homeless population negatively and expressed that they felt those individuals did not have a right to be in or around the river. This suggests that some community members feel the river belongs to some residents, but not others, and homeless individuals do not have the same rights to use this public space. The prominence of the homelessness theme was an unexpected finding in this research and there are many more research directions that should be explored around this issue. In Seattle, Dooling (2009) researched ecological gentrification in urban parks in which homeless people were displaced from public parks as the city implemented policies with an “environmental ethic” to clean-up the parks, while also implementing

policies that pushed vulnerable populations further from the city. The way the homeless population was discussed during our interviews, all but four participants expressed that the homeless were causing problems related to safety, litter, and human waste. Some suggested that these problems created by the homeless were impacting not only individual experiences at the river, but the ecology of the river itself (human waste, litter, debris). The increase in police presence suggests that Salt Lake City might be in the process of implementing similar policies to Seattle which push homeless populations from one part of the city to the next with Operation Rio Grande, and then eventually beyond the city boundaries. It is necessary within planning processes around the river to address and understand whom the river belongs to, and who has a right to use this public space and under what conditions.

Identified social problems around the river, perceptions of insecurity, water quality uncertainty and cleanliness were top priorities that neighborhood residents would like to improve. This community clearly had a goal of ensuring the river is a “livable landscape” with an emphasis on “safety and control”, as Eden and Tunstall, 2006, found in their study of rivers in the United Kingdom. Safety was also an important factor for the general public in a Japanese river study (Asakawa, Yoshida, & Yabe, 2004). Gobster and Westphal (2004) revealed that historical perceptions of urban rivers as toxic, dirty, and hazardous was an influencing factor on people’s views of the Chicago River, similar to our findings here. Chicago residents also highly valued cleanliness of the surrounding river environment in that same study. Urban rivers are defined by the human populations that surround them and the environmental context should not be separated from the social context (Yocom, 2014).

In this study, lack of inclusion and communication about the river has led to a lack of information about many key aspects of the river environment. Participants have seen changes over time in the environment including improvements to the trail, changes in vegetation, and perceptions of degraded water quality, but because they have not been included in those processes they were generally unsure what was happening and the state of the local river environment. Questions related to the origin of smells and uncertainty about water quality reveal a general uncertainty about the environmental quality of the area. Memories associated with past states of the river including fishing opportunities, and stories about people swimming in the river contributed to interviewees' uncertainty about the environmental quality of the area. Respondents were sure the water quality has degraded, but because of perceived improvements to the area's maintenance and the completion of the trail, respondents were not clear of the general state of the area. Additionally, sources of perceived water quality problems were generally unknown.

Our research can contribute to the ongoing identification of Latinx environmentalism in the United States. As Madsen et al. (2014) found in another Utah study, our Latinx participants consider the Jordan River to be an important part of family recreation and would like to see usable spaces with less litter and more security. One of our Latinx participants, who was born in Utah, mentioned a desire for native species and plant diversity, which would be more in line with mainstream environmentalism (Carter, 2016). There might be differences between those participants born in the U.S. versus those born in a Latin American country. This is worth exploring more in future research. Another participant who identified as partially Latinx and partially indigenous identified conflicts and her perception of exclusion in river clean-up efforts in the community. She

suggested there is a disconnect between non-mainstream cultural practices around water and that some current practices promote “assimilation,” rather than diverse perspectives. Nicole discussed how people might feel “shame” for not assimilating to efforts to clean-up the area, which reflects issues with power and positionality of minority residents in this area. She is revealing issues of exclusion and potential discrimination identified through community river efforts. David, a Latinx lifelong resident of this community, was unaware of a community council group despite his desire to participate in his community as reflected by how he seeks out information. Nora, additionally, said that as a Latinx she feels that “they don’t consider us... we don’t count here” and expressed fear that her views would not be taken in to account. Rita said “we are not informed,” and two other Latinx women were unsure whether or not their views would be considered with issues around the river. David’s lack of knowledge of the community council group might be related to Nicole’s views of exclusion or lack of power in this community, which reflects the Latina Mom’s Groups views as well. Minority participants in our study identified significant barriers to participation as well as potential issues of discrimination and power, despite that this is a majority-minority community.

Connections to community and issues of community identity were discussed in complex ways during interviews. Overall, however, it is clear that our participants value the river and enjoy having that natural feature in their neighborhoods. Social issues and perceived neglect of the area have impacted people’s current views of the river; however, participants in our study felt strongly that there should be efforts to improve conditions at the river. Whether the river is a direct part of community identity in this neighborhood is somewhat disputed, even though all respondents agree that it is nice to have a river and

an important feature of their neighborhood. This research demonstrates that neighborhood residents are concerned about many issues around the river because they value it, and want to make this natural resource better and more enjoyable to them.

For the participants who have the longest connections to this neighborhood, the river was a key component of how they viewed their community. For Jamie and David, the river was a very important part of their childhood and contributed to their coming of age experiences. They still view the river as an important feature and an amenity in their neighborhood, but less so than during childhood. Dena also identified the river as “*a big part of this area*” and has strong ties and memories of the river. Abby and Nicole also have memories of the river related to their childhood or their children. However, interviews suggest that the river has become less important as participants have aged, and in some cases, participants expressed how they avoid the area due to safety concerns or negative associations with the river. Positive views of nature and wildlife, the Jordan River Parkway Trail, and memories of the river contribute to an understanding of community connections to the Jordan River. Based on our results, it is clear that these residents highly value the river as a source of nature and respite from the typical urban environment as well as recreation opportunities on the trail and park system. Respondents did share some negative memories associated with the river, mostly with prominent negative events having to do with personal safety, but most memories had a positive tone. In line with previous findings, our study also shows that green spaces attached to urban rivers influence stronger community attachments and a more positive neighborhood opinion (Arnberger & Eder, 2012; Völker & Kistemann, 2013).

Limitations of this Study

At the start of this research project, we worked with community partners to ensure we accessed interview participants that represented the social and racial diversity found in these neighborhoods. Fear and uncertainty about immigration policy negatively influenced our ability to achieve these goals. It was very difficult to access prominent refugee populations in the area due to language barriers and fear of losing their immigration status. At that time, prominent political candidates identified refugees as a target in political statements. For immigrant Latinx participants, it was difficult to gain trust and access to respondents beyond the Latina Mom's Group. The lead researcher, together with a school administrator, spent significant time discussing the project with the head of this group. Because that person trusted the administrator and was enthusiastic about the project, she was able to convince others to participate. She reassured interview participants frequently during the process with statements like "*don't be afraid,*" and it was important for her to be present at each group interview. This group explained very clearly that the Latinx population in their neighborhood is fearful of participating in anything outside of their daily commitments due to fear of immigration-related problems and discrimination. Another limitation to our research was the lack of collaboration with a prominent non-profit in the neighborhood. Despite our efforts to explain our community-engaged approach, this organization was unwilling to partner with our project, possibly due to possible research exhaustion in the community. This neighborhood is a highly researched area due to its unique social composition in this city. This nonprofit is highly regarded in the community and collaboration from them would have had a positive impact on achieving greater representation among our participants.

Conclusions

This research advances the understanding of urban residents' views and connections with an urban river. People who live in close proximity to the river have a simultaneously positive and negative view of this resource. Despite negative perceptions of the river, residents highly value the river corridor as a source of nature and recreation in a highly urbanized area. Negative perceptions of this area were directly related to suggestions for improvement, and neighborhood residents are concerned about social and environmental issues at the river because they value it. The trail adjacent to the river provides opportunities for recreation, relaxation, and transport that would be otherwise unavailable to this population.

Undertaking a community-engaged approach was imperative to the success of this research. We depended heavily on our partners to help identify and convince participants in our project. This was especially important when working with sensitive populations such as Latinx immigrants. Including local knowledge in Jordan River planning is imperative to ensure justice and acceptability to local residents. However, issues of homelessness revealed during this research suggests that many community members do not view homeless individuals as having the same rights to use this space. This has a large social justice implication that is worth exploring further.

The Jordan River runs in very close proximity to many houses in the neighborhood and is a prominent feature of this area. Though our participants demonstrated a lack of knowledge and understanding about many aspects of the river, their stories and experiences of the area would be highly beneficial to consider in river planning projects. Additionally, community knowledge highlights important information

about social problems and security concerns along the river that have to date not been considered in planning. This research demonstrates that events or policy choices outside of a community or beyond the scope of what we normally consider natural resource management can greatly influence how residents view and relate to their local environmental resources. Residents in neighborhoods adjacent to the Jordan River would like to be more included in river planning and management, and have valuable ideas and experiences that could contribute to ensuring the Jordan River was a more livable landscape and more user-friendly.

Recommendations

This research highlighted several problems with representation and inclusion in river-related issues. Based on interview participants' own recommendations and comments, we suggest some easy-to-implement ways that Salt Lake City, and other cities, can help bridge these gaps of participation. The issue of translation and interpretation was a clear limitation for our Spanish-speaking interviewees. One recommendation is for community councils to, first, identify non-English speaking residents in their neighborhoods and then take steps to include these constituencies. Whether that means providing translation of all documents and interpretation at all meetings or ensuring there are some bilingual members of the council to help facilitate communication, there are steps councils should take in order to increase inclusion. One of our community council partners is already seeking to address this issue by undertaking a neighborhood door-to-door survey to assess language needs. This is a positive step toward representation and inclusion in one of our study sites. Beyond community council

groups, the city could make greater efforts at meaningful communication on river issues, both in English and in other languages. Cities could identify a broader range of community centers as points for potential interaction and communication between community members and public officials. One of our participants suggested utilizing the neighborhood elementary school more as a point of official communication because the school is already responsive to multicultural and multilingual families. Expanding ideas of community centers as well as increasing regular communication by mail and signage could be useful. Our participants were generally ready and willing to undertake some community organizing efforts as well as implementing some river improvement projects. Another issue identified by some of our minority participants was a perception that officials might not be interested or willing to consider other views of the river and river stewardship. Officials could make pointed efforts to listen and truly engage with various constituencies including specific outreach to minorities in these communities. Officials involved in river management might be accustomed to more physical science and engineering approaches to river issues; however, there could be important enhancements to public perceptions and use of this resource if all community members felt part of the process. There is potential for positive contributions to river projects and more meaningful engagement between communities and various officials.

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CHAPTER V

CONCLUSION

The Jordan River in Salt Lake City is one example of how a river exists in a metropolitan area in the United States. This riparian corridor includes a recreation trail, 325 acres of urban green space, and houses that are directly adjacent to the river and trail. Despite this amenity that could potentially attract a higher socioeconomic status population, the neighborhoods surrounding the Jordan River have remained home to the city's new and old immigrant populations, representing a greater racial and ethnic diversity than other parts of the city. Signs of gentrification are beginning to appear in some parts of this community, as discussed by interview participants, but those effects are minimal to date. The Jordan River is highly engineered and manipulated, but it does not feel like a highly manipulated environment. Other cities that include rivers have negotiated the presence of rivers in other ways. Some cities have changed the river environment creating a mostly cement-filled riverbank (e.g., Chicago, Los Angeles). Other cities have river environments similar to Salt Lake City's, but the neighborhoods surrounding those rivers are affluent with few houses adjacent to the river (e.g., Boise). Still others have made their rivers prominent attractions and include river walks (e.g., San Antonio), monuments or other prominent features along the river to attract visitors (e.g., Washington, D.C.). Though the case of the Jordan River is potentially unique, this dissertation presented valuable social information and experiences important in understanding how urban residents relate to their local rivers, how those features might

be connected to community identity, and how communities can be better involved in the planning and management of these resources.

Research Synopsis

The research presented in this dissertation shows consistency between how near-river residents perceive their local river. All phases of this research suggest that community members have a simultaneously positive and negative perception of the Jordan River. Survey data demonstrated that local residents go to the river area frequently and believe that it positively influences quality of life in their neighborhood. This same data also revealed that survey respondents were highly concerned about many social and environmental problems associated with the river. The results of our survey analysis are inconclusive regarding how social characteristics, as assessed by singular, self-selected demographic characteristics, influenced community views about the river. Though the Three Creeks survey results show that gender, race and immigrant status are correlated with some concerns, results from the Utah's Water Future survey do not show any significant differences along socio-demographic lines. Three Creeks survey results suggested, in that survey, experiential variables might be more influential in perceptions of the Jordan River. Respondents' experience with the river influenced perceptions of safety, wildlife, litter, and lighting. However, again, Utah's Water Future survey results did not confirm the results of the Three Creeks survey. Further research is needed to understand why discrepancies between these results exist, however survey method might have been influential in obtaining a more representative sample. As demonstrated in Chapter II, the Three Creeks Survey sample looks demographically more similar to the

west side communities than the Utah's Water Future Survey. As demonstrated by previous research, public-intercept surveys can better represent diversity in communities because the method creates ease of response and focuses on meeting people where they are (Miller, Wilder, Stillman, & Becker, 1997; Moskell & Allred, 2013; Parker, Manan, & Urbanski, 2012). Survey results revealed more questions, which I sought to address in the next two phases of research.

Though survey results might appear to demonstrate contradictory perceptions of the Jordan River, results in Chapters III and IV indicate that the west side community has many ideas about how to improve the things that they are concerned about. By asking specifically what residents would like to see improved at their local river, children and adults revealed how they would like to respond to social and environmental problems identified first in survey results and subsequently in interviews and writing. This research revealed important local knowledge about the river that influenced how community members would first identify problems and then make suggestions to solve those problems. Research participants actively engaged in identifying potential solutions to river problems, which indicates that this resource is highly valued by the community. Community members, both adults and children, are willing to work to make improvements to the area, would like to participate more in river management, and would like to continue having positive experiences at the river. Though the river might be marginal in some research participants' daily lives, overall the research presented in this dissertation suggests that the Jordan River is an important part of the west side community in Salt Lake City.

Children's perspectives of the Jordan River added value to this research. Children valued the river for the activities they could participate in around the river, as habitat for wildlife, and as a place for rest and relaxation. Particularly important to our study site, the value children placed on peacefulness, calmness, and relaxation possibilities is noteworthy. The children in our study have busy lives in which they negotiate multilingual environments and potentially stressful life situations. Opportunities for rest and relaxation by the river identified by the children in this study might be a key component to increase well-being in the west side community. Children were concerned about the general cleanliness of the area. Water quality concerns were mostly related to animal welfare and perceptions of drinking water sources. Safety concerns identified by children were associated with the chance of falling in the river or drowning. These safety concerns were different from safety concerns identified by adults in this study. It is unclear whether children view the river as part of community identity; I suggest that the river is mostly marginal in children's daily lives, but they highly value it. However, research participants identified some creative solutions and a willingness to help make the river a better environment for the community.

Two important methodological considerations stem from this research project. The data used in Chapter II came from two different surveys, which utilized different survey methodologies for implementation. The Three Creeks survey was designed specifically for the west side community, which has a significant non-English speaking population and is much more diverse than Utah as a whole. The Utah's Water Future survey was designed for household door-to-door implementation statewide. Results in this dissertation present a compelling comparison that suggests survey design absolutely

matters for obtaining representative results, and that survey design should consider the best approach for minority populations. Interview participants identified language barriers with participating in community meetings and public outreach efforts. The survey team for the Three Creeks survey was entirely bilingual in English and Spanish, which likely contributed to our ability to obtain a significant number of responses from primarily Spanish-speaking residents. Utah's Water Future survey did provide the option for participants to request a Spanish language survey, but the participant had to ask for it from a researcher at their household, which might not have always been possible. The Three Creeks survey results contribute to the growing evidence that public-intercept, or street-intercept, surveys that meet people where they are can provide a better strategy for reaching minorities and the broader population. Further research is needed to fully understand differences between these two surveys.

The other consideration is the use of community-engaged research to study urban rivers. Utilizing community-engaged research throughout a 3-year project, which was designed and implemented in different phases, provided the flexibility to respond to changes and research opportunities in the community. One example of this is how survey results and informal conversations with partners influenced interview questions and design. As survey results were revealed during analysis, it was clear that there were some potentially contradictory views of the river, which prompted further research questions. Utilizing a community-engaged approach and a multi-phase research design allowed for the research to be further guided by previous results in which interview respondents were directly asked about why they had specific concerns and what respondents propose to make the river better. Results revealed that community members were highly concerned

about several aspects of the river *because* they highly value the river, not because they have general negative perceptions of the resource or want the river to become something distinct from its current state.

Research Contributions

The research presented in this dissertation adds to the urban river perception research in important ways by contributing a case study of Salt Lake City's west side communities which intersect the Jordan River. As Gobster and Westphal (2004) found at the Chicago River, residents in Salt Lake City also have prominent negative memories of past states or events at the river which have greatly influenced how many perceive the river today. Similar to other studies (Asakawa, Yoshida, & Yabe, 2004; Gobster & Westphal, 2004), community members feel that there are important safety considerations that should be part of a more comprehensive river management agenda including personal safety and crime issues as discussed with adult participants, and fear of falling in the river as discussed by children. As Petts (2007) also found, near-river residents in this study also value their river for rest and relaxation as related possibly to a sense of wellbeing. People generally prefer scenes with water (White et al., 2010), and parks and open spaces along rivers in cities (Kibel, 2007; Völker & Kistemann, 2013). Though participants in this research identified many problems in their communities including social problems and general upkeep concerns at the river, Haeffner et al. (2017) found that near-river residents in Utah have a more positive community opinion despite that those communities tend to have lower socio-economic status. The presence of green spaces near or attached to urban rivers are related to stronger community attachment and

a more positive neighborhood opinion (Arnberger & Eder, 2012; Völker & Kistemann, 2013). The research in this dissertation suggests that the trail and park system surrounding the Jordan River is highly valued and used by neighborhood residents, which might add to Arnberger and Eder's (2012) and Völker and Kistemann's (2013) findings while enhancing Haeffner et al.'s (2017) work.

Another significant contribution this dissertation has made is in urban minority children's perception literature. As previous studies with children have demonstrated (Adams & Savahl, 2015; Bonnett & Williams, 1998), our participants, both adults and children, viewed their local river simultaneously positively and negatively. Bonnett and Williams (1998) found that children view nature as calm and a place for relaxation. In our study, the calmness of the river was a key feature in children's perceptions of that environment. Our study participants also referred to many opportunities for relaxation and enjoyed the quietness of the area. Having a place of calm, peacefulness, and relaxation can contribute positively to well-being, much as Adams and Savahl (2015) concluded regarding positive impacts of nature for children. Many of our participants have very complex lives in which they negotiate more than one culture and language, typically from lower socio-economic status. Children recognize the opportunities for rest and relaxation around the Jordan River, which they consider a highly positive aspect of this part of their local environment. Recognizing the potential for relaxation, renewal, and peace in this urban river context should be a key component of river restoration projects. Children in this study did not associate the river with social problems such as homelessness as adults did but did share concern about river cleanliness. This dissertation demonstrates that children can contribute their opinions and ideas to local river

management and can be active participants in the research process. Though we did not see a lot of cultural symbolism in children's drawings nor did this research reveal unique perceptions of the Jordan River from minority students' viewpoints, it is important to ensure all members of a community are involved in local environmental decision-making and have the opportunity to express their perceptions.

Recommendations

Though this study provides valuable information about how near-river residents perceive, interact with, and value the Jordan River, the research presented here also reveals several opportunities for further research and public engagement. The first recommendation from this work is to better integrate west side social/political organizations and river-related groups. My work revealed a disconnect between how individual organizations are working in this community to better quality of life in various ways. There is opportunity for better integration and collaboration, however a first step would be to conduct an inventory to identify which organizations and individuals have an active role in river issues. Because there are several social issues associated with the river beyond what might be considered as typical river management, the river presents an opportunity to integrate social and environmental organizations. I highlight the potential for community organizational integration around the river as a big opportunity.

Another key recommendation from this dissertation research is identifying how to resolve social problems associated with the river. As demonstrated by this project, social problems related to homelessness and personal safety concerns greatly influenced how locals perceived the river and how those issues sometimes limited interaction with the

river. This research might reveal that, although there are some successes associated with the city's Operation Rio Grande, some of the homeless population was merely displaced as a result of this project. Our research revealed some key differences between the northern and southern neighborhoods in the west side community regarding the homeless population. Survey data, presented in Chapter II, revealed that homeless people and transient individuals was a concern for residents of the southern part of the community. Survey data was gathered primarily in two neighborhoods in the southern portion of the Salt Lake City section of the Jordan River. Children's opinions and interviews were primarily obtained from residents in the northern section of this community. Interview participants after the enactment of the city homelessness initiative revealed concerns about homeless populations and social problems potentially associated with those individuals. As research participants mentioned at all stages of this community-engaged research, city residents outside of the west side neighborhoods consider this area as one, homogenous area with the same vast social problems, or a negative stigma. Though we define our research area as a community, there are important neighborhood considerations when addressing social problems around the Jordan River. There might be other prominent barriers including a primary road and light rail train line separating the northern and southern portions of this community that could account for distinctions between these areas. Responses to the social problems around the Jordan River should consider these characteristics and identify neighborhood specific solutions. Recommending specific solutions for homeless individuals and personal safety problems at the river is beyond the scope of this research, however research participants revealed

many opinions on these matters, often rooted in personal experience, and would like to have a more active role in identifying solutions.

The third recommendation from this research is to assess river governance. The Jordan River runs through numerous towns and has a large number of stakeholders in a complex state water governance environment. To understand better how to implement strategies for improving the urban section of this river, it is important to understand how these decisions influence other sections of the river and who has a stake in those decisions. One frustration explained at community council meetings in personal conversations involved general confusion with how exactly to implement any community-led projects. Often residents are unclear who has authority of which part of the river, and what issues involve which stakeholders. A thorough inventory regarding Jordan River governance is a research opportunity that has been missed by current coordinating bodies such as the Jordan River Commission. This would be another opportunity for a university to lead a beneficial research project that could benefit both the west side community in Salt Lake City as well as the general near-river populations throughout the state.

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APPENDICES

APPENDIX A

UTAH'S WATER FUTURE SURVEY: LOCAL RESIDENT PERSPECTIVES
ON WATER ISSUES IN THE SALT LAKE VALLEY AND BEYOND

A1. In what ways does your household regularly use water on this property? (check all that apply)

Indoor uses

Outdoor landscaping

Swimming pool or hot tub

Farm uses

A2. How familiar are you with the total quantity of water your household uses each month?

(Likert scale from not at all familiar to very familiar)

A3. How much do you think your household water use compares to the average household in this neighborhood?

(Likert scale from much less average to much more than average)

A4. How familiar are you with how much money your household usually spends on water each month?

(Likert scale from not at all familiar to very familiar)

A5. How has your household's INDOOR use of water (for drinking, bathing, washing, etc.) changed in the last 5 years?

(Scale from decreased a lot to increased a lot, including "not sure" outside scale)

A6. Overall, how often do members of your household do any of the following to reduce indoor water use?

(scale: never, rarely, sometimes, mostly, always)

Take fewer or shorter showers

Only run dishwasher when full

Turn off water when brushing teeth

Buy low water use appliances and fixtures

Fix leaky faucets and toilets

A7. How strongly do you disagree or agree with the following statements?

(scale from strongly disagree to strongly agree)

There is more my household could do to reduce indoor water use.

There is more my household could do to reduce outdoor water use.

B1. Do you have an outdoor lawn on the property where you live?

No (If no, skip to Section C)

Yes (Continue to question B2)

B2. What statement best describes your household's usual approach to fertilizing your lawn?

Our lawn is not fertilized

We fertilize our lawn ourselves- once a year or less

We fertilize our lawn ourselves- more than once a year

We have a professional company fertilize our lawn at least once a year

B3. Is the lawn on the property where you currently live usually watered?

No (Skip to Section C)

Yes (continue to question B4)

B4. Are you (or others in your household) responsible for watering this lawn?

No (If your household is not responsible for watering the lawn, please answer question B4a then Skip to Section C)

Yes (Continue to question B5)

B4a. If no, who is mainly responsible for watering this lawn?

Landlord or property owner

Homeowner or condominium association

Hired private company

B5. How is your lawn watered?

A handheld hose

Sprinklers attached to a hose

An underground sprinkler system

Flood irrigation

B6. Which method from B5 above is used to water MOST of your lawn? _____

B7. Is any part of your lawn watering system currently on an automatic timer?

No

Yes

Not sure

B8. On an average week in July, how many days per week do you water your lawn?

B9. What time of day is your lawn usually watered?

No regular pattern to when I water- whenever I can

Mostly in the morning or evening

Mostly during the day

Mostly at night

B10. How has the amount of water your household uses to water the lawn changed in the last 5 years?

(Scale from decreased a lot to increased a lot, not sure outside of scale)

B11. How important are each of the following factors to you when making decisions about when and how much you water your lawn?

(scale from not at all important to very important)

Vary amount based on weather

Minimize time I spend watering

Conserve amount of water used

Keep a regular schedule

Prevent brown spots on the lawn

Maintain my property value

Keep my neighbors happy

B12. Since you moved in, have any of the following been done to your lawn watering system?

Tested sprinklers to see how much water they apply

Estimated how much water is needed by the lawn

B13. Have you ever participated in the "Slow the Flow Water Check" program?

No

Yes

Not sure

B14. Have you ever done any of these things to your lawn watering system?

Installed more efficient lawn watering system

Installed automatic timer for lawn watering system

C1. Do you have any outdoor plants or landscaping at all on this property?

No (skip to Section D)

Yes (Continue to question C2)

C2. Which of the following kinds of plants do you have in your yard?

Lawn

Flowers or ornamental plants

Trees

Low water use or 'water wise' plants

Vegetable garden

C3. Are you (or others in your household) responsible for deciding what plants are in your yard?

No (skip to Section D)

Yes (Continue to C4)

C4. How important are the following factors in your choices about which plants to have in your hard?

(Scale from not at all important to very important)

Minimizing water use

Providing shade

Providing a place to play or relax

Making landscape look nice

Providing habitat for wildlife

Growing my own food

Keeping my neighbors happy

C5. How interested are you in making the following changes in your yard watering or landscaping?

(Scale from not at all interested to very interested)

Reduce the amount of grass area in my yard

Replace my current landscape with low-water use plant species

Install a more efficient irrigation system

D1. Does any of your household's indoor or outdoor water come from a private well?

No

Yes

D2. Do you or any members of your household currently own any water rights or shares in Utah?

No

Yes- for this property

Yes- for another property in Utah

D3. Does your household have access to a 'secondary' water source?

No (skip to Section E)

Yes (Continue to question D4)

D4. How do you use your secondary water?

We have access to it, but don't use our secondary water

To water lawn and/or other yard landscaping

To water pasture or other agricultural crops

To water livestock

D5. How is your secondary water delivered to your property?

Directly from an open ditch or canal

In pressurized pipe

D6. How satisfied are you with your secondary water system?

(Scale from very unsatisfied to very satisfied)

D7. Have you attended any meetings with your secondary water provider?

No

Yes

D8. How confident are you that your secondary water supply is secure for the next 20 years?

(Scale from not confident to very confident, not sure outside scale)

E1. How willing would you be to reduce your own water use if you know the water you conserved would...

(Scale from not at all willing to very willing)

Reduce your water bill

Ensure future supplies for your home

Allow increased development in this area

Ensure future supplies for agriculture

Improve urban parks and open space

Improve fish and wildlife habitat

Improve opportunities for water recreation

E2. For each of the following statements, indicate whether you disagree or agree:

There is enough water to meet the current needs of all people and businesses in:

Salt Lake City

Salt Lake Valley

Utah

There is enough water to meet the future needs of all people and businesses in:

Salt Lake City

Salt Lake Valley

Utah

E3. Thinking about the next 10 years in the Salt Lake Valley, how concerned are you about the following issues?

(Scale from not at all concerned to very concerned)

Water shortages

Flooding

Poor water quality

High cost of water

Deteriorating water infrastructure

Air pollution

Traffic congestion

Loss of open space

Population growth

Climate change

E4. Thinking of the Salt Lake Valley, how strongly do you disagree or agree with the following statements?

Too much water is used for agriculture

Too much water is used to maintain residential lawns

Too much water is used by industry

Too much water is used by parks and golf courses

E5. How would you rate the water quality of the following types of water?

My current drinking water supply

Water in streams and creeks in my neighborhood

Water in nearby irrigation canals and ditches

Groundwater beneath my neighborhood

Water in rivers and lakes upstream

Water in streams or rivers downstream

Water in reservoirs or lakes downstream

E6. Are you aware of any instance in the last 10 years where flooding and/or stormwater caused the following types of impacts to either your household or community?

Flooded basements

Contaminated drinking water

Contaminated streams

Private property damage

Damage to public roads and infrastructure

Loss of life or injury to a person

E7. Many discussions of water issues are linked to beliefs about climate change. WE know there are many points of view on this controversial subject. Which statement comes closes to your own view?

Climate change is happening and is caused mostly by human activities

Climate change is happening and is caused mostly by natural processes

Climate change is not happening

I don't know enough to say if climate change is happening

E8. How worried are you that climate change will significantly impact water supplies in this valley?

(Scale from not worried to very worried)

E9. Have you ever spent time in or near this stretch of the Jordan River?

No

Yes

Not sure

E10. Before filling out this survey, how familiar were you with this stretch of the Jordan River?

(Scale from never knew it was there to very familiar)

E11. Which of the following aspects of this stretch of the Jordan River have had a negative or positive impact on you or your household?

Sights and sounds

Place to visit and walk

Place to play

Habitat for wildlife

E12. As you think about the Jordan River, how concerned are you about the following issues?

Smell

Flooding potential

Safety

Attracts nuisance wildlife or insects

E13. Overall, how do you think the Jordan River influences quality of life in this neighborhood?

(Scale from negative influence to positive influence, no influence in the middle)

E14. If Salt Lake City faced short-term water shortage, how much would you oppose or support each of the following possible local policies or strategies?

(Scale from strongly oppose to strongly support)

Educate the public about how to conserve water

Implement mandatory watering restrictions

Encourage voluntary reductions in outdoor water use

Restrict watering on parks, golf courses, and public properties

E15. Thinking of Salt Lake City's longer-term approach to water policy and management, how much would you oppose or support each of the following policies or strategies?

(Scale from strongly oppose to strongly support)

Subsidize the purchase of low water use irrigation systems and appliances

Build new water storage facilities

Buy water rights from farms to use in the city

Charge more per gallon for large water users

Limit future housing development unless water supplies are secured by the developer

Implement ordinances that require low-water landscaping

Encourage housing development that uses less water per person

Develop a system to reuse treated wastewater for residential irrigation

Increase budgets for stormwater management

Build structures to reduce stormwater runoff

Reduce requirements for environmental protection to facilitate new water projects

F1. How much of a priority should each of the following goals be for managing Utah's water resources?

(Scale from not a priority to highest priority)

Ensuring supply of drinking water

Ensuring supply of water for agriculture

Ensuring supply of water for economic development

Providing recreation opportunities

Protecting water quality

Protecting wetlands and wildlife habitat

Saving taxpayer money

F2. State officials and water managers have conducted public meetings to gather input on a state water plan. A few of the many strategies suggested are listed below. How much would you oppose or support each of the following policies, programs, or strategies?

(Scale from strongly oppose, to strongly support)

Use state funds to build new reservoirs and storage projects

Use state funds to construct pipelines to bring water to urban areas from other regions

Use state funds to pay for efficiency improvements in agricultural irrigation systems

Use state funds to help replace aging water system infrastructure in cities

Invest in research on new water conservation technologies and practices

Allow people with water rights to sell water saved from using conservation practices

Set minimum state standards for new private residential construction to reduce water use

Establish minimum flow requirements for streams to protect fish habitat

Facilitate transfers of water from agriculture to urban users

Ensure state policy prioritizes the efficient use of water over protecting existing water rights

G1. Do you currently own or rent your residence?

Own

Rent

G2. Do you live at this location year-round or just seasonally?

G3. How long have you lived at this address?

Less than 1 year

1-3 years

3-5 years

6-10 years

More than 10 years

G4. Do you expect to be living at this same residence in 3 years?

No

Yes

Not sure

G5. How many people currently live in your household including yourself? _____

G6. How many of these people are under 18 years old? _____

G7. Does your household belong to a homeowner/condominium association?

(HOA/COA)

No

Yes

G8. Are you originally from the Salt Lake Valley?

No

Yes

G9. Are you originally from Utah?

No

Yes

G10. How would you describe the place you grew up?

On a farm

Rural area or small town

Suburban area

Urban area

G11. Do you or any of your relatives currently farm?

No

Yes

G12. DO you get information about water issues from any of the following sources?

Salt Lake Tribune

Deseret News

TV or Radio

Internet or social media

Mailings or other contact from water provider

Homeowners or neighborhood association

Conversations with friends or neighbors

G13. How often do you participate in any of the following water-related recreation activities in Utah?

(Answer choices- never, rarely, sometimes, often)

Fishing

Boating

Gardening

Walking or hiking near water bodies

Skiing or snowboarding

Snowmobiling

Bird watching near water bodies

Hunting waterfowl

G14. Have you or any adult in your household participated in any of the following activities during the past 12 months?

School group activities

Church group activities

Civic or charity group activities

Attend a public meeting or hearing

Worked with others on an issue or problem in my community

Served on government board, committee or commission

G15. For each of the following items, please indicate whether you are dissatisfied or satisfied with that aspect of your neighborhood?

(Scale from very dissatisfied to very satisfied)

Appearance of homes and yards

Opportunities to interact with neighbors

Number of shade trees

Quality of parks and common spaces

Overall quality of life

G16. In what year were you born?

G17. Are you male or female?

Male

Female

G18. What is the highest level of school you have completed?

Less than high school

High school diploma

Some college

Vocational/Technical degree

4-year College degree

Graduate degree

G19. What category best describes your race or ethnicity?

Asian or Pacific Islander

Black or African American

Native American

Hispanic or Latino

White

Other

G20. What category best describes your religious preference, if any?

Mormon/LDS

Other Protestant

Catholic

Jewish

Other Religion

No Religious Preference

G21. What would you estimate your household income will be in 2014?

Under \$25,000

\$25,000-49,999

\$50,000-74,999

\$75,000-99,999

Over \$100,000

APPENDIX B

THREE CREEKS SURVEY (ENGLISH VERSION)

What language do you prefer?

English (1)

Español (2)

Display This Question:

If What language do you prefer? = English

You are being asked 3-5 minutes of your time to complete a brief survey about the Jordan River and parks that surround it.

This survey is being conducted by Utah State University researchers in collaboration with the Salt Lake City Parks and Public Lands department. We are collecting public opinions and preferences about an upcoming project at 1300 South and the Jordan River. Your responses to this survey will be completely anonymous.

Participation is entirely voluntary. You may refuse to participate at any time without consequence. In addition, you have the right to refuse to answer any specific questions if there is information you are not comfortable sharing with us. There are very minimal risks associated with participation in this survey. None of the topics are sensitive. We appreciate your input!

Are you 18 years or older?

Yes (1)

No (2)

What neighborhood do you live in?

- Glendale (1)
- Poplar Grove (2)
- Jordan Meadows (3)
- Westpointe (4)
- Rose Park (5)
- Fairpark (6)
- Downtown (7)
- Ball Park (8)
- East Side Neighborhood (9)
- Do Not Know (10)
- Other (11) _____

How close is your residence to the Jordan River?

- Next to the river (1)
- 1-5 blocks away (2)
- 6-10 blocks away (3)
- More than 11 blocks away (4)
- Do not know (5)

Overall, how do you think the Jordan River influences quality of life in this neighborhood?












- Strong negative influence (1)
- Negative Influence (2)
- No Influence (3)
- Positive Influence (4)
- Strong positive influence (5)

How often do you visit the Jordan River, surrounding parks, or the Jordan River Parkway?

- Never (1)
- A few times per year (2)
- Monthly (3)
- Weekly (4)
- Daily (5)

As you think about the Jordan River and surrounding parks, how concerned are you about the following issues?

Not at all concerned Somewhat concerned Concerned Very Concerned

Flooding (1)	
Safety or crime (2)	
Wildlife (3)	
Mosquitoes and other Insects (4)	
Water Quality (5)	
Puncturvine Weed (tackweed, goat's head) (6)	
Litter or trash (7)	
Lighting at night (8)	
Not enough crosswalks at busy intersections (9)	
Homeless or transient people (10)	
Other (11)	

Thinking about the parks and the wetland preserve along the Jordan River, please tell us whether you think the following are absolutely needed, could help, or are not needed.

	No Opinion	Not Needed	Could Help	Absolutely Needed
Trash Cans (1)				
Art and Culture Projects (2)				
Wheelchair accessibility (3)				
More lighting (4)				
Bike racks (5)				
Canoe rental (6)				
Parking (7)				
Free events and activities (8)				
Wildlife viewing platform (9)				

How often do you visit the 900 South Wetland Preserve beside the Jordan River?

Never (1)

A few times per year (2)

Monthly (3)

Weekly (4)

Daily (5)

What do you like to do when you visit the wetlands at 900 South?

Please select all that apply.

Fishing (1)

Walking (2)

Wildlife Viewing (3)

General Relaxation (4)

Take Children to Play (5)

Access the Jordan River (6)

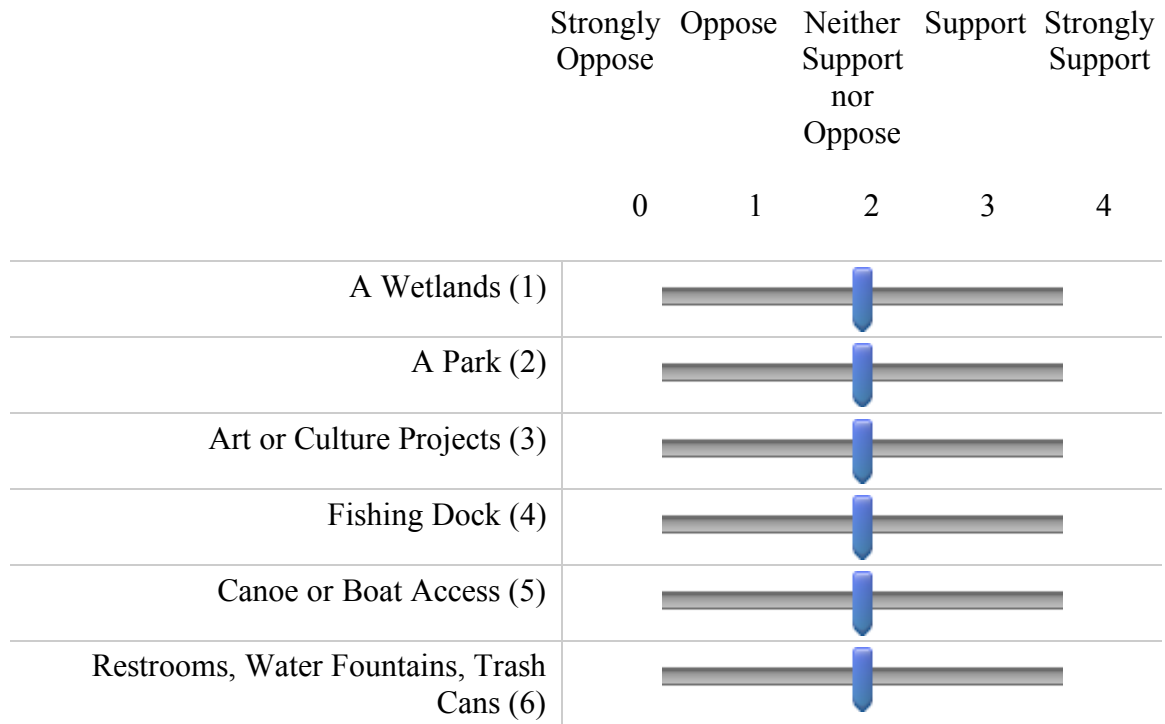
Walking or Biking Through (7)

Other (8) _____

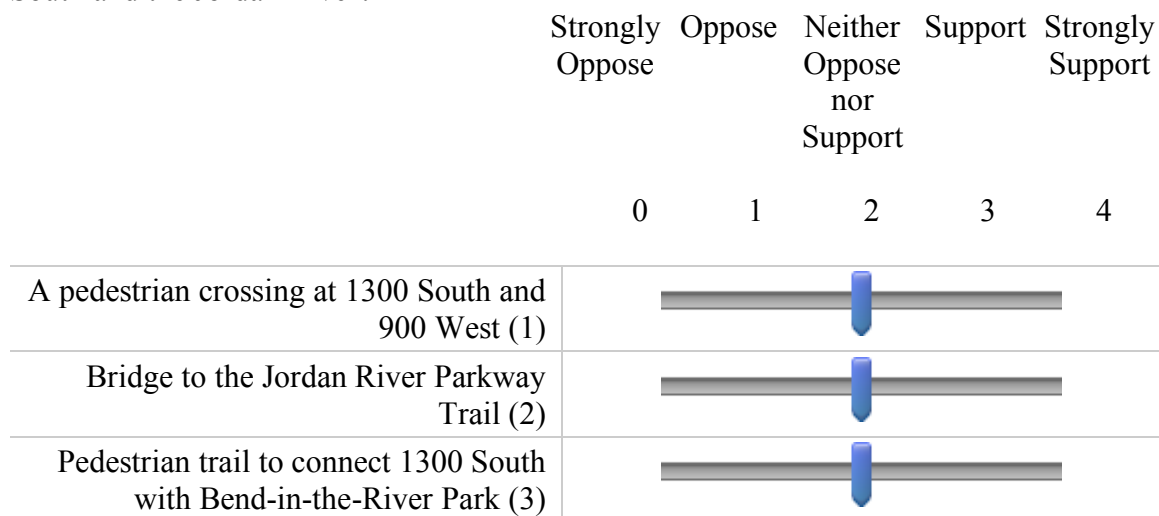
Did you know that there are three creeks, Emigration, Parleys, and Red Butte, in pipes under the street along 1300 South until they reach the Jordan River?

- Yes (1)
- No (2)

How much do you support the following items at a new public area at the intersection of 1300 South and the Jordan River?



How much do you support or oppose the following items around the intersection of 1300 South and the Jordan River?



How much do you support or oppose having more parks or natural areas along the Jordan River?

- Strongly Support (1)
- Support (2)
- Neither Support nor Oppose (3)
- Oppose (4)
- Strongly Oppose (5)

Are you.....?

- Male (1)
- Female (2)
- Other (3) _____

How long have you lived in your current residence?

- Less than 1 year (1)
- 1-5 Years (2)
- 6-10 Years (3)
- 11+ Years (4)
- Not Sure (5)

Were you born in Utah?

- Yes (1)
- No (2)

Where were you born?

- Another State in the U.S. (1)
-

- Another Country (2) _____

Do you have children living at home?

- Yes (1)
- No (2)

What category or categories best describe your race or ethnicity?

Please select all that apply.

- Asian (1)
- Pacific Islander (2)
- Black or African American (3)
- Native American (4)
- Hispanic or Latino (5)
- White (6)
- Other (7) _____

Do you rent or own your home?

- Rent (1)
- Own (2)

How old are you?

- 18-35 (1)
- 36-50 (2)
- 51-64 (3)
- 65+ (4)

APPENDIX C

CHILDREN'S GROUP INTERVIEW QUESTIONS—EXPERIENCE WITH JORDAN
RIVER (AS IDENTIFIED BY CHILDREN'S JOURNAL ENTRIES)

1. What do you think of when I say the word “river”?
2. Tell me about what you think the Jordan River is like.
3. What do you like to do at the Jordan River?
4. What is your favorite place by the river?
5. What do you **not** like about the Jordan River? What would you change about the Jordan River if you could?
6. Do you think the Jordan River is important in your neighborhood?
7. What is your favorite place in your neighborhood?
8. Tell me what you like and what you don't like about your neighborhood.

APPENDIX D

CHILDREN'S GROUP INTERVIEW QUESTIONS—NO EXPERIENCE AT JORDAN
RIVER (AS IDENTIFIED BY CHILDREN'S JOURNAL ENTRIES)

1. What do you think about when I say the word “river”?
2. Tell me about what you think rivers are like where you live.
3. Why do you think you have not been to the Jordan River before the field trip last week? Have you been to other rivers in Utah?
4. If you could go to the Jordan River in the future, what would you like to do there?
5. Do you think the Jordan River is important in your neighborhood?
6. What is your favorite place in your neighborhood?
7. Tell me what you like and what you don't like about your neighborhood.
8. Is there anything else you would like to tell the group?

APPENDIX E

INTERVIEW PROTOCOL GUIDELINE FOR SEMI-STRUCTURED INTERVIEWS

1. When I say “Jordan River,” what are some words or phrases that come to mind?
2. What are your general opinions of the river?
3. What are some things that you like about the river?
4. What are some things that you do not like about the river?
5. For the things you do not like about the river, can you suggest a solution for that problem?
6. How often do you go to the river and what do you like to do there?
7. Do you have any stories or memories of the river?
8. Have you participated in any planning activities for the river, like public meetings, surveys, or speaking with public officials?
 - 8a. Have you heard of the Blueprint Jordan River plan?
 - 8b. Do you know what the Jordan River Commission is?
9. Has there ever been an event, problem, or condition that has ever cause you to not go (avoid) to the river or parks at any time?
10. If you could change something about the river, what would you change and why?
11. Is the Jordan River an important part of your community?
12. If you could participate in planning or river management, what would your priorities be?

CURRICULUM VITAE

Taya Carothers

Department of Environment and Society, Quinney College of Natural Resources
 5215 Old Main Hill, Utah State University, Logan, Utah 84322-5215
 taya.carothers@aggiemail.usu.edu (260) 450-2814

 EDUCATION

Utah State University

Ph.D. Environment and Society, 2018

Dissertation: "Justice and the River: Community Connections to an Impaired Urban River in Salt Lake City"

The American University

Master of Arts in International Affairs, 2010

Thesis: "Quest for Equitable Provisioning: The Complexities of Global Water Governance Initiatives in Costa Rica."

The United Nations Mandated University for Peace

Master of Arts in Natural Resources and Sustainable Development, 2010

University of Southern Indiana

Bachelor of Arts in International Studies and Spanish, Minor in Anthropology, 2008

Cum laude, semester abroad 2007

 FELLOWSHIP- CURRENT APPOINTMENT

National Science Foundation EPSCoR: Innovative Urban Transitions and Aridregion Hydro-sustainability (iUtah), Doctoral Research Fellow, Utah State University, August 2014-July 2017

 GRANTS

The Charles Redd Center, Summer Award for Upper Division and Graduate Students 2016
Awarded \$1,000

International Association for Society and Natural Resources, Student and Early Career Professional Travel Scholarship, 2015

 RESEARCH EXPERIENCE

Utah State University Socio-Ecological Systems Laboratory
Research and Teaching Assistant

Fall 2015-Current

- Research Assistant for iUtah Education, Outreach, and Diversity program
- Designed and conducted community-based research in a diverse Salt Lake City neighborhood regarding perceptions on a river restoration project and green infrastructure proposals
- Analyzed 2015 and 2016 iUtah iPad public intercept survey responses

- Continued analysis of 2014 household (drop-off/pick-up methodology) Utah's Water Future survey
- Engaged with diverse organizations and people to inform a community-based research project to understand community connections to an Urban river corridor and greenway using qualitative and quantitative methods
- Conducted research with a 4th grade elementary school classroom to understand children's perceptions of and connections to the urban river and surrounding park system using mixed-methods
- Assisted teaching the course "Environmental Non-Profit Management"

Utah State University Institute for Social Science Research on Natural Resources Fall 2014-2015

Research Assistant

- Compiled technical reports and initial analysis for 2014 Utah's Water Future household survey
- Analyzed media representation of water issues in 6 Mountain West newspapers

Conservation International, Program Management and Planning Internship 2010

- Analyzed and compiled results from global program assessments
- Conducted structured interviews with department directors and organization leaders

Costa Rican Legislative Assembly, Sustainable Development Internship 2009

- Conducted qualitative research as a participant-observer
- Carried-out several semi-structured interviews

TECHNICAL REPORTS AND PRESENTATIONS

Carothers, Taya and Mark Brunson. November 2016. "Residents' Opinions about the Jordan River and Three Creeks Confluence Project." *Presentation to Glendale Community Council, Salt Lake City.*

Brunson, Mark and Taya Carothers. October 2016. "Residents' Opinions about the Jordan River and Three Creeks Confluence Project." *Presentation to Salt Lake City Parks and Public Lands Advisory Board.*

Jackson-Smith, Douglas, Courtney Flint, Andrea Armstrong, and Taya Carothers. January 2015. "Utah's Water Future: Local Perspectives on Water Issues Highlights from the 2014 iUtah Household Survey"

8 reports compiled for specific municipalities, 1 report compiled for policy leaders

Carothers, Taya and Douglas Jackson-Smith. April 2015. "Utah's Water Future: Local Perspectives on Water Issues in Logan" *Presentation to Logan City Neighborhood Council Leaders.*

CONFERENCE PRESENTATIONS

Carothers, Taya and Mark Brunson. April 2017. "Socio-demographic factors influencing water quality concerns in the Jordan River, Salt Lake City." Association of American Geographers Annual Meeting.

Carothers, Taya and Mark Brunson. March 2017. "Socio-demographic factors influencing water quality concerns in the Jordan River, Salt Lake City." 2017 Spring Runoff Conference, Utah State University.

Elliott, Cynthia, Mark Brunson, and Taya Carothers. November 2016. "Spatial Impacts on Local Perceptions of the Jordan River." Salt Lake County Watershed Symposium.

Vidal, Luis, Mark Brunson, and Taya Carothers. October 2016 "Relationships among Community Concerns and Green Urban Infrastructure in the Jordan River Corridor." 2016 SACNAS: Advancing Chicanos/Hispanics and Native Americans in Science.

Carothers, Taya, Douglas Jackson-Smith, and Courtney Flint. June 2015. "Who supports environmental flows? Evidence from the 2014 Utah's Water Future Survey." International Symposium for Society and Resource Management.

Carothers, Taya, Holly Greenfield, and Kate Hellman. February 2012. "Communicating Across Cultures, Across Campus." LEAP Professional Development Conference, University of Idaho.

REFEREED JOURNAL PUBLICATIONS

I. Villanueva, T. Carothers, M. Di Stefano, & M.T.H. Khan (2018). "There is never a break": The hidden curriculum of professionalization for engineering faculty. *Education Sciences*.

I. Villanueva, M. Di Stefano, L. Gelles, P. Vicioso, S. Benson, & T. Carothers (2018). An intersectional and multi-modal approach to explore the verbal responses and electrodermal activities of science and engineering women to tokenism and research equity. *Contemporary Educational Psychology. Special Issue: Race-Reimagining Psychology Research: Investigating Constructs through the Lens of Race and Culture*, Under Review.

TEACHING EXPERIENCE

Teaching Assistant, Utah State University Department of Environment and Society 2017
Course: Environmental Nonprofit and Volunteer Management
Logan, UT

Classroom Volunteer, English Language Center of Cache Valley 2015
Logan, UT

Instructor, Institute for Intensive English at Lewis-Clark State College 2012-2014
Courses taught: Introduction to College in the United States, United States History and Civics Basics (developed course)
Lewiston, ID

Professional Development Trainer, Lewis-Clark State College 2012-2014

Course taught: International Students 101 (cultural competency themed course)
Lewiston, ID

Spanish Teacher, Evansville Lutheran School and Posey County Schools 2007-2008
Elementary school grades 3-8 Spanish immersion classes
Evansville, IN

SERVICE AND LEADERSHIP

Environment and Society Graduate Student Representative
College of Natural Resources Graduate Student Council Current

Fundraising Representative and Volunteer,
Cache Valley Refugee and Immigrant Connection (CRIC), Logan, UT 2016-Current

Winter Social Fundraiser Coordinator,
College of Natural Resources Graduate Student Council, Utah State University 2016-2017

Undergraduate Mentor for graduate school applications and job interview preparation
College of Natural Resources Graduate Student Council, Utah State University 2016-2017

Representative and Activity Coordinator for iUtah,
Sorenson Unity Fair, Salt Lake City, UT 2016

Near-Peer Mentor
iUtah iFellows Summer Research Experience Program 2015-2016
Student mentees from: Weber State University, University of Utah, Utah State University

Classroom Volunteer,
English Language Center of Cache Valley, Logan, UT 2015

PROFESSIONAL MEMBERSHIPS

Association of American Geographers 2017-Present
International Association for Society and Natural Resources 2015-16
American Sociological Association 2015-16
NAFSA: Association of International Educators 2010-15

OTHER PROFESSIONAL EXPERIENCE

Lewis-Clark State College 2012-2014
Associate Director of International Programs, International Programs Office

University of Idaho 2010-2012
International Student Advisor, International Programs Office