2017-01-01

Household Water Consumption In El Paso, Texas: Perceptions And Behaviors Towards Water In Urban Households

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HOUSEHOLD WATER CONSUMPTION IN EL PASO, TEXAS: PERCEPTIONS AND BEHAVIORS TOWARDS WATER IN URBAN HOUSEHOLDS

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by

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THESIS

Presented to the Faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF ARTS

Department of Sociology and Anthropology

THE UNIVERSITY OF TEXAS AT EL PASO

December 2017

Acknowledgements

I thank Dr. Josiah M. Heyman, Director of the Center for Interamerican and Border Studies; also, professor and mentor of my research, for giving me the opportunity to work under his guidance and gather information that will be helpful for future research. I thank Dr. Pratyusha Basu and Dr. Patricia Juarez-Carrillo for their help and guidance in this research.

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Chapter 1: Introduction

Although household water consumption is part of everyone's life in El Paso, Texas, individuals do not often stop to think about the information, ideas or activities that impact their behavior related water consumption. Today, the world population continues to grow every day, and household water consumption demand increases uninterrupted. It is crucial to comprehend how individuals interact with water and shape their perception of water

I consider that collecting data regarding household water consumption is necessary for the following reasons: Freshwater is the most vital renewable resource on the planet, and the human demand has become higher than the environment's natural process to renew this resource. It is critical to observe the complexity of water usage in El Paso to create preventive actions before the water crisis continues to grow into a greater problem. Furthermore, household water is used every day by every person in the United States; and it is used, observed, and perceived by water consumers in diverse forms from one user to another. Water consumption behaviors and water perceptions may vary depending on the level of education, age cultural background, income, geographic location, and individuality.

The border of US with Mexico, where cultures of two nations are represented, is particularly interesting for such topics. The mixture of common beliefs and cultural background of two different countries are part of the individual complexity of water consumers in El Paso, Texas. This setting could represent different perceptions and behaviors of household water consumption compared to US counties or cities that are border cities.

Furthermore, the water crisis is a problem that will not improve unless policymakers invest in research that helps to identify individuals' perception of water consumption. Collecting

data about household water consumption is critical to understand how water is used and perceived by individuals in El Paso.

Moreover, the constant growth of population is directly responsible for the increase in water use in agriculture, and household consumption. The water crisis is the number one global risk based on impact to society (as a measure of devastation), as announced by the World Economic Forum in January 2015 (World Economic Forum 2015).

Finally, water is the number one physiological need of humans. The average American family of four uses 400 gallons of water per day. On average, approximately 70 percent of that water is used indoors, with the bathroom being the largest consume (EPA). This said I believe individuals' perceptions and attitudes related to household water consumption impact the idea of water in the city of El Paso, Texas directly. The goal of this research is to examine the characteristics that impact household water consumer of El Paso to identify general tendencies of water consumption.

1.1 Methodology

The main objective of this research is to determine perceptions and behaviors of household water consumption and to examine how those may affect the patterns of water use and consumption levels in households of El Paso, Texas.

I conducted a qualitative exploratory research to collect important data that is often left unexplored in quantitative research. The collected data is a mixture of qualitative and quantitative. I do report the quantitative data using descriptive statistics, which help the reader see basic patterns in the study. While this is not a random sample, I did take measures to diversify the selection of informants (see chapter 3). This said, this study in some ways "represents" a cross-section of El Paso water consumers.

The method of data collection consisted of face-to-face structured interviews with 32 household water consumers in El Paso, Texas. The participants were selected using a purposive and snowball sample method. The participants were selected using this type of sample in order to have a varied sample with the characteristics mentioned before; specifically, preferred or primary language, and geographic location. I used my business, a promotional and textile wholesale company, to select the first participants and asked the first participants for referrals among their social networks for the rest of the sample.

The participants were asked to select a place where to have the interview. the interviews were conducted in the participants' home, a public place (coffee shop or restaurant), and in my business location (private office).

The sample is formed by 16 men and 16 women residents of El Paso, located in the west and east areas of the city. The level of education, age, income level and gender is varied amongst participants. I conducted a qualitative exploratory research; I did not test a hypothesis.

Qualitative data can help to understand the reasons that impact water consumption perceptions and behaviors in El Paso. Qualitative research allows to observe and explore the individual complexity of each participant. Also, qualitative data shows another outlook of what is not mentioned in quantitative research.

My research aims to identify general tendencies in household water consumption by observing the level of education, age, cultural background, income, social interactions, gender, and individuality.

Lastly, the qualitative data collected in this research will help the water research group of El Paso to observe individuality and other characteristics in household water consumption. Dr. Heyman is part of the water research group.

Chapter 2: Literature Review

This literature review of household water consumption discusses subjects linked to water perceptions, water conservation and water scarcity in different national and international sociodemographic groups. Although the thesis objective is to understand individuals' water perception in El Paso, Texas, it is important to review different types of water-related issues to understand what shapes the individuals' perception of water.

In this review, I explore the causes defining household water perception in individuals using George Hebert Mead theory of the social self. More specifically Mead's concepts of the "Me" and the "I. "According to Mead the self is developed through social interaction; biological factors do not define it. The self is divided into two, the "Me" and the "I."

I will use George Herbert Mead's concepts of the "I" and "Me" to observe and analyze the social interactions that influence individuals to behaviors about household water consumption. Mead argues (Appelrouth & Edles, 2016) that the "Me" is the social self; it is how we believe the generalized other sees us (society). The "Me" is learned and developed through social interactions; relatives, friends, coworkers, education, cultural heritage and other factors related to social interaction construct the "Me."

The "I" questions the "Me," what we learned through social interaction. The "I" questions the preconceived opinions or beliefs of water consumption. "The individual is aware of the "I" of the present moment only as it passes into memory, into the "Me" (Appelrouth & Edles, 2016). This said I analyzed how the "I influence people perceptions towards household water consumption." Also, I explored the influence of the "I" in people's perceptions concerning water consumption. The "Me" represents the general point of view based on a communal belief of how individuals should perceive or value water, while the "I" represents the ideas and values

questioning the communal belief towards water consumption of individuals (complex individuality). Observing and analyzing data using Mead's approach helped me to have a better understating of individuals' particular water consumption perception.

Household water consumption behaviors

One of the findings in Fielding's (2012) research in Queensland, Australia shows that good water saving habits are linked to water conversation. The study "represents the most comprehensive investigation to date that allows an assessment of the relative contribution of key predictors of household water consumption identified in past research" (Fielding's 2012). Fielding's (2012) shows the relationship between some demographic variables and household water consumption use. "The demographic profile of a low water using household tends to be one with fewer people who have lower education and income" (Fielding 2012). This article discusses that economic and cultural capital could influence individuals' attitudes toward household water consumption. Cultural capital plays an important role in individuals' social interactions and activities.

Also, cultural capital represents education, knowledge, style and any non-economic resource use by individuals in social interactions; it could be considered the foundation of the individuals' "Me." Moreover, the authors argue that "households who reported more engagement with awareness of water conservation used less water" (Gregory and di Leo et al., 2003, as cited by Fielding 2012). Also, the study argues that "households who were more environmentally concerned and who reported more water conservations awareness and practices used significantly less water than those who were less concerned and aware" (Gregory and di Leo et al., 2003, as cited by Fielding 2012). Environmental awareness influences household members' perception and

decisions towards water consumption. Fielding (2012) mentions several barriers to household water consumption behavior; one of them is the household collective behavior.

The authors explain the behavior or intentions of one of the household members could influence positively or negatively other household members. Different types "Me" among the same household could generate a conflict of perceptions between household members. Moreover, "The dynamics of the household could play an important part in residential water demand" (Fielding 2012).

The constant social interactions among the household members who do not share the same point of view could motivate the members to question their attitudes more often compared to a household where all members have a shared point of view of water consumption. Different attitudes or perceptions of water consumption in the same household could lead the household members' "I" to question their standpoints towards water consumption.

For instance, a household member who saves water while taking showers will probably influence another household member who does not care about saving water while taking showers. The household member "I" will respond to the other household member's water conservation habits; the response could be against or in favor of water conservation attitudes. Another important barrier that could impact household members' water consumption attitudes are the automatic routines, "which can be defined as automatic behavioral tendencies that arise as a result of repetition and practice of actions in similar situations (Ouellette and Wood 1998, as cited by Fielding 2012).

Household water consumption behaviors or patterns could be a result of automatic behavioral tendencies performed by individuals unconsciously; these behaviors could be positive or negative. A water-related habit could also be identified as a water consumption "Me," which is

created by a repetition. The constant repetition of the same actions could lead to a lack of self-questioning or evaluate one's behavior. Automatic behavioral tendencies could be questioned when individuals encounter different perceptions not only within the household but in friends, family or any social interaction or activity. An engagement of contradictory perception or ideas could create a change of attitudes.

Wolters (2013) examines how environmental attitudes and concerns about water scarcity are associated with water conservation behaviors. According to Wolters, water conservation attitudes impact directly household water consumption. Wolters' study took place in Oregon, a city that has a strong environmental reputation. "Sociodemographic factors may also play a role in environmental behaviors such as water conservation. Studies have consistently demonstrated that younger and higher educated individuals' express deeper concerns for the environment" (Arcury 1990, as cited by Wolters 2013).

The higher education characteristic could play an important role towards household water perception. Educated individuals' perception is likely to be updated, objective and rationalized, while uneducated individuals are inclined to have a shared local belief, sometimes inaccurate, of the environment. Educated individuals use their "I" to rationalize the value of water. It is possible that rationalized perceptions of water consumption vary from one city to another (Harlan 2009).

Also, younger people are more exposed to data than older people. Younger people have more access to technology (internet), and this allows them to check and verify information related to the environment.

Data allows individuals to question communal beliefs (household, relatives, and friends) that are responsible for shaping their "Me." The " I" exposed to new knowledge restructures the "Me." Moreover, Wolters argues that the "income can be a factor in environmental behaviors (not

a concern) primarily because people with more expendable incomes often have more time or resources to commit to environmental work" (Buttel 1975, as cited by Wolters 2013). However, it is important to mention some studies mention the opposite (Wolters 2013).

Research on gender and environmental concerns are not consistent either. "Several studies found that women are more likely to express higher levels of concern and have stronger environmental attitudes (Bord & O'Connor 1997, as cited by Wolters 2013), while other studies did not find a link between gender, concern, and behavior (Tindall 2003, as cited by Wolters 2013).

An important finding of Wolters' research shows that "the majority of Oregonians believe there is a water quantity problem. Along with the majority of respondents self-reporting that they perform almost all of the water conservation activities is consistent with previous studies that demonstrate a belief in a problem relates to water conservation behaviors" (Wolters 2013). Water scarcity awareness influences household water consumption attitudes; users are prone to use less water when there is a shared local perception of water scarcity.

It can be said that water consumption awareness is a result of a shared "Me" between Oregonians. The social interaction experienced by the majority Oregonians caused a collective water conservation attitude. Water scarcity in the city of Oregon forced residents to react (use the "I") to this challenge and change their water consumption "Me." Moreover, Fransson and Gärling suggest that "habit, norms and situational constraints are all factors influencing behavior" (Fransson & Gärling 1999, as cited by Wolters 2013). All these factors are part of the "Me" performed by individuals in interactions and activities related to water consumption.

According to Jorgensen (2009) "There is evidence to suggest that (mandatory) water restrictions reduce consumption over the short term when motivations to comply exist among consumers (e.g., perceptions of institutional trust, environmental values, etc.)." Household water

awareness increases when there is a communal sense of preoccupation; this sense of preoccupation is often determined by institutions such as local water utilities or federal institutions such as the Environmental Protection Agency (EPA). Mandatory water restrictions force individuals to question their current water consumption habits.

The individuals' "I" responses to mandatory institutional restrictions and restructures the individuals'' attitudes towards water. Water conservation attitudes shaped by mandatory institutional restrictions could be different from voluntary shaped attitudes shaped by communal beliefs (relatives, household, and friends).

However, mandatory may work over the short term, but education programs will work in the medium and long-term. Randolph suggests that "a substantial and sustained education campaign needs to be instituted that will show how we can all address this issue in a practical and achievable manner" (Randolph 2008). Education campaigns could help to build an accurate water consumption awareness. Unlike to public opinion that is often incorrect, education could help to create a homogeneous attitude toward household water consumption.

Education campaigns could standardize the individuals' "Me," and this could result in a more accurate public opinion related to water consumption. Also, education campaigns could encourage responses to the attitudes of others; it could encourage the "I" to take action. Moreover, Willis research findings "provide empirical evidence to support the view that if society at large values water and is actively concerned with how it is being consumed significant reductions in consumption levels can occur" (Willis 2010). Willis argues that targeted education helps to create household water savings. This study provides evidence that public or communal positive attitudes towards water consumption create a snowball effect.

It is possible that negative attitudes related to water consumption could create the same snowball effect. Although the economic characteristic could be one of the reasons influencing water consumption attitude, it is probable that social interactions have a higher impact on individuals' perception of water value.

Perceptions of household water consumption associated with the borderland.

Household water consumption perceptions may vary depending on geographical location. El Paso, Texas is a borderland, a minority-majority area, where most of the residents have Mexican heritage (USBC). These cultural characteristics could impact individuals' water perception. Also, the cultural characteristics and geographic location of El Paso, Texas could be a combination of perceptions of household water from the United States and Mexico.

A study conducted in Manaus City, Brazil (Giatti 2010), showed that "people were concerned about water-related diseases such as diarrhea, vomit or stomach infections." In contrast to the United States, developing countries such as Mexico, have a different mainstream perception of tap water quality. The constant transit of residents between El Paso and Ciudad Juarez could influence the local debates about tap water quality in El Paso. This constant transit between two countries could create two different water consumptions "Me." it is possible that individuals' perceptions of water quality change depending on geographic location, particularly in the border towns such as El Paso, where cultures of two countries collide.

Despite incidents such as the Flint, Michigan water crisis, The United States has one of the world's most reliable and safest supplies of drinking water (EPA). Although drinking water is mostly reliable in the United States, individuals' perception of water quality is often influenced by factors such as geographic location, level of education and cultural background. Even though tap water perception is negative in developing countries such as Mexico, a

qualitative study research conducted by Mark Francis (2015) in India showed that majority of the participants considered public water supply safe for drinking and other household practices.

Among those who considered public water to be unsafe for drinking, boiling drinking water before consumption was the most popular water purification method practiced. Boiling water before consumption is a common habit in developing countries. Diseases such as diarrhea are caused due to the consumption of tap water.

In some cases, stronger diseases such as cholera and typhoid fever (CONAGUA). Boiling water was a regular practice in Juarez City and rest of Mexico in the 1990s; and still is in rural communities. Before bottled water and water filters became popular, boiling water was the most plausible alternative to Mexican families. The multinational cultural characteristics present in some of El Paso residents could play an important factor in my research.

Multiple cultural backgrounds impact the developing of individuals' water consumption "Me." The "I" could question individuals' variations in perceptions and attitudes towards household water consumption caused by cultural heritage. Individuals are raised and educated in a specific style depending race and cultural background.

Also, the qualitative research by Francis (2015) which consisted of focus groups allowed the researchers to gain insight into participant perceptions regarding water consumption at a deeper level. It is important to consider perceptions of water quality outside the United States to understand the interviews of bilingual and multicultural participants of my research.

Perceptions of water consumption

Wolters (2013) argues that age and socioeconomic status produce statistically significant impacts on cumulative water conservation. “This research found that as people age they are more likely to engage in water conservation behaviors” (Wolters 2013, p.460). Individuals’ age could be associated with a change of attitudes or development of the self (Me). According to Mead, the self is constructed through social interactions and activities (Appelrouth & Edles, 2016).

These activities could include attainment of a higher level of education or autodidacticism. Older people have been exposed to a higher number of social interactions and activities than younger people. Higher exposure to social interactions and activities could be associated with a higher understanding of water conservation in older individuals. Moreover “As income increases water conservation behaviors increase” (Wolters 2013, p.460). Socioeconomic status could be another factor to contemplate while observing household water consumption perceptions in El Paso, Texas.

The social interactions experienced by social classes are different from one class to another. Each social class is exposed to specific social interactions. These social interactions shape individuals’ opinions associated with water consumption. However, as I mentioned before, there are contradictory studies about age and socioeconomic status. Gartin (2010) argues the cost of water plays an important role in determining water desirability. “Low prices, in and of themselves, do not make tap water desirable to drink” (Gartin 2010, p.36). Individuals’ negative perception of tap water quality could be associated with the low cost of water utilities.

Tap water price is lower than any other type of drinkable water. It is possible that individuals associate the low cost of water to low quality due to locally shared opinions, national and international negative situations linked to low water quality. For instance, isolated cases such

as the water crisis in Flynt, Michigan where tap water was highly contaminated with lead. Another reason could be bottled and purified water industry.

Many people prefer water bottle because of its taste (EPA). The particular taste of bottled water (disinfected with chlorine, chloramine, ozone, or ultraviolet light) could be associated with individual's negative perceptions towards tap water. Also, Adorno argues that the culture industry influences individuals' perceptions of actual human needs (Appelrouth & Edles, 2016). A false belief often influences Individuals' perception of bottled water that because bottled water price is higher, bottled water quality is higher as well. People often associate pricing with quality in all kind of products, in this case, bottled water.

However, the culture industry impact associated with the cost and quality of water in individuals' perceptions varies from one person to another. Moreover, home filtration system is another factor to consider in household water perception. Gartin (2010) study findings show that home filtration systems make tap water taste better. Similar to what happens with bottled water, it is possible that individuals associate the taste of water with water quality.

Adorno's concept of culture industry (Appelrouth & Edles, 2016) argues that needs manufactured by corporations, in this case, the need for better tasting drinking water, impact individuals' perception and values about water quality. It is important to mention that the culture industry is part of the construction of the self and the water consumption "Me" of each individual. Social interactions and activities are connected to popular culture or mass culture. Television, radio, films, advertising and news influence individuals' attitudes and desires.

Grafton findings show that "a higher average price increases the likelihood that households will undertake some self-reported water-saving" (Grafton, 2011). Household water- saving attitudes influenced by price increases could be a response to an unpredicted change of economic

value; it is possible that individuals associate a price increase with a water crisis. Water-crisis related issues encourage changes in attitudes in people. Individuals' living in areas where water crisis has become or will become an important issue are forced to question their water consumption "Me" because the shared views of water usage usually change significantly

Another reason could be that a higher cost of water utilities could impact the household financial budget, especially working-class households; in this case, the water saving attitudes could be influenced by economic reasons rather than ethical motives. Moreover, according to a study conducted by Renwick and Archibald where "data from two communities in California was used, results found that higher income households have a statistically significant smaller consumption response to water price changes than lower-income households" (Renwick & Archibald 1998, as cited by Grafton 2011).

Inconsistencies of consumption between higher and lower income households could indicate that individuals' water consumption behaviors are not influenced only by variation of water prices but by moral reasons or other reasons not related to the cost of water; these reasons are possibly developed by each particular "Me" influenced by subjective and objective motives. However, the cost of water might be an essential factor influencing water consumption in El Paso, Texas where the median household income is $42,772 according to the United States Census Bureau (USCB).

Water is usually inexpensive in the developed world (Harlan 2009). The perception of water utilities high cost depends on the household income, education level or cultural heritage; the value of water could be subjective and independent of economic factors. Harlan's (2009) research about household water consumption in Phoenix, Arizona showed that higher income households use more water because their house was larger than lower income single-family houses.

Also, Harlan's (2009) findings show that larger homes are likely to contain more indoor water amenities such as spas or exotic aquariums. It is important to mention that although higher income households could have water-saving attitudes, it is probable they use more water than lower-income households with the same attitudes.

Also, another important factor to consider is home ownership. Randolph argues that "homeowners are likely to have direct control over their homes and are in a position to undertake refitting their homes or buying new appliances that can assist in lowering overall potable water use. On the other hand, tenants have little or no control over these aspects of their home and also do not necessarily see the water bill" (Randolph 2008).

Homeownership could influence individuals' water consumption awareness. For instance, homeowners are likely to pay more attention to water leaks because they would be responsible for the cost of repair. The homeowner has additional concerns compared to the tenant. These additional or fewer concerns influence the household member attitudes and perceptions of water. "Me." Moreover, Randolph (2008) argues that renters do not pay as much attention to the cost of water utilities as homeowners because sometimes the bill is included in the rent.

This said home ownership is another important factor that could impact the household water consumption perceptions and attitudes. It is possible that renters are less likely to question their water consumption "Me" because they are not observing their constant interaction with water, while homeowners are likely to observe in greater detail their interaction with water because they are concerned about their property.

Owners' "I" is likely to respond to any variation in water consumption whereas the renters' "I" is less likely to respond. Also, Randolph (2008) findings suggest that an increase in water prices is unlikely to be an effective strategy to control water demand. Most individuals believe

their water usage is below the average. “Most think water consumption problem is caused by someone else and they should not have to pay for a solution” (Randolph 2008). Attitudes towards water conservation could be based on individuals’ inaccurate self-evaluations of their water consumption.

There could be a gap between what people perceive they are using and what they in fact consume. Self-evaluation of water consumption could be influenced by a lack of variation in water bills, income level, education level and social interactions. Social interactions with family, friends, and coworkers could blur individuals’ decisions related to water consumption. A person interacting with individuals with similar points of view regarding water will be less likely to question his or her current attitudes about water consumption. A person interacting with individuals with different opinions related to water consumption is likely to question his routine or habits (Me) in relation to water consumption.

Chapter 3: Sample Characteristics

The interview participants are men and women, residents from El Paso, Texas 18 to 70 years old. Initially, in the proposal, the sample was planned to be divided into two groups, monolingual (English only) and bilingual (English and Spanish). Due to the cultural characteristics of El Paso, a border city with Mexico, most of the participants are fluent in English and Spanish. The participant chose the language group at the beginning of the interview. This said the groups were divided into two groups:

- English as a primary language (14 participants).
- Spanish as a primary language. (18 participants).

It is important to mention that the language characteristic is part of the cultural background (discussed below), but the results show language alone does not impact household water consumption perceptions and attitudes.

Geographic location is another characteristic considered in the sample. 13 participants reside in the west area, and 19 participants reside in the east area of El Paso. The east area includes participants residing in the downtown area.

The final sample consisted of 32 participants. 16 women and 16 men from a different age (18-70). The uniform division of gender (women and men) was planned during the research.

I begin with characterizing key demographic characteristics that I used to introduce diversity into my snowball sample. I then discuss interesting data collected during the interviews.

I varied my opportunity sample according to the following characteristics:

3.1 Age

The findings show that 34.375% of the participants are between 18-30 years old, 37.5% of the participants are between 31-40 years old, 9.375% of the participants are between 41-50 years old, and 18.75% of the participants are between 51-70 years old (figure1).

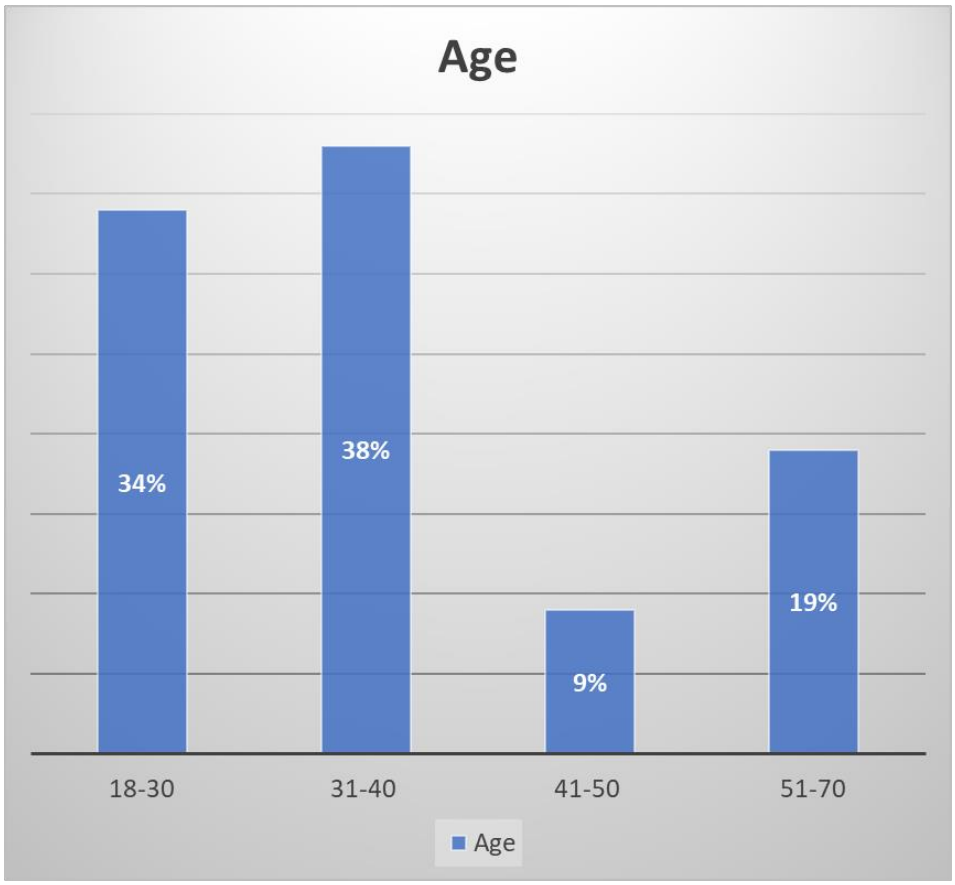

Figure 1: Age categories

3.2 Level of education

The findings show that 34.375% of the participants have a high school degree, but less than a bachelor degree, 40.625 % of the participants have a bachelor degree or but less than a master degree, and 25% have a master degree or a higher level of education (figure 2).

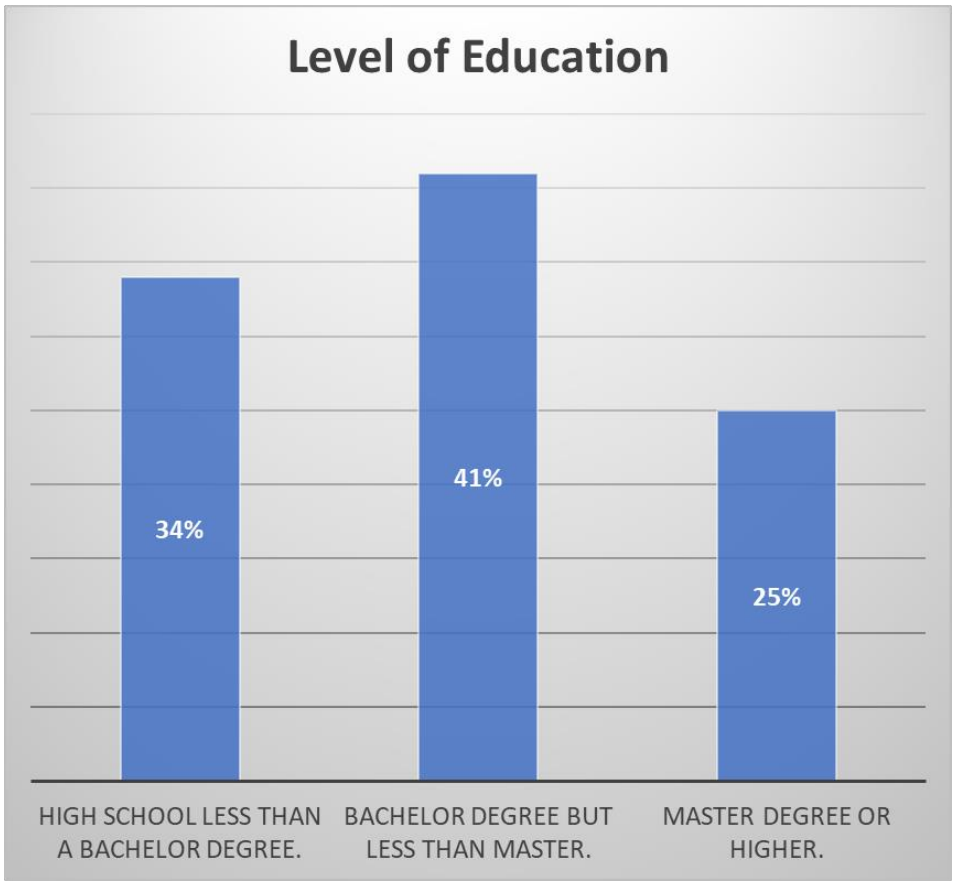

Figure 2: Level of education.

Participants with a bachelor degree and higher education (master degree or higher education included) showed a higher comprehension o of the questionnaire compared to the less educated participants (level of education below bachelor degree). Less educated participants struggled to answer complex questions that demanded higher water consumption awareness.

Not all the participants with a bachelor degree or higher education showed the same level of water awareness, but they showed a higher level of comprehension in general during the interview.

3.3 Cultural background

El Paso, Texas is a border with Juarez city, Chihuahua, Mexico. It is essential to consider the border characteristic of El Paso because residents of El Paso are more exposed to Mexican culture compared to other non-border cities. Residents of El Paso often cross the border or visit Mexico. This said, it is possible that El Paso residents cultural background impacts water consumption perceptions and behaviors. This research focuses on the cultural background in El Paso only. Further research is needed to compare border cities to non-border cities.

The results of the interview show that 56.25 % of the sample considered Spanish as their preferred language, while 43.75% of the sample consider English as their preferred language. All the sample except one participant are bilingual or are at least fluent in English and Spanish. 50% of the participants responded that they have a Mexican cultural background (of one these participants responded “Mexican/Cuban”), 40.625 % of the sample responded that they have a Hispanic/ Latino background, 6.25% of the participants responded they have a Mexican/American cultural background, and 3.125 % participants responded they have other or different cultural background (figure 3).

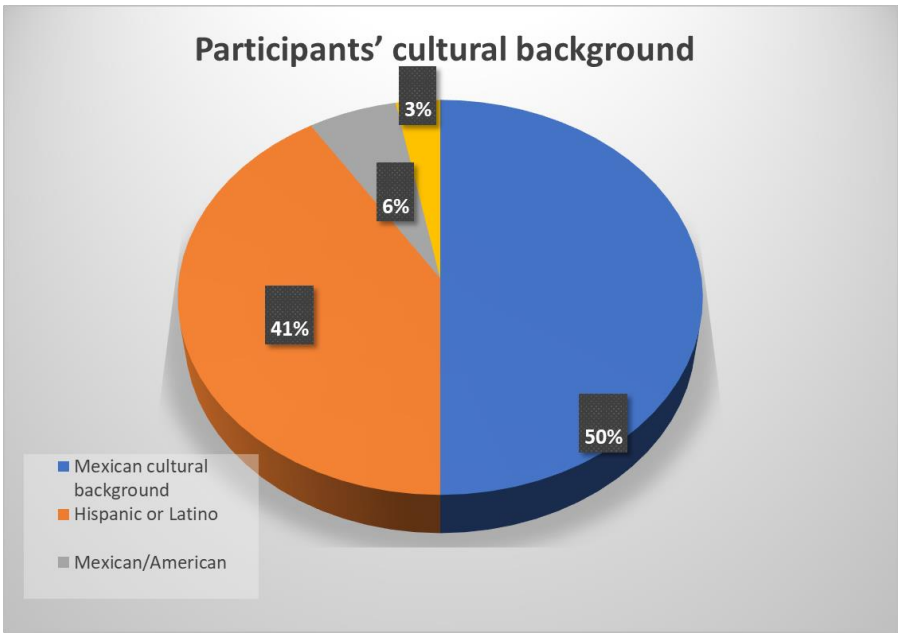

Figure 3: Cultural background.

The results were expected since El Paso is a city were the race, and Hispanic origins are 82.2% of the population (United States Census Bureau)

In general, the cultural background of the participants by itself did not appear to impact El Paso residents' water consumption perceptions and attitudes, but the combination of cultural background and other characteristics such as education and age could influence water consumption decisions. Cultural background is one of the key characteristics that influence household water consumption perception, as discussed in chapter 5.

3.4 Residence characteristics

The average residence size of the sample is 2,150.06 square feet. The size of the residence was only a factor to consider when participants had a yard, and in rare cases, a pool. Water consumption perceptions varied from participants with a yard from participants without a yard, but the participants' perceptions towards water consumption were not considerably

different from one another. 100% of the participants responded that their water is supply by El Paso Water Utilities (EPWU).

The residence size is not a significant characteristic to study in this research, but it could be a characteristic to consider in further research where the sample's average residence size is higher, or where residences have a landscape that requires a high amount of water.

3.5 Income level

The findings show that 6.25% of the sample has an annual family income of 0-15,000, 43.75 % of the sample has an annual family income of 15,000-30,000, 9.375% of the sample has an annual family income of 30,000-50,000, 28.125 % of the sample has an annual family income of 50,000- 80,000, and 12.5% has an annual family income of 80,000 or more. The participants' estimated water bill in the summer is $72.80 and $57.36 in the winter. The water bill cost did not vary considerably between households with lower and higher annual income.

The following chapter focus on the key questions of the questionnaire used to collect the research data. These questions helped to determine the main factors or characteristics impacting the participants' perceptions and decisions related to water consumption.

3.6 Gender

The findings show that 50% of the participants are women, and 50% of the participants are men. There are some preliminary findings of gender that will be mentioned in chapter 5.

Chapter 4: Household Water Consumption Key Questions

The data collection method for this research consisted of a face-to-face interview using an open questionnaire. Each interview lasted between 25 to 60 minutes. The questionnaire includes 52 questions. Brian Guerrero created this questionnaire for research related to water consumption. Dr. Heyman and I revised the questionnaire to fit this research requirement.

All the questions were important to collect data and examine the reasons that impact the participants' perceptions and behaviors related to water consumption, but among the 52 questions, some questions served as key questions to determine the main reasons impacting the participants' perceptions and behaviors towards water consumption.

The key questions are divided into two groups, simple data, and complex data. Simple questions consist of simple and shorts answers; Complex question consists in more elaborated answers. Some of the complex questions were responded with simple and short answers, but there are interesting cases were participants expanded their response and showed individuality.

It is important to mention that the questionnaire was explained or rephrased in occasions where the interviewee did not seem to understand the question. This said I did not force the interviewees to answer the questions or expand their responses. Forcing the interviewees to answer or expand their responses would have affected the research findings.

Both groups of questions are important to determine the factors impacting water consumers' perceptions and decisions.

4.1 Simple data questions

1. What is your ethnic background or cultural heritage? (Can give more than one answer):

    a) Race classification:

    b) What is your preferred language? (English, Spanish, both, Other_____)

c) Were you born in Mexico? (How about your mother, father, or any grandparents?)

This question provided information required to designate the participant's sample group (English as a primary language or Spanish as a primary language) and allowed to verify the participants' cultural background. As expected, the findings showed that in general, the sample's cultural background is Hispanic or Mexican. El Paso, Texas is a border city where 82.2% of the residents are Hispanic or Latino (U.S. Census Bureau).

The cultural background of the participants by itself resulted in being not significant towards water consumption perception. Even if we separate the participants into two clusters, born in Mexico, and born in the USA, the differences between these two groups are not significant. However, as I mentioned before cultural background combined with other factors impacts the participants' perceptions related to water consumption.

The cultural background is part of the complex individuality of each water consumer. Household water consumers that have a connection to more the one culture could have a different perception of water consumption than water consumers than only have a connection to one cultural background. This said the findings did not show evidence that cultural background by itself impacts the participants' perceptions and behaviors towards household water consumption.

Also, the data collected in this question is important to determine the participants' preferred language. The general tendency shows that residents of El Paso are fluent in Spanish or at least understand and speak some Spanish.

2. Is water important to you?

    a) In what ways is water important to you inside of your home?

    b) In what ways is water important to you in your yard or landscape?

c) In what ways is water important to you in your work and business?

This question provided a general idea of the participant's water perception. The general tendency shows that the participants' see water as a utility, like electricity, or gas. In general, the participants' lack a deep connection or understanding of water overall. They usually responded simple and short phrases such as "I just use it for drinking purposes" or "it is important for personal hygiene. "In rare cases, participants showed knowledge above the average. These participants expanded their response about the importance of water. For instance, some of the uncommon answers where:

"it is extremely important. Access to clean and nontoxic water is very important. All the fruit and vegetables and all the produce are very important to me."

Another interesting and rare response was:

"I need water for showering and for cleaning. It's a feeling of safety for me. There was one year that the pipes clogged, we didn't have water, it was very disturbing not having water. We felt homeless not having water inside the house."

Here the participants expanded their opinion and expressed their individuality. These uncommon cases responses show the influence of complex individuality towards water consumption. These participants had a deeper awareness of water and were their behavior towards water was influenced differently than the rest of the sample. It is important to mention that other participants might have these types of different perceptions of water, but only rare cases expressed those different or deeper perceptions during the research.

3. Overall, which part of your home life do you believe uses the most water?

This question showed the participants' perception of personal water usage. 78.125% of the participants responded they believe the bathroom (showers, toilet, personal hygiene) uses

the most water in the household. The rest of the participants believe the yard, air conditioning system and kitchen use the most water in the household.

The general tendency shows household water users identify showers, toilet and personal hygiene as the activity that uses the most water. 43.75% of the participants identify showers as the activity that uses most water specifically. It is important to mention that the participants were not aware of the exact amount of water they use, but they identified the bathroom was used as the part of their home life that uses the most water.

4. Do you believe your water bill is reasonable? Why or why not?

This question helped to understand participants' perception of water monetary value. This helped to compare economic value of water among the participants considering their social class, education level, and cultural background. The findings show that 93.75% of the participants believe their water bill reasonable (figure 4).

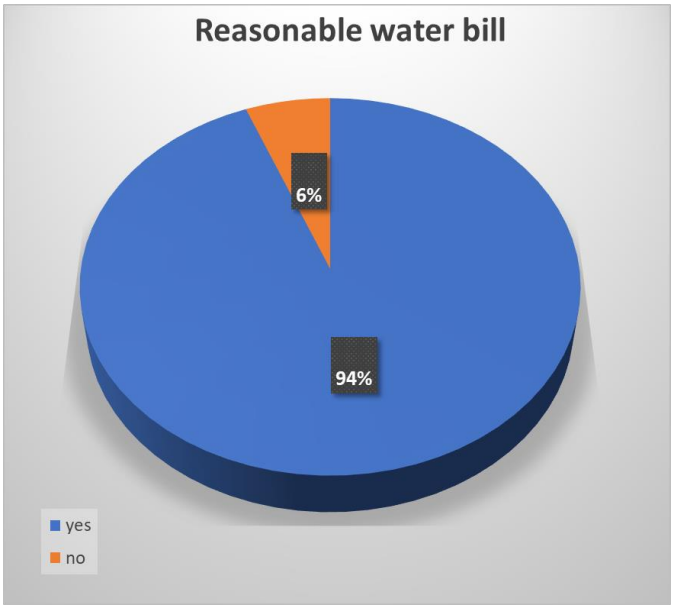

Figure 4: Water bill.

The general tendency shows individuals do not categorize their water bill as a luxury or as an expensive bill. In several cases, the participants mentioned that their water bill is inexpensive. For instance, Cesar mentioned: "Yes. Water is very cheap for a desert like El Paso."

One of the two cases that responded the water bill is not reasonable is Jessica, a female with a bachelor degree that has an annual income of 80,000 and above. When I asked her if she believed her water bill was reasonable, she responded:

"No, I think my bill is too high. I used to live in a one-bedroom apartment, and I used to pay 30 Now I moved to a two-bedroom apartment, and I pay the double, maybe they charge according to the apartment size."

It is important to mention that Jessica was the only participant that mentioned she pays her water bill directly to the apartment company and not to the EPWU. Even though Jessica was part of the group of participants with the highest income level, her perception about the water bill is that is expensive. In this case, Jessica's perception is influenced by the fact that she used to pay half before she moved to a new apartment. Jessica's individual complexity influenced her perception of the cost of water. The fact that she experienced and 100% water bill increase changed her perception of the cost of water utilities. In this particular case, the characteristic that influences the perception of water cost is not income level, but a personal situation experienced by the household water user.

5. Do you believe tap water is safe to consume?

This question provides information related to the level of tap water trust in household water consumers.

The results show that 84.375% of the sample believes that tap water is safe to consume, and 12.5% of the sample believes tap water is not safe to consume, and 3.125% of the sample is not sure if tap water is safe to consume (figure 5).

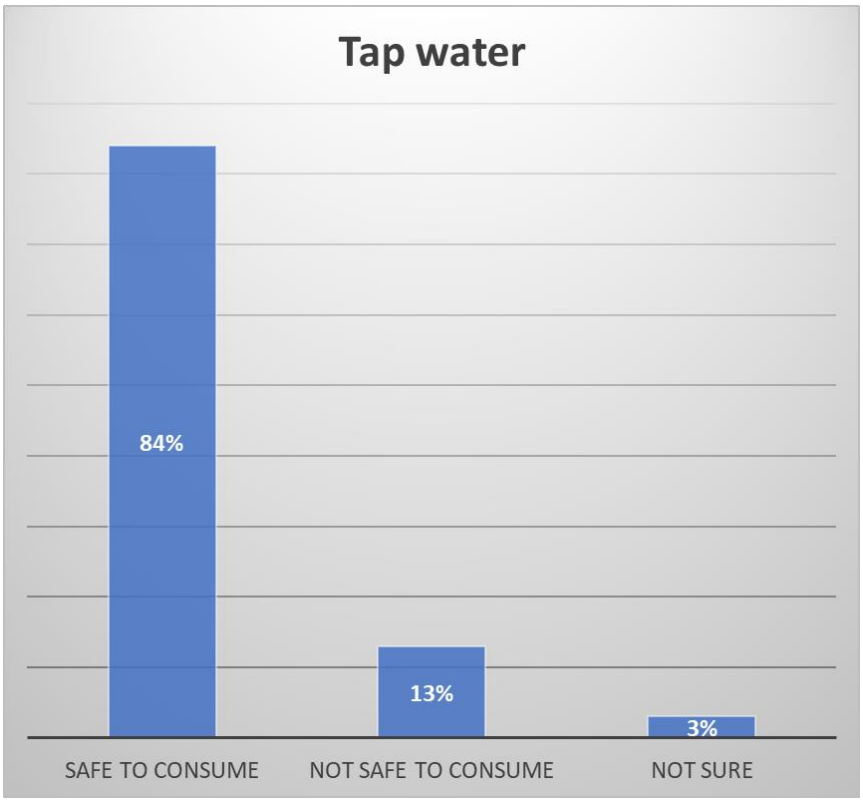

Figure 5: Tap water.

6. What kind of drinking water do you use? Why?

This question provided information related to different sources of drinking water such as tap water, bottled water, water dispensers, and other sources. The main objective was to identify the participants' primary source of drinking water.

The results show that 46.875% of the sample uses tap water as their source of drinking water (tap water or tap water with filter), 34.375% of the sample use bottled water as their

source of drinking water, and 18.75% of the sample use a combination of tap water, filtered water, and bottled water. 84.375% of the sample believes tap water is safe to consume.

The general tendency shows that residents of El Paso believe tap water is safe to consume. Participants believe that their water supply is safe to drink, even some of the participants that preferred to consume bottled water mentioned they consume tap water (filtered or unfiltered) sometimes because they know it is safe to consume. In rare cases, participants distrusted tap water but had no foundation or information to back up their disapproval about tap water. Only one participant mentioned that an old water pipe system was the reason of why she distrusted tap water and only one participant did not trust tap water as a precaution since her husband has cancer and a weak immune system. Only 12.5 % of the sample distrusts tap water, and only 3.125 is unsure if tap water is safe to consume,

7. How important is it for you to conserve water? Not important – not very important – somewhat important – very important – extremely important – No opinion.

This question provided information to measure the participants' water conservation self-evaluation. The results of the interviews show that 21.875% of the participants believe it is extremely important to conserve water, 50% believe it is very important, 21.875% believe is somewhat important, 3.125% believe is not very important, and 3.125% have no opinion (figure 6).

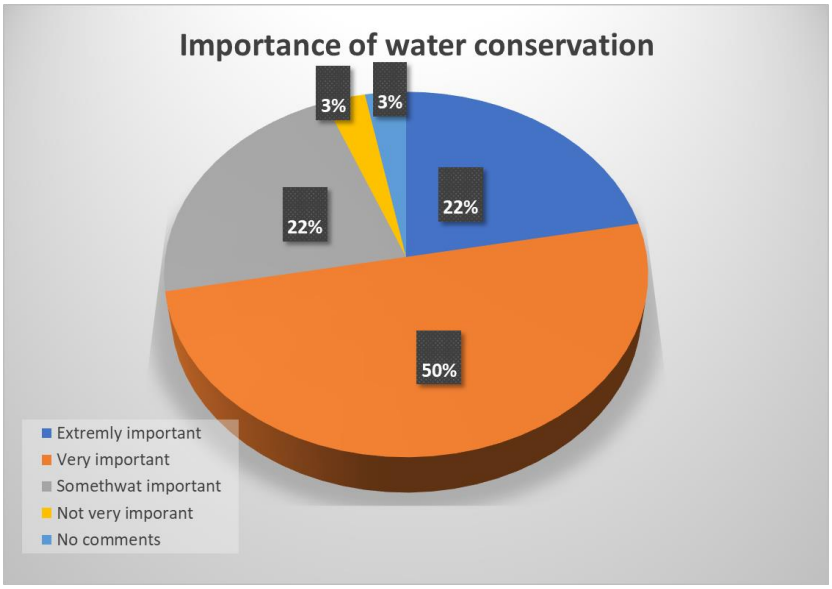

Figure 6: Importance of water conservation.

It is important to mention that the response to this question contrasted in some interviews with other responses about water conservation.

The general tendency shows that individuals believe it is important to conserve water. This question only shows the self-evaluation of each participant and does not offer information to determine if the participants conserve or not conserve water. In general, the participants did not show extraordinary water conservation habits.

8. Would you be interested in technology that helps you track your water use for different purposes in real time?

This question provided information to understand the participants' acceptance of technology, water economic value and water conservation. 90.625% of the participants are interested in technology that helps to track water usage.

The general tendency shows that residents of El Paso would be interested in technology that helps to track water usage. Only 9.375% of the sample responded that is not interested in

technology that helps to track water usage. These participants showed indifference towards water issues in general during the interview.

The responses of the participants were generally “Yes,” only one participant had an expanded answer:

“Yes, actually I thought about inventing something like that using a valve tells you how much water you are using. I am interested about it to save money.”

Alfonso is a civil engineer who has above the average knowledge about water consumption.

9. Approximately:

    a) How many showers do you take per week, and for how long?

    b) How many times do you wash dishes per week?

    c) How many times do you wash clothes per week?

    d) How often do you use water to cook?

    e) How many times do you flush the toilet per (day)?

This question provided information related to personal water consumption within the household. This data helped to determine the average water consumption per participant in household activities that require water.

The findings show that the average household water consumer takes 8.375 showers per week for 11.40 minutes. In uncommon cases, participants responded they take between 15-20 showers per week. The mode or most repeated response is 7 showers per week for 10 minutes.

The findings show that the average household consumer washes dishes 8.875 times per week. In uncommon cases, participants responded they wash dishes between 21-24 times per week. The mode or most repeated response is 7 times per week.

The findings show that the average household consumer washes clothes 1.70 times per week. In uncommon cases, participants responded they wash clothes between 0.5 times per week. The mode or most repeated response is once a week.

The findings show that the average household consumer uses water to cook every day. In uncommon cases, participants responded they never use water to cook. The mode or most repeated response is every day.

The findings show that the average household consumer flushes the toilet 7.48 times per day. The responses varied from 2 to 20 times per day.

10. Do you plan on using (More, Less or the Same) amount of water in the future?

This question provides information about individuals self-evaluation of water usage in the future. The findings show that 56.25% of the sample plan to use the same amount water in the future, 37.5% plan to use less, and 6.25% plan to use more.

11. Have you deliberately altered your water usage? If so, how and, why?

This question provides information about the possible reasons that influence water usage alteration in households. The findings show that 68.75% of the sample have not altered water usage deliberately, and only 31.25% of the sample have changed water usage deliberately.

The general tendency shows that individuals have not altered their water usage deliberately. Also, there is a general tendency in the participants that altered their water usage; the participants' most common reason for altering their water usage is because they moved to a different residence or decided to take shorter showers. A bigger residence with a yard demands more water, while a smaller residence without a yard demands less water.

In an isolated case a participant altered her water usage due to extreme climate conditions experienced in the past:

"After that winter when the pipes feezed I realized how important water is. After having a week of no water, that really changed my mind about water. I started to really, really value water. it was like having a drought but only in my house."

In this particular case, the individual was exposed to an unexpected situation, where the lack of access to water made her alter her water usage. This said the general tendency shows that individuals alter water usage when they experience lifestyle changes, such as moving to a new home, or challenges, such as a water shortage.

12. Have you changed your landscaping in order to conserve water?

This question provides information about water conservation awareness impacting landscaping in El Paso. The findings show that 25% of the participants have changed their landscaping to conserve water, and 75% have not. Landscaping in El Paso, Texas is usually low-water maintenance (a few desert plants and rocks mostly). The average participant did not have a landscape that requires a high amount of water to maintain.

13. Would you be interested in technology that helped you track your water use for different purposes in real time?

This question provides information to evaluate the acceptance of technology for personal use related to water consumption. The findings show that 90.625% of the participants are interested in technology that helps to track water usage for different purposes in real time, and only 9.375% of the participants are not interested (figure 7).

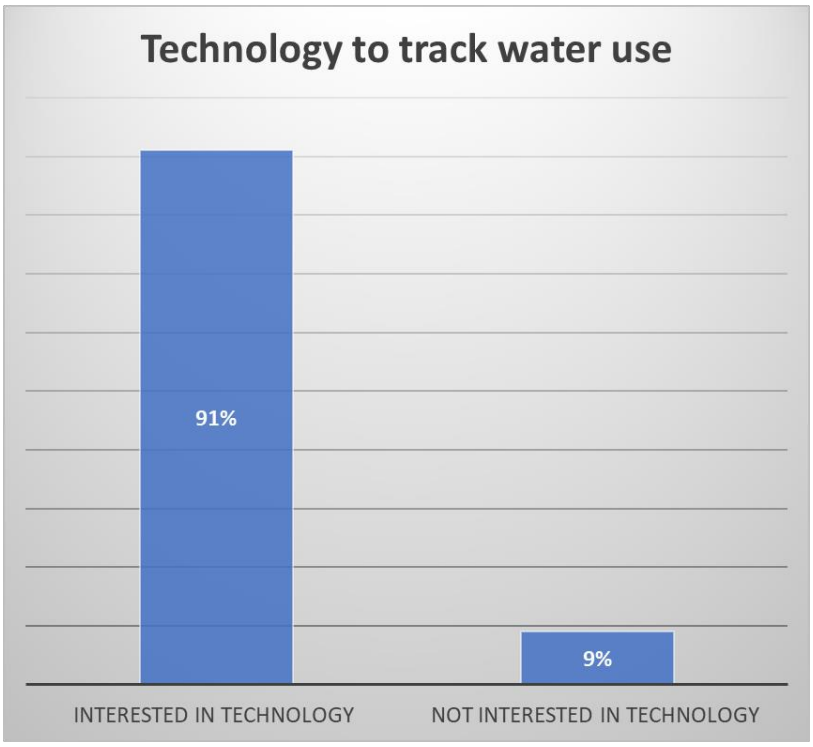

Figure 7: Technology to track water.

The general tendency shows that participants are interested in technology to track water usage. It is important to mention that in general the participants that were interested in technology to track water usage appeared enthusiastic or attracted to this proposal during the interview. In some cases, participants mentioned that cell phone apps to track water usage would be a great idea.

14. Is future water of interest to you?

This question provides a general impression of individuals' self-evaluation of interest in the future of water. The findings show that 37.5% of the sample considers the future of water a very great deal, 31.25% consider it a great deal, 21.875% have some interest, 6.25% have a little interest, and 3.125% have no interest at all.

The general tendency shows that the participants are concerned about the future of water. The results were expected in the proposal because of the climate characteristics El Paso, which is a desert city. Individuals that live in regions where it does not rain often tend to value water more than individuals that live in regions where rains often.

15. Do you seek information about water issues?

This question provides information about water awareness. The results show that 87.50% of the participants do not seek information about water issues, 9.375% seek information, and 3.125% have sought information in the past (figure 8).

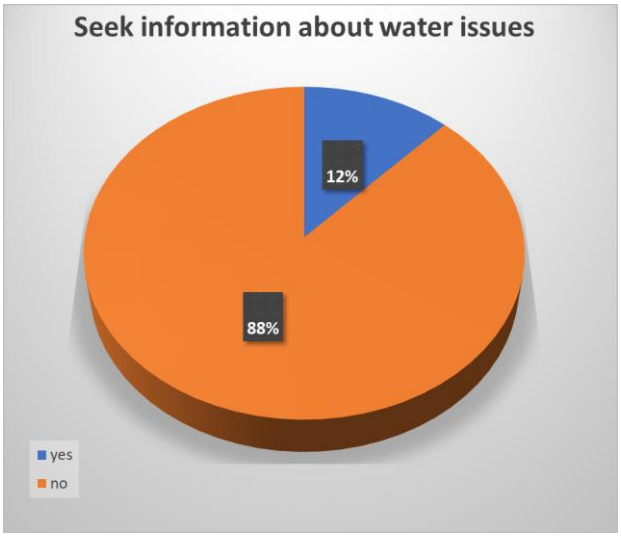

Figure 8: Seek information about water issues.

In uncommon cases, the participants mentioned water issues can be controlled and should not represent a problem in the future.

16. Do you seek information about climate issues?

This question provides information about climate issues awareness.

The results of the interviews showed that 68.75% of the participants do not seek information about climate, 28.125% seek information and 3.125 % sometimes seek information (figure 9).

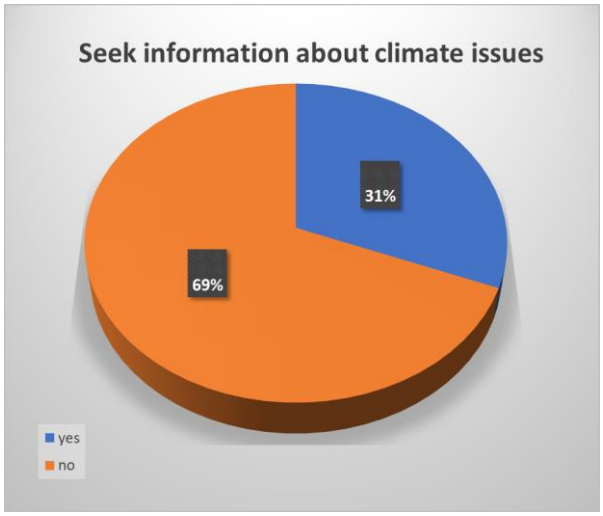

Figure 9: Seek information about climate issues.

The general tendency shows that the participants do not seek information about climate issues. The results show that the participants are more concerned about climate issues than water issues.

17. Do you believe there should be more information available about water concerns and issues? How likely are you to go to a website that gives information about water policy issues and concerns?

This question provides data to understand the individuals' perception of the quantity of information available to the water consumer related to water concerns and issues. The results show that 93.75% of the sample believes there should be more information available about water concerns and issues, 3.125% believes there should not be more information, and 3.125% believes there is enough information already. It is interesting that even though the general tendency shows individuals do not seek information about water concerns and issues they believe there should be more information about it.

The results show that 71.875% of the participants are not likely or never go to a website that gives info about water policy issues and concerns, 12.5% are very likely to go, 3.125 % do

it often, and 12.5% might go or do it once a year. The general tendency shows that individuals are not likely to go to a website that gives information about water policy issues and concerns.

18. Have you ever reported someone for wasting water? Have you ever attended a public policy making meeting?

This question provides information about the individuals' reaction to someone wasting water. Also, it provides information about individuals involved in local public policy. The findings show 93.75 % of the participants had reported someone for wasting water, and 93.75% of the participants have attended a public policy-making meeting. The general tendency shows that household water consumers are indifferent or do not want to be involved in activities that help to improve water issues or to improve water policy.

19. Do you know what direct potable reuse is? What are your thoughts about direct potable reuse?

The findings show that 9.375% of the participants know the concept of Direct Potable Reuse and 90.625 do not know the concept. After explaining the definition of direct potable reuse - Direct Potable Reuse involves taking wastewater, giving it advanced purification (to standards higher than drinking water) and putting it back into the regular drinkable water supply – the participants showed approval and understanding attitudes towards direct potable reuse.

In rare cases, the participants showed negative reactions followed by acceptance and understanding attitudes. The general tendency shows that there is no rejection of the concept or idea of direct potable reuse. As mentioned before, the participants were not aware of the existence of this purification process. To understand the household water consumer approach towards Direct Potable Reuse additional research would be necessary. This said this research does not focus on Direct Potable Reuse.

4.2 Complex data questions

1. What reasons do you have to conserve water?

This question provided information about personal motivations or reasons influencing the participant water conservation attitudes. 59.375% of the participants believe the reason to conserve water is to help the environment. The general tendency shows that water consumers' reasons to conserve water are associated with the environment. The participants associate helping the environment to save water because "it is a scarce resource," saving water because "El Paso is a desert city," "helping to conserve the environment" and other similar responses.

The consumers identify water as a limited resource and believe it is important to conserve it. The fact that El Paso, Texas is a desert city also influence the participants' view of water. Living in a geographic area where water is a limited resource creates a common belief in conserving water.

In general, the participants did not describe or elaborated their responses. The majority of the data collected in this question was simple and short. For instance, the participants responded:

"Drinkable water is limited."

"To preserve life."

"Environmental reasons."

In rare cases, the participants offered elaborated answers. For instance:

"I live in the desert; it is cost efficient to conserve water. I consider it is good for the environment not to waste resources. I like to make good use of resources."

Both, simple and descriptive answers offer the same information; the average household water consumer conserves water to help the environment.

It is important to mention that 20% of the participants responded that they save water for economic reasons. The participants' answers were short and simple. For instance:

"Economic reasons, I don't want to spend money on water."

Even though the general tendency shows that people in El Paso, Texas conserve water to help the environment, the data collected in this question could have been influenced by the context of the questionnaire. In some cases, the participants were uncertain or nervous about their answer. Additional research would be required to determine the reasons for water conservation in El Paso, Texas.

2. Have you deliberately altered your water usage? If so, how and, why?

This question provides information to identify the causes that influence participants' variations in water consumption habits. The general tendency shows that residents of El Paso do not alter their water usage deliberately. 68.75% of the participants have not deliberately altered their water usage, while only 31.25% have altered their water usage deliberately.

The main reason that impacts the participants' deliberately water usage is the moving to another residence. In some cases, the participants moved to a larger house, which resulted in higher water usage; in other cases, moving to a smaller residence, which resulted in lower water usage.

In rare cases, the participants had other motives to alter their water usage. For instance, Julia altered her water usage due to a specific personal experience:

"After that winter when the pipes were frozen. I realized how important water is. After having a week of no water that really changed my mind about water. I started to really really value it. it was like having a drought but only in my house."

In this particular case the participant experienced a lack of water which impacted her water usage behavior, but in general water usage is altered when the consumer moves to a different residence. Also, participants mentioned they had altered their water usage by taking shorter showers. In a previous question, the participants identified showers as the activity that consumes the most water in residents of El Paso.

3. If your water bill was to become so costly that you had to conserve water, what would you do?

This question provides information about how water would be seen or treated if its price were higher than it is right now. Water has never been seen as an expensive utility by the household consumers. In general, the participants responded that in case of a cost increase of water they would limit the water usage or change they habits.

The respondents mentioned that common activities such as watering plants, having a landscape, taking showers and using the restroom would have to be limited or change. For instance, one of the participants responded:

"I would limit my showers to ten minutes only," or "I would use less water, I would have to conserve water."

In general, the participants responded that they would decrease their water usage overall. In uncommon cases, the participants expanded their response and specified how they would conserve water if necessary. For instance:

"Maybe I would reduce the grass area in my yard, put rocks instead. Make it Xeriscaping; I'll use desert plants, native plants that don't require too much water and maybe put synthetic grass or work more to earn more money."

Xeriscaping is a type of landscape that does not require water used in arid regions. At the end of the response, the participant commented: “work more to earn more money.”

This individual identified that the cost of water issue would not be a problem if he earns more money. The cost of water perception would be approached differently among different economic. Also, while some consumers would see an increase of the cost of water as an effect of water scarcity and take social action to support this issue, other consumers might see it only as an increase in a utility bill that does not impact their lifestyle or economy.

4. What measures do you believe the authorities or the city should take to conserve water?

This question helped to identify participants’ general understanding of local legislation related to water consumption. The opinion about this issue was varied, but the general tendency showed that residents of El Paso believe the authorities should limit the use of water in households to conserve it. Other interesting answers were revealed that the economic factor plays a key role:

“First of all, government buildings have to buy water conserving appliances, faucets or toilets. Also, the landscaping has to use native plants; they are doing that already. Also, tax breaks for households that do the same.”

Other participants mentioned the city should keep the water flow meters in good shape to avoid water leaks or disproportionate use of water.

5. What are the main causes of future changes in water?

This question provided information about what participants expect of water in the future. The general tendency shows that residents of El Paso believe overpopulation will be the main

cause of changes in water the future. In general, people believe the demand for water will be higher than the supply.

Some participants mentioned that the climate change would be the cause of changes in water in the future. In rare cases, the participant had no comments about this question or misinterpreted this question. One isolated case mentioned she does not care about this issue at all:

"Since I was a kid, I have been hearing we are running out of water, and nothing has happened yet. I don't believe there will be water scarcity. When I was a kid, I worried about this issue because I used to hear it every day. Nowadays I don't pay attention because I grew up and nothing changed at all. I care about other stuff. When you are a kid, you don't have a thing to worry about, that's why you care about water."

Although this is an isolated case, it is interesting to observe how this participant expressed her distrust about water issues. This distrust about water issues is based on her personal experience towards water consumption. In this particular case, the participant did not observe any changes in water consumption during her life, and this impacted her perception of water.

This is a good example of complex individuality impacting behaviors towards water consumption. The social interactions experienced during the participant's childhood influenced her perception of water today.

6. Do you believe that your water supply (tap water) is safe to consume? Why or why not?

Question six provided information that helps to understand participants' reasons for approval or disapproval of local tap water. In general, the average household water consumer

believes tap water is safe to consume. The findings show that 84.375% of the participants trust tap water, only 12.5% believe tap water is not safe to consume, and 3.125% is uncertain.

The general tendency shows that household water consumers believe that their water supply is safe to drink, even some of the participants that preferred to consume bottled water mentioned they consume tap water (filtered or unfiltered) occasionally.

Only one participant mentioned that old water pipes were the reason she distrusted tap water, and only one participant did not trust tap water as a precaution since her husband has cancer and a weak immune system.

In rare cases, participants distrusted tap water but had no foundation or information to back up their disapproval about tap water. For instance, one of the participants that do not trust tap water mentioned:

"No, I don't trust it. Maybe is just ignorance but I do not trust tap water."

The participant had no reasons to believe tap water is not safe to drink. Even when I tried asked again trying to obtain an explanation she repeated: "I just don't trust it."

One of the participants that believe tap water is not safe to consume mentioned:

"No, I don't know how old the pipes are, and there is plateau behind my home where I hear water or sewer being disposed."

In this case, the participant's perception of local tap water is influenced by her location. The fact that she lives near to a plateau where a sewer is being disposed of influences her perception of tap water. In this particular case, the complex individuality plays an important role defining the water consumer perception, but the findings show a general tendency of tap water trust in residents of El Paso, Texas.

The participants that distrusted tap water were influenced by their complex individuality. It is important to observe complex individuality to determine a possible general tendency in unusual cases. Additional research would be required to understand the complex individuality impacting household water consumption.

7. Do you use water to grow plants or food? If so, do you choose specific ones for a particular reason?

This question provides information that helps to establish a connection between household water consumption and plants or food. The findings show that 50% of the participants use water to grow plants or food, and 50% of the sample does not use water to grow plants or food; only 6.25%% of the participants that have plants, grow herbs, vegetables or fruits.

It is important to mention that only the participants that grow herbs, vegetables or fruits (edibles) were enthusiastic while talking about their plants. For instance, Ernesto, 42 years old male, grows watermelon, peach, and jalapeno. When I asked Ernesto the specific reason for why he grows food, he seemed convinced that his home-grown food tastes and is overall better than commercial food:

"My fruit is very different compared to the one you buy in the market, no chemicals. It tastes very good."

Ernesto was one of the rare cases of participants that grow more than herbs in a household. The general tendency of the research shows that the participants that grow plants or foods grow only herbs using indoors pots.

In contrast to Ernesto who was proud of his home-grown food, Alfonso, a 32 years old male, had a different perception of growing food. When I asked Alfonso about his water usage related to growing plants or food, he responded:

"I have a lime tree, an apple tree, and promenade tree, but I rarely eat the fruits."

Although Alfonso has a variety of homegrown food, his perception about growing plants is different from Ernesto's. Alfonso does not find a particular value on his home-grown fruits; Alfonso's fruit trees are perceived as a decoration that is part of the landscape or yard only.

Even though Ernesto and Alfonso use water to grow food or plants the same way, the perception of the homegrown food between them is different. Ernesto values the flavor of his fruits and Alfonso values the look of his landscape.

The general tendency shows that household water consumers are indifferent to their plants, but in uncommon cases, the participants found an extrinsic value in their plants. It is important to mention that the amount of water was not a significant factor in growing plants, herbs or food, even though El Paso is a desert city.

The findings show that 100% of the participants use a cup, pitch or a small recipient to water indoor plants or plants in pots. In rare cases, the participants use recycled water to water their plants (water used for washing dishes).

The general tendency shows that participants with a yard use a sprinkler system or a hose to water the garden and plant areas. In general, the participants did not consider or mention the amount of water in this section of the interview.

Only in rare cases, the participants mentioned the amount of water used to water the yard, but none of them considered it a factor or a barrier to maintain a yard. As I mentioned before, the average residence size is only over 2,000 square feet and has no yard. Additional research is required to understand the variance of household water consumption between residences with and without a yard that requires water to be maintained.

8. Have you purchased water conserving appliances? If yes, why? If no, would you like to or plan on doing so in the future?

This question provides information that helps to identify water conservation behaviors in the participants. The findings show that 31.25% of the sample have purchased water conserving appliances, while 68.75% of the sample have not. Although a third of the participants have purchased water conserving appliances, most of them did not have an argument that provided evidence that they selected water conserving appliances with the goal of conserving water.

Water conserving appliances were chosen by the participants because "that was the only choice" or "it was the cheapest option." The findings do not show evidence supporting that individuals buy water conserving appliances to conserve water.

The general tendency shows that household water consumers are not aware of the advantages or benefits of water conserving appliances. The findings show that household water consumers are inclined to buy water conserving appliances for economic reasons.

In summary, the key questions provided information to identify the main characteristics that impact individuals' perceptions and behaviors towards household water consumption.

One of the most interesting findings is that the general tendency shows participants identify water used in the bathroom (showers specifically) as the activity that consumes the most water, but only a few participants have changed their water usage by taking shorter showers deliberately. Individuality plays a key role in water perception in this case.

While some participants are aware they have to reduce their water usage by taking shorter showers, other participants do not seem to believe their water usage should be reduced at all.

Household water consumption is impacted by the combination of different ideas experienced by each water consumer.

Furthermore, the general tendency shows that residents of El Paso have a Hispanic background as expected in the proposal. The border city factor does not seem to be significant in individuals' perception about household water consumption. During the interview, the participants were asked to talk about where they spent their childhood. Several participants spent their childhood in Mexico.

Spending their childhood in Mexico did not seem to impact participants' water perception differently compared to participants that spent their childhood in El Paso or other US city. Further research would be needed to compare household water consumption perceptions in a heterogeneous cultural background sample.

The following chapter explains the main characteristics that according to this research impact perceptions and behaviors towards household water consumption in residents of El Paso, Texas.

Chapter 5: Characteristics Impacting Household Water Consumption

After completing the data collection (face to face interviews), I identified the main characteristics that shape individuals' perceptions and opinions of water consumption in general. From all of the characteristics mentioned in the previous chapters, I identified four main characteristics that I believe impact perceptions and behaviors in household water consumers. The individual complexity of each participant plays a key role in the development of household water consumption behaviors and perceptions.

I explain these four characteristics and its part in water consumers' complex individuality. The main characteristics that impact individuals' perceptions and behaviors towards water consumption are:

- Level of education.
- Age.
- Cultural background.
- Complex individuality (Social interactions).

I also considered one demographic characteristic that unexpectedly did not affect attitudes to water, because most people reported that water did not have a high cost:

- Income.

Another demographic characteristic important characteristic to consider:

- Gender.

Four of these six characteristics were mentioned as part of my research proposal expectations. Level of education, social interactions, income and cultural background were considered in the research proposal as the possible primary characteristics influencing

household water consumption perceptions. Age was mentioned in the research proposal, but not considered as one of the main characteristics linked to household water consumption.

There are several differences between the research proposal expectations and the actual research findings. The main research expectation was to find evidence supporting that the characteristics mentioned before impact household water consumption perceptions and behaviors directly; but I did not consider that it is the combination of more than one of characteristic and the water consumers' individual complexity what influence the perceptions and attitudes towards household water consumption. I will explain the research findings characteristic by characteristic:

5.1 Level of education

The findings show that the participants' level of water knowledge or awareness appears to be associated with their level of education. Participants' knowledge or awareness is linked to their perceptions and behaviors towards water consumption. Participants with a higher level of education showed a higher comprehension of the questionnaire compared to participants with a lower level of education.

Furthermore, participants with a higher level of education gave extended responses compared to participants with a lower level of education whose answers were short and simple sentences. Also, some participants with a higher level of education had the interest to show their knowledge related to water consumption. The level of education by itself is linked to a deeper comprehension of water consumption related issues, but the level of education by itself does not impact perception and behaviors of household water consumption.

My research proposal expectations about the importance of the level of education in household water consumption perceptions contrast from the final research findings. The level

of education impacts perceptions and behaviors toward household water consumption, but not by itself as considered in the research proposal.

It is the combination of the level of education and other characteristics such as age, social interactions, and cultural background. Also, the combination of the level of education and individual complexity plays a key role in household water consumption. The level of education allows water consumers to have a higher comprehension of water-related issues, but it is their complex individuality that determines how the knowledge or awareness obtained through education impacts household water consumption.

Participants with a higher level of education showed a higher comprehension of the questionnaire in general, or at least they were more comfortable while responding the questionnaire and also expanding their responses. Participants with a lower level of education often looked uncomfortable answering complex questions, and sometimes answered "something" just to go to the next question.

For instance, Ernesto, a 42 years old male participant, had a hard time explaining his opinion about household water consumption. When I asked Ernesto "In what ways is environment and health important to you?"**,** he responded:

It is important to play outside with your children. It is important because it helps to clean the street."

Ernesto did not seem to understand some of the questions. Ernesto was an uncommon case, but it was not an isolated case.

It is important to clarify that data collected using this questionnaire is a representation of the household water consumption perceptions and attitudes of each individual, but not in all

the cases. There is a possibility that the lack of comprehension of the questionnaire could impact the actual perception of household water consumers (as seen in Ernesto's example).

Participants that showed higher comprehension of the interview also showed higher water awareness or knowledge overall. Answers like "I don't know" or "I have no idea" were presented more than once in participants with a lower level of education. It is possible that the complex characteristics of some of the questions during the interview contributed to a misconception about water issues.

The level of education showed a pattern of household water consumption. The general tendency shows that participants with a higher level of education have a higher comprehension of water issues and in some cases a higher level of water awareness or knowledge. Similar to the other key characteristics, level of education impacts household water consumers' perception when is combined with other characteristics.

This said it is important to mention that the general tendency shows that higher level of education is linked to a higher comprehension of household water consumption issues.

During the research, I came across to participants that demonstrated to have an above the average level of education and water awareness. These participants did not show the same perceptions and attitudes towards water consumption. These perceptions and attitudes towards water consumption differed from one participant to another due to the personal experiences that form the complex individuality.

The level of education impact perceptions and behaviors towards household water consumption, but it is the individual complexity of each participant that contributes to the final decision of how to react about water consumption in specific situations.

For instance, Alfonso Perez, a 33 years old civil engineer, which was one of the participants that showed higher levels of water consumption knowledge or awareness did not seem to care about conserving water. Alfonso was the only participant that visited the EPWU plant in the past; also, he took a college class about water. Although Alfonso's unusual level of education and water awareness overall is higher than the rest of the participants, his perception of water contrast from other educated participants. Alfonso's responses and reflected a lack of interest in conserving water:

"I don't think about saving water when I take a bath or was my teeth" and "I don't care to spend water to make my yard look good."

These were some of Alfonso's responses. Other educated and less educated participants showed higher water conserving attitudes. As mentioned before, level of education is a characteristic that could influence household water perceptions, but only when it is combined with other characteristics.

5.2 Age

The findings show that older participants have a higher water awareness or knowledge than younger participants. The participants that show a higher level of awareness or knowledge related to water consumption also have a higher level of education than participants that show a lower level of water awareness.

The general tendency shows that older participants have a higher level of concern about water issues than younger participants. Older participants show a higher level of social responsibility related to water issues.

For instance, Raquel Barrientos, 51-60 years old (Master Degree and retired) was one of the few participants that often goes to a website to get information about water policy issues.

Raquel's responses about water usage and water issues contrasted with the responses of educated and less educated younger participants. When she was asked to talk about her feelings and ideas about water as it relates to her yard and plants she responded:

"I am very conscious about conserving water while watering our yard and would like eventually to put artificial grass. I focus on purchasing only plants that are from this area, and there I purchase from the UTEP greenery sale, an annual event."

These type of perceptions and attitudes towards water consumption could be associated with her age; also, it is possible that it is the combination of age and education level and not only her age that is impacting her perception about water consumption.

Moreover, it is important to consider her complex individuality, the fact that she is 51-60 years old, retired, and educated woman could impact her perception of water consumption. It is possible that the combination of all these characteristics creates a specific approach towards water consumption. Also, Raquel's water awareness seems to be impacted by her social interactions, in this particular case, her social interaction with her husband. When I asked her, "How do you water your yard and how do you water specific yard areas?" she responded:

"A third of the backyard gets water. But it is a small area in the back. In the front, we have rock landscaping. My husband specifically dug a hole, so it is more efficient because you use less water. He dug an actual hole, probably the size of a mug. The water stays there. It hits the roots directly instead of watering all over the place."

She explained later that she and her husband are always looking for ways to save water; her husband is an industrial engineer with a master degree in administration. In this specific case, Raquel's perceptions and attitudes towards household water consumption could be associated with her age, combined with her level of education and social interactions.

Age by itself cannot be identified as characteristic impacting household water perceptions. It is Raquel's individual complexity that defines perceptions and opinions related to household water consumption.

Participants older than 51 years old showed water conservation attitudes. These water conservation attitudes seemed to be originated by the participants' awareness and interest about water issues. For instance, Julia, 51-60 years old, explained her reasons for why she decides to conserve water:

"I live in the desert; it is cost efficient to conserve water. I consider it is good for the environment not to waste resources. I like to make good use of resources."

Julia and other participants older than 51 showed a higher level of awareness about the water and the environment than younger participants. In addition, older participants presented expanded answers compared to simple and short responses from younger participants. The general tendency shows that participants older than 51 years old have a higher level of water and climate conservation awareness than younger participants.

Also, older participants showed a higher level of comprehension overall throughout the questionnaire compared to younger participants. In general, older participants were more comfortable responding and expanding their opinions during the interview.

Older participants that show a higher level of water conservation have a bachelor degree or a higher education level. This does not mean that older participants with a lower level of education lack of water conservation attitudes. The main difference between older participants with higher and lower level of education is the comprehension of the questionnaire. Participants with a higher level of education were able to present more elaborated responses; they tried to show their knowledge related to water consumption.

For instance, When I asked, “What is your vision for the future in terms of how water will be allocated and used in our region?” One of the older participants with a higher level of education (bachelor degree or higher) responded:

“No more front lawns with grass, no high-water consumption trees, and energy efficient products either retro fitted in homes and an app that tells you how you are doing in your water consumption. That will be interesting. Re-using water with the household. We did that once in one of our homes, our previous home.”

In contrast, when I asked the same question to one of the older participants with a lower level of education (high school or less) the answer was: “I have no idea.” Age in combination with other characteristics such as level of education is one of the characteristics that impact household water consumption.

Younger participants, 18-40 years old showed a lower level of water consumption awareness in general. Younger participants frequently offered a simple and short question. In some cases, younger participants showed indifference about water issues. For instance, Jessica, a 31-40 years old female, that takes 20 showers per week (20 minutes per shower) showed signs of indifference about her water usage. When I asked her, “What reasons do you have to conserve water?” she responded:

“Conserving water is something I don’t ask myself because I think I don’t use that much water, I use my tub to take showers.”

Jessica believes the amount of water she uses is typical, but she is the participant that takes more showers per week. Younger participants have different consumption standards and definitions of what is a high-water usage and low-water usage; Jessica makes a good example.

The findings cannot be considered as evidence that age by itself impacts household water consumption as I expected in my research proposal. The findings showed that the participants' age is linked to household water consumption perceptions and attitudes, but only when age is combined with other characteristics.

Household water consumption cannot be measured by one characteristic only, but age is one of the important characteristics that determine how people interact with water.

5.3 Cultural background

The findings show that the participants' cultural background is associated with water consumption behaviors, but it is not a characteristic that impacts water consumption by itself.

During the interviews there were only a few cases of participants that distrusted tap water; these participants had a Hispanic or a Mexican cultural background (raised or spent years outside the US).

For instance, Ana, a 51-60 years old female resident of El Paso with a Mexican cultural background is one of the participants that distrusted tap water. Even though Ana moved to the United States more than 15 years ago, she still distrusts water. Ana did not explain the reasons for why she distrusts tap water specifically. When I asked her, "Do you believe that your water supply (tap water) is safe to consume?" She responded:

"No. Maybe it is ignorance, but I just don't trust it."

In the following question, I asked her "What kind of drinking water do you use?" she responded:

"Bottled water or 5 Gallon bottled water. I think bottled water is purified and tap water might be polluted".

Ana responded with a detailed answer this time, but she did not explain why she believes tap water might be polluted. In this case, the cultural background might be a factor impacting Ana's decision to avoid tap water as her drinking water source, but the data collected in this interview is insufficient to affirm that Ana's cultural background is the main cause influencing her water consumption perception.

This said, consumers' distrust of tap water cannot be associated with one characteristic only. As mentioned before in the previous characteristics, the individual complexity plays a key role defining and shaping household water consumption perceptions and behaviors.

Cultural background is part of the individual complexity of each person. Each has different cultural backgrounds. In some cases, the cultural background could impact individuals' perception of water consumption and in some cases, it might not. What determines if cultural background impacts water consumption or not is the individual complexity.

Individual complexity could include visits to another country, interactions with friends and family that share the same cultural background and personal interests about this particular cultural background. Even siblings could have completely different perceptions and attitudes towards water consumption due to individual complexity.

Furthermore, the case of Julia is a good example of individual complexity, a 51-60 years old female with a Mexican cultural background. Julia trusts tap water, but she does not use it as her drinking source. Julia responded a rationalized answer when I asked "Do you believe that your water supply (tap water) is safe to consume?" she responded:

"Yes, I read the report of the water quality here in El Paso, the flavor is not great but is safe. Swampy taste. It is ok; you can drink it."

She seemed convinced that tap water is a safe source of drinking water, but when I asked her “What kind of drinking water do you use?” she responded:

“Bottled water. When my husband got cancer, we started drinking bottled water only. I like the flavor. Before that, we didn’t drink bottled water. Cancer really affected his immune system. We felt safer with him drinking bottled water. It’s a habit now. I can drink the water from the tap”.

The case of Julia shows that different factors such as flavor and illness prevention, influence water consumption. Julian is an unusual case, but it helps to explain the individual complexity that shapes individuals’ perceptions and attitudes towards household water consumption. In this case, the fact that she has a Hispanic cultural background did not impact her perception of tap water. It was a cause part of her individual complexity.

The general tendency shows that individuals with Mexican or Hispanic cultural background trust tap water for drinking purposes. Cultural background is associated with water consumption used for drinking purposes only in uncommon cases, but the evidence does not show a pattern that indicates that participants with Hispanic or Mexican cultural background distrust tap water.

Also, there are no clear variations of water awareness of knowledge between different cultural backgrounds. It is important to mention that in general, the sample shared a similar cultural background: Mexican or Hispanic.

In the research proposal, the cultural background was expected to be a characteristic impacting household water consumption perception directly, but the findings show a different situation. As mentioned before, cultural background is just a part of the individual complexity

influencing water consumption and only impacts household water consumption perceptions and attitudes when other factors are present.

5.4 Income and affordability of water

The findings show that 93.75% of the sample believes their water bill is reasonable, and only 6.25% believes it is not reasonable. 6.25% of participants that believe their water bill is reasonable, believe that their water bill is reasonable but expensive. The general tendency shows that household water consumers believe that water is not an expensive utility, on the contrary, the majority of the participants believe the cost of water is fair or inexpensive.

Moreover, the results show that 93.75% of the sample believes lower water prices do not influence where they live, and only 6.25% of the sample believes lower water prices influence where they live.

The general tendency shows household water consumers do not consider the cost of their water bill as a factor that impacts their economy. The general tendency shows that the perception of the cost of water among the participants is that is reasonable or inexpensive. In the rare cases of participants who own a pool, the perception of the cost of water was similar to the participants who do not own a pool. The water bill cost was considered as reasonable or even inexpensive.

Income level is not a characteristic that impacts water perception and attitudes towards household water consumption among the participants as expected in the proposal. Although income level by itself is not a characteristic that impacts the perception of household water consumption, the combination of income level and other characteristics such as level of education, age, and cultural background influence the household water consumers' perceptions and attitudes towards of water consumption.

5.5 Gender

Gender is not one of the main characteristics mentioned in the proposal, but there are interesting findings worth discussing.

The findings show that 62.5% of the participants that use water to grow plants or food are women. Women show higher concern about plants compared to men in general.

The findings show that 87.5% of women use water to cook every day; only 62.5% of men use water to cook every day.

The findings show that only 4 participants do not trust tap water. All 4 participants are women.

These are the main differences between women and men during the interview. The difference of water usage related to growing plants, cooking water usage and tap water trust is considerably different between men and women. Further quantitative research is required to determine if gender impacts water consumption in the activities mentioned before.

5.6 Individual complexity (Social interactions)

Individual complexity or complex individuality is the set of characteristics that differentiate an individual from others. Individuality is important to distinguish individuals that share similar characteristics.

The findings show that participants' social interactions influence their perception of water overall. Social interactions complement the three characteristics mentioned before (level of education, age, and cultural background). The social interactions experienced by each individual are similar but not identical. Even a minor variation between two individuals can represent a completely different perception of household water consumption.

The sample is formed by residents of El Paso, Texas, who share the same water utility service, pay a similar amount for utilities, and are exposed to the same quality of water share common beliefs of water, but their social interactions make each experience unique or different from the rest of the individuals. These social interactions shape individual complexity.

The combination of the level of education, age, cultural background, and social interactions are the main factors impacting the participants' perceptions and behaviors towards water consumption. Also, individual complexity plays a key role determining how these characteristics impact water consumption perceptions.

The fact that individual complexity is different in each person makes the process of measuring household water consumption perceptions and behaviors a complex assignment. As I mentioned before using interviews extracts, people make different decisions related water consumption every day, and these decisions could suddenly change due to circumstances experienced by each individual or could not change at all.

I was able to identify individuality in the interviews where the participants responded with expanded opinions. Individuality was mentioned before as part of other characteristics impacting water consumption. I will mention more interesting stories about complex individuality.

Victor, (man, 31-40 years old, master degree) seeks information about climate issues and offered several answers that show he has a higher level of knowledge compared to less educated participants. Victor tried to contribute to this research by sharing his knowledge related to water consumption. When I asked Victor about his feeling and ideas about water he responded:

"We use the dishwasher machine to avoid wasting water; the machine is way more efficient than washing the dishes by hand."

Victor is interested in climate issues, and his responses show a higher water awareness compared to the average sample water consumer. In this case, Victor's decisions towards water consumption are influenced by education, but more specifically his interest in climate issues.

Although Victor responded that he does not seek information about water issues his interest in climate issues is linked to water issues. Victor responses show water conservation attitudes:

"I try to use metal containers and fill them with water from the drinking water machines in buildings or my school."

Moreover, Victor was one of the few participants that expanded his response when I asked him if lower water prices influence where he lives:

"No, because that would only increase waste."

Victor' perspective of water consumption is related to water conservation again. Victor's specific interest in climate issues is part of his complex individuality. Although participants with higher education show higher water awareness than participants with a lower level of education, Victor perceptions and behaviors show that is not only his education that is behind his perceptions and behaviors towards water consumption.

In this case, Victor's specific interest in climate issues impacts his decisions towards water conservation. When I asked him about the measure he takes to conserve water he responded:

"I tried not to waste at home, but I'm aware that 80% of the water is used in agriculture, so I tried not to waste food and try to avoid red meat, which is the most water-consuming calorie source."

Victor awareness of climate and water issues allows him to decide what is ethically correct when consuming water.

Although it may seem education is primarily impacting Victor's perceptions and behaviors towards water consumption other participants with similar characteristics do not show the same water conservation attitudes. Alfonso (man, 31-40 years old, bachelor degree), one of the participants that showed higher levels of water consumption awareness is not motivated about conserving water.

Alfonso was the only participant that has visited the El Paso Water Utility (EPWU) plant in the past; also, he took a college (bachelor degree in civil engineering) class about water. Although Alfonso and Victor had a similar knowledge of water consumption, Alfonso's responses and reflected a lack of interest in conserving water:

"I don't care to spend water to make my yard look good."

The constant variation of individuality is what impacts perceptions and behaviors towards water consumption.

Julia is another important case of complex individuality. Julia's case was mentioned before when I talked about cultural background.

Julia's behavior toward water consumption is impacted directly by a personal experience. Julia consumes bottled water not because she distrusts tap water but because her husband has cancer:

"When my husband got cancer, we started drinking bottled water only. I like the flavor. Before that, we didn't drink bottled water. Cancer really affected his immune system. We felt safer with him drinking bottled water. It's a habit now. I can drink the water from the tap".

Julia's case makes a good example of the importance of qualitative research related to water consumption. Julia's decision to consume bottled water is defined by the fact that her husband has cancer. This information cannot be identified in the quantitative research.

Dan is another case were individuality is important. Dan was one of the two participants that believe that the water utility is not reasonable. The other participant was Jessica. Jessica pays her water bill to the apartment complex. When I asked Dan if he believes the water utility cost is reasonable he responded:

"No, because we are paying for homebuilders subsiding and trash collection."

His response does not offer information about individuality, but when I asked him why his water bill was high, he mentioned he has a home business that uses a high amount of water. Dan is a screen printer. Screen printing requires a high amount of water. Dan water usage for business is part of his complex individuality. Dan is also a good example of individuality not expressed directly by a participant.

Complex individuality is hard to identify. I was able to identify complex individuality in some of the participants. Individuality was not part of the research proposal, and the questionnaire was not intended to search for individuality.

Individuals cannot be reduced to simple demographics as is done in quantitative research. A combination of quantitative and qualitative research is the best approach to understand data related to household water consumption. This said, I believe further research

about complex individuality is required to find more information that can help to understand how individuals' personal experience impact household water consumption.

Chapter 6: Conclusion

Household water consumption perceptions and behaviors in residents of El Paso is a complex issue to study. But the findings show that the main characteristics that impact perceptions and behaviors of household water consumption are the level of education, age, cultural background and social interactions.

As mentioned before, the findings do not show significant evidence about these characteristics impacting perceptions and behaviors of household water consumption alone. It is the combination of these characteristics and the complex individuality of each person that shapes perceptions and behaviors related to household water consumption.

This said level of education, age, cultural background and social interactions are the characteristics in that demonstrate to have an impact on individuals' perceptions and behaviors towards household water consumption. This does not mean there are no other characteristics impacting individuals' perceptions and behaviors related to water consumption.

Also, it is important to mention that the findings did not show evidence of income impacting household water consumption perceptions as expected in the research proposal. Additional research would be needed to determine how other characteristics impact perceptions and behaviors of household water consumption.

The complex individuality shown by some of the participants of this research is evidence that even a trivial experience can impact how people decide to interact with water. Not all the participants expressed their individuality, but the ones that did, confirm that qualitative research is important to comprehend the reasons that shape perceptions and behaviors towards household water consumption.

Qualitative research helps to discover new questions to ask about household water consumption that quantitative research is not capable of explaining.

After completing this research, my considered opinion about perceptions and behaviors towards household water consumption is that individuals are influenced primarily by the level of education, age, cultural background and social interactions. But it is their individuality that ultimately shapes individuals' relations to household water consumption.

Although residents of El Paso share similar social characteristics, their water consumption perception is impacted by individuality. The characteristics examined in this research are the foundation of household water consumption perceptions and behaviors. These characteristics could help to test a hypothesis in further research.

Also, complex individuality can be identified in this research as the constant change in individuals that complicates the generalization of perceptions and behaviors of household water consumption in El Paso, Texas. As I mentioned before, Individuals cannot be reduced to simple demographics. My considered opinion is that a mixture of quantitative and qualitative research is the best method to study data related to household water consumption.

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Appendix A: Questionnaire

Household water consumption: Interview Questions

Name:

Personal Information – Coding:

1) Age, Gender: (18 to 30) – (31 to 40) – (41 to 50) – (51 to 60) – (61 and above)

2) Where do you live?

3) What is the approximate size of your residence?

4) How many people live in your residence?

5) What is your annual family income: (0 to 15,000) – (15,000 to 30,000) – (30,000 to 50,000) – (50,000 to 80,000) – (80,000 and above).

6) What is your ethnic background or cultural heritage? (Can give more than one answer):

a)[Place for reply]

b) What is your preferred language? (English, Spanish, both, Other_____)

c) Were you born in Mexico? (How about your mother, father, or any grandparents?)

d) Where did you spend your childhood?

7) How is your water supplied? (Can have multiple answers)

a) Piped from utility? (Utility name)

b) Do you own a well?

c) Do you receive truck deliveries? If so, is it for all of the water that you use or drinking water only?

d) Do you go to pick up water? If so, is it for all the water that you use or bottled drinking water only?

Water Usage and Water Concern Questions:

8) What are your feelings and ideas about water as it relates to the following?

a) Your yard?

b) Plants?

c) Air temperature in the house?

d) Swimming pool?

e) Personal cleanliness?

f) Kitchen cleanliness?

g) Drinking Water?

9) Is water important to you?

a) In what ways is water important to you inside of your home?

b) In what ways is water important to you in your yard or landscape?

c) In what ways is water important to you in your work and/or business?

d) In what ways are environment and health important to you?

10) Do you use water to grow plants or food If so, do you choose specific ones for a particular reason?

a) How do you water your yard?

b) Specific garden areas?

c) How do you water plants in pots?

11) Approximately:

a) How many showers do you take per week, and for how long?

b) How many times do you wash dishes per week?

c) How many times do you wash clothes per week?

d) How often do you use water to cook?

e) How many times do you flush the toilet per (day)?

12) Have you purchased water conserving appliances? If yes, why? If no, would you like to or plan on doing so in the future?

13) Overall, which part of your home life do you believe uses the most water?

14) Do you own a swimming pool? Do you use it? Why or why not?

a) If you ever owned a home that did not have a swimming pool; do you believe that you used (More) or (Less) water at that time?

b) Does the amount of water that you use for the swimming pool concern you?

15) What is your estimated monthly water bill?

a) In Summer

b) In Winter

16) Do you believe your water bill is reasonable? Why or why not?

a) When you have to pay the water bill; do you have to limit other purchases (such as groceries)?

17) Would lower water prices influence where you live?

18) What kind of air conditioning do you use? Are you satisfied with this type of air conditioning?

19) Does energy cost, or water use factor into the type of air conditioning system that you use?

20) Do you believe that your water supply (tap water) is safe to consume? Why or why not?

21) What kind of drinking water do you use? Why?

21a) How much do you spend on delivered or purchased bottled water, per week (approximately)? (if applicable)

22) How important is it for you to conserve water? (SELECT ONE OF THE FOLLOWING)

Not important – not very important – somewhat important – very important – extremely important – No opinion.

23) What reasons do you have to conserve water?

24) What measures do you take to conserve water?

25) Does your water usage concern you now: (More, Less or the Same) than in the past?

26) Do you plan on using (More, Lessor the Same) amount of water in the future?

27) Have you deliberately altered your water usage? If so, how and, why?

28) If your water bill was to become so costly that you had to conserve water, what would you do?

29) Have you changed your landscaping in order to conserve water?

29a) Would you be interested in technology that helped you track your water use for different purposes in real time?

Policies and Legal Issues Questions:

30) Is future water of interest to you?

Not at all – A little – Some – A great deal – A very great deal

31) What do you think will be main future changes in water quantity and quality?

32) How do you see these changes impacting your home/business/work/interests?

33) What are the main causes for future changes in water?

34) What are your perceptions of future climate?

34a) What are your perceptions of how future climate will impact water in our region?

35) Do you seek information about water issues?

a) Where do you get information on water issues?

36) Do you seek information on climate issues?

a) Where do you get information on climate issues?

37) How do you see the demands for water changing among agricultural, urban/industrial, and environmental users in the future?

38) Under current projections of water supply, can future water demands be adequately met in our region?

39) What is your vision for the future in terms of how water will be allocated and used in our region?

a) What, if anything, will have to change to realize this future vision?

40) Do the solutions to meeting future water challenges lie in technology, management, policy, or other?

41) What measures do you believe the authorities or the city should take to conserve water?

42) Do you believe there should be more information available about water concerns and issues?

a) Do you believe the city should provide more information about water concerns and issues?

43) How likely are you to go to a website that gives information about water policy issues and concerns?

44) Does hearing about places such as California implementing extreme water restrictions concern you? Why or why not?

45) Do you believe water conditions will become as critical in the Paso del Norte region as they currently are in California?

46) Have you ever reported someone for wasting water?

47) If you wanted to report someone for wasting water, how would you go about reporting them? Whom would you turn to?

48) Have you ever attended a public policy making meeting? If yes, why? If no, what reasons would make you want to attend?

49) Do you know what direct potable reuse is?

(If yes, go to (a); if no, go to (b))

(a) What are your thoughts about direct potable reuse?

(b) Read this definition:

"Direct potable re-use involves taking wastewater, giving it advanced purification (to standards higher than drinking water) and putting it back into the regular drinkable water supply."

Now, what are your thoughts about this proposal?

50) May we view one of your water bills?

51) Are you aware of the water conservation program in El Paso, Texas?

52) How many school years did you complete?

Appendix B: Questionnaire Data

First name	Participant No.	Age (1)	Gender (1)	Occupation
Teresa	1	18-30	Female	Logistics
Jesus	2	18-30	Male	Video
Adela	3	18-30	Female	Progammer
Mariana	4	18-30	Female	Hotel Marketing
Ruben	5	31-40	Male	Entrepenaur
Jessica	6	31-40	Female	Insurance
Alfonso	7	31-40	Male	Civil Engineering
Raul	8	31-40	Male	Sales
Ricardo	9	31-40	Male	Government
Gloria	10	31-40	Female	Entrepenaur
Julia	11	51-60	Female	Retired
Ana Emily	12	51-60	Female	Insurance agent
Mauricio	13	18-30	Male	Screen Printer
Andres	14	18-30	male	Undergraduate Student
Dan	15	31-40	male	Self- Employed
Victor	16	31-40	male	Government
Marisela	17	41-50	female	Accounting
Ana	18	51-60	Female	Senior assitant (personal care)
Rosa	19	61-70	Female	Retired
Itzel	20	18-30	Female	Undergraduate Student
Larry	21	31-40	Male	Self-employed
Esteban	22	31-40	Male	Self-employed
Ernesto	23	41-50	Male	Contractor assistant
Carolina	24	41-50	Female	Marketing
Alejandro	25	18-30	Male	Phd Student
Anita	26	18-30	Male	Phd Student
Daniela	27	18-30	Female	Phd Student
Jaclyn	28	18-30	Female	Phd Student
Victor R	29	31-40	Male	Self-employed
Cesar	30	31-40	Male	Lawyer
Raquel	31	51-60	Female	Retired
Carlos	32	51-60	Male	Entrepenaur

First name	City Area (2)	Prefered language (6)	Education Level (52)	Residence Size SQF (3)
Teresa	WEST	Spanish	Bachelor degree	8000.00
Jesus	EAST	ENGLISH	Bachelor degree	2100.00
Adela	WEST	Spanish	Bachelor degree	2000.00
Mariana	WEST	Spanish	Bachelor degree	2500.00
Ruben	WEST	Spanish	Bachelor degree	1100.00
Jessica	WEST	Spanish	bachelor degree	1500.00
Alfonso	WEST	Spanish	bachelor degree	8000.00
Raul	WEST	Spanish	Bachelor degree	1200.00
Ricardo	WEST	SPANISH	bachelor degree	1200.00
Gloria	WEST	SPANISH	Bachelor degree	1082.00
Julia	EAST	ENGLISH	Bachelor degree	1150.00
Ana Emily	EAST	ENGLISH	high school	1600.00
Mauricio	Downtown	ENGLISH	High School	1000.00
Andres	EAST	SPANISH	high school	2000.00
Dan	EAST	ENGLISH	Bachelor degree	1000.00
Victor	EAST	ENGLISH	Bachelor degree	1770.00
Marisela	EAST	ENGLISH	High School	2300.00
Ana	EAST	Spanish	High School	2500.00
Rosa	EAST	Spanish	High School	1400.00
Itzel	EAST	ENGLISH	high school	1500.00
Larry	DOWNTOWN	ENGLISH	High school	2000.00
Esteban	EAST	Spanish	High school	3550.00
Ernesto	DOWNTOWN	Spanish	High school	1500.00
Carolina	DOWNTOWN	ENGLISH	High school	1500.00
Alejandro	EAST	ENGLISH	MASTER DEGREE	1000.00
Anita	DOWNTOWN	ENGLISH	MASTER DEGREE	800.00
Daniela	EAST	ENGLISH	MASTER DEGREE	1000.00
Jaclyn	WEST	Spanish	MASTER DEGREE	2000.00
Victor R	EAST	SPANISH	MASTER DEGREE	750.00
Cesar	WEST	Spanish	MASTER DEGREE	800.00
Raquel	WEST	ENGLISH	MASTER DEGREE	5000.00
Carlos	WEST	SPANISH	MASTER DEGREE	4000.00

First name	Annual Family Income (5)	Ethnic Back(6)	How is your water supplied ? (7)	Do you use water to grow plants or food ? (10)
Teresa	80k-above	Mexican and American	EPWU	NO
Jesus	15-30k	Mexican	EPWU	YES
Adela	80k-above	MEXICAN	EPWU	YES
Mariana	50-80k	Hispanic	EPWU	NO
Ruben	50-80k	MEXICAN	EPWU	NO
Jessica	80k-above	MEXICAN / CUBAN	EPWU	NO
Alfonso	50-80k	MEXICAN	EPWU	YES, BUT RARELY EATS THAT FOOD
Raul	50-80k	Hispanic	EPWU	NO
Ricardo	30-50k	Hispanic	EPWU	NO
Gloria	50-80k	MEXICAN	EPWU	NO
Julia	15-30k	HISPANIC	EPWU	YES
Ana Emily	30-50k	MEXICAN	EPWU	NO
Mauricio	0-15K	Hispanic	EPWU	NO
Andres	0-15k	Mexican	EPWU	NO
Dan	15-30k	Mexican	EPWU	NO
Victor	50-80k	Mexican	EPWU	NO
Marisela	80k-above	Mexican and American	EPWU	YES
Ana	15-30k	MEXICAN	EPWU	YES
Rosa	15-30k	Mexican	EPWU	NO
Itzel	15-30k	HISPANIC	EPWU	YES
Larry	50-80k	European, Native Amercan	EPWU	YES
Esteban	15-30k	HISPANIC	EPWU	YES
Ernesto	15-30k	Mexican	EPWU	YES
Carolina	15-30k	HISPANIC	EPWU	YES
Alejandro	15-30k	HISPANIC	EPWU	NO
Anita	15-30k	MEXICAN	EPWU	YES (1 CACTUS)
Daniela	15-30k	HISPANIC	EPWU	YES, PLANTS ONLY
Jaclyn	50-80k	Mexican	EPWU	YES
Victor R	30-50k	HISPANIC	EPWU	NO
Cesar	50-80k	Latino	EPWU	NO
Raquel	15-30k	HISPANIC	EPWU	YES
Carlos	15-30k	MEXICAN	EPWU	YES

First name	How many Showers per Week? (11) a	Shower minutes (11)	How many time do you wash dishes per week? (11)b
Teresa	7	10	7
Jesus	6	10	12
Adela	7	5	7
Mariana	12	10	5
Ruben	10	5	7
Jessica	20	30	3
Alfonso	7	5	4
Raul	14	5	3
Ricardo	7	5	4
Gloria	8	10	24
Julia	4	5	14
Ana Emily	7	10	21
Mauricio	7	15	8
Andres	10	8	7
Dan	7	25	7
Victor	9	10	15
Marisela	7	20	7
Ana	7	10	7
Rosa	7	10	21
Itzel	7	15	7
Larry	7	10	7
Esteban	10	10	10
Ernesto	14	15	7
Carolina	7	10	14
Alejandro	6	15	3
Anita	9	10	5
Daniela	3	10	10
Jaclyn	7	10	14
Victor R	14	30	7
Cesar	7	7	3
Raquel	7	10	7
Carlos	7	5	7

First name	How many times do you wash clothes per week? (11) c	How often do you use water to cook? (11) d	How many times do you flush the toilet per (day)? (11) e	Have you purchased water conserving appliances? (11
Teresa	2	NOT OFTEN	15	NO
Jesus	5	Everyday	12	NO
Adela	1	Everyday	5	YES
Mariana	2	Everyday	4	NO
Ruben	1	NEVER	4	NO
Jessica	1	Everyday	5	NO
Alfonso	0.5	NOT OFTEN	3	YES
Raul	2	Everyday	4	NO
Ricardo	1	NOT OFTEN	8	NO
Gloria	1	Everyday	5	NO
Julia	1	Everyday	3	YES
Ana Emily	1	Everyday	5	NO
Mauricio	1	Everyday	3	NO
Andres	1	NEVER	3	NO
Dan	3	Everyday	10	NO
Victor	5	Everyday	8	NO
Marisela	5	Everyday	20	NO
Ana	1	Everyday	8	YES
Rosa	1	Everyday	6	NO
Itzel	3	Everyday	20	YES
Larry	1	Often	10	NO
Esteban	1	Everyday	3	YES
Ernesto	2	Everyday	20	YES (FILTERS)
Carolina	2	Everyday	8	NO
Alejandro	1	NOT OFTEN	8	NO
Anita	1	NOT OFTEN	5	NO
Daniela	1	Everyday	2	NO
Jaclyn	1	Everyday	5	YES
Victor R	1	Everyday	4	NO
Cesar	2	Everyday	3	NO
Raquel	2	Everyday	10	YES
Carlos	1	Everyday	8	YES

First name	Overall, which part of your home life do you believe uses the most water (13)	Estimated water bill SUMMER (15)	Estimated water bill WINTER(15)	Do you believe your water bill is reasonable? (16)
Teresa	KITCHEN	100	100	YES
Jesus	BATHROOM, KITCHEN	45	30	YES
Adela	WASHING MACHINE / DISHWASHER	120	95	YES
Mariana	SHOWER	50	50	YES
Ruben	SHOWER	50	45	YES , but IT IS EXPENSIVE
Jessica	TOILETS / SHOWERS	60	60	NO
Alfonso	YARD	120	60	YES, BUT NOT CHEAP
Raul	SHOWER	30	30	YES
Ricardo	BATHROOM	20	20	YES
Gloria	BATHROOM	25	25	YES
Julia	BATHROOM, KITCHEN, DRINK	50	50	YES
Ana Emily	BATHROOM	80	50	YES
Mauricio	BATHROOM	40	20	YES
Andres	SHOWER	50	30	YES
Dan	SHOWER	120	90	NO
Victor	KITCHEN	66	66	YES
Marisela	SHOWER	55	50	YES
Ana	YARD	180	90	YES
Rosa	NA	40	30	YES
Itzel	SHOWER	150	100	YES
Larry	SHOWER	45	45	YES
Esteban	SHOWER	90	80	YES
Ernesto	TOILET	60	60	YES
Carolina	SHOWER	150	140	YES
Alejandro	AC	58	40	YES
Anita	SHOWER	INCLUDED IN THE RENT	INCLUDED IN THE RENT	YES
Daniela	PERSONAL CLEANING	100-120	80-100	YES
Jaclyn	SHOWER	30	50	YES
Victor R	SHOWER	50	40	YES
Cesar	BATHROOM	40	30	YES
Raquel	TOILET	110	75	YES
Carlos	SHOWER	100	70	YES

First name	Would lower prices influence were you live ? (17)	Do you believe tap water is safe to consume ? (20)	What kind of drinkin water do you use? (21)	How important is for you to conserve water? (22)
Teresa	NO	YES	BOTTLED WATER / FILTERED WATER	SOMEWHAT IMPORTANT
Jesus	NO	YES	TAP WATER	EXTREMELY IMPORTANT
Adela	NO	YES	TAP WATER	VERY IMPORTANT
Mariana	NO	YES	TAP WATER	VERY IMPORTANT
Ruben	NO	YES	TAP WATER WITH FILTER (TRUSTS TAP	VERY IMPORTANT
Jessica	NO	YES	ALCALINE, TAP AND BOTTLED	NO OPINION
Alfonso	NO	YES	TAP WATER WITH FILTER	SOMEWHAT IMPORTANT
Raul	NO	YES	TAP WATER	EXTREMELY IMPORTANT
Ricardo	NO	YES	TAP WATER	SOMEWHAT IMPORTANT
Gloria	NO	YES	TAP WATER	VERY IMPORTANT
Julia	NO	YES	BOTTLED WATER	SOMEWHAT IMPORTANT
Ana Emily	NO	NO	BOTTLED WATER	NOT VERY IMPORTANT
Mauricio	NO	YES	BOTTLED WATER	EXTREMELY IMPORTANT
Andres	NO	YES	TAP WATER	EXTREMELY IMPORTANT
Dan	YES	YES	BOTTLED WATER	VERY IMPORTANT
Victor	NO	YES	BOTTLED WATER	VERY IMPORTANT
Marisela	NO	YES	BOTTLED WATER	SOMEWHAT IMPORTANT
Ana	NO	NO	BOTTLED WATER	EXTREMELY IMPORTANT
Rosa	NO	NO	BOTTLED WATER	SOMEWHAT IMPORTANT
Itzel	NO	YES	BOTTLED WATER, TAP WATER, FILTERED	VERY IMPORTANT
Larry	YES	I DON'T KNOW	BOTTLED WATER	SOMEWHAT IMPORTANT
Esteban	NO	YES	BOTTLED WATER	VERY IMPORTANT
Ernesto	NO	YES	TAP WATER - TAP WATER WITH FILTER	VERY IMPORTANT
Carolina	YES	YES	BOTTLED WATER , TAP WATER	VERY IMPORTANT
Alejandro	NO	YES	BOTTLED WATER	VERY IMPORTANT
Anita	NO	YES	BOTTED WATER / FILTERED WATER	VERY IMPORTANT
Daniela	NO	YES	BOTTLED WATER, TAP WATER, FILTERED	VERY IMPORTANT
Jaclyn	NO	YES	TAP WATER	VERY IMPORTANT
Victor R	NO	YES	TAP WATER	VERY IMPORTANT
Cesar	NO	YES	TAP WATER	VERY IMPORTANT
Raquel	NO	NO	TAP WATER WITH FILTER	EXTREMELY IMPORTANT
Carlos	NO	YES	TAP WATER	EXTREMELY IMPORTANT

First name	What reasons do you have to conserve water? (23)	Do you plan on using more less or the same amount of water in the future (26)	Have you deliberately altered your water usage? If so, how and, why? (27)
Teresa	environment	LESS	NO
Jesus	environment (perserve life)	LESS	YES
Adela	environment	SAME	NO
Mariana	enviroment (planet conservation)	LESS	NO
Ruben	environment (desert city)	SAME	NO
Jessica	I don't care	LESS	YES
Alfonso	money	MORE	NO
Raul	enviroment (save the planet)	LESS	NO
Ricardo	I don't care	LESS	NO
Gloria	Health	SAME	NO
Julia	environment (desert city)	SAME	YES
Ana Emily	I don't care	SAME	NO
Mauricio	environment (perserve life)	SAME	YES
Andres	environment (scare resource)	LESS	YES
Dan	environment (scare resource)	SAME	NO
Victor	environment (perserve life)	SAME	NO
Marisela	environment	SAME	NO
Ana	environment (we needit!)	SAME	YES
Rosa	I don't care	SAME	NO
Itzel	environment (scare resource)	SAME	YES
Larry	so we don't run out	SAME	NO
Esteban	Health	MORE	NO
Ernesto	money	SAME	NO
Carolina	WE should not waste we should limit our use	LESS	NO
Alejandro	money	SAME	NO
Anita	water is limited	SAME	NO
Daniela	environmental	LESS	NO
Jaclyn	enviroment (save the planet)	SAME	NO
Victor R	Social Crisis	SAME	NO
Cesar	environment (Conserving the world, preserving humanity)	LESS	YES
Raquel	environment (scare resource)	LESS	YES
Carlos	environment (scare resource)	LESS	YES

First name	Have you changed your landscaping in order to conserve water (29)	technology that helped you track water use for different purposes in real time? (29a)	is future water of interest to you? (30)
Teresa	NO	YES	SOME
Jesus	NO YARD / LANDSCAPING	YES	A VERY GREAT DEAL
Adela	YES	YES	A GREAT DEAL
Mariana	NO	YES	A GREAT DEAL
Ruben	NO	YES	A VERY GREAT DEAL
Jessica	NO YARD / LANDSCAPING	NO	SOME
Alfonso	YES	YES	SOME
Raul	NO	YES	A VERY GREAT DEAL
Ricardo	NO YARD / LANDSCAPING	NO	NOT AT ALL
Gloria	NO	YES	A LITTLE
Julia	YES	YES	A GREAT DEAL
Ana Emily	NO	NO	A LITTLE
Mauricio	NO YARD	YES	A VERY GREAT DEAL
Andres	NO YARD / LANDSCAPING	YES	A GREAT DEAL
Dan	YES	YES	A GREAT DEAL
Victor	NO	YES	A GREAT DEAL
Marisela	NO	YES	SOME
Ana	NO	YES	A VERY GREAT DEAL
Rosa	NO	YES	SOME
Itzel	NO	YES	A VERY GREAT DEAL
Larry	YES	YES	A VERY GREAT DEAL
Esteban	YES	YES	SOME
Ernesto	NO	YES (Of Course)	A GREAT DEAL
Carolina	NO	YES	A VERY GREAT DEAL
Alejandro	NO	YES	SOME
Anita	NO	YES	A GREAT DEAL
Daniela	NO	YES	A GREAT DEAL
Jaclyn	NO	YES	A VERY GREAT DEAL
Victor R	NO	YES	A GREAT DEAL
Cesar	NO	YES	A VERY GREAT DEAL
Raquel	YES	YES	A VERY GREAT DEAL
Carlos	YES	YES	A VERY GREAT DEAL

First name	What are the main causes for future changes in water? (33)	Do you seek information about water issues ? (35)	Do you seek information on climate issues ? 36)
Teresa	Humanity is wasting water.	NO	NO
Jesus	People not being considerate enough about the water use	NO	NO
Adela	The rate at wich we are currently depleting our fresh water supply	NO	YES
Mariana	Water scarcity	NO	NO
Ruben	Pollution	NO	NO
Jessica	She doesn't care about the future of water...	NO	NO
Alfonso	Pollution, overpopulation, bad water piping managing systems. Also, pollution of underground water	NO	NO
Raul	THERE IS LESS WATER NOW BECAUSE OF CLIMATE CHANGES	NO	YES
Ricardo	I don't know	NO	NO
Gloria	Supply	NO	no
Julia	Population, because polar caps are melting is going to affect us. Things will dry up.	I HAVE IN THE PAST	YES
Ana Emily	Cost of water	NO	NO
Mauricio	IT WILL REMAIN THE SAME	YES	YES
Andres	Scarcity, pollution	NO	NO
Dan	The usage of water by people	YES	YES
Victor	Conserve water	NO	NO
Marisela	More demand than supply	NO	NO
Ana	Climate change, it doesn't rain like it used to.	NO	NO
Rosa	The price will increase	NO	NO
Itzel	Main cause that we have a limited amount of water and population is always growing	NO	NO
Larry	Not Running out of water	NO	NO
Esteban	IRRESPONSIBLE USAGE	NO	NO
Ernesto	There will be no water, no rivers. WEIRD ANSWER	NO	NO
Carolina	Not enough water	NO	NO
Alejandro	Better draining systems NA	NO	NO
Anita	Overpopulation. More consumption than production	NO	YES
Daniela	Water from the ocean removing salt NA	NO	SOMETIMES
Jaclyn	Running out of tap water	NO	NO
Victor R	Climate change will get more serious and drought seasons will get longer, so we as a society will be challenged to use the water way more efficiently	NO	YES
Cesar	People not worrying about it.	NO	NO
Raquel	Government, global warming, technological advances	YES	YES
Carlos	Global warming of course	NO	YES

First name	What measures do you believe the authorities or the city should take to conserve water? (41)
Teresa	They have to limit water usage even more.
Jesus	Implement more inclusive activities social wise that would get people concerned about the current water situation
Adela	Educating people about ways to conserve water, and setting higher fees for people and companies who waste water
Mariana	Create laws that force citizens to conserve water.
Ruben	Limite water use (fines)
Jessica	Poner reglas si realmente hay escazes. Hacer programas de consciencia. Educar a la ciudadania.
Alfonso	First of all, government buildings have to buy water conserving appliances, faucets or toilets. Also, the landscaping have to use native plants, they are doing that already. Aslo, tax breaks for household that do the same.
Raul	Fine companies that don't take good care of it
Ricardo	Create mor efficent water plants
Gloria	Give facts of what is happening with water
Julia	I think they are already encouraging the general population to conserve water, if you use a landscaping that doesn't require water they give incentives.
Ana Emily	Provide more information to the water consumer
Mauricio	Use less water, use it more for the people than for their selves. use it for a common well-being
Andres	Yes, but also politically and economically
Dan	Limit growth of homes being built
Victor	Penalty people for not taking care of water
Marisela	Invest in better technology
Ana	Tener los medidores en buen estado.
Rosa	NA
Itzel	In el paso our vegetation should be desert vegeration to not water plant all the time
Larry	Can't we just desalinate the ocean?
Esteban	NA
Ernesto	The city should audit people.
Carolina	Tell us more about the water concerns and how we can help
Alejandro	Limit amount of water to water the yard
Anita	The flow meter are correct and people are paying the bills
Daniela	**Restricting the amount of liter per week**
Jaclyn	Limit the water per house in households
Victor R	NA
Cesar	Probably invest more in technology so that we can save water in our daily life.
Raquel	Invest in technology. Higher cost of water to prevent excessive use
Carlos	Control water usage. People waste a lot of water everyday.

First name	Do you believe there should be more information available about water concerns and issues ? (42)	How likely are you to go to a website that gives info about water policy issues and concenrs? (43)	Have you ever reported someone for wasting water? (46)
Teresa	YES	NOT LIKELY	NO
Jesus	YES	VERY LIKELY	NO
Adela	YES	MAYBE	NO
Mariana	YES	NOT LIKELY	NO
Ruben	YES	NOT LIKELY	NO
Jessica	YES	NOT LIKELY	NO
Alfonso	YES	NOT LIKELY	NO
Raul	YES	VERY LIKELY	YES
Ricardo	YES	NOT LIKELY	NO
Gloria	YES	NOT LIKELY	NO
Julia	YES	LIKELY TO GO ONCE A YEAR	NO
Ana Emily	YES	NOT LIKELY	NO
Mauricio	YES	NOT LIKELY	NO
Andres	YES	NOT LIKELY	NO
Dan	YES	VERY LIKELY	NO
Victor	YES	NOT LIKELY	NO
Marisela	YES	NOT LIKELY	NO
Ana	YES	NOT LIKELY	NO
Rosa	YES	NOT LIKELY	NO
Itzel	YES	NOT LIKELY	NO
Larry	YES	NOT LIKELY	NO
Esteban	YES	MAYBE	NO
Ernesto	YES	NOT LIKELY	NO
Carolina	YES	VERY LIKELY	NO
Alejandro	NO	NOT LIKELY	NO
Anita	THERE IS INFO AVAILABLE ALREADY	NOT LIKELY	NO
Daniela	YES	NOT LIKELY	NO
Jaclyn	YES	NOT LIKELY	NO
Victor R	YES	MAYBE	NO
Cesar	YES	NOT LIKELY	YES
Raquel	YES	I DO IT OFTEN	NO
Carlos	YES	NOT LIKELY	NO

First name	wasting water, how would you go about reporting them? Who would you turn to? (47)	Have you ever attended a public policy making meeting ? (48)	Do you know what direct potable reuse is? (49)
Teresa	POLICE	NO	NO
Jesus	THE CITY	YES	YES
Adela	EPWU	NO	NO
Mariana	POLICE	NO	NO
Ruben	EPWU	NO	NO
Jessica	THE CITY	NO	NO
Alfonso	EPWU	NO	NO
Raul	POLICE	NO	YES
Ricardo	EPWU	NO	NO
Gloria	EPWU	NO	NO
Julia	WEB	NO	NO
Ana Emily	EPWU	NO	NO
Mauricio	POLICE	NO	NO
Andres	PLICE	NO	NO
Dan	EPWU	YES	YES
Victor	THE CITY	NO	NO
Marisela	EPWU	NO	NO
Ana	POLICE	NO	NO
Rosa	POLICE	NO	NO
Itzel	POLICE	NO	NO
Larry	POLICE	NO	NO
Esteban	EPWU	NO	NO
Ernesto	POLICE	NO	NO
Carolina	EPWU	NO	NO
Alejandro	EPWU	NO	NO
Anita	EPWU	NO	NO
Daniela	POLICE	NO	NO
Jaclyn	EPWU	NO	NO
Victor R	POLICE	NO	NO
Cesar	POLICE	NO	NO
Raquel	I WOULD TALK TO THEM FIRST	NO	NO
Carlos	EPWU	NO	NO

Curriculum Vita

Diego Armando Sanchez Garcia was born in Chihuahua, Chih., Mexico in 1985. He attended Instituto La Salle, a Catholic school, for his middle school and high school education. After finishing high school, Diego spent one year abroad in Sao Paulo, Brazil as an exchange student. During his year in Brazil Diego learned Portuguese. Then, he returned to Chihuahua to start a Bachelor Degree in Marketing in 2004 at Universidad La Salle Chihuahua. During his undergraduate education Diego worked as an intern in the National Institute of Statistics and Geography of Mexico (INEGI) for six months, working in the data coding department. After completing his Bachelor Degree in Marketing, Diego started working in Renca S.A. de C.V., a wholesale textile company as sales manager. In 2010 Diego moved to El Paso, Texas to start a wholesale textile business, The Low-Cost T-Shirt. In August 2015, Diego was accepted into the Master of Arts in Sociology program where he graduated in fall 2017.

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