Vessel Size and Feasting in Three Chacoan Great House Communities

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by

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AUTHORIZATION TO SUBMIT THESIS

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ABSTRACT

Measuring rim sherds and identifying the size of vessels is one method used to identify feasting. Larger than normal vessels may indicate a scale of food preparation for groups of people larger than the normal household. Located in the American Southwest Chaco Canyon was a central place for the Ancestral Puebloans, and reached apex between A.D. 1000-1130/1150. Chacoan Great Houses are thought to be used as gathering places for local communities and to be the locus of ritual and feasting activities. If true, great house ceramic assemblages should differ from those of smaller household residences, especially in terms of size. This thesis reports vessel size data, both by ware type and temporally, from the smaller residences and great houses in the southern Cibolan communities of Cox Ranch Pueblo, Cerro Pomo and Largo Gap to assess ceramic evidence for feasting. The primary result being that there is little evidence of feasting in the data but there are indications of status differences at the great houses.

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DEDICATION

To my Father, who was always encouraging me to learn and explore. He supported me going to graduate school to continue to follow my dreams. His education and experience with education also inspired me to further my own education. Thanks to my Mother for all her support and encouragement throughout this. Thanks to my husband for all the help, support and encouragement in getting me though this. And thanks to all my friends who made me laugh throughout this project.

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CHAPTER 1: INTRODUCTION

This project is an examination of three Chacoan great houses located in the southern Cibola region of New Mexico. This project examines evidence of feasting. Vessel size data was collected to determine if the great houses were being used as places where feasting occurred. The diameters of vessels from the great houses were compared to the vessels found in the surrounding communities, or non-great house sites, to find out if there is a difference in the sizes of the vessels used at the great houses. Any difference of diameters might show that great houses were used to host feasts. This method has been used successfully in the Southwest for other time periods (Potter 1997; Potter 2000; Wills and Crown 2004), as well as for a Mississippian mound village where archaeologists examined feasting practices (Blitz 1993). This study is part of a larger project aimed at determining the extent of the Ancestral Puebloan and Mogollon cultural interaction, and community organization at the three great houses as part of a study being conducted by Dr. Andrew Duff at Washington State University.

Cox Ranch Pueblo, Cerro Pomo, and Largo Gap are contemporaneous sites dating to the late Pueblo II period, A.D. 1050-1130. Largo Gap is the smallest of the great houses, while Cox Ranch Pueblo is the largest. They are located in the southern Cibola region of west-central New Mexico approximately 120 kilometers south of Chaco Canyon (Figure 1). Each site contains a great house built in the Chacoan style. This area is at the interface of the Ancestral Puebloan culture area in northern New Mexico and the Mogollon culture area in southern New Mexico and mountainous parts of Arizona; the region is also the southern periphery of the Chacoan system. Because of this, the great houses show a mix of these two cultures (Clark 2010; Duff and Nauman 2005; Elkins 2007; Nauman 2007; Wichlacz 2009).

There is evidence that large gatherings of people and feasting at Chaco Canyon (Toll 1985) and this could be one possible function for Cox Ranch Pueblo, Cerro Pomo and Largo Gap.

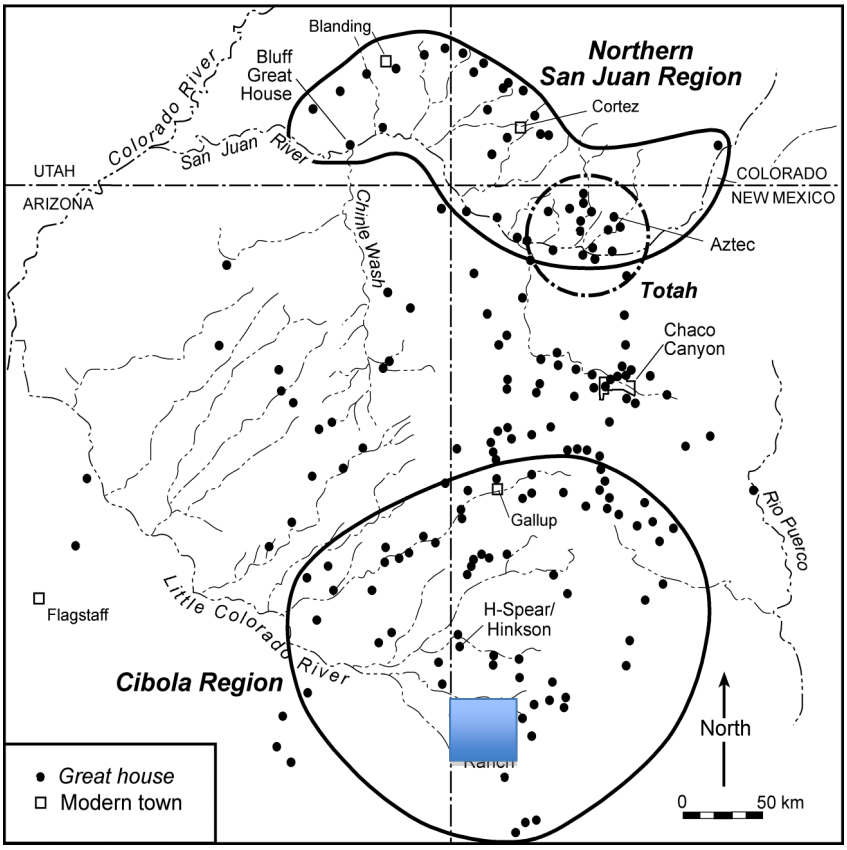

Figure 1: Map showing the project location. The sites are located within blue square (modified from Cameron and Duff 2008:30, Figure 1).

CHAPTER 2: BACKGROUND

The southern Cibola region of New Mexico is located south of the modern Zuni reservation. The region was a cultural boundary between Puebloan and Mogollon people, with the Puebloan culture located north of the region and the Mogollon located south of the region, up until about A.D. 800-900. There seems to be sparse occupation in the Cibola region during this time (A.D. 800-900). The Puebloan culture becomes more evident in the Cibola region after A.D. 1000. During the Chacoan era (A.D. 800-1250) the boundary between groups becomes much weaker but with both cultural traditions persisting in the Cibola region. Chacoan influence in the region reached its peak between A.D. 1000 and 1150. This period is also when great houses start appearing throughout the region, presumably stemming from Chacoan influence. The great houses were built in the same manner as the great houses built in Chaco Canyon (Duff and Lekson 2006). How closely these great houses are tied to Chaco Canyon is not well understood. Because the region is being on the border of two cultures, there is evidence of both cultures in the artifacts recovered at the three great house sites discussed in this thesis. This would suggest that these sites were only loosely connected with the larger Chacoan phenomenon and that the two cultures were mixing at the sites (Wichlacz 2009).

The Ancestral Pueblo people, also known as Anasazi or Pueblo, lived throughout the Four Corners region. Their settlements are found in the plateau areas of northwestern New Mexico, northeastern Arizona, southwestern Colorado, southeastern Utah, and southern Nevada. Their settlements are found in a variety of environmental settings (Plog 2008). They have lived in the northern region of the American Southwest from about 600 B.C., and

continue to reside in the region today. Beginning in the latter half of the first millennium, they built their structures out of stone (Reed 2004).

The Mogollon lived in the east-central portion of Arizona and the west-central portion of New Mexico, and even into some parts of western Texas. They gain their name from the area where they live: the Mogollon Rim and Plateau. They lived primarily in wetter and wooded mountainous areas, though their settlement extended into the lower drier areas. River terraces were another place where villages were built. They built their structures with a stone base and adobe top (Plog 2008).

The basic differences between the two cultures is that Puebloan culture is associated with white and gray paste ceramic wares and circular kivas, while Mogollon culture is associated with brown paste ceramic wares and square kivas (Wichlacz 2009). However, they were similar in some ways. For example, both cultures made the transition from pithouses to above ground structures and villages, and became predominantly farmers supplemented by hunting and gathering (Plog 2008). Kivas are subterranean structures used for ceremonies and rituals. Great kivas are exceptionally large kivas (Brody 1990).

Chaco Canyon was a center of Ancestral Puebloan Culture from A.D. 850 to 1250. It is located in northwestern New Mexico, near the Four Corners . The Chaco River runs through the canyon when there is enough water, starting to the east and then it joins the San Juan River to the north. The canyon is shallow but wide, and runs east to west for approximately twenty miles (Lister and Lister 1981; Reed 2004). Large D-shaped great houses were built on the north side of the Chaco Wash, with a few being built on the mesa

tops above Chaco Wash (Lekson 2006; UNESCO 2012). Smaller buildings were constructed on the south side of the canyon, along with isolated great kivas (Plog 2008). Pueblo Bonito, for example, still stands four stories tall in places. The great houses also contain walled-off plazas and kivas, as well as several great kivas (Brody 1990; Plog 2008).

Human occupation in Chaco Canyon goes further back to the Archaic. Evidence of early consists of lithic debitage and small campsites (Lister and Lister 1981). People seem to have started living more permanently in the canyon during the Basketmaker III Period (A.D. 500 to 750). This is seen in the site of Shabik'eschee Village, a pithouse village in Chaco Canyon dating A.D. 500 to 700. The site contains 60 pithouses that were rectangular or circular in shape. Storage bins were also found in association with the houses (Plog 2008). By the late A.D. 800s there were several hundred people living in pueblos in Chaco Canyon. It was also during this time when three of the twelve great houses started being built. These three great houses were Una Vida, Penasco Blanco and Pueblo Bonito.

Chaco Canyon's peak was between A.D. 1050 and 1080. This peak seems to have been linked with favorable climatic conditions, which allowed for expanded agriculture production. During this and later times outlier sites were also being built. This has been called the Chacoan Phenomenon, or the Chacoan System. What it represents is not well understood and will be discussed later in the thesis (Reed 2004).

In the early 1100s the major northern outliers, Aztec specifically, start to take prominence away from Chaco Canyon. In A.D. 1130 a region-wide drought was occurring which continued through A.D. 1180. This seems to have led to Chaco Canyon's demise

along with the change of site prominence to the north. By the 1200s Chaco Canyon was still occupied and used but it does not seem to have held the same influence as before (Reed 2004).

There are many theories about what Chaco Canyon represented. These include: it was a seat of political power, a ritual center or a redistribution center (Lekson 2006; National Park Service 2012; UNESCO 2012). Another theory proposes that the canyon was the center for a trade network (Brody 1990). While there are multiple theories of what Chaco Canyon represented, there is evidence that the canyon was a place where people came together for periodic gatherings.

Evidence of gatherings comes from multiple sources. One is the amount of ceramic vessels found broken in the midden, or trash mound, of the Pueblo Alto great house located on a mesa above the Chaco Canyon near an ancient road. The density of ceramic found here than would be expected for a normal household. In the same midden there is also evidence of a large number of animal remains (Toll 1985, cited in Plog and Watson 2012). However, contrary to this Plog and Watson (2012) reexamined the data used by Toll found that ceramics and faunal remains do not show a difference from any other site in Chaco Canyon. Few domestic hearths were found within the great houses. This could be from lack of evidence due to the upper rooms collapsing before archaeologists could study Chaco Canyon. Differences in the internal structures of the great houses show that it was more likely used for multiple purposes (Plog 2008).

Another line of evidence are the goods from outside the canyon, such as ceramics from the Chuska region located to the west of the canyon and chert and wood from the Chuska Mountains (Judge 1984). Trade was also happening with Mesoamerica for copper bells, macaws, and cacao (Crown and Hurst 2009; Reed 2004). Roads come into the canyon that connect it with some of the outlier sites (Judge 1984), though some also seem to go to nowhere in particular.

Ritual architecture and artifacts can be found in Chaco Canyon. Ritual or ceremonial artifacts include painted sticks (possibly prayer sticks), objects inlaid with turquoise, carved frogs, covered shell objects, copper bells, bird effigies carved from turquoise, and many more. Most of these artifacts are found in kivas. Pueblo Bonito contains the largest amount of ceremonial objects found in Chaco Canyon (Reed 2004). Along with the great houses there are smaller buildings on the opposite side of the canyon. Isolated great kivas are also found on the side of the canyon along with the smaller buildings. The evidence seems to point to Chaco Canyon being an important place for possibly ritual ceremonies to take place or as a trading center, as discussed earlier. However, what Chaco Canyon represented continues to be debated (Brody 1990; Judge 1984; Lekson 2006; National Park Service 2012; Reed 2004 UNESCO 2012). It is clear that something was happening with Chaco Canyon. It is clear that Chaco Canyon having influence over a large area as outlier great house sites are found outside the canyon.

Outside of the canyon, Chacoan influence can be seen in outlier sites. Outlier great house sites, or sites with Chacoan-affiliated great houses, are seen throughout the region

around the canyon. Most of these outlier great houses were built during the height of Chaco Canyon's influence approximately A.D. 1050 to 1080. The greatest concentrations of these houses are in the north and south-southwest of the region (see Figure 1). At present there are approximately 150 known outlier sites. How these sites are recognized as outliers is that they are similar to the great houses found in Chaco Canyon. The construction style is similar, using core-veneer construction and bands of sandstone building blocks. However, the outlier sites can still have their own characteristics along with Chacoan traits (Reed 2004). With the architectural features it is interesting to note that they could only be copied with direct knowledge of Chacoan architecture (Van Dyke 2008). . The outlier great houses follow the pattern of a great house surrounded by smaller residential settlements, or big bumps surrounded by many little bumps, that is a noted characteristic of Chacoan great house communities (Lekson 1991). The relationship between Chaco Canyon and the outlier sites is still not well understood. This project helps to understand what possible uses of the outlier great house sites, especially in the Cibola region, and may help build an understanding of the Chacoan system. What follows is a description of the sites used in this thesis and an explanation of outlier great houses (Figure 2).

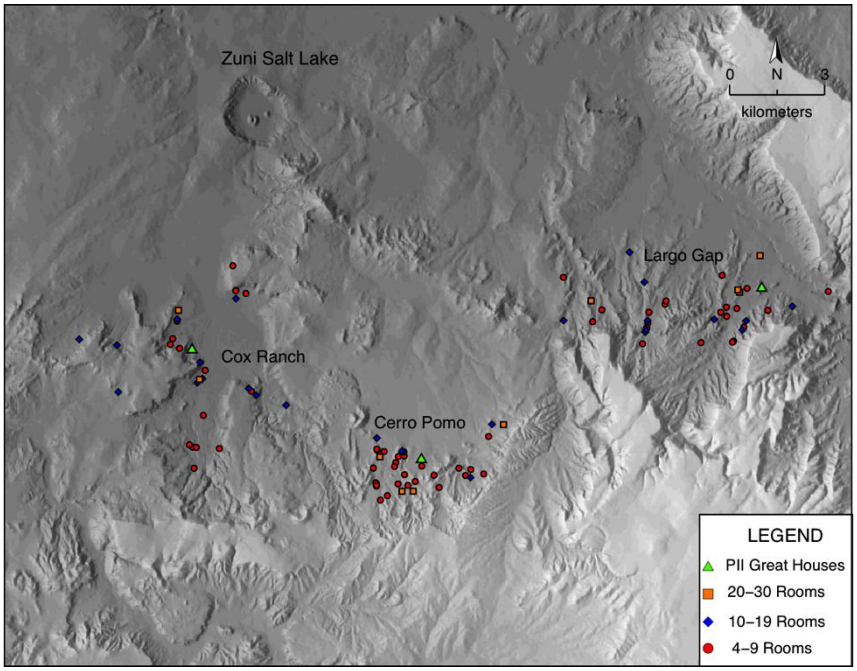

Figure 2: Aerial overview showing location of the three great houses and surrounding communities. Courtesy of Kristan Safi.

SITES BACKGROUNDS

Cox Ranch Pueblo is a multiple roomblock aggregated settlement. It contains a D-shaped great house surrounded closely by residential roomblocks and middens (Figure 3).

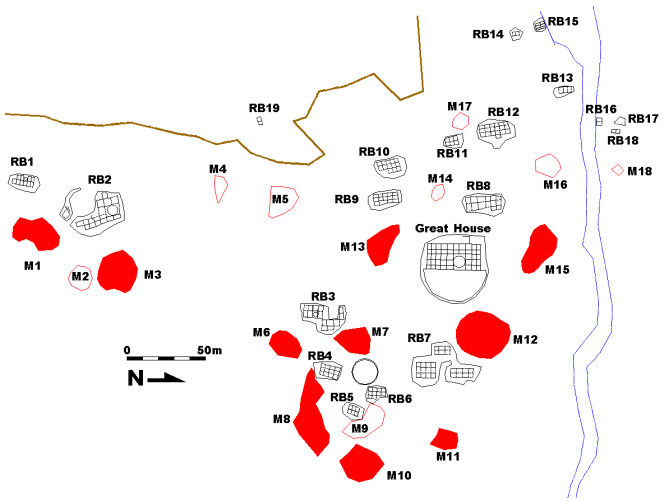

Figure 3: Plan of Cox Ranch Pueblo (red indicates sampled middens).

Roomblocks are approximately five to twenty rooms and form single story

rectangular buildings. The great house has about 50 rooms and a blocked-in kiva, with its associated midden a short distance to the east. It is built in the same core and veneer style as the great houses in Chaco Canyon. There are eighteen surrounding community roomblocks and associated middens around the great house. All the middens are to the east of their associated roomblocks, just as with the great house (Clark 2010; Duff and Nauman 2005; Elkins 2007; Nauman 2007; Wichlacz 2009).

Cerro Pomo is located eight kilometers southeast from Cox Ranch Pueblo. The Cerro Pomo great house is slightly smaller than Cox Ranch Pueblo great house (Figure 4). It has about 40 rooms and is rectangular in shape rather than the typical D-shaped great house and built in the same masonry style of Chaco Canyon. The roomblocks around Cerro Pomo are more dispersed than those found at Cox Ranch Pueblo (see Figure 2). These surrounding residential roomblocks are also smaller than those around Cox Ranch Pueblo (Clark 2010; Elkins 2007; Nauman 2007; Wichlacz 2009).

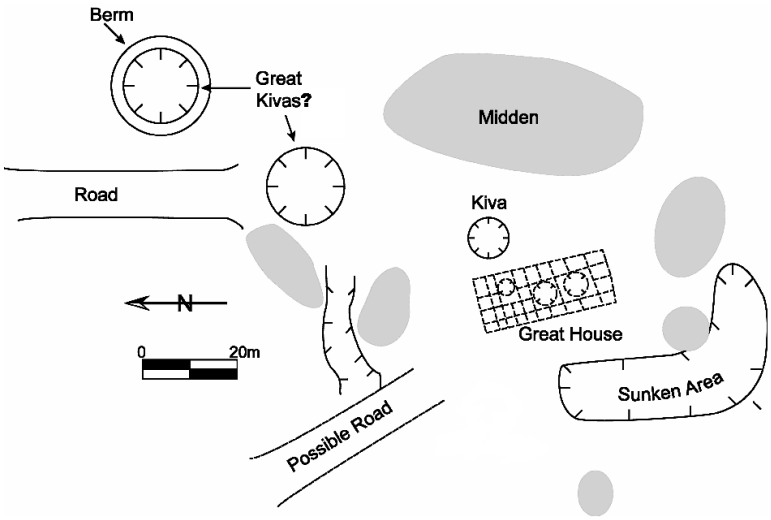

Figure 4: Plan of Cerro Pomo great house

Largo Gap is the smallest of the great house sites (Figure 5). It is located on a hill that has a view of the gap where Largo Creek cuts through Tejana Mesa. It is located 25 kilometers northeast from Cox Ranch Pueblo and 20 kilometers northeast from Cerro Pomo.

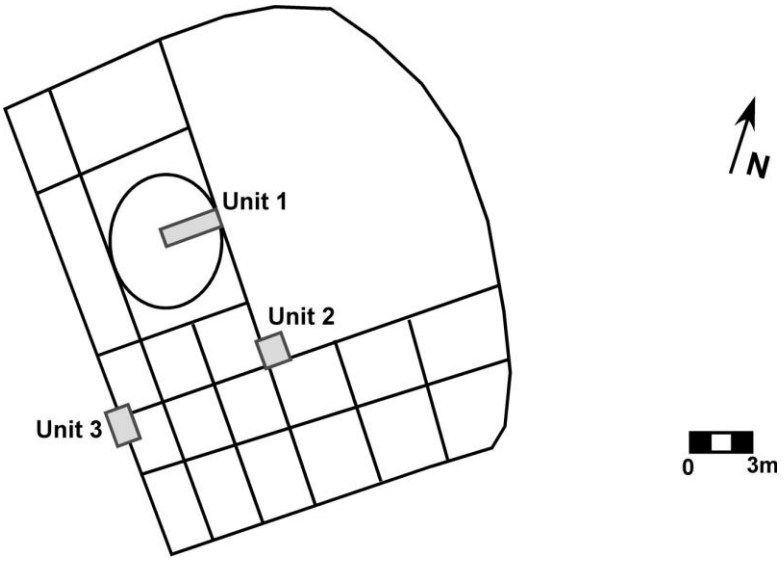

Figure 5: Largo Gap great house plan.

The great house has approximately fifteen rooms, a blocked-in kiva, it is multi-storied, and built with the same masonry style as Chaco Canyon. It is also rectangular in shape like Cerro Pomo. Its associated midden is located on the slopes of the hill (Jarrett 2013).

The surrounding communities date to the late Pueblo II Period (A.D. 1050-1130). Another name used for the surrounding communities is non-great house sites. They are built in the areas surrounding the great houses, in places suitable for farming (see Figure 2). Primarily this would occur in areas near water or on slopes as rainfall would wash down hills or mesas. These settings are where the majority of the people would be living (personal communication with Andrew Duff, June 20, 2012). Surrounding communities were broken up by which great house site they were closest to. Ceramics collected from the sites will be discussed next.

CERAMIC COLLECTION

The ceramic assemblage used in this analysis from the great houses was taken from excavations led by Andrew Duff. Cox Ranch Pueblo was excavated 2003-2005, Cerro Pomo was excavated 2005-2008, and Largo Gap was excavated 2012 to 2013 (Clark 2010; Jarrett 2013; Nauman 2007). The ceramic assemblages from the surrounding communities were acquired during surface survey or testing that took place between 2002 and 2013 (personal communication with Dr. Andrew Duff, June 20, 2012).

Unpainted pottery from the sites show a mix of Ancestral Puebloans and Mogollon cultures. These are the gray and brown wares, also known as utilitarian wares. Gray wares are associated with the Ancestral Puebloans, and brown wares are associated with the Mogollon. Gray wares are often made with light-firing clays fired in a reducing atmosphere. Brown wares are made from iron-rich clays fired in an oxidizing atmosphere. Cox Ranch Pueblo, Cerro Pomo, Largo Gap and their surrounding communities are in this boundary between the Ancestral Puebloan and Mogollon cultures, and their ceramics and architecture reflects this mixing (Jarrett 2013). Puebloan style great houses and gray ware ceramics, along with brown ware ceramics, show that something was happening at this boundary. Clearly there was a mixing of these two cultural groups and a bringing together of ideas. Why this was going on still needs to be answered and could to understand the larger question of the Chacoan system.

FEASTING BACKGROUND

Feasting has many different definitions, but most deal with how feasts are different from a regular meal. There are two definitions for "feast" commonly used by archaeologists. One is "a form of public ritual activity centered around the communal consumption of food and drink" (Dietler 2001:67). The other definition is "any sharing between two or more people of special foods (i.e., foods not generally served at daily meals) in a meal for a special purpose or occasion" (Hayden 2001:28). The main points of what defines a feast are people sharing food and/or drink for a reason different from another normal meal. The size of the group and reasons for feasting are many. Some require a large gathering while others can include smaller groups. Reasons vary from anything outside a normal meal to special, ritual or political events.

Ethnographic examples of feasts from around the world show that there are a wide variety of feasts, as well as purposes for feasting (Dietler and Hayden 2001). They are an important part of understanding political and social interactions in a culture. They can be used to maintain and create social ties within the communities as solidarity feasts. The creation and maintenance of alliances can also be done through feasting. Ritual events are often marked with feasting. Politics are another thing that can be negotiated through feasting. The use of prestige items during feasting can reinforce who has power. Competitive feasts are designed to show which person can bring together more followers through having the largest feast (Dietler and Hayden 2001). As Phillips and Sebastian say "feasting occurs at multiple scales and fills many purposes. Small feasts frequently mark

personal triumphs and tragedies-coming of age, marriage, the birth of a child, or the death of a family member. The largest feasts, involving a whole community or multiple communities, mark points within a religious calendar, recurring events such as harvest time, or occasions of commemoration or thanksgiving" (2004:239). While this study is not researching why feasting was taking place, it is important background information to understand. It shows that feasting is a common occurrence in the ethnographic record and is also a potentially common occurrence in the past.

There are multiple different archaeological methods to identify feasting. Frequently used methods for examining feasting include analysis of ceramics, faunal remains, and architecture. Often all are used together to determine whether feasting was taking place. Ceramics are commonly employed to determine if a site was being used for feasting. One indication is finding special or unique vessels at a site, especially if found in restricted contexts or deposited in a special way. Unique vessels often have different decorations, shapes or were imported (Dietler and Hayden 2001; Mills 2007). Another indicator is using the ratios or percentages of cooking vessels to serving vessels at a site. This can indicate what type of feasting was taking place, whether it was potluck or potlatch (Blinman 1989). The size of the serving vessels is another indication. Needing to feed a large number of people requires larger vessels for both cooking and serving. Personal vessels for eating out of could be present along with the larger vessels. A bimodal distribution, showing both small and larger diameters, is the last method commonly used (Blitz 1993; Clark 2010;

Hayden 2001; Junker 2001). Vessel diameter is the method being used in this project to compare ceramics from the three great house sites with their surrounding communities.

In the Southwest most of the information on feasting is focused ether on ceramics or faunal remains, as these are very common in archaeological sites. These categories are used to compare between sites and across time. They are used to try and understand relationships of the Ancestral Puebloans. Politics and trade are primary interests; with researchers asking what sites were hosting feasts and what trade items were brought in during feasts (Mills 2007; Phillips and Sebastian 2004; Potter and Ortman 2004; Spielmann 2004; Van Keuren 2004; Wills and Crown 2004)?

Ceramics are used in three ways to discover evidence of feasting in the Southwest. The first is with decoration, that is, how the bowls are decorated both inside and outside. Outside decoration can indicate that the vessels were supposed to be seen by other people, not just the people using the vessel, while interior decoration indicates vessels for personal use as only the person using the vessel would primarily see the decoration. Diameter of vessels at a site is the second way ceramics are examined. Having both larger and smaller vessels present at a site can be an indication of feasting. Another way is if there are larger vessels of a particular type present only at a specific site or sites. In a similar way imported vessels found in only a specific site or sites can indicate that this was a place that was important and may have held feasts (Mills 2007; Phillips and Sebastian 2004; Potter 1997; Potter and Ortman 2004; Spielmann 2004; Van Keuren 2004; Wills and Crown 2004).

Faunal remains can also be used to determine where and if feasting was taking place. This is done by looking at what types of animals were being consumed. Communal hunting can indicate feasting for a large number of people. Also, if there are special or only specific animals being eaten, such as rabbits, or specific parts of the body represented could be an indication of feasting occurring (Keuren 2004; Phillips and Sebastian 2004; Potter 1997; Potter and Ortman 2004; Spielmann 2004; Wills and Crown 2004). Faunal remains, though not the focus of the thesis, will be bought in to help corroborate the ceramic diameter data.

CHAPTER 3: METHODS

The ceramics used in this study were primarily from assemblages that had already been collected. The only exception to this was Largo Gap, where I was a participant in the first excavation during the summer of 2012. Before collecting the rim measurements, some of the surrounding communities and Largo Gap's midden ceramics needed to be typed. The researcher did this analysis by classifying pieces of pottery according to ware, sub-ware, type and form. Ware is determined based upon either slip color or paste color. Red and white wares are slipped, and gray and brown are not slipped. The sub-ware or type represents the decoration on the sherd. Form represents from what vessel shape the sherd derives from originally. This could be a bowl, jar or ladle (Hays-Gilpin and Hartesveldt 1998). For this study only bowls and jars are used because ladle sizes do not change much based upon activities, and are thus not useful for examining feasting practices.

Once the sherds were typed, then the measurements could be taken. Rim sherds were measured using a rim chart. A rim chart is a piece of paper curved in one-centimeter increments that represents the radius. The one I used had the curves cut out for each radius in one centimeter increments. The curves of the chart were fitted into the interior curve of the rim sherd, just below the edge to determine a measurement. This method has been critiqued as being subjective because it requires the researcher to find the best fit for the curved paper to fit the rim (Plog 1985). One way around this problem is to have only one data collector. This will keep whatever biases there are the same throughout the sample (Duff 2013). I measured the rim sherds for the entire data set, so if there were any biases,

then it is just mine throughout the sample, and should be consistent throughout the sites. As this measurement gives the radius, this has to be multiplied by two in order to give the diameter of the whole vessel.

Another aspect to the rim chart is the degree of arc, or included angle. This represents how much of the whole vessel the sherd, measured using degrees. These are lines that radiate out from the center of the chart in one degree of arc. An entire rim of a vessel would measure 360 degrees. For this project, some rim sherds were excluded from the final sample based on this measurement for being too small to achieve an accurate measurement.

The reason this method was chosen is because it has worked in the Southwest as well as in a Mississippian mound community. These studies compare information from the site or sites where feasting is suspected of happening, usually non-residential areas, to a site or sites where it is thought feasting was not taking place, usually residential areas. In these cases there is evidence that at places where feasting was occurring larger vessels are also found. These vessels include cooking, serving and storage vessels. Smaller personal vessels were also found. A bimodal distribution was found when the diameters were graphed out. I am asking if this bimodal pattern is present in these data. The information is backed up with other evidence, such as faunal and ceremonial artifacts (Blitz 1993; Elkins 2007; Potter 1997) and shows that this method is viable to use for this study.

All rim sherds that could be measured were examined from each of the different sites. The total sample was 4,270 sherds. This sample is not to be the final count used in analysis, as some rim sherds were excluded based on the degree of arc. The final sample was

decided after graphing out the different sherds by ware and form using a one-centimeter interval. This where each tick on the X-axis equals one diameter measurement and the Y-axis shows the number, or count, of how many rims of that diameter there are. One of the issues was that a number of the rim sherds with radii at twenty centimeters or less had degrees of arcs that were below five degrees. This was small enough that it is hard to find a good fit with the rim chart most of the time. Often just close enough was used. Another problem was at these diameters there were some rims that had to be half diameters or close to that but there were only a few of these so removing them was not an issue. As a result, any sherds with a diameter of twenty-one centimeters or less that had a degree of arc less than ten were removed from the final sample. With sherds of twenty-two centimeters and above any sherds with a degree of arc less than five were taken out of the final sample. This leads to the total sample of 3,532 sherds from all the sites. This reduced sample was graphed in a one-centimeter interval and compared to the one-centimeter graph of the total sample (n=4,270). There was no significant difference in the two graphs.

The sherds were then organized into their form and/or function. Bowls and jars were separated first. The jars were then broken into groups by their function: utilitarian, also called cooking jars, and painted jars. Cooking jars are the gray and brown jars, and the painted jars are the slipped and painted red and white jars (personal communication with Dr. Andrew Duff, September 2013). Bowls were broken into groups by ware: red, white, other/unidentified, gray, and brown. These form the groups used for the data analysis. If a pattern is found in the analysis, then statistics were used to determine comparisons and statistically significant. This will be explained in the next section.

Once the sample size was set, then another set of graphs was done of the diameters. The interval for the graphs used was set at two-centimeter intervals. The two-centimeter graphs have the same X and Y-axes as the one-centimeter graphs. The only difference is each tick represents two diameters, such as ten and eleven-centimeter diameters, combined to make one of the bars in the graph. In the one-centimeter graph ten-centimeter diameter would make up one bar and eleven-centimeter diameter would make up another. Several different groupings of the data were used. At the most aggregated, all three great house sites were combined and then all surrounding communities sites were combined together. At the least aggregated grouping, each great house site is graphed individually. Then the surrounding communities are split based on which great house they are located nearest and graphed out in the same manner as the other graphs. The ceramics for all the graphs were broken into their ware and form. Total number of each ware and form for the sites were also taken. When graphing out the least aggregated grouping, the great house was one graph and all of the surrounding communities around the great house were combined together. None of the surrounding communities were graphed out singularly due to high variability in the number of rim sherds found from the surface collection from each site.

After the rims were graphed, the graphs were examined to see if there were any differences between the great houses and the surrounding communities. Depending on what was found, the next step would be to perform statistical analysis. This was only done if there are very small differences seen in the graphs to determine how significant the difference is. The statistical analysis used was an independent means t-test.

After completing the first analysis, the next analysis was looking for temporal

differences. The temporal data were analyzed using the painted bowls. These are vessels that can be dated based on the design (Hays-Gilpin and Hartesveldt 1998; personal communication with Dr. Andrew Duff, August 2014). Based on the decorated ceramic typology, the bowls were broken into broad time spans of earlier and later. This was done for the both the red and white wares. For the white wares the earlier grouping is made up of types Kiatuthlanna, Red Mesa, Gallup and Puerco Black-on-white. The later grouping for white ware is made up of Reserve black-on-white. The red ware earlier group is made up of Puerco Black-on-red, and the later group is made up of Wingate black-on-red and Wingate Polychrome. Also, with some types there are very small sample sizes or no examples present at the sites that are rim pieces, thus combining the types helps increase the sample size.

Temporal analysis was done in the same manner as the rest of the data. All the great houses data were analyzed in aggregate and separately; all the non-great house data were analyzed in aggregate and separately by great house community. Once the data were grouped into the categories, graphics were generated. As with the rest of the data there were only small variations in the graphs. T-tests of independence were carried out on the data to see if the differences were statistically significant or not. One issue with breaking the data up in this manner is the fact that there are many categories with small sample sizes. This makes the interpretation of the statistical data difficult. There is also one sample, Largo Gap non-great house red wares, where the sample size is three sherds total; no graphing or t-tests of independence was conducted on this small sample.

CHAPTER 4: ANALYSIS

This chapter is broken into three parts. First will be the discussion of the aggregated data. The rim sherds were grouped by form and location of recovery. All bowls, painted jars, and cooking jars form the major groupings for the first set of analyses. Great house and non-great house forms the other grouping for the first analysis. Second will be the data broken into the great houses and their surrounding communities or non-great house sites. The data are also grouped into general ware categories: brown bowls, red bowls, white bowls, brown jars, and gray jars. Last is the temporal analysis of the data. The rim sherds were grouped into temporally distinct types for the painted bowls and compared across the same great house or non-great house groupings for the temporal data. The full read out of the t-test statistics can be found in the appendices.

AGGREGATED DATA

The most aggregated analysis was done by grouping all the bowls together, all cooking jars together, and all painted jars together. This was done at the broad level of all the great houses together and all the non-great houses together. These were then compared to each other. This showed that there was no bimodal distribution in the data. All graphs showed close to bell shaped curves.

AGGREDATED BOWLS

Graphs for the combined bowl data grouped by great houses and non-great houses appear very similar (Figure 6). The great house graph has a much gentler incline to the main peak. The main peak is at 20 to 22 centimeters diameter, and has a count of over 250. After the main peak there is a sharp decline. This becomes a much gentler until 34 to 36

centimeters. The graph tails off to a gap. After the gap is a one-count peak at 46 to 48 centimeters.

For the non-great houses the incline to main peak is steeper (Figure 6). It is also broken but steps up, and ends with the main peak at 20 to 22 centimeters diameter. It has a count of just over 150. The decline is steep, and ends similar to the great house graph. There is a small plateau between 38 to 42 centimeters. A gap follows this and the last peak at 44 to 46 centimeters. The t-tests for independence show that the bowls from the great houses are significantly different from those from the non-great house sites.

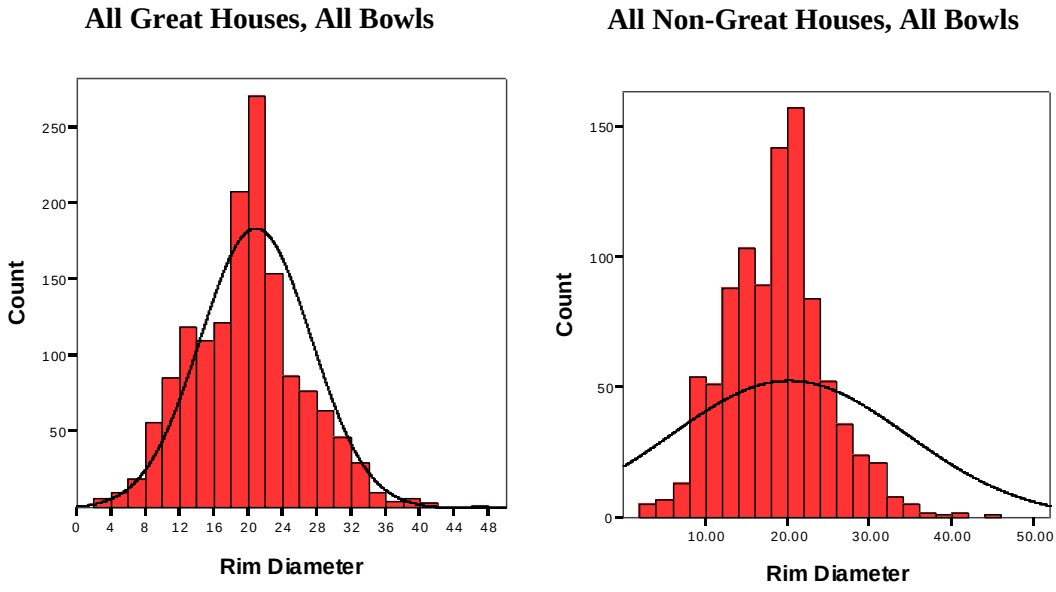

Figure 6: Graphs for all great houses bowls combine, and all non-great houses bowls combined.

The t-test for independence shows that on average the bowls from the great house are larger than those found at the non-great house sites (Table 1). Sample size totals for bowls are 1490 sherds for the great houses and 404 sherds for the non-great house sites. Mean diameter for the two samples are little over one-centimeter different: 20.8 centimeters for the great houses and 19.4 centimeters for the non-great houses. This difference is statistically significant as the p-value is less than 0.05 at 0.00.

Table 1: T-test for independence results for all great houses and all non-great houses bowl wares combined.

All Communities Combined		
Ware and Form	**Mean Size (cm)**	**t-test**
All Bowls	**GH** 20.8 **Non** 19.4	**t**=4.889 **df**=1582.287 **p**=0.000

AGGREGATED PAINTED JARS

Painted jars were measured and graphed out. The graphs show that for both aggregations the majority of the diameters fall below 20 centimeters. The non-great house sites have a few more diameter counts beyond 20 centimeters, but that is the only difference. Painted jars are primarily storage jars for water and grains, with large round bodies and narrow openings (Hays-Gilpin and Hartesveldt 1998). This makes measuring them accurately difficult. Painted jars were measured but because of the difficulty of accurately measuring the rim, and because they are used as storage and not directly related to feasting (Hays-Gilpin and Hartesveldt 1998) they are left out of the rest of the analysis.

AGGREGATED COOKING JARS

Similarly to the aggregated bowls, the graphs for the aggregated cooking jars appear similar. Both appear like bell curves (Figure 7). The great house has a gentle incline to a dip. It jumps up to two peaks and dips before the main peak. The main peak is at 20 to 22 centimeters diameter. It has a count over 75. The drop off after the main peak is steep but then becomes a gentle decline. The graph ends with a small plateau from 36 to 42 centimeters.

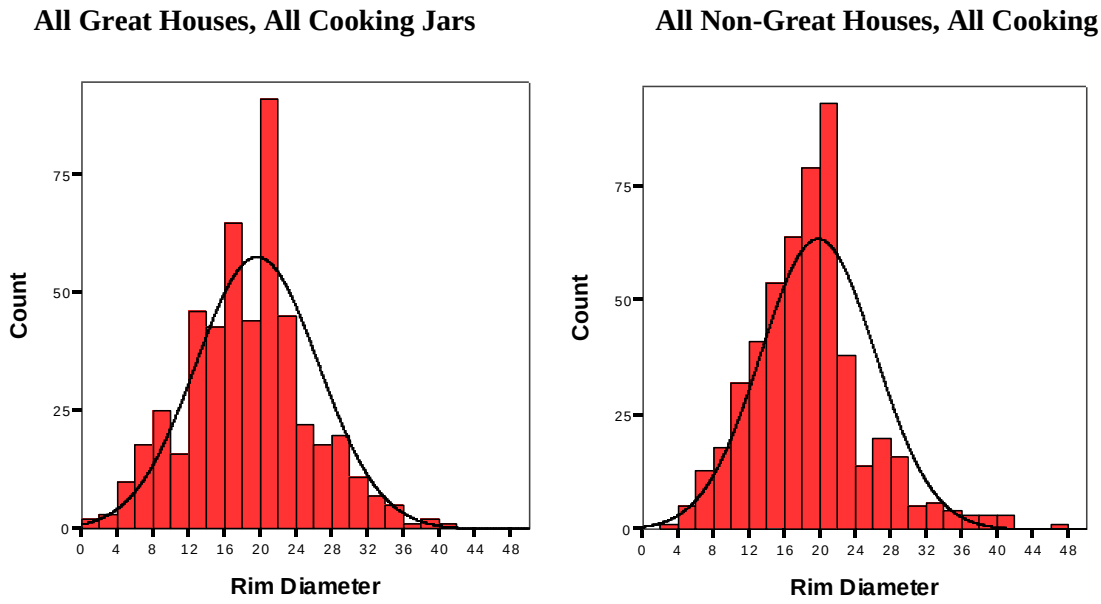

Figure 7: Graphs for all great houses cooking jars combined and all non-great houses cooking jars combined.

The non-great houses graph starts with a gentle incline to the main peak. The main peak is at 20 to 22 centimeters diameter, and also has a count of over 75 (Figure 7). There is a much steeper decline after the main peak than for the great houses graph. There is a slight peak at 26 to 30 centimeters. The graph ends with a small plateau followed by a gap. The final peak is a count of one at 46 to 48 centimeters.

The t-test shows the samples sizes closer together then with the aggregated bowls (Table 2). For the great houses the sample size is 494 sherds, and for the non-great houses the total is 303 sherds. Diameter means are 19.6 centimeters for the great houses and 19.8 centimeters for the non-great houses. Again the two tenths of a centimeter difference is not statistically significant.

Table 2: T-test for independence results for all great houses and all non-great houses cooking jars combined.

All Communities Combined		
Ware and Form	**Mean Size (cm)**	**t-test**
Cooking Jars	**GH** 19.6 **Non** 19.8	**t**=-0.411 **df**=996.087 **p**=0.682

ANALYSIS BY WARES

The data for this have been broken into several parts. The first is the ceramics have been broken into broad ware categories. All brown bowls, red bowls, white bowls, brown jars, and gray jars were grouped together for each great house and their surrounding non-great houses. A general comparison was also made between all great houses and all non-great houses combined. Then the data were broken into specific great houses and their surrounding non-great houses communities and compared. Both graphs and t-tests were done on the data.

ALL GREAT HOUSES COMPARED TO ALL NON-GREAT HOUSES

BROWN BOWLS

Brown bowls were graphed first. The graphs are very similar in shape; both are bell shaped and have peaks at 20 to 22 centimeter diameters (Figure 8). With the great house graph there is a bit more of a tail where there are more counts of rim diameters above 28 centimeters. This is just a slight difference in means diameters, but it is statistically significant as shown via the t-test.

All Great Houses, All Brown Bowls **All Non-Great Houses, All Brown Bowls**

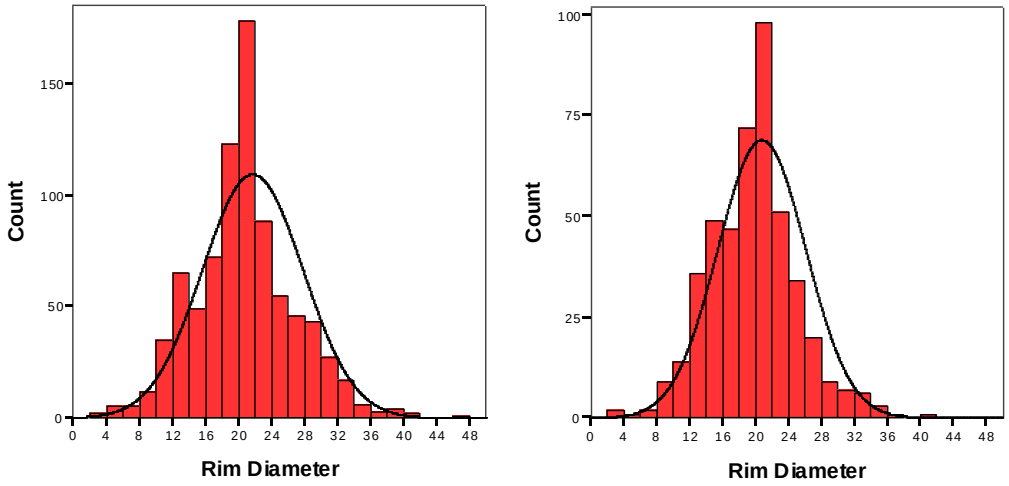

Figure 8: Graphs for all great houses brown bowls combined and all non-great houses brown bowls combined.

There was a total sample size of 837 for all great houses, and a total of 470 for all non-great houses for brown bowls. The mean diameter for great houses was 21.6 centimeters (Table 3). The mean diameter for non-great houses was 20.7 centimeters. This is only one-centimeter difference, but it is a highly significant difference as the p-value is 0.003.

Table 3: All great houses and non-great houses brown bowls t-test of independence results.

All Communities Combined		
Ware and Form	**Mean Size (cm)**	**t-test**
Brown Bowls	**GH** 21.6 **Non** 20.7	**t**=2.975 **df**=1090.072 **p**=0.003

RED BOWLS

Red bowls were analyzed next (Figure 9). The graphs are still bell shaped and have peaks at 20 to 22 centimeters. However, the graph for the non-great houses is more plateau like. It sharply rises at 12 centimeters, dips then peaks, and then drops off sharply. The great house graph is narrow and does have a bit of a sharp drop off after 24 centimeters.

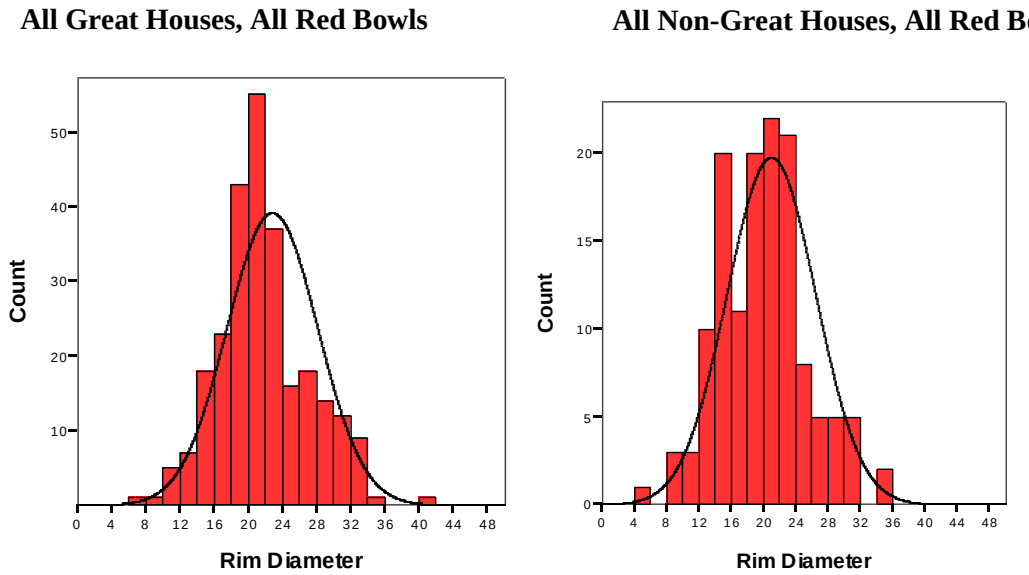

Figure 9: Graphs for all great houses red bowls combined and all non-great houses red bowls combined.

The sample size for the red bowls is closer than for the brown bowls (Table 4). There was a total sample size for the great houses of 237 rim sherds, and 135 sample size for non-great houses. The means of the diameters were further apart. The mean great house diameter was 23.2 centimeters. For non-great houses the mean diameter was 20.9 centimeters. The p value is 0.000, and because it is less than 0.05 it shows that this is a statistically significant difference.

Table 4: All great houses and non-great houses red bowls t-test of independence results.

All Communities Combined		
Ware and Form	**Mean Size (cm)**	**t-test**
Red Bowls	**GH** 23.2 **Non** 20.9	**t**=3.924 **df**=268.502 **p**=0.000

WHITE BOWLS

For both great houses and non-great houses the graphs are more plateau like (Figure 10). For the great houses there is both a sharp incline to the peak at 12 to 14 centimeters. It levels off with a slight dip at about 18 centimeters, and then drops off in a steep declining curve to 40 centimeters.

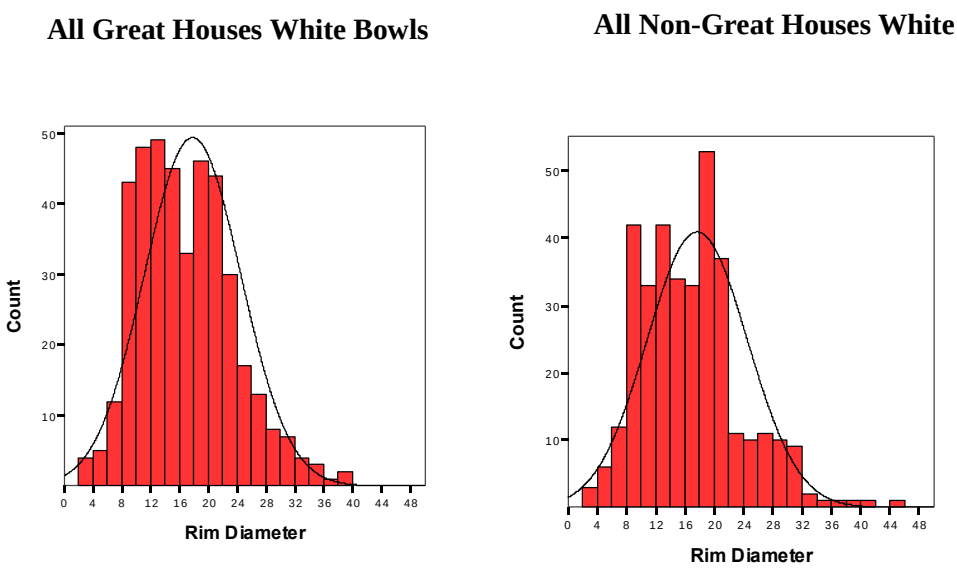

Figure 10: Graphs all great houses white ware bowls and all non-great houses white bowls.

The non-great house graph is similar to the great house graph. There is a sharp incline to a plateau with two peaks. The main peak is at 18 to 20 centimeters. It then drops sharply to another plateau between 22 and 32 centimeters. There are a few counts of rim diameters beyond 32 centimeters. The great houses graph is a lot narrower then the non-great house graph. Statistics for the comparison show that there is no significant difference between the two.

The sample size was 412 for great houses and 214 for non-great houses. Diameter means are 17.8 centimeters for great houses and 18.7 centimeters for non-great houses

(Table 5). While there is approximately a one-centimeter difference between the means, this is not statistically significant. The p-value is 0.110, which is larger than 0.05.

Table 5: All great houses and non-great houses white bowls t-test of independence results.

All Communities Combined		
Ware and Form	**Mean Size (cm)**	**t-test**
White Bowls	**GH** 17.8 **Non** 18.7	**t**=-1.603 **df**=443.858 **p**=0.110

BROWN JARS

The graphs for the brown jars are both shaped like bells (Figure 11). For the great houses there is a very tall and sharp peak. The peak is at 20 to 22 centimeters diameter. The majority of the diameters are between 2 and 40 centimeters, with only one rim counted beyond 40 centimeters. With the graph for the non-great houses, there is a gradual incline to the peak at about 22 centimeters. This is followed by a sharp decline into the tail that is longer than in the great house graph.

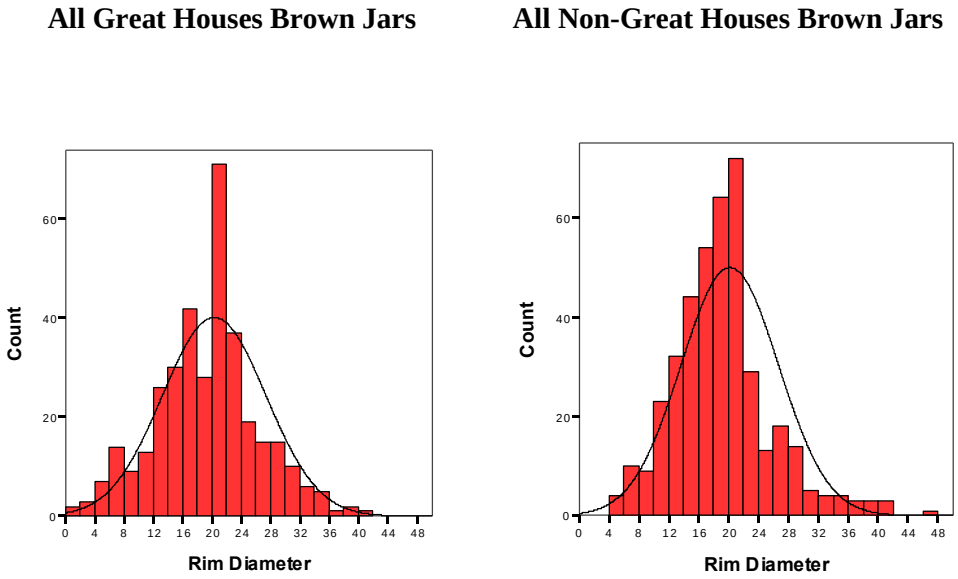

Figure 11: Graphs for all great houses and all non-great houses brown jars.

The statistics for brown jars shows that both samples are very close to identical (Table 6). The sample size for the great houses is 356 and 400 for the non-great houses. Great houses mean diameter and the non-great house mean are nearly identical; the mean diameter for the great houses is 20.3 centimeters and for the non-great houses the means are 20.2 centimeters. The p-value also shows that there is no statistical difference, with the p-value of 0.862.

Table 6: All great houses and non-great houses brown jars t-test of independence results.

All Communities Combined		
Ware and Form	**Mean Size (cm)**	**t-test**
Brown Jars	**GH** 20.3 **Non** 20.2	**t**=0.174 **df**=728.713 **p**=0.862

GRAY JARS

The graphs for both the gray jars are fairly narrowly contained (Figure 12). The great houses graph has more peaks and valleys than for the non-great houses. For the great houses graph there is the first large peak at about 8 centimeters, then a valley, and then more valleys and peaks. The main peak is at 16 to 18 centimeters diameter, which is surrounded by two peaks and valleys. Then there is a fairly steep drop off to a small plateau with a small peak, and a drop to a lower plateau.

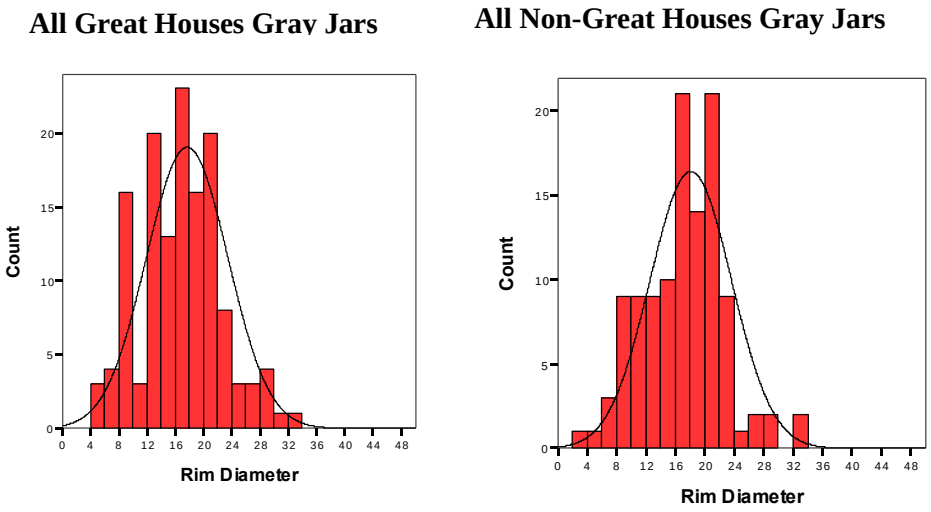

Figure 12: Graphs for all great houses and all non-great houses gray jars.

Interesting for the non-great house graph there are two peaks at the same height. One is at 16 to 18 centimeter diameter and the other at 20 to 22 centimeter diameter. The graph has a sharp rise to a plateau, then another sharp rise to the peaks. Then the counts drop off to 32 centimeters.

The statistics shows that there is no significant difference between the two samples (Table 7). This is despite the means being about a centimeter difference. The sample size was also similar. The great houses had a total of 138 rim sherds and the non-great houses had a total of 114 rim sherds. The mean for the great houses is smaller than the non-great houses at 17.7 centimeters. For the non-great houses the mean is 18.1 centimeters. The p-value is larger than 0.05 at 0.577, and confirms that there is no statistical difference in the means between the two samples.

Table 7: All great houses and non-great houses gray jars t-test of independence results.

All Communities Combined		
Ware and Form	**Mean Size (cm)**	**t-test**
Gray Jars	**GH** 17.7 **Non** 18.1	**t**=-0.559 **df**=244.366 **p**=0.577

The general trend with this aggregated data are there are only two vessels categories with differences that are significant; brown and red bowls. They are larger at the great house contexts, especially for the red bowls. Subtle variations in this trend are seen when each great house and non-great house community are examined individually.

GREAT HOUSES AND THEIR SURROUNDING COMMUNITIES

In this section each of the great houses and their associated non-great house sites are examined individually. The grouping of the ceramic types is the same as the last section. Now each of communities are explored individually, starting with Cox Ranch Pueblo, then Cerro Pomo and last Largo Gap.

COX RANCH PUEBLO COMMUNITY

BROWN BOWLS

The graphs for both the great house and non-great houses are a bell curve (Figure 13). For the great house there is a gentle rise to the peak at 20 to 22 centimeters diameters. Then there is a steep drop off, but more of a tail at the larger diameter compared to the non-great houses graph. There is a large break followed by a very small count of a rim diameter at about 46 centimeters. The graph for the non-great houses also has a peak at 20 to 22 centimeters diameter. There is a smaller peak followed by a small dip before reaching the largest peak. After the peak there is a gentle decline to a small plateau, which ends at a break. There are a few diameter counts after the break at about 42 centimeters diameter.

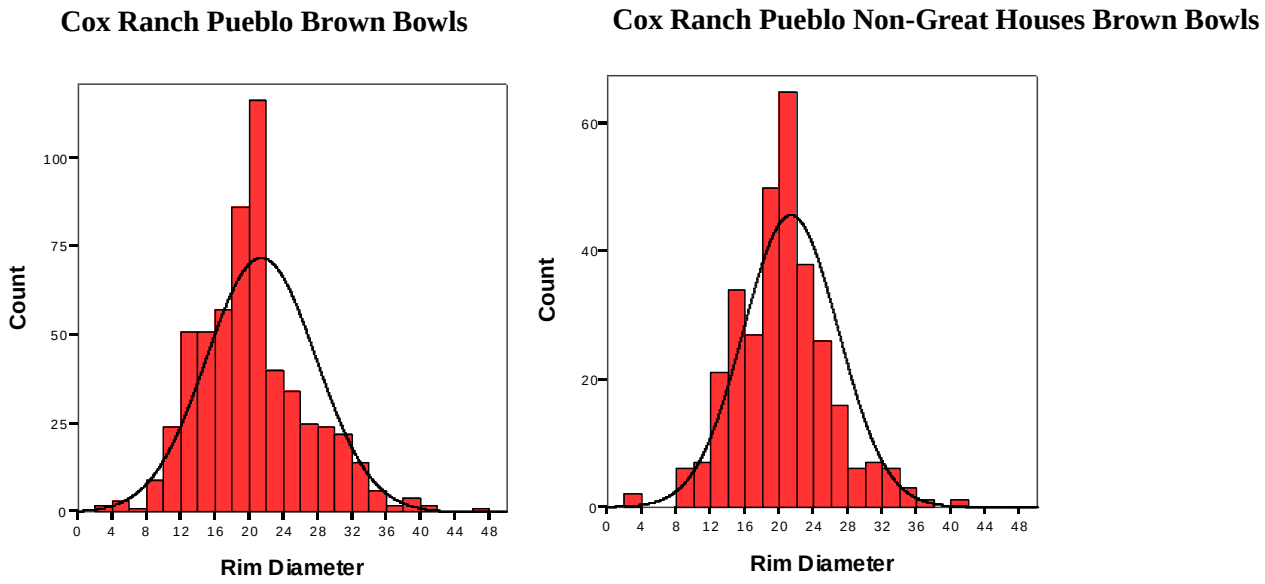

Figure 13: Graphs for Cox Ranch Pueblo great house brown bowls and Cox Ranch Pueblo non-great houses brown bowls.

Statistics show that there is no difference in the size (Table 8). The sample sizes are 519 for the great houses and 312 for the non-great houses. The mean diameter for the great houses is 21.8 centimeters and 21.3 centimeters for the non-great houses. This is only a slight difference. It is significant as the p-value is greater than 0.05 at 0.302.

Table 8: T-test for independence results of brown bowls for the Cox Ranch Pueblo Community

Cox Ranch Pueblo		
Ware and Form	**Mean Size (cm)**	**t-test**
Brown Bowls	**GH** 21.8 **Non** 21.3	**t**=1.003 **df**=767.822 **p**=0.302

RED BOWLS

Graphs for the red bowls do not appear similar to each other (Figure 14). The great house graph shows a gradual build up to one main peak. This is followed a bit of a plateau and sudden drop off to a break until a few counts at about 40 centimeters. The peak is at 20 to 22 centimeters diameter. For the non-great houses graphs, there distribution is bimodal

valley in the middle of them. This is followed by a sharp drop off, break, and counts at about 34 centimeters. The two peaks are at about the 14 to 16 centimeter diameter and 22 to 24 centimeter diameter marks.

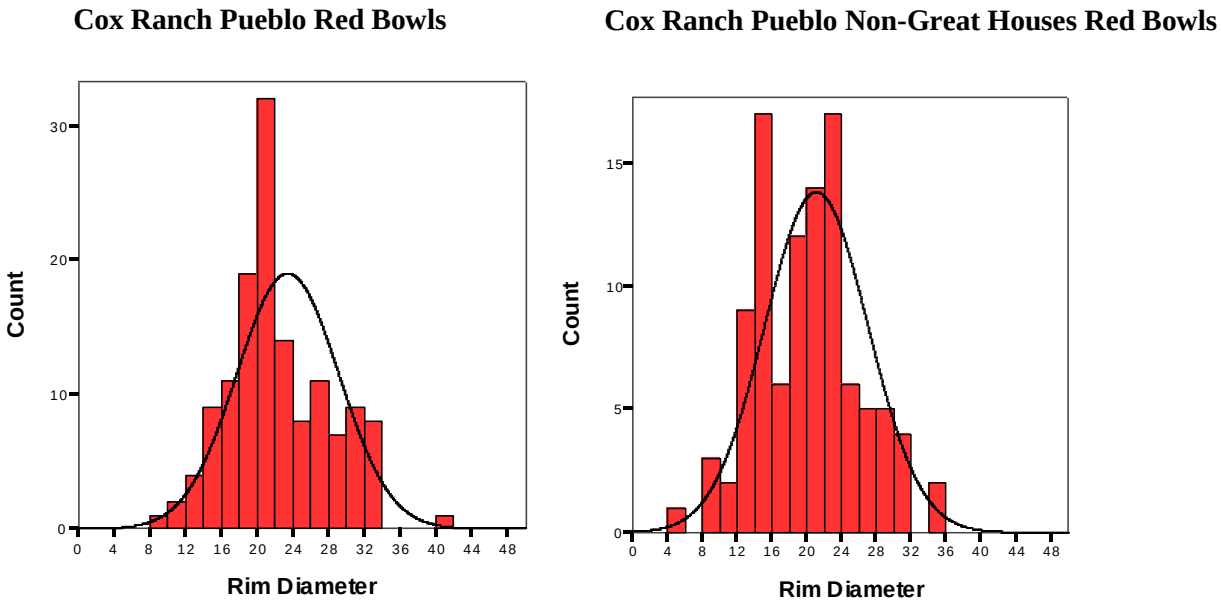

Figure 14: Graphs for Cox Ranch Pueblo red bowls and Cox Ranch Pueblo non-great houses red bowls.

The statistics show that the sample size differs significantly. There is a sample size of 136 for the great house and 108 for the non-great houses. The diameter means are different by three centimeters (Table 9). The great house had a mean diameter of 23.4 centimeters. The non-great houses had a mean diameter of 20.97 centimeters. This difference is confirmed as being statistically different as the p-value is 0.002.

Table 9: T-test for independence results of red bowls for the Cox Ranch Pueblo Community

Cox Ranch Pueblo		
Ware and Form	**Mean Size (cm)**	**t-test**
Red Bowls	**GH** 23.4 **Non** 20.97	**t**=3.200 **df**=226.346 **p**=0.002

WHITE BOWLS

The graphs for the white bowls do not appear to be similar (Figure 15). For the great house it appears to be a bell curve with a small valley in the middle. It starts with an abrupt incline up to the peak at the 12 to 14 centimeters diameter. The graph starts to decline, then drops into a valley at about 18 centimeters, and then returns to the gradual decline. The graph ends at 40 centimeters. With the non-great houses, there are many peaks and valleys, along with several breaks in the graph.

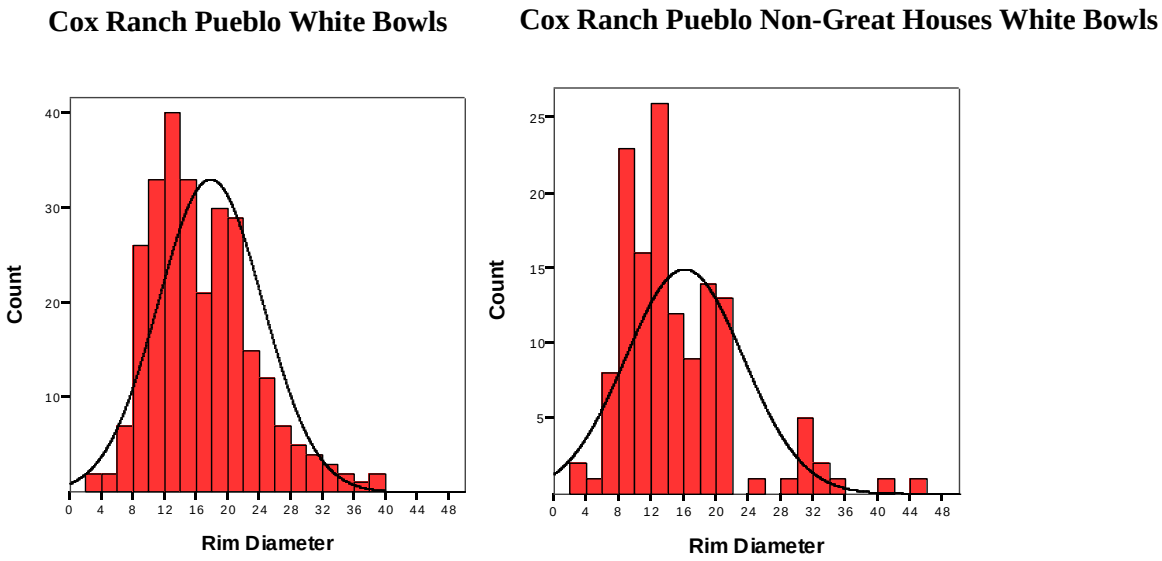

Figure 15: Graphs for Cox Ranch Pueblo great house and all Cox Ranch Pueblo non-great houses white bowls.

The graph starts with a similar abrupt incline to a peak, followed by a dip. Next is the main peak at the same place as the great house graph, the 12 to 14 centimeters. There is a sharp decline to a valley, a slight rise to a small peak and then a break in the graph at the 22 to 24 centimeters. The next bar is at the 24 to 26 centimeters. There is a break again from 26 to 28 centimeters. A small grouping follows this from 28 to 36 centimeters with the most counts for the small grouping at the 30 to 32 centimeters. A larger gap comes next from 36 centimeters to 40 centimeters, then two more counts of about 2 with a gap between them.

Despite the graphs appearing different, the statistics show that there is no statistical difference between the two samples.

For the t-test results the sample sizes were a little under a hundred apart, with the non-great houses having a larger size (Table 10). The great house has a sample size of 255 rim sherds and the non-great houses have a sample size of 153. The mean diameter for both is a little over one centimeter apart: 17.8 centimeters for the great house and 16.3 centimeters for the non-great houses. The p-value shows that the samples are statistically different as 0.036 is less than 0.05.

Table 10: T-test for independence results of white bowls for the Cox Ranch Pueblo Community

Cox Ranch Pueblo		
Ware and Form	**Mean Size (cm)**	**t-test**
White Bowls	**GH** 17.8 **Non** 16.3	**t**=-2.111 **df**=301.961 **p**=0.036

BROWN JARS

These two graphs do appear similar to each other. Both are bell curves with valleys and peaks (Figure 16). Interestingly, this is one of the few analyses that show the opposite of what the normal patterning seems to be indicating. The statistics show that it is close to being significant.

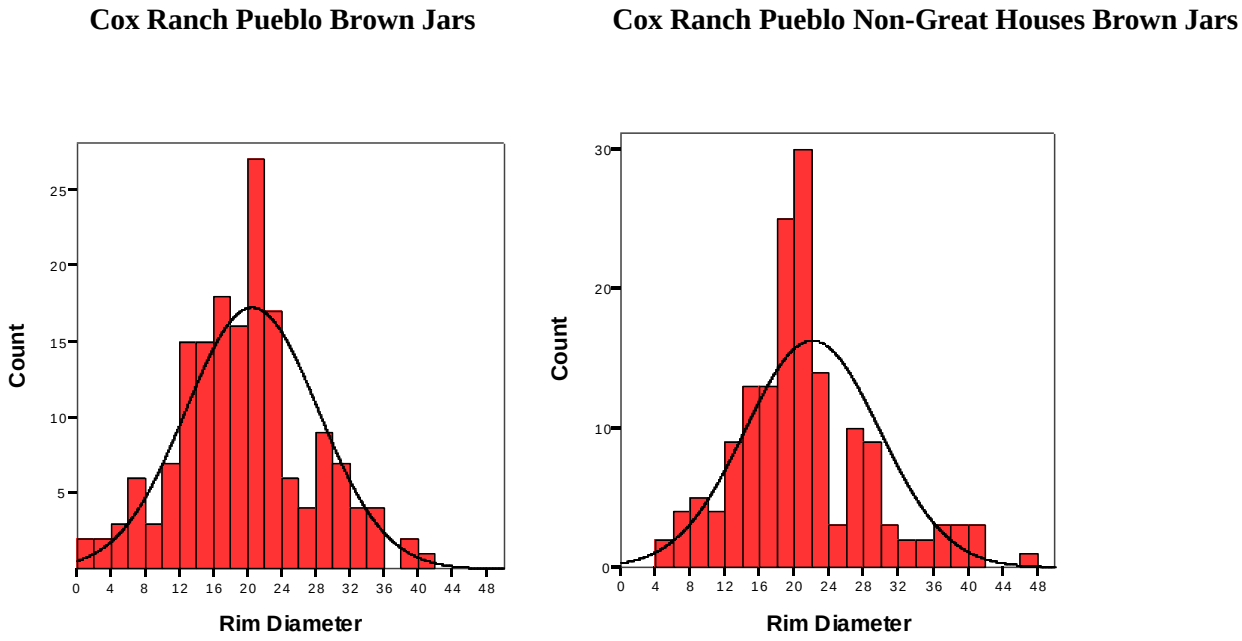

Figure 16: Graphs for Cox Ranch Pueblo great house brown jars and Cox Ranch Pueblo non-great houses brown jars.

The great house graph starts at the 0 to 2 centimeter mark. This is unusual for all the graphs. It starts with a gentle incline with only one dip until 10 to 12 centimeters. There is a steep incline after this to two peaks and dips. After this comes the main peak at 20 to 22 centimeters diameter with a count close to 30, followed a short drop. A steep drop off comes after this, and leads to another small incline to a small plateau. A gap at 36 to 38 centimeters separates the main graph from two small peaks between 38 and 42 centimeters for the end of the graph. The non-great houses graph is similar but shifted over the right slightly.

The non-great houses graph starts at 4 to 6 centimeters. There is a gentle incline to a short plateau before the main peak at 14 to 18 centimeters. A sharp incline leads to a slightly smaller peak, then the main peak at 20 to 22 centimeters diameter having a count of 30. There is a sharp drop after the main peak, and leads to another two small peaks at 26 to 30 centimeters. This leads to small plateaus, one shorter than the other by one centimeter,

between 32 to 42 centimeters. Following this is a gap and then a one-count peak at 46 to 48 centimeters.

Statistically, this slight shift over to the right is close to being significant. The sample sizes are only one off from each other (Table 11). The great house has a sample size of 168, and the non-great houses have a sample size 169. Diameter means are just over two centimeter different. The great house has a mean diameter of 20.5 centimeters. The non-great houses have a mean diameter of 22.1 centimeters. The p-value is 0.057, which is slightly larger than 0.05 but also close to 0.05. It indicates that this might be a significant difference but needing more data.

Table 11: T-test for independence results of brown jars for the Cox Ranch Pueblo Community

Cox Ranch Pueblo		
Ware and Form	**Mean Size (cm)**	**t-test**
Brown Jars	**GH** 20.5 **Non** 22.1	**t**=-1.911 **df**=334.993 **p**=0.057

GRAY JARS

Gray jar data is another group that contradicts the normal pattern. The non-great houses have the larger mean diameter vessels. The statistics show that it is a significant difference. Graphically, they do not appear as similar to each other (Figure 17).

The great house graph has two large peaks and dips before reaching the main peak. The first major peak is at 8 to 10 centimeters, followed by a dip. This is followed by the next major peak and valley. The main peak is at 16 to 18 centimeters diameter with a count close to 20. A short dip and slight peak come next, and is followed by slight peak. Another steep drop follows, and the end is a small peak. A gap from 28 to 30 centimeters separates the last

two counts at 30 to 34 centimeters. The non-great houses graph has a similar shape but slightly different.

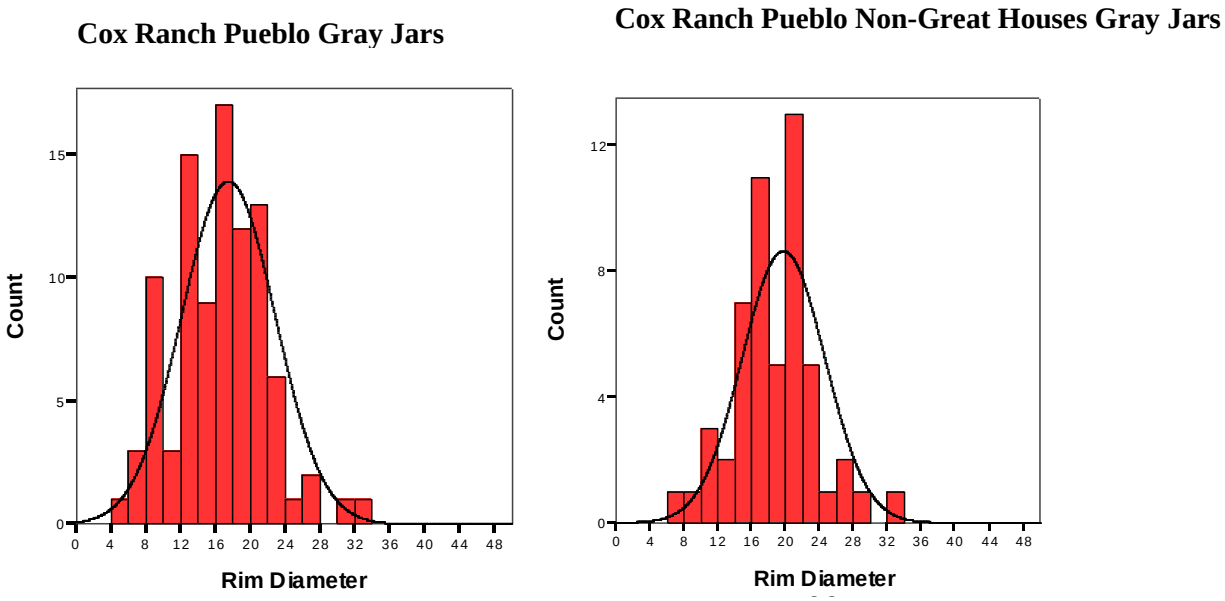

Figure 17: Graphs for Cox Ranch Pueblo great house gray jars and Cox Ranch Pueblo non-great houses gray jars.

The non-great houses graph starts with a small plateau and peak. There is a dip, then a steep incline to two peaks. A drop occurs before the main peak. The main peak is at 20 to 22 centimeters diameter with a count slightly above 12. This drops off abruptly to a plateau with small peak in its middle. Like the great house graph this is followed by a gap, and then a peak at 32 to 34 centimeters ends the graph.

The statistics show that there is a significant difference in the means of the two samples (Table 12). The sample size for the great house is 94 rim sherds. For the non-great houses the sample size is 58. Mean diameter for the samples is almost two centimeters different. The diameter mean for the great house is 17.4 centimeters, and 19.3 centimeters is the mean diameter for the non-great houses. With a p-value of 0.028, which is less than 0.05, means that this difference is significant. The non-great houses gray jars are larger than those in the great house.

Table 12: T-test for independence results of gray jars for the Cox Ranch Pueblo Community

Cox Ranch Pueblo		
Ware and Form	**Mean Size (cm)**	**t-test**
Gray Jars	**GH** 17.4 **Non** 19.3	**t**=-2.222 **df**=128.446 **p**=0.028

The data for Cox Ranch Pueblo shows that the there is more diversity in vessel size at the community level. For Cox Ranch Pueblo only the red bowls being larger at the great house is the same as the global aggregated data. White bowls follow the red bowls. But one interesting surprise is that gray jars and brown are smaller at the great house. These differences in the diameters are only approximately one to two centimeters but they are statistically significant. This pattern of each community being different is continued at Cerro Pomo.

CERRO POMO COMMUNITY

BROWN BOWLS

The graphs for the brown bowls are similar (Figure 18). Both are close to a bell curve. The great house graph starts with a steep incline broken with a dip at the 14 to 16 centimeters mark. The main peak is at 20 to 22 centimeters diameter. The drop off is also steep and has a small dip at 24 to 28 centimeters. It ends at 32 centimeters but with a gap and a small count at the 36 to 38 centimeters.

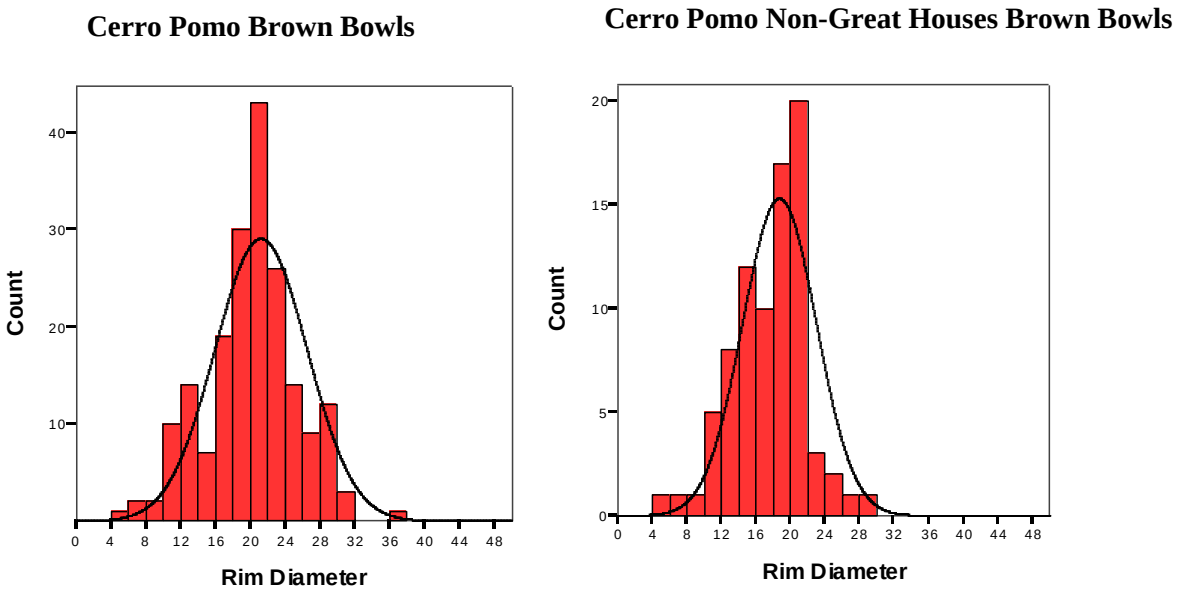

Figure 18: Graphs for Cerro Pomo brown bowls and Cerro Pomo non-great houses brown bowls.

For the non-great house graph, the beginning is similar to the great house. The incline to the peak is steep and broken by a dip at the 16 to 18 centimeters mark. The main peak is also at 20 to 22 centimeters diameter. The drop off is sharp with a small plateau at 26 to 30 centimeter mark to end the graph.

Statistics show that there is a difference between the two samples as can be seen in Table 13. The sample size is small for the surrounding communities compared to the great house. The sample size for the great house is 193. For the non-great houses the sample size is 82. The means for diameters are quite far apart. The great house mean is 21.2 centimeters diameter, and 18.7 centimeters diameter for the non-great houses. This is a significant difference and this is confirmed by the t-test with a p-value less than 0.05 at <0.001.

Table 13: T-test of independence results of brown bowls for the Cerro Pomo Community

Cerro Pomo		
Ware and Form	**Mean Diameter (cm)**	**t-test**
Brown Bowls	**GH** 21.2 **Non** 18.7	**t**=4.041 **df**=190.081 **p**=0.000

RED BOWLS

Graphs for the red bowls for both great house and non-great houses are relatively narrow (Figure 19). The great house graph is contained between 6 and 36 centimeters, but with two gaps. The graph for the non-great houses is even narrower and is contained between 10 and 32 centimeters. This includes the four gaps in the graph. The great house graph starts with a small count at 6 to 12 centimeters followed by a gap. Following the gaps comes the main part of the graph. There is steep rise to the main peak at 18 to 20 centimeters diameter. The decline is more gradual to a short plateau at the end, with a gap from 32 to 34 centimeters. There is a small count at 34 to 36 centimeters.

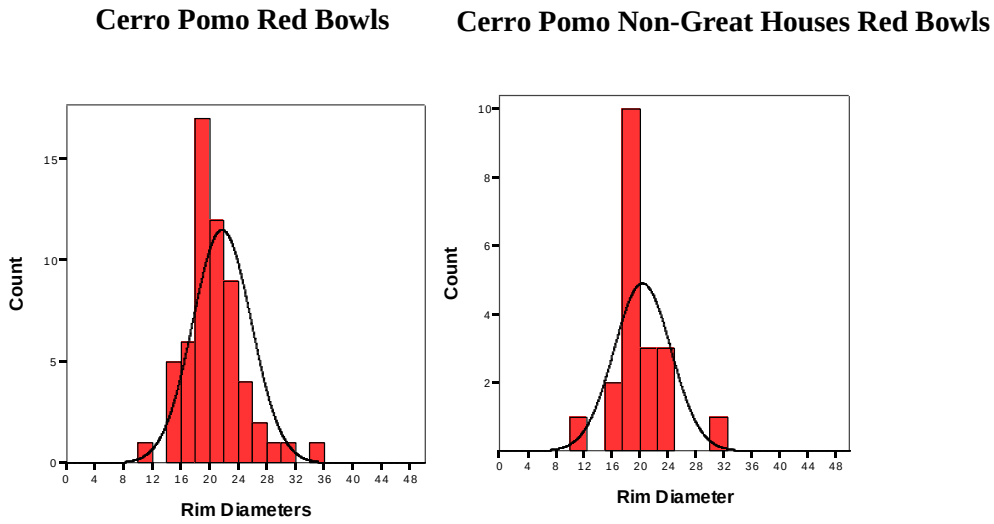

Figure 19: Graphs for Cerro Pomo great house red bowls and Cerro Pomo non-great houses red bowls.

The non-great houses graph starts with a count of one at the 10 to 12 centimeters. This is followed by a gap, then the main portion of the graph. The main portion is very short.

There is a bar with a count of two at about 16 centimeters, and then a sharp rise to the main peak at about 18 to 20 centimeters diameter. The main peak drops directly to a plateau between 20 and 26 centimeters. A gap follows between 26 and 30 centimeters. There is one last count of a diameter at 30 to 32 centimeters.

As shown by the graphs, the samples sizes are quite small. For the great house there is a sample size of 51, and for the non-great houses there is a sample size of 20. The diameter means are a little over two centimeters apart (Table 14). The great house mean diameter is 22.1 centimeters. The non-great houses mean diameter is 20.3 centimeters. Despite this difference of a little over two centimeters the t-test shows it is not significant. The p-value is 0.102, which is larger than 0.05.

Table 14: T-test of independence results of red bowls for the Cerro Pomo Community.

Cerro Pomo		
Ware and Form	**Mean Diameter (cm)**	**t-test**
Red Bowls	**GH** 22.1 **Non** 20.3	**t**=1.680 **df**=35.711 **p**=0.102

WHITE BOWLS

These graphs appear similar and have a more bell shaped curve (Figure 20). For the great house the graph rises to the main peak steep but gradual. There is a plateau between 10 and 16 centimeters, with a dip in the middle at 12 to 14 centimeters. The main peak is 18 to 20 centimeters diameter. The decline is also steep but less gradual. There are dips and peaks until the end with a little plateau at 32 to 36 centimeters. The graph for the non-great houses has even more peaks and valleys.

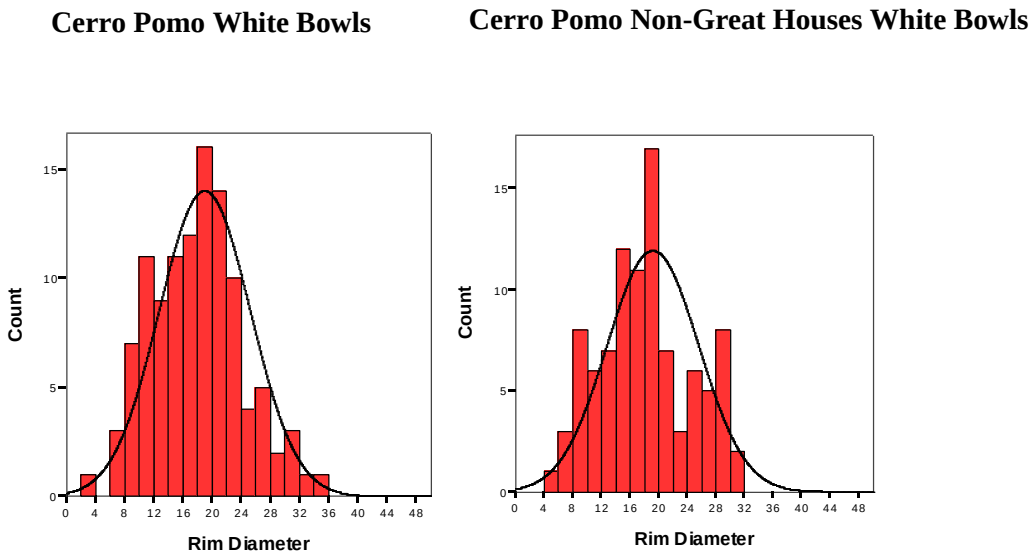

Figure 20: Cerro Pomo great house and non-great houses white ware bowl graphs.

The non-great houses graph has a much gentle climb to the main peak. Two dips and two peaks punctuate the climb before reaching the main peak. The main peak is at the same place as with the great house at 18 to 20 centimeters diameter. A sharp drop follows this to a dip at 22 to 24 centimeters. Then comes another bump with a small peak at 28 to 30 centimeters. The graph ends after this peak drops to the last counts at 30 to 32 centimeters.

The statistics for the white bowls indicate no difference. Sample sizes were also very close in number. The sample size is 99 for the great house and 96 for non-great houses. In the means for the diameters there is only a difference of a tenth of a centimeter (Table 15). For the great house the diameter mean is 19.0 centimeters and for the non-great house the diameter mean is 19.1 centimeters. T-test results show that there is no significant difference with a p-value much larger than 0.05 at 0.936.

Table 15: T-test of independence results of white bowls for the Cerro Pomo Community.

Cerro Pomo		
Ware and Form	**Mean Diameter (cm)**	**t-test**
White Bowls	**GH** 19.0 **Non** 19.1	**t**=-0.080 **df**=192.945 **p**=0.936

BROWN JARS

Graphs for this sample do not appear similar. The great house graph appears more like a bell curve with one strong peak (Figure 21). The non-great house graph does have one main peak but it is not as strong as the other graph. The great house graph starts with a small plateau with a dip in the middle of it at 8 to 10 centimeters. The rise up to the main peak is steep. There is a dip right before the main peak at 18 to 20 centimeter mark. The main peak is at 20 to 22 centimeters diameter. The decline is in the form of small plateaus. It starts with one smaller count, then a small plateau between 24 and 28 centimeters. Another single small peak and a plateau follow this at 30 to 34 centimeters, and the final one at 34 to 38 centimeters.

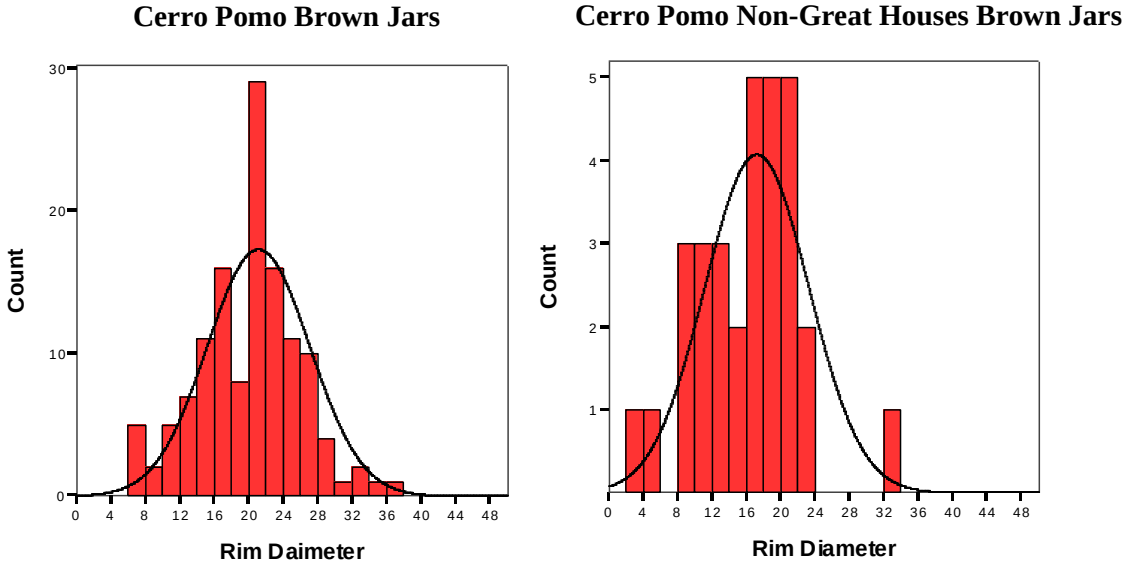

Figure 21: Graphs for Cerro Pomo great house brown jars and Cerro Pomo non-great houses brown jars.

For the non-great houses the graph has a much steeper rise. This leads to a small plateau with a large dip in the middle at 16 to 18 centimeters. The main peak is at the same place as the great house graph at 20 to 22 centimeters diameter. Following this, the decline is abrupt. There is one peak about half as high as the main peak, which leads to a small plateau between 24 to 28 centimeters. The graph ends at 28 to 30 centimeters.

The t-test for the jars shows that the differences in the graphs are statistically different (Table 16). Samples sizes are roughly equal. Great house sample size is 129 rim sherds, and non-great house sample size 140 rim sherds. The mean diameter for the great house is 21.1 centimeters. For the non-great houses the mean diameter is 18.9 centimeters. This difference in the mean of a little over one centimeter is statistically significant with a p-value smaller than 0.05 at 0.002.

Table 16: T-test of independence results of brown jars for the Cerro Pomo Community

Cerro Pomo		
Ware and Form	**Mean Diameter (cm)**	**t-test**
Brown Jars	**GH** 21.1 **Non** 18.9	**t**=3.185 **df**=254.900 **p**=0.002

GRAY JARS

These graphs are similar to each other but do not appear to be bell curves. They both appear more like the graph for the non-great houses brown jars (Figure 22). Both graphs have more plateaus, valleys and gaps. For the non-great houses there is no single main peak.

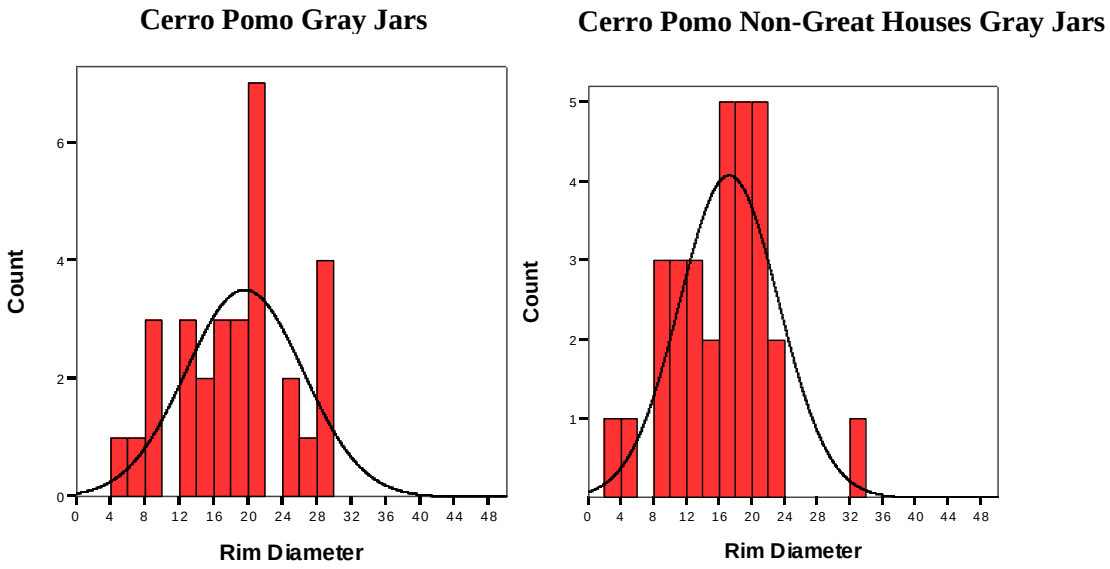

Figure 22: Graphs for Cerro Pomo great house and non-great houses gray jars.

The great house graph consists of plateaus punctuated with dips and gaps. The first small plateau is between 4 to 8 centimeters. This is followed by a count and then a gap at 10 to 12 centimeters. The count is the same as before, and the gap starts in the middle portion of the graph. A dip follows this and breaks up the plateau. The main peak is at 20 to 22 centimeters diameter. A gap directly follows the main peak, and the last part of the graph follows this. This last part goes from 24 to 30 centimeters. A small peak starts this part off, followed by a dip. The last peak is about half the height of the main peak. The non-great houses graph has even more of a plateau then for the great house graph.

The non-great house graph starts with two peaks of the same number of counts. This spans 2 to 6 centimeters. A gap follows this, and then another plateau. This plateau runs from 8 to 14 centimeters, and then dips before the main peaks. The main peak is made up of three bars with same number of counts, which is a count of five. These three peaks span the 16 to 22 centimeters diameter. There is one peak then a large gap. The final count is a one

count at the 32 to 34 centimeters. Interestingly, the statistics show that any differences are not significant.

Sample sizes for the great house and non-great houses are very close together (Table 17). The great house had a sample size of 29, and the non-great houses have a sample size of 27. Mean diameters are just over two centimeters apart. Great house mean diameter is 19.4 centimeters, and the non-great house mean diameter is 17.3 centimeters. This difference of just over two centimeters is not significant. The p-value is 0.232, which is larger than 0.05.

Table 17: T-test of independence results of gray jars for the Cerro Pomo Community

Cerro Pomo		
Ware and Form	**Mean Diameter (cm)**	**t-test**
Gray Jars	**GH** 19.4 **Non** 17.3	**t**=1.208 **df**=53.907 **p**=0.232

Cerro Pomo has one similarity to the global aggregated data. The brown bowls are larger at the great house compared to the non-great houses. The brown jars also have a larger mean diameter for the great house. These are only larger by approximately two to three centimeters. While this is not a large difference in mean diameters, they are significant.

LARGO GAP COMMUNITY

BROWN BOWLS

The graphs appear similar to each other, with peaks and valleys as can be seen in Figure 23. For the great house graph it starts with a gradual incline. A dip follows this and then a sharp rise to the main peak at 18 to 20 centimeters diameter. A short decline comes next, followed a dip. There is a small peak, then a sharper decline. The end of the graph is a slightly larger peak from 32 to 34 centimeters. The non-great houses graph has a similar shape to the great house graph.

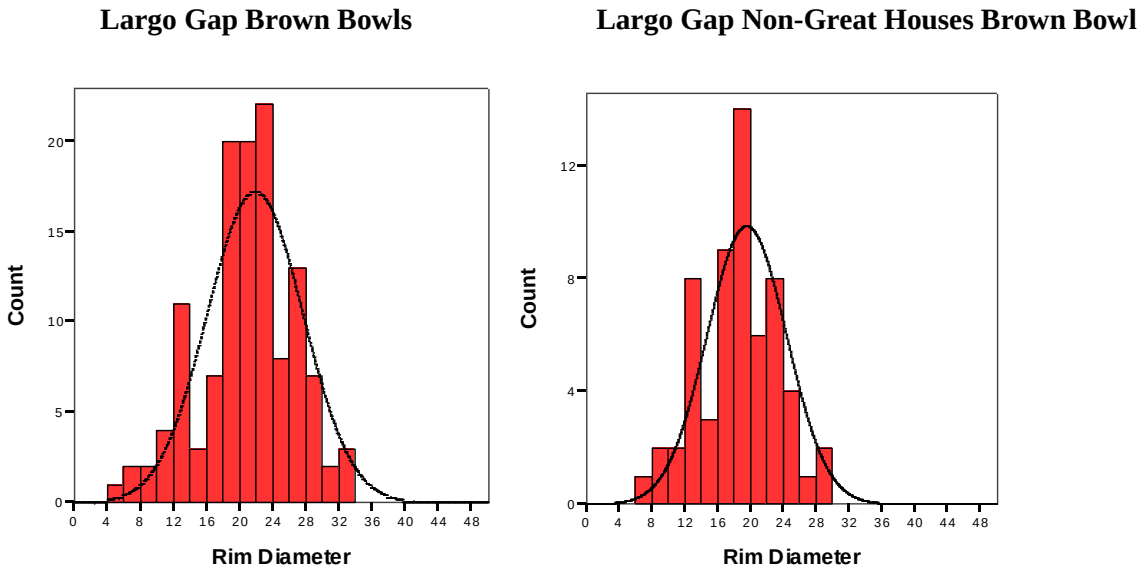

Figure 23: Graphs for Largo Gap great house brown bowls and Largo Gap non-great houses brown bowls.

The graph starts off with a gradual incline. A large peak at 12 to 14 centimeters punctuates this. There is a dip followed by a sharp incline to the main peak at 18 to 20 centimeters diameter. The decline is a series of steps. First there is a sharp step down, followed by a step up. Two steps down follow this and last is a step up at the 28 to 30 centimeters.

Statistically the t-test shows there is a difference in the diameters of bowls (Table 18). Sample sizes are not close together, with the great house having a larger sample size. The great house has a sample size of 125. The non-great house has a sample size of 52. Mean diameter for the great house is 21.8 centimeters, and for the non-great houses it is 19.8 centimeters. While this is only a difference of two centimeters, the difference is significant. The p-value is less than 0.05 at 0.020.

Table 18: Largo Gap Community t-test for independence results for brown bowls.

Largo Gap		
Ware and Form	**Mean Diameter (cm)**	**t-test**
Brown Bowls	**GH** 21.8 **Non** 19.8	**t**=2.354 **df**=108.330 **p**=0.020

RED BOWLS

The two graphs for the red bowls are hard to compare. The non-great houses have a very small sample size. This makes a comparison hard to accomplish (Figure 24).

For the great house graph there is a small peak at 6 to 8 centimeters, followed by a gap. The main part of the graph starts at the 14 centimeter mark. This is a short plateau, with the start of the incline to the main peak. The main peak is at 22 to 24 centimeters diameter. Following this is a sharp decline leading to steps up. Another sharp decline comes at the end of the graph at 34 centimeters. The graph for the non-great houses has only three bars; about 14 to 18 centimeters, 18 to 22 centimeters, and 22 to 28 centimeters. The main peak is the approximately 18 to 22 centimeters. It steps up to the main peak than down to the last peak with has the smallest number of counts.

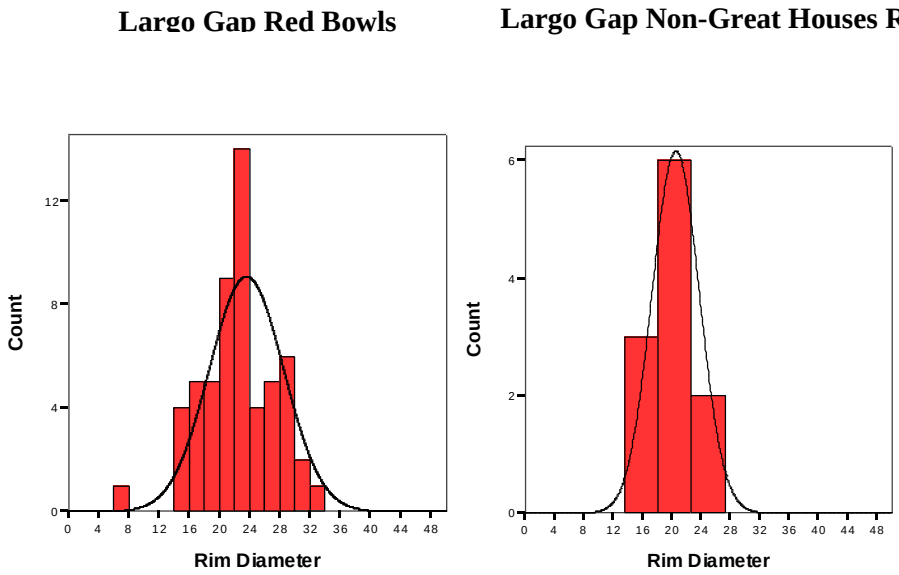

Figure 24: Graphs for Largo Gap great houses and non-great houses red bowls.

Because of the small sample size for the non-great houses the statistics show there is no significant difference (Table 19). However, it appears to be trending toward the great house having a lager diameter. The sample size for the great houses is 50, and only 7 for the non-great houses. Diameter mean for the great house is 24.0 centimeters, and 22.3 centimeters for the non-great houses. The p-value is 0.122, and as this is larger than 0.05 it means the little over two-centimeter difference is not significant.

Table 19: Largo Gap Community t-test for independence results for red bowls.

Largo Gap		
Ware and Form	**Mean Diameter (cm)**	**t-test**
Red Bowls	**GH** 24.0 **Non** 22.3	**t**=1.627 **df**=17.034 **p**=0.112

WHITE BOWLS

These graphs again appear similar to each other (Figure 25). For the great house it starts off with a gentile incline ending in a short plateau between 4 and 8 centimeters. There is an abrupt incline to a peak following this. The graph then dips and steps up to the main

peak is at 18 to 20 centimeters diameter. An abrupt drop comes after the main peak. There is another small peak, and following is the up and down and up of the end of the graph. The non-great houses graph is similar to this.

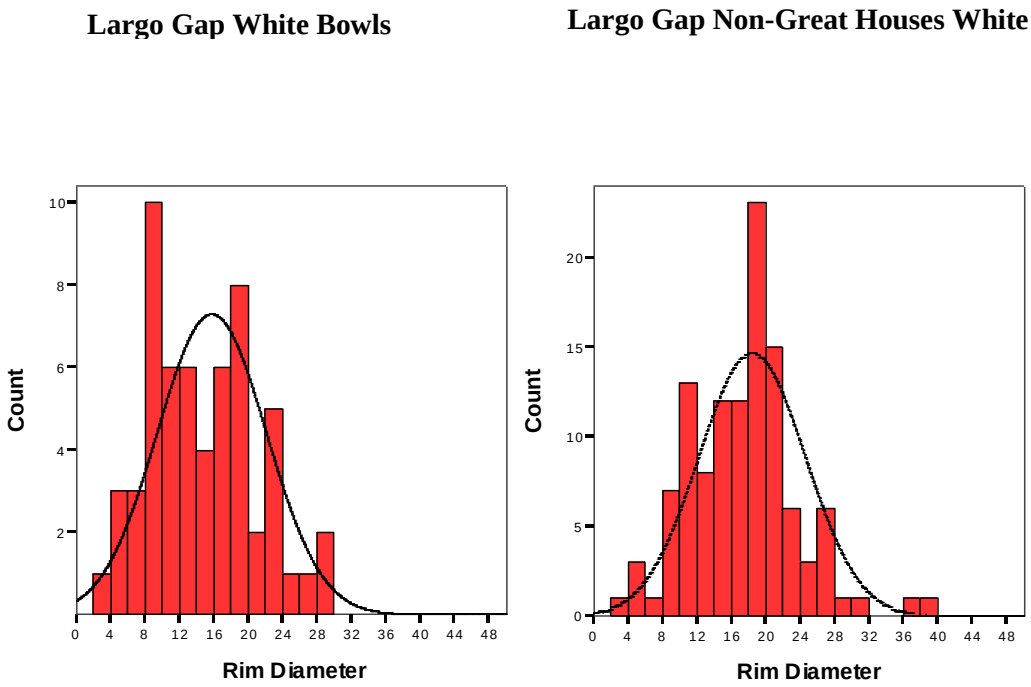

Figure 25: Graphs for Largo Gap great house white bowls and Largo Gap non-great houses white bowls.

The graph for the non-great houses starts with a small plateau with a peak in the middle of it. There is a sharp climb up to the first peak. A dip and another short plateau follows this at 14 to 18 centimeters. The main peak comes next at 18 to 20 centimeters diameter. A short dip starts the decline. This is followed by what would be a plateau if a valley did not break it. There is a short plateau from 28 to 32 centimeters, followed by a gap and then another short plateau at 36 to 40 centimeters, ends the graph.

Statistics show that there is a significant difference in the diameters, but it is the non-great houses that have the larger diameters (Table 20). Sample sizes are also larger for the non-great houses. The sample for the great house is 58 rim sherds. For the non-great houses the sample size 101. The mean diameter for the great house is 15.7 centimeters. For the non-

great houses the mean diameter is 18.6 centimeters. The p-value is 0.007, less than 0.05. This means that the difference of just about three centimeters is significant. White bowls are on average larger at the non-great houses compared to the great house.

Table 20: Largo Gap Community t-test for independence results for white bowls.

Largo Gap		
Ware and Form	**Mean Diameter (cm)**	**t-test**
White Bowls	**GH** 15.7 **Non** 18.6	**t**=-2.737 **df**=118.987 **p**=0.007

BROWN JARS

The two graphs for brown jars do not appear similar. However, the statistics show that they are similar (Figure 26).

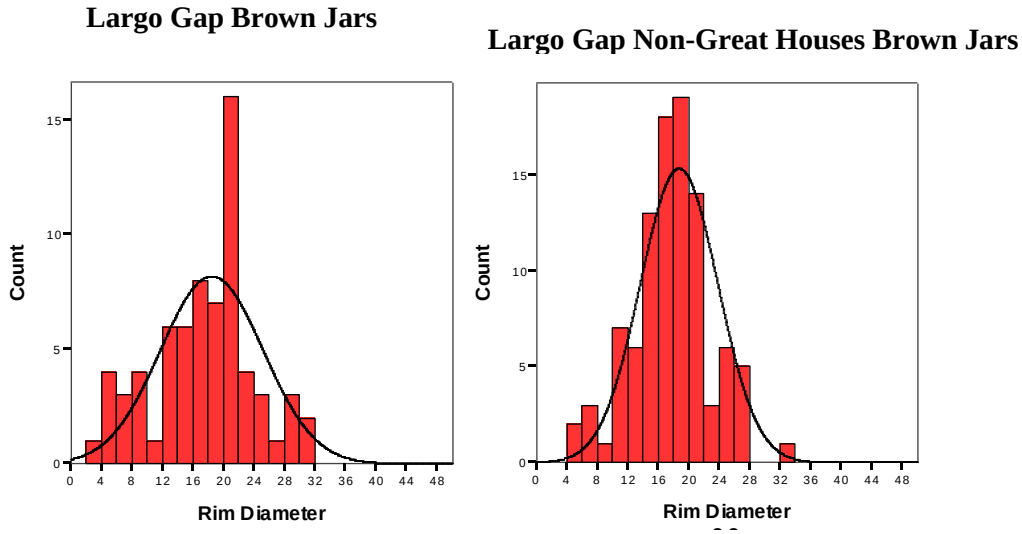

Figure 26: Graphs for Largo Gap great house and non-great houses brown jars.

For the great house the graph starts with what would be a small bell curve, but there is a dip in the middle. This is another dip at 10 to 12 centimeters. A sharp rise leads to small plateau, a little peak and dip before the main peak. The main peak is at 20 to 22 centimeters

diameter. There is a steep drop of to 26 to 28 centimeters. There is small rise to and drop to end at 30 to 32 centimeters. For the non-great houses the graph is more compact.

The non-great houses graph also start with a rise and dip. A smaller repeat of this comes before the steep rise to the main peak. The main peak is at 18 to 20 centimeters diameter. The trend is started by a small decline, which then drops off sharply to 22 to 24 centimeters. There is also a small rise and dip at the end of the graph, but there is a gap before a small count at 32 to 34 centimeters. While the non-great houses graph is more confined than for the great house graph, the statistics show they are the same.

Sample sizes are close to each other. The great house has a sample size of 56 rim sherds. The non-great houses have a sample size of 90 rim sherds. The mean diameter for the great house is 18.1 centimeters, while the non-great houses have a mean diameter of 18.8 centimeters (Table 21). The p-value is 0.554, which is larger than 0.05. This means that there is no statistical difference between the two samples.

Table 21: Largo Gap Community t-test for independence results for brown jars.

Largo Gap		
Ware and Form	**Mean Diameter (cm)**	**t-test**
Brown Jars	**GH** 18.1 **Non** 18.8	**t**=-0.594 **df**=91.148 **p**=0.554

GRAY JARS

The gray jar graphs are somewhat opposites (Figure 27). There is only one main peak for the great house graph, while there are three peaks at the same count for the non-great houses. The great house also has a smaller sample size than the non-great houses. The great house graph starts with one count at 4 to 6 centimeters. There is a gap then the main part of the graph starts. The main peak is at about 16 to 18 centimeters. It is surrounded by

two counts of two, and on the ends are two counts of three. The non-great houses graph has more peaks than the great house graph.

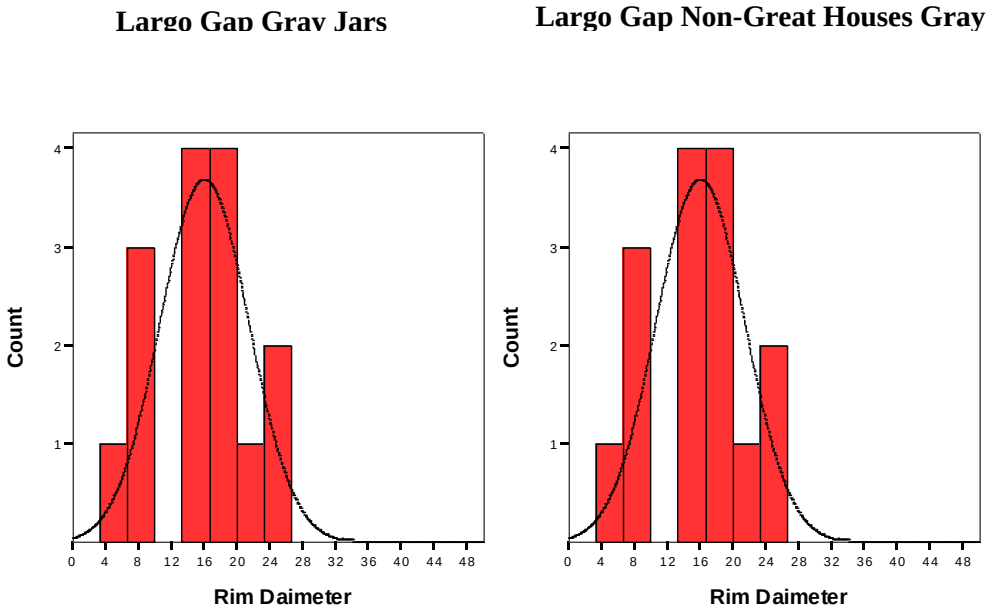

Figure 27: Graphs for Largo Gap great house and non-great houses gray jars.

For the non-great houses the graph starts with a count of two. This jumps up to one of the three peaks with the same high count of five. There is a dip between the first peak at five and the second peak at five. The first peak is at 8 to 10 centimeters, and the second is at 12 to 14 centimeters. A dip separates the second and third five-count peak. The third peak is at the 18 to 20 centimeters. A steep decline follows the last peak to a gap. There is a small plateau after this gap at 28 to 32 centimeters.

The statistics show that again the great house has a smaller sample size (Table 6). The great house sample size of 15. The non-great house has a sample size of 29. The diameter means are very close (Table 22). The mean diameter for the great house is 16.0 centimeters, and 16.3 centimeters for the non-great houses. The p-value greater than 0.05 confirmers that there is no statistical difference between the samples. The p-value is 0.845.

Table 22: Largo Gap Community t-test for independence results for gray jars.

Largo Gap		
Ware and Form	**Mean Diameter (cm)**	**t-test**
Gray Jars	**GH** 16.0 **Non** 16.3	**t**=-0.197 **df**=29.764 **p**=0.845

Largo Gap follows the aggregated data for the brown bowls. The great house has larger brown bowls than do the non-great houses. There is also one reversal of the normal pattern. White bowls have a large mean diameter for the non-great houses. These differences are approximately three-centimeter, and the t-test shows these are statistically significant. The other wares are not statistically difference from each other.

TEMPORAL DATA

The temporal data were broken up in the same manner as the ware data. First was the most aggregated data. This includes all the great houses combined and all the non-great houses combined. Next was the great houses and non-great houses broken into their communities of great house and non-great houses. However, only the red and white painted bowls are being examined. These are broken into earlier and later for each grouping. A slight pattern does emerge that the great houses are a little different from the non-great houses.

AGGREGATED TEMPORAL DATA

This is the global presentation of the data. The red ware bowls were divided into Puerco and Wingate for both the great houses and non-great houses. Red Puerco and red Wingate were then compared to each other for great houses and non-great houses separately. The analysis is the same for the white Puerco and Reserve.

RED WARE BOWLS-PUERCO VS. WINGATE ALL GREAT HOUSES

The graphs for the great houses appear similar to a bell curve (Figure 28). For the Puerco bowls there a steep but gentle incline to the main peak. This incline is broken close to the beginning by a gap at 12 to 14 centimeters, but then continues. The main peak is 20 to 22 centimeters diameter, and has a count of 20. The decline is also steep but gentle. There is a greater dip that breaks up the decline at 24 to 28 centimeters. The graph ends at a short plateau from 30 to 34 centimeters.

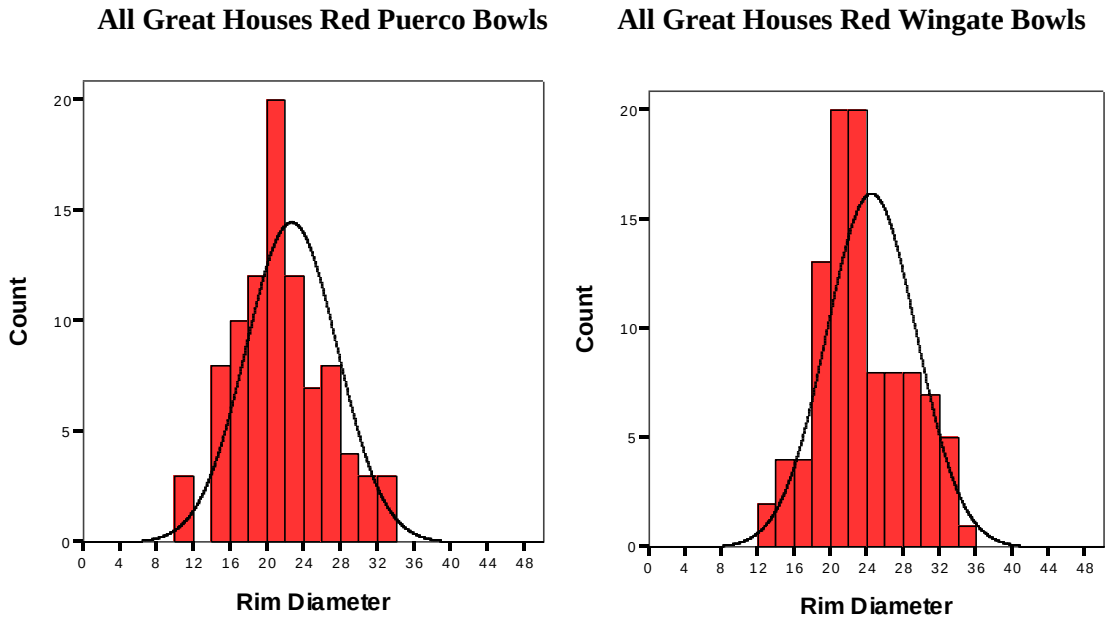

Figure 28: Graphs showing the comparison of all the great houses red Puerco and Wingate bowls.

The Wingate graph is similar to the Puerco graph. It starts with a gentle incline to a short plateau from 14 to 18 centimeters. Then there is a sharp incline to a peak. There are two main peaks next to each other, and both having the number of counts at 20. The main peak is from 20 to 24 centimeters. This drops off to a plateau from 24 to 30 centimeter diameters, which then starts to gradually decline. The graph ends in an abrupt drop to a count of one at 34 to 36 centimeters.

The statistics show that there is a significant difference between the Puerco and Wingate bowls (Table 23). The sample sizes are fairly close. Puerco bowls have a sample size of 90 rim sherds. Wingate bowl have a sample size of 100 rim sherds. The mean diameter for Puerco bowl is 22.6 centimeters. For Wingate bowls the mean diameter is 24.4 centimeters. This is only a little over two centimeters difference but it is significant. The p-value is less than 0.05 at 0.012.

Table 23: All great houses red ware temporal t-test of independence results

All Great Houses Red Ware Bowls		
Ware and Type	**Mean Diameter (cm)**	**t-test**
Red Puerco Bowl	22.6	**t**=-2.525 **df**=185.670 **p**=0.012
Red Wingate Bowl	24.4	

RED WARE BOWLS-PUERCO VS. WINGATE ALL NON-GREAT HOUSES

Unlike the great house graphs, the non-great house red ware bowl graphs do not appear similar to each other. Despite this difference in the appearance there no significant difference in the diameters. The Puerco bowl graph appears more like a bell curve then the Wingate bowl graph (Figure 29).

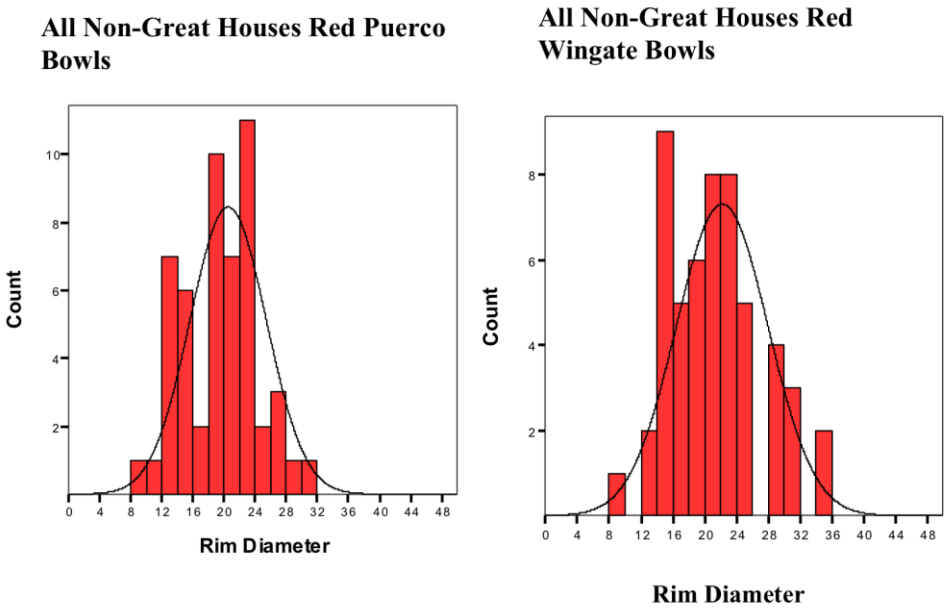

Figure 29: Graphs showing the comparison of all non-great houses red Puerco and Wingate bowls.

The Puerco bowl graph would have a steep but gentle incline. However, it is interrupted by abrupt dips. The graph also starts and ends with short one count plateaus. The first plateau abruptly inclines to the first peak at 12 to 14 centimeters. A valley follows this, with another abrupt incline to another peak at 18 to 20 centimeters. A dip separates this peak from the main peak at 20 to 22 centimeters diameter with a count of about 11. An abrupt decline follows the main peak. One last small peak follows the drop, and then a drop onto the last small plateau from 28 to 32 centimeters.

For the Wingate bowl graph, the main peak comes near the left side of the graph. There is a count of one at 8 to 6 centimeters, followed by a gap. A count of two leads directly to a main peak at 14 to 16 centimeters diameter. The main peak has a count close to 9. A valley separates the main peak from the second largest peak. This peak is made up of two bars with the same count at 8. A drop to one peak and then a gap follows. Two declining

peaks come after the gap. This is followed by a gap and the last count of two at 34 to 36 centimeters.

The statistics show there is no significant difference between the samples (Table 24). Sample sizes are very close to each other. Puerco bowls have a sample size of 52 and Wingate bowls have a sample size of 53. The mean diameter for Puerco bowls is 20.5 centimeters. Wingate bowls have a little over two centimeters at 22.8 centimeters. The p-value is 0.110. This is larger than 0.05 and shows that this difference is no significant.

Table 24: All non-great houses red ware temporal t-test of independence results

All Non-Great Houses Red Ware Bowls		
Ware and Type	**Mean Diameter (cm)**	**t-test**
Red Puerco Bowls	20.5	**t**=-1.613 **df**=100.949 **p**=0.110
Red Wingate Bowls	22.8	

WHITE WARE BOWLS-PUERCO VS. RESERVE ALL GREAT HOUSES

As with the red ware bowls, the great houses white ware graphs appear similar (Figure 30). The Puerco bowl graph starts with a small plateau at 2 to 6 centimeters. This rises sharply to the main peak. The main peak is at 10 to 12 centimeters diameter, and has a count of 30. A slightly shorter peak is next to it, and then a drop to a plateau. Another peak follows, then the decline and the tail of the graph. There is slight peak in the tail, which ends at 38 to 40 centimeters.

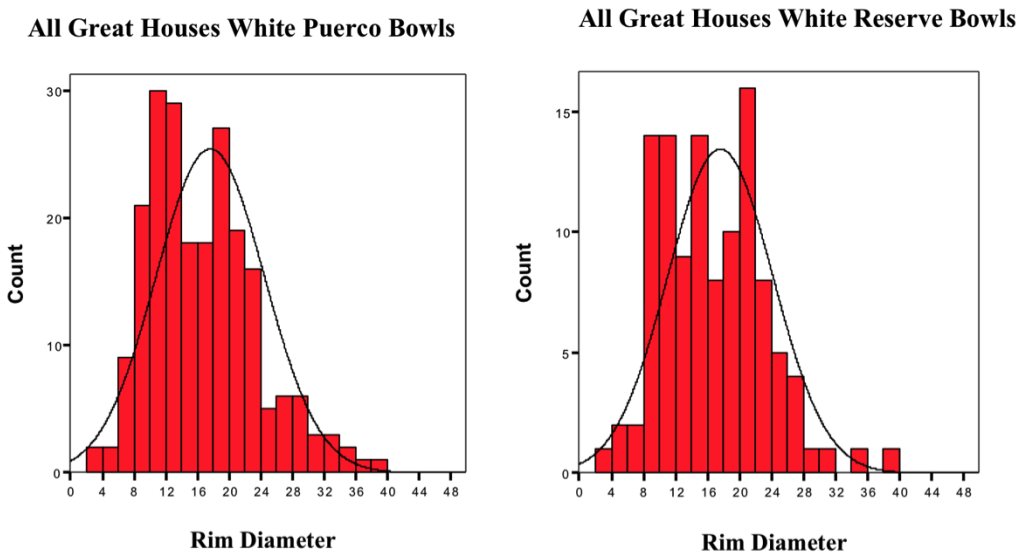

Figure 30: Graphs showing the comparison of all great houses white Puerco and Reserve bowls.

The Reserve bowl graph starts off with a small counts peak. This rises sharply to a small plateau. The plateau is broken by a dip at 12 to 14 centimeters. A valley separates this plateau from the main peak. The main peak is at 20 to 22 centimeter diameter and with a count of slightly over 15. A sharp decline leads to a short tail. The tail has peaks of counts of one broken by two gaps. The graph ends at same place as the Puerco bowls, 38 to 40 centimeters.

Statistics show that there is no difference in the samples (Table 25). The sample size for the Puerco bowls is 218. The Reserve bowls has a sample size of 111. Diameter means for both are almost identical. Puerco bowls have a mean of 17.6 centimeters, and then Reserve bowls have the same mean diameter of 17.6 centimeters. The p-value is 0.979. As this is much larger than 0.05, it confirms that the samples have no significant difference.

Table 25: All great houses white ware temporal t-test of independence results.

All Great Houses White Ware Bowls		
Ware and Type	**Mean Diameter (cm)**	**t-test**
White Puerco Bowl	17.6	**t**=0.026 **df**=229.228 **p**=0.979
White Reserve Bowl	17.6	

WHITE WARE BOWLS-PUERCO VS. RESERVE ALL NON-GREAT HOUSES

The non-great house white bowls are similar to the great house white bowls. Both the white Puerco and Reserve bowls for non-great houses do not appear similar. Like the great houses, the statistics show no significant difference (Figure 31).

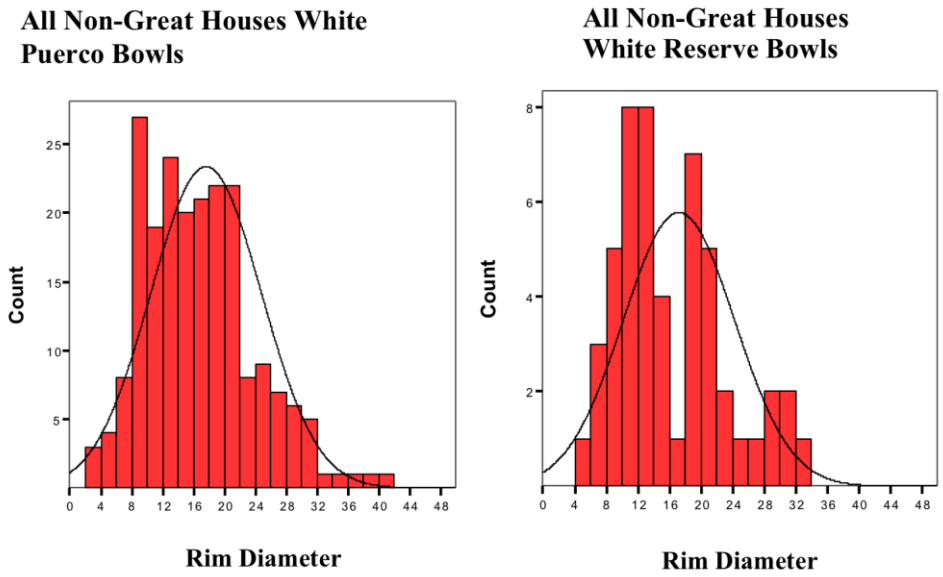

Figure 31: Graphs showing the comparison of all non-great houses white Puerco and Reserve bowls.

The Puerco bowls graph starts with a short gradual incline, then a sharp incline to the main peak. The main peak is at 8 to 10 centimeters diameter. It has a count a little above 25. After this comes a dip and then another peak. This is followed by a small dip and short incline to a short plateau between 18 and 22 centimeters. It is a sharp decline starts the tail of the graph. A slight peak is followed by a decline, and a longer plateau of counts of one between 32 and 42 ends the graph.

The Reserve bowls graph has two major peaks and one minor peak. Valleys with bars with counts of one separate these peaks. This count of one is how the graph starts, and then steeply inclines to the main peaks. The main peak is between 10 and 14 centimeters diameter. Both are next to each other and have the same count of eight. A sharp decrease leads into a valley that separates the main peak and the secondary peaks. It starts with a sharp increase, and sharply declines to the next valley. The last set of two bars peak is at 28 and 32 centimeters. The last one count bar ends the graph.

Despite the differences in the graphs, the statistics show no difference. Sample sizes are different. Puerco bowls have a sample size larger than the Reserve bowls. The Puerco bowls sample size is 210 and the Reserve sample size is 51. The mean diameters are almost identical (Table 26). Puerco bowls have a diameter mean of 17.6 centimeters. Reserve bowls have a diameter mean of 17.2 centimeters. The p-value is larger than 0.05 at 0.703.

Table 26: All non-great houses white ware temporal t-test of independence results.

All Non-Great Houses White Ware Bowls		
Ware and Type	**Mean Diameter (cm)**	**t-test**
White Puerco Bowl	17.6	**t**=0.383 **df**=77.124 **p**=0.703
White Reserve Bowl	17.2	

COMMUNITY TEMPORAL DATA

This is laid out in a manner similar to the rest of the data. Each of the great houses and their surrounding residences are examined together. The red and white wares are grouped together for each community. Interestingly, there seems to be little pattern in these data other than Cox Ranch Pueblo, which does follow the same pattern as the aggregated data. This could be because of sample sizes. In general, sample sizes tended to be small.

Small sample sizes has also made it impossible to make a comparison between Largo Gap great house red ware bowls and its non-great houses red ware bowls.

COX RANCH PUEBLO COMMUNITY

RED WARE BOWLS-PUERCO VS. WINGATE GREAT HOUSE

The Puerco bowl graph appears like a bell curve. It is skewed to the right (Figure 32). The graph starts with a peak and gap at 12 to 14 centimeters before the main graph area. A gentle but steep incline leads to the main peak. The main peak is at 20 to 22 centimeters diameter, and has counts a little over 15. A steep decline leads to a valley after the main peak. Next is a small peak of five at 26 and 28 centimeters. A dip separates this peak from the short plateau the ends the graph at 30 to 36 centimeters. For the Wingate bowl graph there are three major peaks separated by short dips.

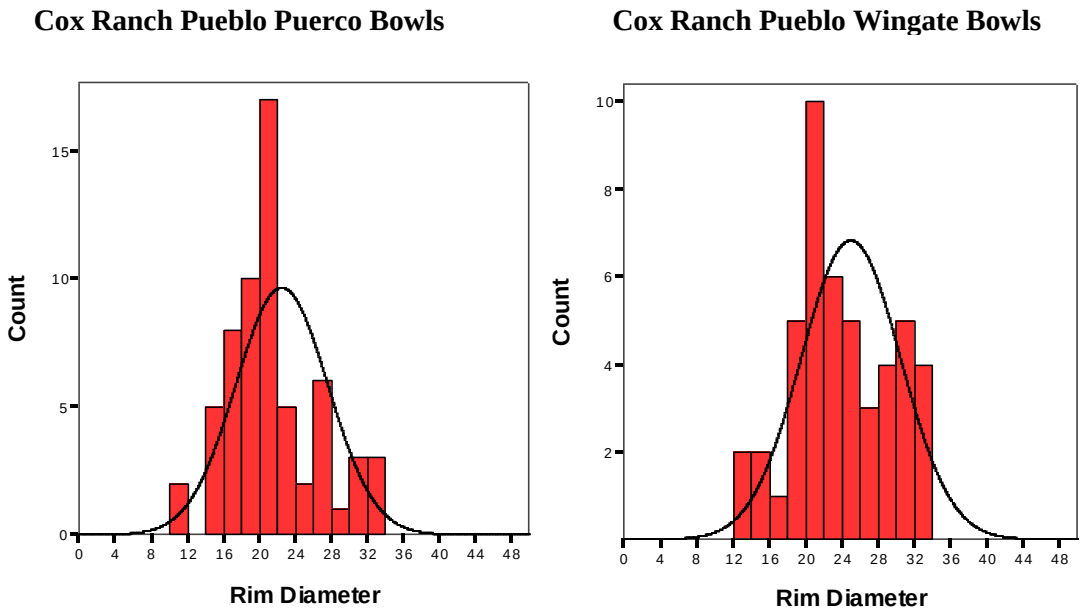

Figure 32: Graphs showing the comparison of Cox Ranch Pueblo great house Red ware Puerco and Wingate bowls.

The Wingate graph starts with a small peak plateau at 12 to 16 centimeters (Figure 32). A small dip comes next, followed by a jump up to the main peak. The main peak has a

count of 10 at 20 to 22 centimeters diameter. A short decline leads to another dip. Then comes another short incline to another peak at 30 to 32 centimeters. It drops in count to end the graph at 32 to 34 centimeters.

Like the aggregated data, the statistics show that there is a significant difference in samples. The sample sizes are close together. Puerco has a sample size of 62, and Wingate has a sample size of 47. The mean diameters are two and a half centimeters apart (Table 27). Puerco bowls have a mean diameter of 22.4 centimeters. Wingate bowls have a mean diameter of 24.9 centimeters. The p-value is 0.017. This is less than 0.05, and show that there is significant difference with Wingate being larger.

Table 27: Cox Ranch Pueblo great house red ware temporal t-test of independence results.

Cox Ranch Pueblo Great House		
Ware and Type	**Mean Diameter (cm)**	**t-test**
Red Puerco Bowl	22.4	**t**=-2.419 **df**=95.438 **p**=0.017
Red Wingate Bowl	24.9	

RED WARE BOWLS-PUERCO VS. WINGATE NON-GREAT HOUSES

The non-great houses graphs do not appear similar, but they do have roughly bell shape (Figure 33). The Puerco bowls graph is more squared. The graph starts with short, small plateau at 8 to 12 centimeters. This goes directly into a small peak. What would be a large plateau between 14 and 22 centimeters comes next but there is a drop to a count of one in the middle of the of the plateau. The main peak rise directly after this at 22 to 24 centimeters diameter, and it has a count of 10. A sharp drop comes after the main peak. There is small three-count peak, and then a drop to a short plateau at 28 and 32 centimeters to end the graph.

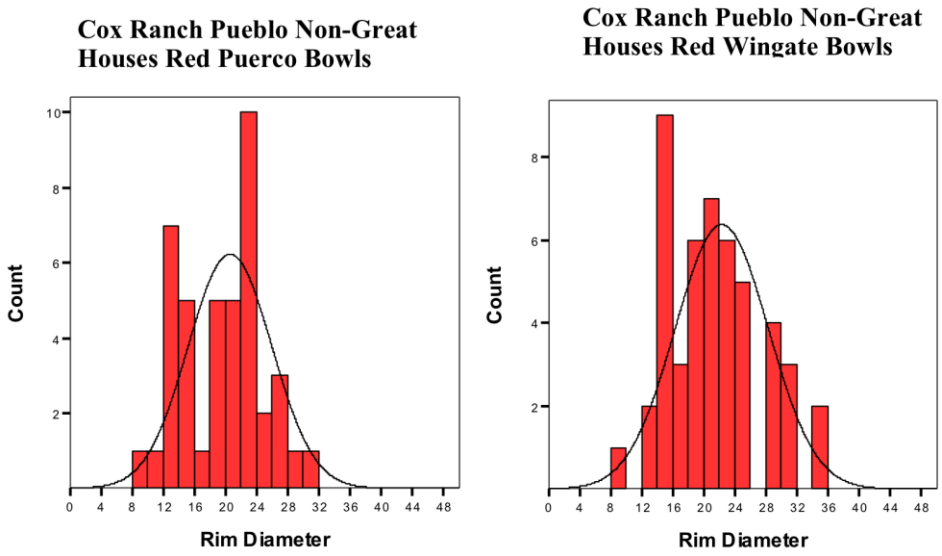

Figure 33: Graphs showing the comparison of Cox Ranch Pueblo non-great houses red Puerco and Wingate bowls.

The Wingate graph has the main peak very early. There are also three gaps in the graph. The graph starts with a small peak and a gap. Then there is an abrupt transition to the main peak. The main peak has a count of about nine at 14 to 16 centimeters diameter. A dip follows the main peak, then an incline to another peak. The decline after this is steep but gentle, and is broken by two gaps. The graph ends abruptly at a count of two at 34 to 36 centimeters. Despite the difference in the graphs and mean diameters, statistically there is no significant difference.

The samples sizes are similar. The Puerco bowl sample size is 42 and the Wingate bowl sample size is 48. The mean diameters are also only about two centimeters apart (Table 28). Puerco bowls have mean diameter of 20.6 centimeters. Wingate bowls have a mean diameter of 22.3 centimeters. The p-value shows that there is no significant difference because it is larger than 0.05 at 0.156.

Table 28: Cox Ranch Pueblo non-great houses red ware temporal t-test of independence results.

Cox Ranch Pueblo Non-Great Houses		
Ware and Type	**Mean Diameter (cm)**	**t-test**
Red Puerco Bowl	20.6	**t**=-1.431 **df**=87.947 **p**=0.156
Red Wingate Bowl	22.3	

WHITE WARE BOWLS-PUERCO VS. RESERVE GREAT HOUSE

The great house graphs are similar (Figure 34). The Puerco bowls graph has a right skew to it. There is a steep climb up to the main peak. The main peak is at 10 to 12 centimeters diameter. Its count is a little over 20. A slight drop comes after the main peak. There is another short peak and small gradual decline starts after it. This follows into three small plateaus stepping down to the end of the graph. The first is from shorter than the last two. The last plateau goes from 34 to 40 centimeters.

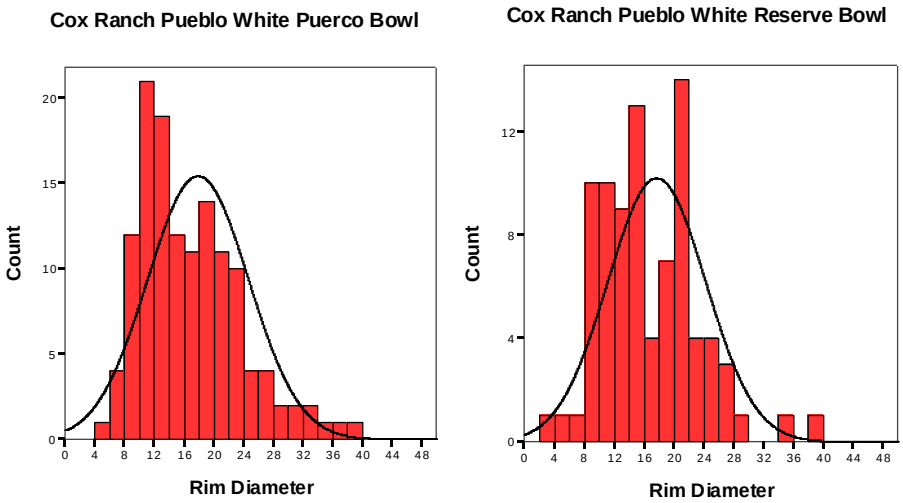

Figure 34: Graphs showing the comparison of Cox Ranch Pueblo great house white Puerco and Reserve bowls.

The Reserve bowl graph is also slightly right skewed. The graph starts with a small and short plateau between 2 and 8 centimeters. An abrupt jump up to the first major peaks comes next. These are separated from the main peak by a valley. The main peak is at 20 to 22 centimeters. The main peak has a count of close to 16. Another abrupt drop leads to a

short plateau and steep decline to a gap. There are two more peaks with one counts separated by a gap. The first one is at 34 to 36 centimeters and the last one is at 38 to 40 centimeters.

Again, there is no significant difference in the samples (Table 29). The sample size for Puerco bowls is much larger than for Reserve bowls. Puerco bowls have a sample size of 132, and Reserve has a sample size of 84. Diameter means are almost identical. Puerco bowls have a mean diameter of 17.8 centimeters. Reserve bowls have a mean diameter of 17.6 centimeters. The p-value is 0.840. As this is larger than 0.05 it confirms that there is no significant difference in the two samples.

Table 29: Cox Ranch Pueblo great house white ware temporal t-test of independence results.

Cox Ranch Pueblo Great House		
Ware and Type	**Mean Diameter (cm)**	**t-test**
White Puerco Bowl	17.8	**t**=0.202 **df**=181.628 **p**=0.840
White Reserve Bowl	17.6	

WHITE WARE BOWLS-PUERCO VS. RESERVE NON-GREAT HOUSES

Non-great house graphs are quite similar. There are both right skewed and have at least one major gap (Figure 35). The Puerco bowl graph has two main peaks with the same counts. It starts with a steep incline to the first of the main peaks. This is at 8 to 10 centimeters diameter with a count close to 20. A dip separates this main peak from the other main peak at 12 to 14 centimeters diameter. Two dips and two peaks follow this, which leads to a sharp decline. A gap from 26 to 30 centimeters comes next. A short peak and small plateau follows the gap. Another gap from 36 to 40 centimeters separates this from the last one count at 40 to 42 centimeters.

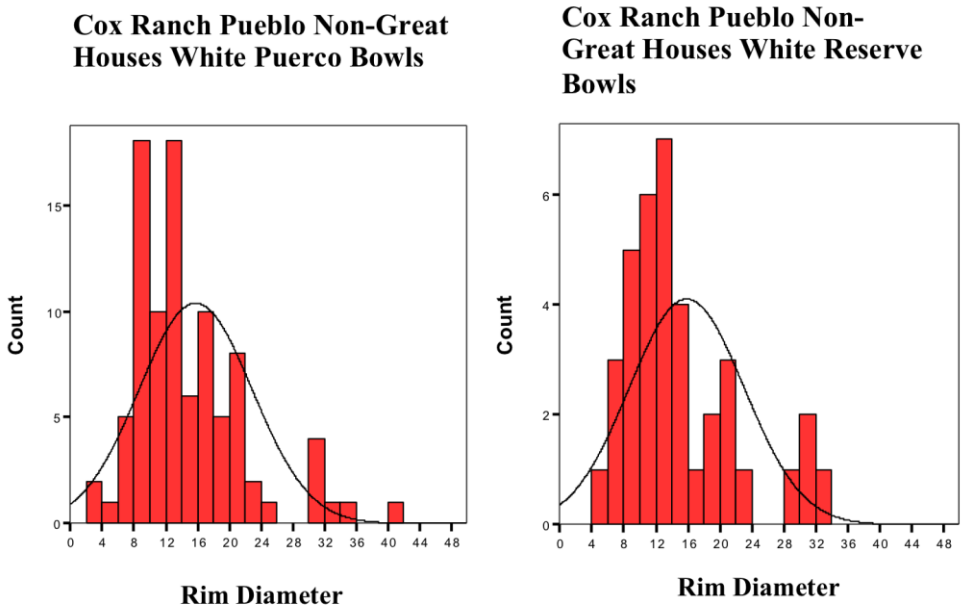

Figure 35: Graphs showing the comparison of Cox Ranch Pueblo non-great houses white Puerco and Reserve bowls.

The Reserve bowl graph starts with a steep but gentle climb to the main peak. This is in a series of jumps every two centimeters that gets shorter and shorter to the main peak. The main peak is at 12 to 14 centimeters diameter, with a count a little over six. A drop into a valley comes next. Another small peak follows with a steep drop into a gap. The gap is between 24 to 28 centimeters. Another small peak of a count of two with one-count bars on each side comes after the gap. This ends the graph at 32 to 34 centimeters.

The statistics are for the non-great houses are very similar to the great house statistics. Sample sizes for the non-great houses are closer in size than with the great house. Puerco have a sample size of 93, and Reserve has a sample size of 37. The mean diameters are also very close (Table 30). Puerco bowls have a mean diameter of 15.8 centimeters. Reserve bowls have a mean diameter of 15.9 centimeters. With a p-value of 0.942, which is larger than 0.05, means there is no significant difference in the samples.

Table 30: Cox Ranch Pueblo non-great houses white ware temporal t-test of independence results.

Cox Ranch Pueblo Non-Great Houses		
Ware and Type	**Mean Diameter (cm)**	**t-test**
White Puerco Bowl	15.8	**t**=-0.073 **df**=65.859 **p**=0.942
White Reserve Bowl	15.9	

CERRO POMO COMMUNITY

The Cerro Pomo community has a different pattern compared to the aggregated data and Cox Ranch Pueblo. It also has the same pattern as found in Largo Gap. This pattern is small sample sizes and no significant difference. This will be explained and expanded below.

RED WARE BOWLS-PUERCO VS. WINGATE GREAT HOUSE

The graph for the Puerco bowls is quite small and short (Figure 36). This is because the sample size is very small. It starts at about 12 to 16 centimeters and steps up to the main peak. The main peak is at about 22 to 28 centimeters diameter. It has a count of five, and that is the end of the graph.

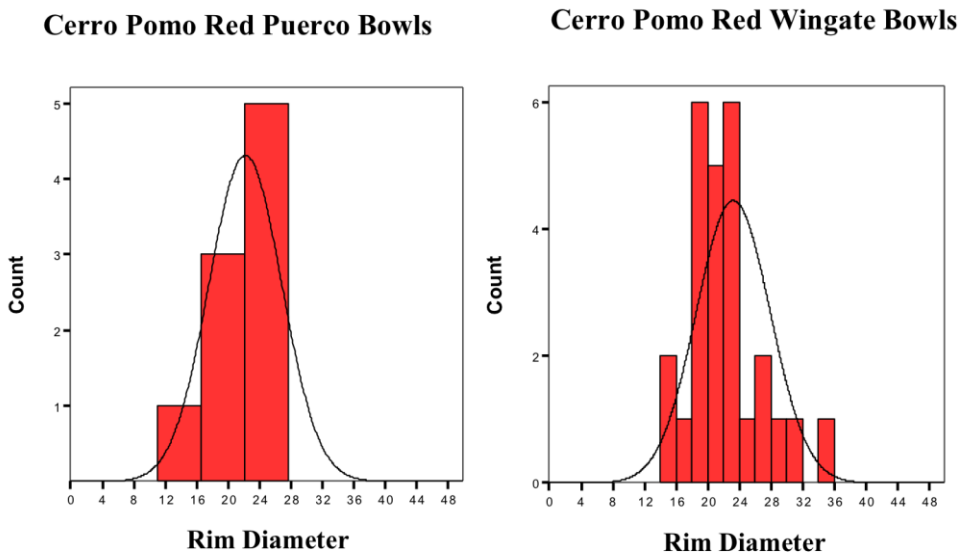

Figure 36: Graphs showing the comparison of Cerro Pomo great house red Puerco and Wingate bowls.

For the Wingate graph, the sample size is large enough so that there are more than three bars. It also has two peaks with the same counts, see appendix. It starts with the main pattern of the graph. This is a peak and valley. The first peak is at 14 to 16 centimeters. A dip comes after this, and then a jump up to the first main peak. The first main peak is at 18 to 20 centimeters diameter. A short dip separates this one from the next main peak at 22 to 24 centimeters diameter. Both have counts of six. An abrupt drop down to a count of one follows comes after this. Another peak and then a small plateau are next. The plateau has a gap in it at 32 to 34 centimeters, which separates the last one count peak from the plateau.

The statistics show that there is no significant difference in these two samples. The sample sizes are quite different; Puerco only has a sample size of 9, and Wingate has a sample size of 26. Mean diameters are also a little different (Table 31). The mean diameter for Puerco is 22.2 centimeters. For Wingate the mean diameter is 23.2 centimeters. The p-

value is larger than 0.05 at 0.583. This means there is no significant difference between the sample sizes.

Table 31: Cerro Pomo great house red ware temporal t-test of independence results.

Cerro Pomo Great House		
Ware and Type	**Mean Diameter (cm)**	**t-test**
Red Puerco Bowl	22.2	**t**=-0.562 **df**=14.059 **p**=0.583
Red Wingate Bowl	23.2	

RED WARE BOWLS-PUERCO VS. WINGATE NON-GREAT HOUSES

Non-great houses graphs for the Puerco and Wingate bowls are even shorter than for the great house (Figure 37). This is because the sample sizes are so small. The Puerco bowls have two bars. One has a count of two from about 12 to 18 centimeters diameter. The next one is from 22 to 24 centimeters diameter, and has a count of six. For the Wingate there is only one bar with a count of four. It spans the 12 to 24 centimeter diameter range.

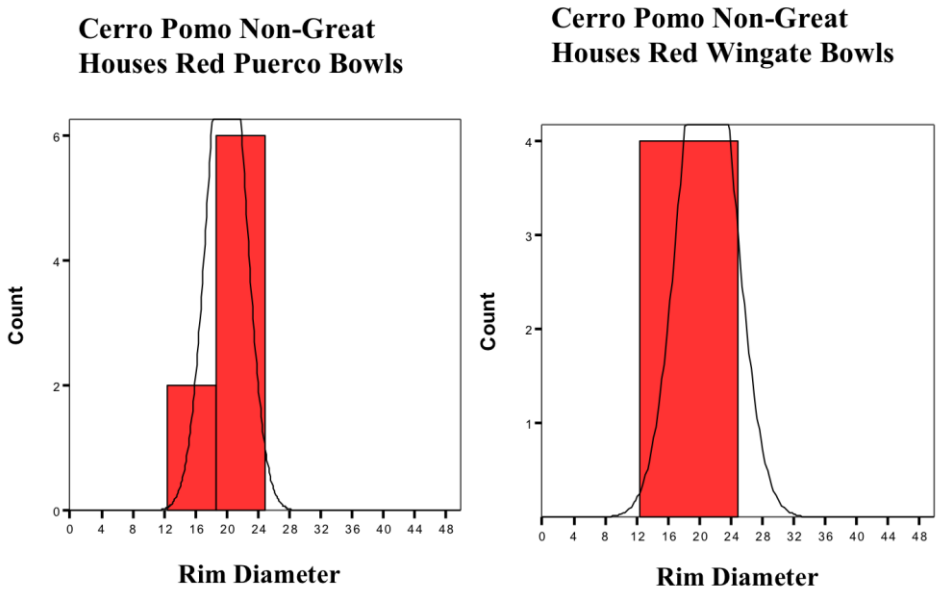

Figure 37: Graphs showing the comparison of Cerro Pomo non-great houses red Puerco and Wingate bowls.

The statistics show there is no difference in the samples. Sample sizes are very small. Puerco bowls have a sample size of 8, and Wingate bowls have a sample size of 4. The

mean diameters are only one centimeter different (Table 32). Puerco has a mean diameter of 20.0 centimeters. Wingate has a mean diameter of 21.0 centimeters. The p-value is 0.628. This being larger than 0.05 and so there is no significant difference, but sample size might be a problem for this analysis.

Table 32: Cerro Pomo non-great houses red ware temporal t-test of independence results.

Cerro Pomo Non-Great Houses		
Ware and Type	**Mean Diameter (cm)**	**t-test**
Red Puerco Bowl	20.0	**t**=-0.519 **df**=4.490 **p**=0.628
Red Wingate Bowl	21.0	

WHITE WARE BOWLS-PUERCO VS. RESERVE GREAT HOUSE

With the Puerco graph there are two main peaks (Figure 38). The graph starts with a peak and a gap before the main portion of the graph. After the gap there is a very steep incline to the first main peak. This is at the 10 to 12 centimeter diameter. A valley separates the two main peaks. The other main peak is at 20 to 22 centimeter diameter. Both have a count of about seven. A sharp drop off leads to a long plateau for the end of the graph. One small peak breaks the plateau at 28 to 30 centimeters. The graph ends at 34 to 36 centimeters.

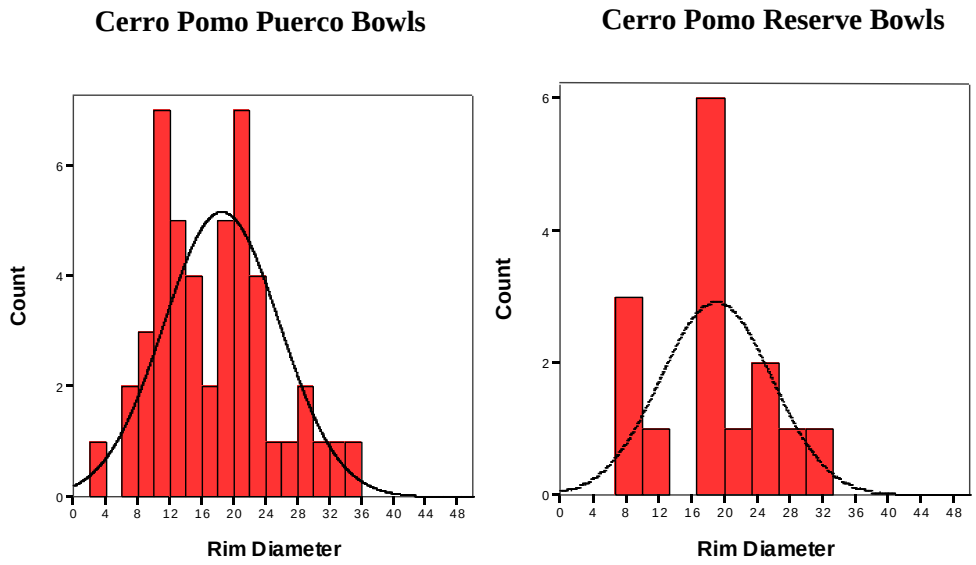

Figure 38: Graphs showing the comparison of Cerro Pomo great house white ware Puerco and Reserve bowls.

Because the Reserve has a smaller sample size, the graph is shorter (Figure 20). It starts with a peak, a dip, and a gap. Right after the gap is the main peak at 16 to 20 centimeters diameter. It has a count of six. Similarly to the Puerco graph, the Reserve graph ends with a long plateau directly after the main peak. This plateau is also broken by a short peak at about 24 to 26 centimeters, and ends at about 30 to 34 centimeters.

The statistics show no significant difference in the samples, and also the small sizes. For Puerco the sample size is 47. Reserve has a sample of 15. The mean diameters are very similar (Table 33). Puerco has a mean diameter of 18.4 centimeters, and Reserve has a diameter mean of 18.9 centimeters. The p-value is larger than 0.05 at 0.814, which means there is no significant difference in the samples. This could also have a problem with a small sample size for the Reserve bowls.

Table 33: Cerro Pomo great house white ware temporal t-test of independence results.

Cerro Pomo Great House		
Ware and Type	**Mean Diameter (cm)**	**t-test**
White Puerco Bowl	18.4	**t**=-0.237 **df**=25.024 **p**=0.814
White Reserve Bowl	18.9	

WHITE WARE BOWLS-PUERCO VS. RESERVE NON-GREAT HOUSES

Non-great houses have a similar problem with sample size. It also has the similar two main peaks for the Puerco bowls, like the great house (Figure 39). The graph starts with a gradual incline. This is broken by a drop, which leads directly to the first main peak. The first main peak is at 14 to 16 centimeters, and a drop separates it from the other main peak. The second main peak is at 18 to 20 centimeters. Both have a count close to nine. After this is a drop to a small, short plateau. This jumps up to another small plateau between 24 to 30 centimeters. This drops to the end of the graph at 30 to 32 centimeters.

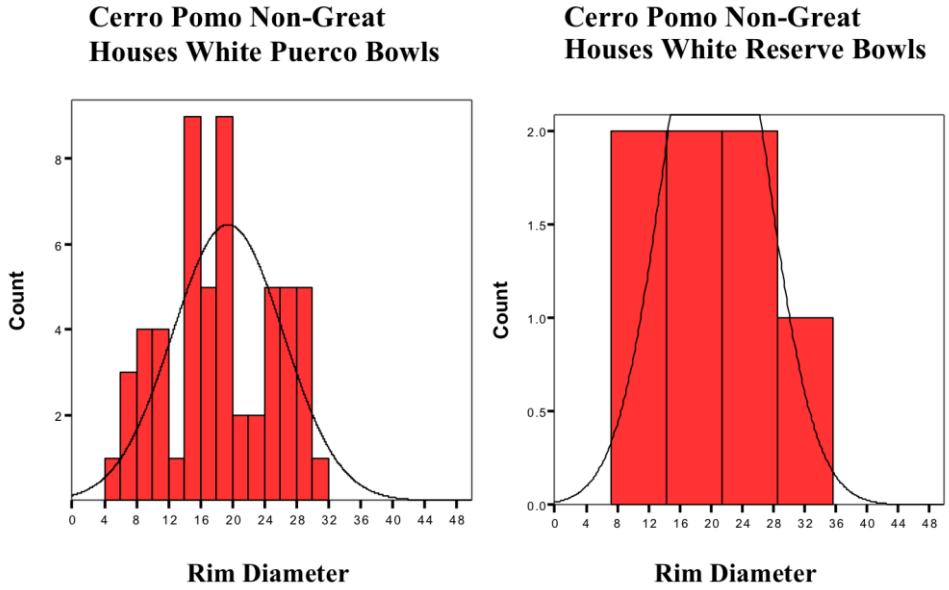

Figure 39: Graphs showing the comparison of Cerro Pomo non-great houses white Puerco and Reserve bowls.

The graph for the Reserve bowls is very basic. It has a plateau from about 8 to 28 centimeters diameter. The all have the same count at two. There is one drop off to a count of

one. This ends the graph at about 28 to 36 centimeters. The small sample size is the reason for this basic graph. Both graphs are found in the appendix.

Statistics show that there is no significant difference in the samples. Puerco bowls have a sample size of 56, while Reserve bowls have sample size of seven. Diameter means are a little over one centimeter different (Table 34). Puerco bowls have a mean diameter of 19.4 centimeters. Reserve bowls have a mean diameter of 20.6 centimeters. The p-value is larger than 0.05 at 0.671, so there is no significant difference.

Table 34: Cerro Pomo non-great houses white ware temporal t-test of independence results.

Cerro Pomo Non-Great Houses		
Ware and Type	**Mean Diameter (cm)**	**t-test**
White Puerco Bowl	19.4	**t**=-0.441 **df**=7.929 **p**=0.671
White Reserve Bowl	20.6	

LARGO GAP COMMUNITY

One sample for the non-great houses could not have statistics done because the sample size is so small. The sample being left out for the non-great houses is the red wares, both the Puerco bowls and the Wingate bowls. Therefore, only the great house red wares will be discussed below (Figure 40).

RED WARE BOWLS-PUERCO VS. WINGATE GREAT HOUSE

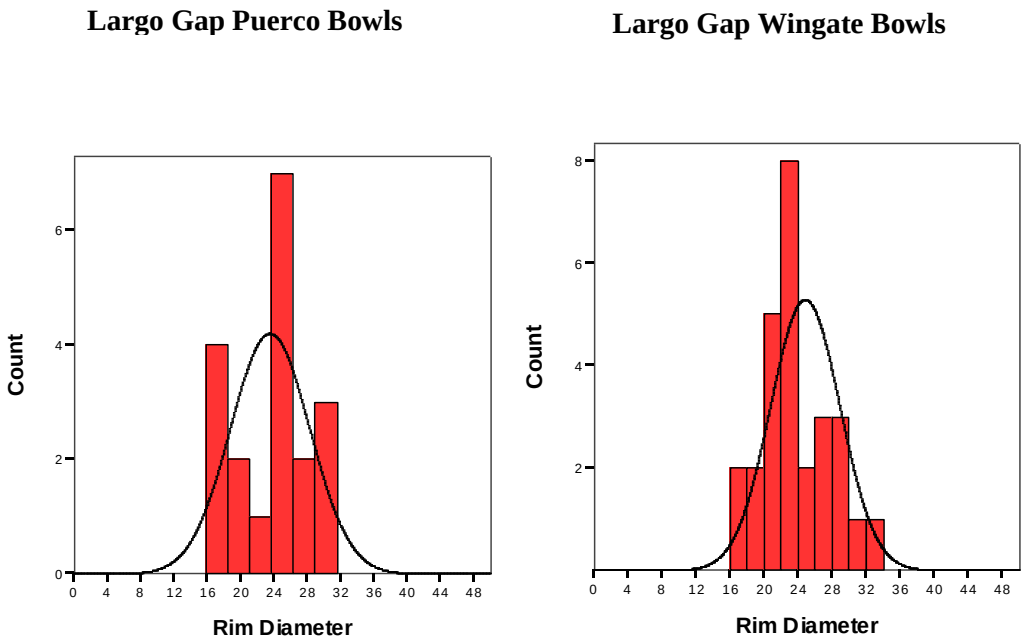

Figure 40: Graphs showing the comparison of Largo Gap great house Red wares Puerco and Wingate bowls.

The great house Puerco bowl graph and the Wingate bowl graph are both narrow. They are also both contained around 16 to 32 centimeters. The Puerco graph starts with a peak and valley before the main peak. The main peak is at 24 to 26 centimeters diameter. It has a count of about seven. Another abrupt drop down comes after the main peak. After the dip is followed by a small peak to end the graph at about 26 to 32 centimeters.

The Wingate bowl graph is not similar to the Puerco graph (Figure 21). It starts with small and short plateau. This leads to a steep jump to the main peak. The main peak is at 22 to 24 centimeter diameter. It drops down abruptly, and then up and down with two short plateaus. The graph ends at the last plateau at 30 to 34 centimeters.

While there is a difference in the mean diameters, the difference is not significant. The sample sizes are small but close together. Puerco has a sample size of 19, and Wingate has a sample size of 27. The means are a little over a centimeter apart, as can be seen in Table 35. Puerco bowls have a diameter mean of 23.5 centimeters. Wingate bowls have a

mean diameter of 24.8 centimeters. A p-value of 0.338, which is larger than 0.05, means there is no significant difference between the samples.

Table 35: Largo Gap great house red Ware temporal t-test of independence results.

Largo Gap Great House		
Ware and Type	**Mean Diameter (cm)**	**t-test**
Red Puerco Bowl	23.5	**t**=-0.970 **df**=34.986 **p**=0.338
Red Wingate Bowl	24.8	

The non-great houses have sample sizes that are very small. Puerco bowls have a sample size of two. Wingate bowls have a sample of size of one. These sample sizes are small enough that it is impossible to perform the t-test. However, the white ware bowls do have a sample large enough to perform the t-test for both the great house and non-great houses.

WHITE WARE BOWLS-PUERCO VS. RESERVE GREAT HOUSE

Great house Puerco bowls have a larger sample size than Reserve bowls (Figure 41). The graph for Puerco bowls starts with a short plateau. A steep incline leads to the first peak at 6 to 8 centimeters. This peak is separated from the next peak with a dip. This is followed by another peak and dip. Another peak leads up to the main peak at 18 to 20 centimeters diameter, and has a count of eight. A sharp drop leans to another small peak. A gap separates this peak from the last part of the graph. A one-count peak goes up to a two-count peak to end the graph. The last peak is at 28 to 30 centimeters. This is very different from the Reserve bowl graph.

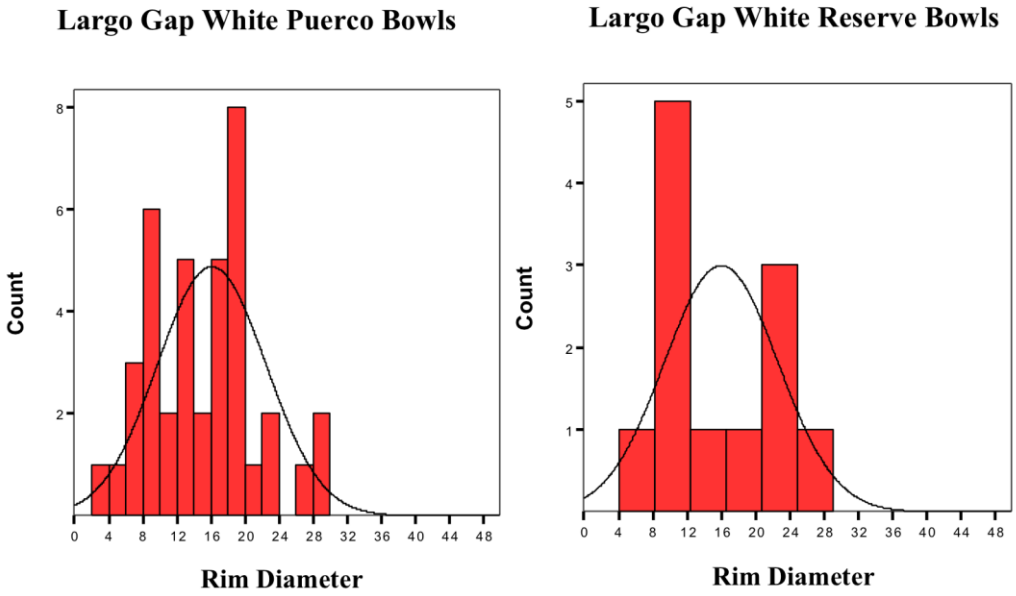

Figure 41: Graphs showing the comparison of Largo Gap great house white Puerco and Reserve bowls.

The Reserve bowl graph is much simpler compared to the Puerco bow graph. It is a plateau going from 4 to 28 centimeters. The count of plateau is one. The main peak and a secondary peak rise out of the plateau. The main peak is at 8 to 12 centimeters diameter, with a count of five. The second peak is at 20 to 24 centimeters and has a count of three. This just how simple the graph is, and is due to the small sample size.

The t-test shows that there is no significant difference in the samples (Table 36). Puerco bowls have a sample size of 39. Reserve bowls have a sample size of 12. The mean diameters are very similar. Puerco bowls have a mean diameter of 16.1 centimeters, and Reserve bowls have a mean diameter of 16.0 centimeters. The p-value is much larger than 0.05, at 0.963.

Table 36: Largo Gap great house white ware temporal t-test of independence results.

Largo Gap Great House		
Ware and Type	**Mean Diameter (cm)**	**t-test**
White Puerco Bowl	16.1	**t**=-0.047 **df**=17.701 **p**=0.963
White Reserve Bowl	16.0	

WHITE WARE BOWLS-PUERCO VS. RESERVE NON-GREAT HOUSES

Non-great house white bowls are similar to the great house graphs. The Reserve bowl graph is much more simple compared to the Puerco bowl graph. This also has to do with the Reserve bowls having a small sample size (Figure 42).

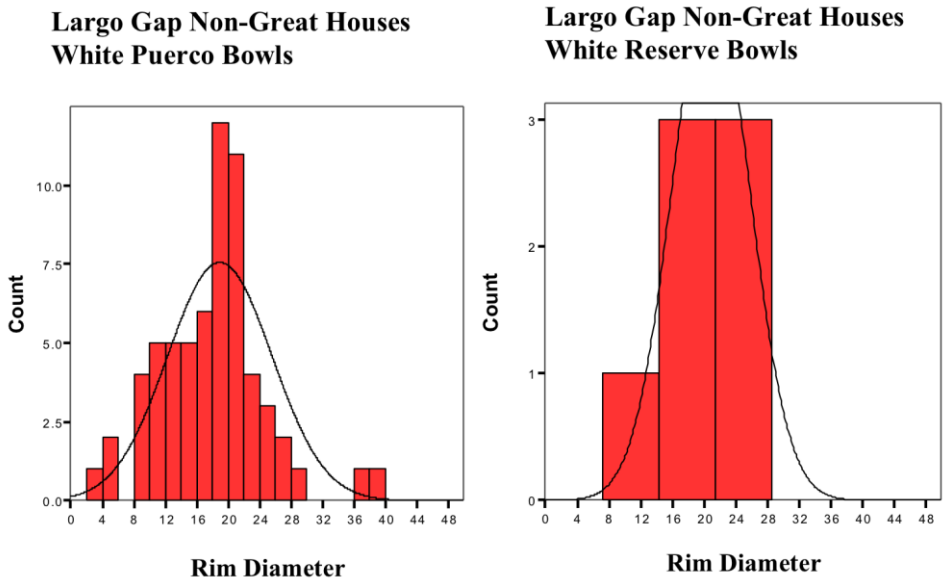

Figure 42: Graphs showing the comparison of Largo Gap non-great houses white Puerco and Reserve bowls.

The Puerco graph starts with a steep incline broken by a gap. This incline leads to plateau of counts of five from 8 to 16 centimeters. There is a sharp jump leads up to the main peak. The main peak is at 18 to 20 centimeter diameter. It has a count of close to 10.5. A slightly smaller peak comes after the main peak. Next comes a sharp drop leads to a gentle step downs to a gap. This gap separates the last to peak that form a short plateau. This is where the graph ends at 36 to 40 centimeters.

In comparison, the Reserve bowl graph is very simple. There is a single one-count peak to start the graph. Two peaks with counts of two follow this. The whole graph spans from 8 to 28 centimeters diameter.

The t-test shows no significant difference in the samples. Puerco bowls have a sample size of 63. Reserve bowls have a sample size of only seven. There is a difference of

about two centimeters between the mean diameters (Table 37). Puerco bowls have a mean diameter of 18.9 centimeters. The Reserve bowls have a slightly larger mean diameter at 20.9 centimeters. The p-value is 0.369. This is larger than 0.05 and so there is no significant difference in the samples.

Table 37: Largo Gap non-great houses white ware temporal t-test of independence results.

Largo Gap Non-Great Houses		
Ware and Type	**Mean Diameter (cm)**	**t-test**
White Puerco Bowl	18.9	**t**=-0.948
White Reserve Bowl	20.9	**df**=8.696 **p**=0.369

FAUNAL DATA

In order to enhance my examination of feasting, the faunal data from Aletheia Bouknight's thesis (2014) is summarized. Relative amounts of faunal data will be presented. As the thesis is primarily about Largo Gap, this is presented first. Cox Ranch Pueblo and Cerro Pomo follow.

The Largo Gap great house faunal assemblage is primarily made up of Lagomorphs. Lagomorphs, or rabbits and hares, comprised 24.42 percent of the total assemblage. Rodents comprise the next largest percent of the assemblage at 17.63 percent. This is made up of both cultural and invasive rodents. Ritual birds, such as hawks and quail, make up 2.24 percent. Last at 1.16 percent of the assemblage are medium-sized artiodactyls. The non-great houses have a much smaller assemblage, consisting of a minimum number of individuals of 18. Minimum number of the individuals is used because of very small sample size. More cooperatively hunted animals, and ritual animals are found at the great house. The data also suggests that the inhabitants of the great house may have had more opportunities to hunt

artiodactyls, but were not using them for feasting events. Turkeys are a ritually significant resource, and show the great house inhabitants did have access to them (Bouknight 2014).

Cerro Pomo has a faunal composition similar to Largo Gap. The majority of the assemblage is lagomorphs at 36.77 percent. Rodents again make up the next highest percent of the assemblage at 12.81 percent. Medium-sized artiodactyls comprise 1.45 percent of the assemblage, while ritual birds comprise slight more at 1.56 percent. Turkeys only make up 0.56 percent of the assemblage. The rest of the assemblage is made up of carnivores. Again, there are more cooperatively hunted lagomorphs at the great house. There are also more ritual and social prestige faunal remains at the great house (Bouknight 2014).

Cox Ranch Pueblo is slightly different than the other two great houses. An analysis of the faunal remains by Mueller (2006) concluded that all the inhabitants of the sites had roughly equal access to fauna with ritual significance, although it does appear that the great house inhabitants may have had greater involvement in preparation of the ritual resources. This may have led to increased social status (Bouknight 2014).

In conclusion, all three sites do have some resemblance to each other. They have similar overall species in comparable quantities, and there is a difference of distribution of the species within each community. This suggests there might be differences in the degree of social hierarchy in each of the communities.

> Data from Cerro Pomo suggest that great house inhabitants were hosting communally integrative feasts, and that residents throughout the community had roughly equal access to ritually significant animal resources. At Cox Ranch Pueblo, great house inhabitants may have had slightly elevated social statuses, but people throughout the site still had access to ritually significant resources (Muller 2006). However, in Largo Gap, faunal evidence suggests that people living within the great house had increased social status when compared to those at Cox Ranch Pueblo great house, and that people in the surrounding areas may not have had access to ritually significant animal resources, since nearly all were found within the great house. While differences in sample sizes could cloud these results, this still suggests that

social power within the Cibola region was individualized and varied between sites (Bouknight 2014:46-47).

ANALYSIS SUMMARY

Analysis of the diameter data show there is no real pattern. A few of the graphics hint at a bimodal distribution, especially at the community level. Further, there is only a weak pattern that appears. Most of the data indicate that on average the great houses do have one of the bowl categories that are larger than the non-great houses. One varies from great house community to another, and in one case there is a bowl category that is smaller at the great house. Temporally, only the most aggregated data and the Cox Ranch Pueblo community have any difference in the data.

At the most aggregated, the data show that great houses have larger bowls. When broken into ware and form aggregated data, it becomes clear that two of bowl wares are larger. Brown and red bowls are larger at the great houses. White bowls, brown jars and gray jars are not statistically different. This pattern becomes more complicated when each of the communities is examined individually.

Cox Ranch Pueblo has an interesting pattern. Brown bowls are not statistically different, while every other form is or is close to being statistically different. Red and white bowls are both larger at the great house. Brown jars are close to being statistically different with the great house having smaller jars. Gray jars are larger at the non-great houses. This pattern of bowls and jars both being able to be statistically different continues.

Cerro Pomo has only two wares and forms that are statistically different. Brown bowls and brown jars are larger at the great house. The other wares and forms are not different from each other. White bowls are interesting in that they have almost the same

mean diameter. Having only two statistically different wares and forms continues with Largo Gap.

Largo Gap has two bowls that are statistically different. Brown bowls are larger at the great house. White bowls, however, are smaller at the great house. Both the jars are not statistically different. They also have nearly identical mean diameters.

Table 38: Summary of all the ware diameter data.

Ware Data Summary	
Ware/Form	**Significant**
Aggregated All Bowls	Larger at great houses, significant
Aggregated All Cooking Jars	Identical sizes, not significant
Aggregated Brown Bowls	Larger at great houses, significant
Aggregated Red Bowls	Larger at great houses, significant
Aggregated White Bowls	Larger at non-great houses, not significant
Aggregated Brown Jars	Identical sizes, not significant
Aggregated Gray Jars	Larger at non-great houses, not significant
Cox Ranch Pueblo Brown Bowls	Identical sizes, not significant
Cox Ranch Pueblo Red Bowls	Larger at great house, significant
Cox Ranch Pueblo White Bowls	Larger at great house, significant
Cox Ranch Pueblo Brown Jars	Larger at non-great houses, not significant
Cox Ranch Pueblo Gray Jars	Larger at non-great houses, significant
Cerro Pomo Brown Bowls	Larger at great houses, significant
Cerro Pomo Red Bowls	Larger at great house, not significant
Cerro Pomo White Bowls	Identical sizes, not significant
Cerro Pomo Brown Jars	Larger at great house, significant
Cerro Pomo Gray Jars	Larger at great house, not significant
Largo Gap Brown Bowls	Larger at great house, significant
Largo Gap Red Bowls	Larger at great houses, not significant
Largo Gap White Bowls	Larger at non-great houses, significant
Largo Gap Brown Jars	Identical sizes, not significant
Largo Gap Gray Jars	Identical sizes, not significant

With the temporal data there is only one pattern seen. At the most aggregated for red wares, there is a statistically significant difference. Red Wingate bowls are larger, but only for the great houses. There is no difference in the red wares for the non-great houses. White

wares for both great houses and non-great houses are not statistically different. For both great houses and non-great houses the mean diameters for the white wares are nearly identical. This same pattern holds for Cox Ranch Pueblo, but not for the other great house communities.

Table 39: Summary of all the temporal diameter data.

Temporal Data Summary	
Ware/Form	**Significant**
Aggregated All Great Houses Red Puerco v. Wingate Bowls	Wingate larger, significant
Aggregated All Non-Great Houses Red Puerco v. Wingate Bowls	Wingate larger, not significant
Aggregated All Great Houses White Puerco v. Reserve Bowls	Identical sizes, not significant
Aggregated All Non-Great Houses White Puerco v. Reserve Bowls	Identical sizes, not significant
Cox Ranch Pueblo Red Puerco v. Wingate Bowls	Wingate larger, significant
Cox Ranch Pueblo Non-Great Houses Red Puerco v. Wingate Bowls	Wingate larger, not significant
Cox Ranch Pueblo White Puerco v. Reserve Bowls	Identical sizes, not significant
Cox Ranch Pueblo Non-Great Houses White Puerco v. Reserve Bowls	Identical sizes, not significant
Cerro Pomo Red Puerco v. Wingate Bowls	Wingate larger, not significant
Cerro Pomo Non-Great Houses Red Puerco v. Wingate Bowls	Wingate larger, not significant
Cerro Pomo White Puerco v. Reserve Bowls	Identical sizes, not significant
Cerro Pomo Non-Great Houses White Puerco v. Reserve Bowls	Reserve larger, not significant
Largo Gap Red Puerco v. Wingate Bowls	Wingate larger, not significant
Largo Gap Non-Great Houses Red Puerco v. Wingate Bowls	N/A small sample size
Largo Gap White Puerco v. Reserve Bowls	Identical sizes, not significant
Largo Gap Non-Great Houses White Puerco v. Reserve Bowls	Reserve larger, not significant

Cox Ranch Pueblo red wares are also statistically different. Like the aggregated data, red Wingate bowls are larger for the great house. Non-great houses red wares are not

statistically different, though the Wingate vessel mean is larger. The mean diameters for the white wares are nearly identical in both samples. This ends the pattern for the temporal data.

Cerro Pomo and Largo Gap both have no differences in either wares for the temporal data. There is one pattern that does appear. White ware bowls for both great houses have nearly identical mean diameters. Largo Gap does have a problem with sample size. There were so few red Puerco and Wingate rim sherds for the non-great houses that no analysis could be done. What analyses have been done show no difference. Temporally both of these great house communities show no difference in vessel diameters.

The differences seen in mean diameters are small. They range from approximately a one-centimeter difference to a three centimeters difference. This is a small range, but it is often statistically significant. Another point to be made is that many of the samples sizes are small. Small sample size has led to not being able to carry out an analysis for Largo Gap non-great houses. It might also be why there are no patterns in the data. More rim sherds might change the data or the current pattern might hold.

The faunal data does show that there are some indications of feasting. Types of feasting are also indicated. However, small sample sizes at some sites might be clouding or skewing the data. This is also true for with the rim data. The rim data indicates that the great houses do have some larger vessels, but this is a weak trend.

CHAPTER 5: CONCUSIONS

This thesis examined whether feasting might have been taking place at three Chacoan outlier great houses. Ceramic vessel diameters were recorded to discover if there was a difference in vessel sizes between great houses and their surrounding residential settlements. A bimodal distribution of vessel sizes was expected, as these have been used as archaeological markers of feasting in other studies elsewhere (Blitz 1993; Clark 2010; Hayden 2001; Junker 2001). However, the data did not show this, and instead shows only a weak trend in slightly larger vessels at the great houses. Even this small centimeter difference could indicative of a much higher volume vessel. In the end, no bimodal pattern was discovered but the pattern that was discovered was related to variation in vessel sizes. This trend also varies from community to community, and makes it difficult to interpret. When the faunal data are added, it does indicate some feasting activities. The ceramic vessel diameter data might indicate the same thing but it is weak at best.

The general trend of vessel diameter data is that some bowls are larger at the great houses compared to the non-great houses, although this the trend varies from community to community. When the data are aggregated by form (bowls or jars), bowls are larger at the great houses. When aggregated by ware, it is the brown and red bowls that are larger. One of these two bowls is always significantly larger at the great house compared to the non-great houses. The other wares either have similar means, or are smaller at the great houses.

At Cox Ranch Pueblo the cooking jars, both brown and gray, are smaller at the great house. For the brown jars it is close to being a statistically significant difference ($p=0.057$), while for gray jars it is statistically significant ($p=0.028$). For Largo Gap it is the white

bowls that are significantly smaller at the great house. The differences in means are small, approximately one to three centimeters apart.

When taken all together, the diameter data indicate that feasting might be occurring at the great houses. The larger bowls could be used for serving a large group of people. The smaller jars at Cox Ranch Pueblo could indicate that not much cooking was occurring at the great house. This observation fits with the faunal data indicating that there is more equality in access to ritually significant resources at Cox Ranch Pueblo (Mueller 2006). Smaller white bowls at the Largo Gap great house may indicate personal use for consumption, while the larger brown ware bowls may have been used for serving. This might connect with the faunal data saying the great house had more access to ritually significant resources (Bouknight, 2014). Cerro Pomo has larger brown bowls and jars. Faunal data indicate that Cerro Pomo great house again has roughly equal access to ritually significant resources, and that the great house may have been hosting communally integrative feasts (Bouknight 2014). The larger vessels might be an indication of this. Small sample sizes could be hindering a more complete understanding of patterning.

Small sample size also plays a role in the temporal data. Only the most aggregated data and Cox Ranch Pueblo show any difference. In both cases the later red ware, Wingate, is larger, significantly so at the great houses. This might indicate a slight increase in feasting activities, or it could mean that there was a need for larger vessels. Another possibility is that it is connected with status. Since the size of white bowls does not increase over time and red bowls do, red bowls might be an indication of an increase of status. All the data described reveal no uniformly strong trends. This makes understanding what is occurring difficult. While there is no strong indication of feasting, another possible explanation is

status.

If status is the reason for the trends evident, then there is also a weak trend in which ware or wares are indications of status. Brown bowls might be an indication of status, as they are larger at both the Cerro Pomo and Largo Gap great houses. They are also the larger in the most aggregated data and so are red bowls. At the Cox Ranch Pueblo great house, brown bowls are not larger, but red and white bowls are larger. Comparing this with the faunal data for status suggests no clear pattern.

The Cox Ranch Pueblo great house appears to have slightly elevated status when looking at the faunal data (Bouknight 2014). Both red and white bowls are larger, while both jars are, or are close to, being smaller at the great house. Cerro Pomo great house appears to have little difference in status when compared to the non-great houses (Bouknight, 2014). Brown bowls and brown jars are both larger at the great house compared to the non-great house sites. Largo Gap appears to have the highest social status compared to its surrounding non-great houses with the faunal data (Bouknight, 2014). Only the brown bowls are larger at the great house. Furthermore, white bowls are smaller at the great house, and therefore larger at the non-great house sites. The only thing in common with any of the great houses is brown bowls being larger, but their connection with status is not clear. It could be that only having one, or two, larger vessels types was enough to show status. Red ware bowls get larger over time, it may be that they were a status symbol. This could explain the variety seen at the great houses, and that feasting might not be occurring. Two graphs might have hints of bimodality, in the Cox Ranch Pueblo great house red Wingate graph, and the Cerro Pomo great house white Puerco graph. This could indicate that these wares were used both as personal and serving vessels at feasts. However, this bimodality is only hinted at in the

graphs.

Another possible explanation is whether the food for feasting was prepared at the great houses or brought to them. Percentages of the wares and types found at the great houses and the non-great houses would be the best way to answer this question. However, based on the diameter data, only a guess can be made. Only one great house, Cerro Pomo, has jars that are larger than at the non-great houses, and only brown jars are larger. Cox Ranch Pueblo gray jars are small than the ones from the non-great houses. At Largo Gap the jar diameters are almost identical. If feasting with many people from the non-great houses was taking place and food was prepared at the great houses then there should be larger cooking vessels. As this is not the case it seems likely that food was primarily prepared elsewhere, then brought to the great houses for feasting.

There is a great deal of variety in the diameter data. At the most aggregated there is one pattern. When each individual great house and surrounding non-great houses are examined other patterns show up. There is no clear evidence of feasting taking place at the great houses. Status seems to play a major part with the faunal data, and may also by evident with the diameter data. The great houses may simply had access to larger and better-made vessels. This needs to be examined further. It is clear that each great house community has its own relationship between the great houses and their surrounding non-great houses.

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APPENDIX A: CERAMIC WARE FULL STATISTICAL READ OUT

T-test of independence for means all great houses, and all non-great houses all bowl wars combined full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
GH	1490	20.8268	6.45027	0.16710
NGH	800	19.4100	6.69798	0.23681

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.440	0.507	4.944	2288	0.000	1.4168	0.28656
Equal variances not assumed			4.889	1582.287	0.000	1.4168	0.28983

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	0.85490	1.97879
Equal variances not assumed	0.84835	1.98534

T-test of independence for means all great houses, and all non-great houses all cooking jar wars (brown and gray) combined full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
GH	494	19.5830	6.83775	0.30764
NGH	514	19.7549	6.43836	0.28398

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	4.919	0.027	-0.411	1006	0.681	-0.7179	0.41818
Equal variances not assumed			-0.411	996.087	0.682	-0.1719	0.41868

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-0.99247	0.64874
Equal variances not assumed	-0.99346	0.64973

T-test of independence for means all great houses, and all non-great houses all brown bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
GH	837	21.6440	6.11100	0.21123
NGH	470	20.6830	5.29870	0.24441

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	6.245	0.013	2.859	1305	0.004	0.9610	0.33616
Equal variances not assumed			2.975	1090.072	0.003	0.9610	0.32304

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	0.30151	1.62047
Equal variances not assumed	0.32714	1.59483

T-test of independence for means all great houses, and all non-great houses all red bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
GH	237	23.2363	5.26934	0.34228
NGH	135	20.9407	5.51222	0.47442

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.494	0.483	3.973	370	0.000	2.2955	0.57780
Equal variances not assumed			3.924	268.502	0.000	2.2955	0.58500

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	1.15936	3.43174
Equal variances not assumed	1.14377	3.44732

T-test of independence for means all great houses, and all non-great houses all white bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
GH	412	17.7888	6.68488	0.32934
NGH	214	18.6729	6.47172	0.44240

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.841	0.359	-1.587	624	0.113	-0.8841	0.55722
Equal variances not assumed			-1.603	443.858	0.110	-0.8841	0.55153

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-1.97831	0.1018
Equal variances not assumed	-1.96799	0.19986

T-test of independence for means all great houses, and all non-great houses all brown jars full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
GH	356	20.3146	7.07679	0.37507
NGH	400	20.2275	6.59807	0.32990

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	3.884	0.049	0.175	754	0.861	0.0871	0.49748
Equal variances not assumed			0.174	728.713	0.862	0.0871	0.49951

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-0.88951	1.06372
Equal variances not assumed	-0.89355	1.06776

T-test of independence for means all great houses, and all non-great houses all gray jars full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
GH	138	17.6957	5.78774	0.49269
NGH	114	18.0965	5.55897	0.52064

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.435	0.510	-0.557	250	0.578	-0.4008	0.71957
Equal variances not assumed			-0.559	244366	0.577	-0.4008	0.71681

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-1.81804	1.01636
Equal variances not assumed	-1.81274	1.01107

T-test of independence for means Cox Ranch Pueblo great house, and Cox Ranch Pueblo non-great houses brown bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CRP	519	21.7746	6.45995	0.28356
NGH	326	21.3436	5.52297	0.30589

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	4.647	0.031	0.997	843	0.319	0.4310	0.43220
Equal variances not assumed			1.033	767.822	0.302	0.4310	0.41710

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-0.41731	1.27932
Equal variances not assumed	-0.38779	1.24980

T-test of independence for means Cox Ranch Pueblo great house, and Cox Ranch Pueblo non-great houses red bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CRP	136	23.3676	5.70615	0.48930
NGH	108	20.9722	5.88751	0.56653

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.259	0.611	3.212	242	0.001	2.3954	0.74588
Equal variances not assumed			3.200	226.346	0.002	2.3954	0.74857

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	0.92618	3.86467
Equal variances not assumed	0.92036	3.87049

T-test of independence for means Cox Ranch Pueblo great house, and Cox Ranch Pueblo non-great houses white bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CRP	255	17.7725	6.73714	0.42190
NGH	153	16.2484	7.24594	0.58580

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.014	0.907	2.150	406	0.032	1.5242	0.70888
Equal variances not assumed			2.111	301.961	0.036	1.5242	0.72191

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	0.13065	2.91772
Equal variances not assumed	0.10357	2.94480

T-test of independence for means Cox Ranch Pueblo great house, and Cox Ranch Pueblo non-great houses brown jars full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CRP	168	20.4762	7.76832	0.59934
NGH	169	22.0947	7.77913	0.59839

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.238	0.626	-1.911	335	0.057	-1.6185	0.84693
Equal variances not assumed			-1.911	334.993	0.057	-1.6185	0.84693

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-3.28445	0.04748
Equal variances not assumed	-3.28445	0.04748

T-test of independence for means Cox Ranch Pueblo great house, and Cox Ranch Pueblo non-great houses gray jars full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CRP	94	17.4255	5.38714	0.55564
NGH	58	19.3276	4.96086	0.65139

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.490	0.485	-2.178	150	0.031	-1.9021	0.87314
Equal variances not assumed			-2.222	128.446	0.028	-1.9021	0.85618

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-3.62729	-0.17682
Equal variances not assumed	-3.59610	-0.20801

T-test of independence for means Cerro Pomo great house, and Cerro Pomo non-great houses brown bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CP	193	21.1762	5.29839	0.38139
NGH	82	18.7439	4.21582	0.46556

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	2.807	0.095	3.689	273	0.000	2.4323	0.65932
Equal variances not assumed			4.041	190.081	0.000	24323	0.60183

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	1.13426	3.73027
Equal variances not assumed	1.24514	3.61939

T-test of independence for means Cerro Pomo great house, and Cerro Pomo non-great houses red bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CRP	51	22.1176	4.18400	5.8588
NGH	20	20.3000	4..06655	0.90931

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.059	0.809	1.659	69	0.102	1.8176	1.09543
Equal variances not assumed			1.680	35.711	0.102	1.8176	1.08171

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-0.36768	4.00298
Equal variances not assumed	-0.37678	4.01207

T-test of independence for means Cerro Pomo great house, and Cerro Pomo non-great houses white bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CP	99	19.0404	6.50262	0.65354
NGH	96	19.1146	6.41195	0.65442

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.063	0.802	-0.080	193	0.936	-0.0742	0.92506
Equal variances not assumed			-0.080	192.945	0.936	-0.0742	0.92486

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-1.89871	1.75035
Equal variances not assumed	-1.89832	1.74996

T-test of independence for means Cerro Pomo great house, and Cerro Pomo non-great houses brown jars full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CP	129	21.0775	5.95506	0.52431
NGH	140	18.9000	5.19033	0.43866

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	1.353	0.246	3.203	267	0.002	2.1775	0.67979
Equal variances not assumed			3.185	254.900	0.002	2.1775	0.68362

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	0.83908	3.51596
Equal variances not assumed	0.83127	3.52377

T-test of independence for means Cerro Pomo great house, and Cerro Pomo non-great houses gray jars full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
CP	29	19.4483	6.92607	1.28614
SC	27	17.3333	6.17688	1.18874

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.770	0.384	1.203	54	0.234	2.1149	1.75864
Equal variances not assumed			1.208	53.907	0.232	2.1149	1.75136

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-1.41091	5.64079
Equal variances not assumed	-1.39646	5.62635

T-test of independence for means Largo Gap great house, and Largo Gap non-great houses brown bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
LG	125	21.8240	5.79079	0.51794
NGH	52	19.7692	5.06667	0.70262

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.642	0.424	2.228	175	0.027	2.0548	0.92236
Equal variances not assumed			2.354	108.330	0.020	2.0548	0.87289

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	0.23439	3.87515
Equal variances not assumed	0.32460	3.78494

T-test of independence for means Largo Gap great house, and Largo Gap non-great houses red bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
LG	50	24.0200	4.91765	0.69546
NGH	7	22.2857	2.13809	0.80812

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	2.370	0.129	0.915	55	0.364	1.7343	1.89473
Equal variances not assumed			1.627	17.034	0.122	1.7343	1.06617

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-2.06283	5.53140
Equal variances not assumed	-0.51480	3.98337

T-test of independence for means Largo Gap great house, and Largo Gap non-great houses white bowls full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
LG	58	15.7241	6.34060	0.83256
NGH	101	18.5842	6.34550	0.63140

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.593	0.442	-2.737	157	0.007	-2.8600	1.04512
Equal variances not assumed			-2.737	118.987	0.007	-2.8600	1.04491

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-4.92434	-0.79570
Equal variances not assumed	-4.92904	-0.79100

T-test of independence for means Largo Gap great house, and Largo Gap non-great houses brown jars full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
LG	56	18.1250	7.25650	0.96969
NGH	90	18.7889	5.28405	0.55699

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	7.431	0.007	-0.638	144	0.524	-0.6639	1.04044
Equal variances not assumed			-0.594	91.148	0.554	-0.6639	1.11827

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-2.72039	1.39261
Equal variances not assumed	-2.88515	1.55738

T-test of independence for means Largo Gap great house, and Largo Gap non-great houses gray jars full statistics.

Group Statistics

VAR00002	N	Mean	Std. Deviation	Std. Error Mean
LG	15	16.0000	5.39841	1.39386
NGH	29	16.3448	5.68379	1.05545

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.456	0.503	-0.194	42	0.847	-0.3448	1.77793
Equal variances not assumed			-0.197	29.764	0.845	-0.3448	1.74838

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-3.93284	3.24319
Equal variances not assumed	-3.91668	3.22703

APPENDIX B: TEMPORAL FULL STATISTICAL READ OUT

T-test of independence for means all great houses temporal red wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
GH RP	90	22.6222	4.96862	0.52374
GH RW	100	24.4400	4.93865	0.49387

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.011	0.961	-2.526	188	0.012	-1.8178	0.71986
Equal variances not assumed			-2.525	185.670	0.012	-1.8178	0.71986

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-3.2373	-0.39818
Equal variances not assumed	-3.23794	-0.39761

T-test of independence for means all non-great houses temporal red wares full statistics.
Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
NGH RP	52	20.5192	4.91293	0.68130
NGH RW	53	22.78246	5.78246	0.79428

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.866	0.354	-1.611	103	0.110	-1.6883	1.04808
Equal variances not assumed			-1.613	100.949	0.110	-1.6883	1.04645

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-3.76693	0.39029
Equal variances not assumed	-3.76420	0.38757

T-test of independence for means all great houses temporal white wares full statistics.
Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
GH WP	218	17.6330	6.85015	0.46395
GH WR	111	17.6126	6.58810	0.625323

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.109	0.742	0.026	327	0.979	0.0204	0.78860
Equal variances not assumed			0.026	229.228	0.979	0.0204	0.77863

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-1.53095	1.57178
Equal variances not assumed	-1.51378	1.55461

T-test of independence for means all non-great houses temporal white wares full statistics.
Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
NGH WP	210	17.6190	7.17302	0.49499
NGH WR	51	17.1961	7.05130	0.98738

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.049	0.824	0.379	259	0.705	0.4230	1.11612
Equal variances not assumed			0.383	77.124	0.703	0.4230	1.10450

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-1.77486	2.62080
Equal variances not assumed	-1.77632	2.62226

T-test of independence for means all Cox Ranch Pueblo great house temporal red wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
CRP RP	62	22.4194	5.12323	0.65065
CRP RW	47	24.9149	0.548845	0.80057

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	1.230	0.270	-2.442	107	0.016	-2.4955	1.02182
Equal variances not assumed			-2.419	95.438	0.017	-0.24955	1.03163

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-4.52119	-0.46989
Equal variances not assumed	-4.54346	-0.44761

T-test of independence for means all Cox Ranch Pueblo non-great house temporal red wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
CRP NGH RP	42	20.5952	5.37864	0.82994
CRP NGH RW	48	22.3125	6.00764	0.86713

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.146	0.703	-1.420	88	0.159	-1.7173	1.20924
Equal variances not assumed			-1.431	87.947	0.156	-1.7173	1.20030

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-4.12038	0.68586
Equal variances not assumed	-4.10262	0.66810

T-test of independence for means all Cox Ranch Pueblo great house temporal white wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
CRP WP	132	17.7955	6.81460	0.59313
CRP WR	84	17.6071	6.56940	0.71678

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.075	0.785	0.201	214	0.841	0.1883	0.93801
Equal variances not assumed			0.202	181.628	0.840	0.1883	0.93037

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-1.66060	2.03723
Equal variances not assumed	-1.64741	2.02403

T-test of independence for means all Cox Ranch Pueblo non-great house temporal white wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
CRP NGH WP	93	15.7634	7.15420	0.74186
CRP NGH WR	37	15.8649	7.20016	1.18370

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.022	0.882	-0.073	128	0.942	-0.1014	1.39308
Equal variances not assumed			-0.073	65.859	0.942	-0.1014	1.39696

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-2.85787	2.65502
Equal variances not assumed	-2.89065	2.68781

T-test of independence for means all Cerro Pomo great house temporal red wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
CP RP	9	22.2222	4.63081	1.54360
CP RW	26	23.2308	4.66740	0.91535

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.021	0.885	-0.560	33	0.579	-1.0085	1.80168
Equal variances not assumed			-0.562	14.059	0.583	-1.0085	1.79460

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-4.67409	2.65700
Equal variances not assumed	-4.85606	2.83896

T-test of independence for means all Cerro Pomo non-great house temporal red wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
CP NGH RP	8	20.0000	2.39046	0.84515
CP NGH RW	4	21.0000	3.46410	1.73205

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	2.727	0.130	-0.592	10	0.567	-1.0000	1.68819
Equal variances not assumed			-0.519	4.490	0.628	-1.0000	1.92725

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-4.76153	2.76153
Equal variances not assumed	-6.12845	4.12845

T-test of independence for means all Cerro Pomo great house temporal white wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
CP WP	47	18.4468	7.25561	1.05834
CP WR	15	18.9333	6.79776	1.75517

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.500	0.482	-0.229	60	0.819	-0.4865	2.12076
Equal variances not assumed			-0.237	25.024	0.814	-0.4865	2.04957

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-4.72868	3.75563
Equal variances not assumed	-4.70747	3.37442

T-test of independence for means all Cerro Pomo non-great house temporal white wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
CP NGH WP	56	19.4464	6.91749	0.92439
CP NGH WR	7	20.5714	6.29437	2.37905

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.440	0.510	-0.409	61	0.684	-1.1250	2.74960
Equal variances not assumed			-0.441	7.929	0.671	-1.1250	2.55232

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-6.62316	4.37316
Equal variances not assumed	-7.01989	4.76989

T-test of independence for means all Largo Gap great house temporal red wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
LG RP	19	23.4737	4.75358	1.09055
LG RW	27	24.7778	4.07934	0.78507

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.664	0.419	-0.997	44	0.324	-1.3041	1.30791
Equal variances not assumed			-0.970	34.986	0.338	-1.3041	1.34373

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-3.94002	1.33183
Equal variances not assumed	-4.03206	1.42387

T-test of independence for means all Largo Gap great house temporal white wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
LG WP	39	16.1026	6.38994	1.02321
LG WR	12	16.0000	6.66060	1.92275

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.144	0.706	0.048	49	0.962	0.1026	2.12978
Equal variances not assumed			0.047	17.701	0.963	0.1026	2.17806

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-4.17740	4.38253
Equal variances not assumed	-4.47890	4.68403

T-test of independence for means all Largo Gap non-great house temporal white wares full statistics.

Group Statistics

VAR00053	N	Mean	Std. Deviation	Std. Error Mean
LGNGH WP	63	18.9365	6.64994	0.83781
LGNGH WR	7	20.87950	4.87950	1.84428

Independent Sample Test

	Levene's Test for Equality of Variance	Levene's Test for Equality of Variance	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means	t-test for Equality of Means
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.976	0.327	-0.740	68	0.462	-1.9206	2.59489
Equal variances not assumed			-0.948	8.696	0.369	-1.9206	2.02566

	t-test for Equality of Means	t-test for Equality of Means
	95% Confidence Interval of Difference	95% Confidence Interval of Difference
	Lower	Upper
Equal variances assumed	-7.09865	3.25738
Equal variances not assumed	-6.52752	2.68625