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The Effects of Climate Control on the Visitor Experience in Charleston House Museums

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A thesis in Historic Preservation Presented to the Faculties of the University of Pennsylvania in Partial Fulfillment of the Requirements of the Degree of Master of Science in Historic Preservation 2008.
Advisor: Gail Caskey Winkler

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Abstract
This thesis will describe how Colonial and Antebellum buildings were constructed in the south to respond to their environments and whether the experience of those who now visit these buildings is affected by the addition or absence of climate control. The study will focus on house museums in Charleston, South Carolina. Charleston house museums have a wide range of types of climate control, from none at Drayton Hall, to partial systems as in the forced air heating system at the Aiken-Rhett House and limited heating and air conditioning in the Joseph Manigault House. Charleston also provides a unique climate in which methods of European and vernacular architecture were blended together to create the distinct housing styles of the South Carolina Low Country. The climate is classified as Sub-Tropical and is generally hot and humid. Temperatures rarely drop below freezing in the winter, a feature that attracts visitors to the area year round. The question is how do the interior climates of Charleston's house museums affect the visitors who tour these sites? Do visitors select the house museums they visit based on physical comfort, or do they seek an authentic experience and put their needs aside?

Comments
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Elizabeth Ashlea Kleinfelder

A THESIS

In

Historic Preservation

Presented to the Faculties of the University of Pennsylvania in Partial Fulfillment of the Requirements of the Degree of

MASTER OF SCIENCE IN HISTORIC PRESERVATION

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To Wes, Ziggy and Ashby,

Thank you for the long walks and delicious food that kept me going.

And to Gran, I could not have done it without you.

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Thank you to the staff of all of the house museums featured in this study, I appreciated all of the time and information that you all provided and hope that the findings will be of help to you. Especially Craig Tuminaro and Peggy Reider at Drayton Hall, Brandy Culp at The Historic Charleston Foundation, Carl Borick at The Charleston Museum and Mamie Gasperecz at The Herman-Grimma Gallier Houses, and all of the guides who took the surveys.

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Chapter One: Introduction

This thesis will describe how Colonial and Antebellum buildings were constructed in the south to respond to their environments and whether the experience of those who now visit these buildings is affected by the addition or absence of climate control. The study will focus on house museums in Charleston, South Carolina. Charleston house museums have a wide range of types of climate control, from none at Drayton Hall, to partial systems as in the forced air heating system at the Aiken-Rhett House and limited heating and air conditioning in the Joseph Manigault House. Charleston also provides a unique climate in which methods of European and vernacular architecture were blended together to create the distinct housing styles of the South Carolina Low Country. The climate is classified as Sub-Tropical and is generally hot and humid. Temperatures rarely drop below freezing in the winter, a feature that attracts visitors to the area year round. The question is how do the interior climates of Charleston's house museums affect the visitors who tour these sites? Do visitors select the house museums they visit based on physical comfort, or do they seek an authentic experience and put their needs aside?

These three houses were each constructed with consideration to the local environment. They include their own ventilation systems, shutters and basements for cooling. Are these features enough to satisfy the demands of thermal comfort in the twenty-first century? Are they enough to properly care for the houses and their collections? Or is it best for both the fabric and the visitor to have a contemporary heating and air conditioning system? A comparison of temperature changes between

the late 18th and early 19th centuries and what we experience today is also necessary, and will be discussed in chapter two. This will help explain what the day-to-day experience was at the time the houses were built and why they may seem more uncomfortable today.

Undoubtedly, the most dramatic temperatures will be felt in the heat of the summer. With the constraints of this study, it was not possible to visit the sites during the heat of the summer, but information on the conditions was still obtained through the testimony of staff members. On-site surveying was conducted in January, 2008, asking visitors and staff about their comfort as they visited each house museum. The survey results will be further discussed in chapters four and five and copies of the surveys are included as appendices one and two.

This topic deserves exploration for several reasons. First the field of the house museum has been struggling for some time. Many areas are so rich with sites that organizations must now compete for funding and attendance. This study may help answer some questions for the field; for example, do people avoid some sites because they have no air conditioning and are too hot, or are they drawn to the authentic experience of how life was lived "back then." It is possible that visitors are put off by the idea of being in a historic house and hearing the rumble of an older HVAC system and seeing the large vents, wires and switches associated with it. Does temperature have anything to do with holidays, or will people go to vacation whenever they get the chance, regardless if it is 90 degrees or 50 degrees out?

The research methods that have been used include an examination of how structures were traditionally heated and cooled, with attention given to the evolution

of houses in Charleston, South Carolina and the American South. This involves a study of vernacular methods of heating and cooling homes in these conditions, what was traditionally done by the native peoples, and how those techniques blended with those of the Europeans who latter settled the area. The house museums have been selected to show an array of traditional and contemporary methods used to regulate interior temperatures. This will be further explored in Chapters two and three.

Specifically, the selected houses will be studied to examine how they were treated when used as full time residences. Many Colonial and Antebellum Charleston homes were only used a fraction of the year, as is the case with several of the selected houses. Their histories and traditional heating and cooling methods will be discussed in Chapter three, with an examination of building orientation and surroundings at each site, both past and present.

The main source of information for this study has come from surveys. In January, 2008, surveys were conducted with both visitors and guides at the three selected sites. Their opinions and experiences have been analyzed in chapters four and five. Visitors were given a survey asking demographic information and a series of yes or no questions about the climate comfort they had experienced while on tour. Surveys were distributed as the visitors exited the tour. Guides were given open-ended questions in more of an interview format to be able to gain the most information possible in a short time. The results of the visitors' surveys have been analyzed in a series of pie charts in chapter four while the results of the guides' interviews were analyzed in chapter five, and again, copies of the surveys have been included as appendices one and two.

There is also a comparison of visitor patterns throughout greater Charleston, to show the interests of those who come to town, where they are from and what brings them to the city. This adds perspective to the select group that was surveyed in the short time available at each site and helps create an idea of who the average visitor to one these house museums would be, so that the results may be as conclusive as possible. Information pertaining to city wide visitation was obtained from the Charleston Visitors Center and is included in appendix two.

The fieldwork included visiting several sites with varying locations and climate control systems so that a comparison could be conducted. The sites chosen were Drayton Hall, located outside of the city of Charleston and situated along the Ashley River, the Aiken-Rhett House, a fully-furnished, anti-bellum town house complex with no air-conditioning and a forced air heating system and the Manigault House, also in downtown Charleston which is fully-furnished with limited air-conditioning and heat limited to the first floor. Interviews have been conducted with the guides at the Heyward-Washington House in downtown Charleston, which is fully heated and air-conditioned.

While this work does not examine a full range of climate control systems over a great span of time, it will provide a glimpse into what motivates visitors to select the house museums they visit and how much of a factor their climate comfort is. Hopefully this will aide Charleston's house museums in determining how to program their tours, attract visitors and gain support.

Chapter Two: Early Climate Control in Charleston

When European settlers first arrived in North America, they encountered an environment unlike what they had experienced in their native lands. Those who settled along the Southeastern cost and the West Indies were faced with extreme heat and humidity, unfamiliar in Britain and most of Europe. A common belief of the time was that humans and their native environment were linked together, and existed in a state of harmony. Humans responded to the local climate, air and diet of their surroundings; therefore those native to England would risk short-term illness and long-term physiological and psychological changes as their bodies responded to the new environment.[1] Nevertheless settlers arrived to make their homes in the unfamiliar hot and humid terrain. Through the eighteenth century, more Europeans settled in the southern regions then the northern ones, showing that despite the dangers it was somehow worth the risk.[2]

Physicians of the day made efforts to identify the sources of the diseases they encountered. The prevailing disease theory of the time was the Hippocratic theory of four humors, tied to the four elements: air, fire, earth and water. Each of these elements was believed to be represented in the human body by the humors blood, yellow bile or choler, phlegm, and black bile or melancholy. Good health required a proper balance of these humors, with each natural climate creating its own balance.

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[1] Karen Ordahl Kupperman, "Fear of Hot Climates in the Anglo-American Colonial Experience," *The William and Mary Quarterly* Vol. 41, no. No 2 (April, 1984), p.213.
[2] ibid., p.213

It was believed that moving to a new climate could send the humors off balance; choler- corresponding to fire would thus dominate the body in the hot climates.[3]

Settlers were continually surprised by the degree of heat they encountered in the American south and the West Indies. The Englishmen Richard Ligon in 1647 reported of his three years in Barbados, that he could not believe his fellow countrymen could "indure such scorching without being suffocated." He added that his companions felt they were being "fricased" [sic] and had "great failing in the vigour and sprightliness we have in colder Climates."[4] The Europeans referred to the acclimation process as "seasoning" and it was said to take two years, even in areas as far north as southern New England. It was believed that the adjustment included paling and thinning of the blood. William Wood, of the Massachusetts Bay colony said that English traders from Virginia who arrived in New England were very pale, which was attributed to the drying up of their blood. Sweating was one of the most remarkable features of life in this new region and the term may have been derived from the practice of seasoning or drying out wood.[5]

Many colonists were fearful of the new elements that were found in North America, particularly the new diseases and illnesses. Along with the new propensity for sweating was the risk of overheating, which caused the sweating to cease. From

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3 ibid., p.214

4 ibid., p.214 As cited from Lignon, Richard, *A True and Exact History of the Island of Barbados*. (London 1673 [orig. publ. 1657]), 9-10,27,45; Hakluyt, "Epistle Dedicatory" to *The Principall Navigations, Voiages and Discoveries of the English Nation*...(1589), in E.G.R. Taylor, ed, *The Original Writings and Correspondence of the Two Richard Hakluyts,* 2 vols. (London, 1935), II, 400.

5 ibid., p.215 As cited from William Hubbard, *A General History of New England from the Discovery to 1680,* 2d ed. (Boston, 1848), 324, 325.

Virginia to Barbados, many deaths were attributed to the heat. Heat stroke is associated with the failure of the body to produce sweat, the skin becomes hot and dry and the body temperature rises. Some victims may appear to recuperate and then die days later due to brain damage. One description of the severity of heat stroke was given by George Percy in Nevis, saying that a mans' fat was melting within him, leading to death. These accounts depict the atmosphere of fear that was present in the Colonies and the severity of risk associated with living there.[6]

Another barrier to the colonists' ability to adjust to North America was the fact that nothing surrounding them felt familiar. All objects were foreign and appeared to be more dangerous then their European counterparts. Many were forced to give up what they were accustomed to, including clothing, materials, and housing types. The traditional foods and beverages could not be prepared, butter melted, wine and beer could not be produced according to traditional methods because of the heat and cost of the materials needed. All complications were attributed to the heat.[7] Drastic changes in lifestyle became necessary. In the 17th century, Richard Ligon noted that hangings in Barbadian planters' homes were spoiled by ants and eaten by cockroaches and rats. The animals were different and dangerous and included rodents, snakes and insects. He listed a variety of insects, lizards, and land crabs that infested homes in the West Indies. The worst of all were the chiggers and cockroaches; he stated that the slaves' skins looked as if they had

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[6] ibid., p.223 As cited from Percy, *Observations Gathered Out of a Discourse* (1607), in Purchas, *Pilgrams,* XVIII, 406-407; Josselyn, *Account of Two Voyages,* Mass. Hist. Soc., *Colls*., 3d Ser., III, 264. For heat exhaustion and heat stroke see Lind, "Human Tolerance to Hot Climates," in Lee, ed., *Handbook of Physiology,* Sect. 9, 102-104; Montcastle, ed., *Medical Physiology,* II, 1338-1339.

[7] ibid., p.228 As cited from Lignon, *History of Barbados* 40-41.

been raked with a currycomb because they were so badly bitten by cockroaches while sleeping. Snakes and ants could not be restrained and were consistently present indoors.[8] It became apparent that the style in which homes were built would need to be adjusted for this new climate.

There is evidence that as early as the sixteenth century colonists were aware that the configuration of their houses could contribute greatly to their health and comfort in hot climates. Colonists in Maryland and Virginia quickly learned to build on higher ground, with open landscapes to catch breezes. Cool, open, airy rooms were designed and many plans included a central hall to circulate air. Basements were raised a half or full story to again pull in breezes and cool air and act as a respite from the warm temperatures. These underground spaces also functioned as storage space for heat sensitive items such as butter, wine and meat. Outbuildings became popular for kitchens and wash houses that produced heat. There were conflicting views as to the necessity for trees. One naturalist, Mark Catesby, believed that cutting down trees in South Carolina had allowed the breeze to flow more efficiently, keeping the area cooler; while Janet Schaw, a Scottish gentlewoman, disagreed, observing the cooling shade of the palmetto tress on her voyage to Antigua.[9]

Despite architectural accommodations, the American south and the West Indies were continually thought of as a dangerous place to live. Disease spread quickly, to the point that South Carolina Governor James Glen (1701-1777) noted

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[8] ibid., p.228, p.231 As cited from Lignon, *A History of Barbados* 40-42.

[9] ibid., p.234 As cited from Beverly, *History of Virginia,* ed. Wright, 289-290,299; Jones, *Present State of Virginia,* ed. Morton 71,74; Mark Catesby, *The Natural History of Carolina, Florida and the Bahama Islands* (1731-1743), ibid, 89; Pelariah Webster, "Journal of a Visit to Charleston, 1765," ibid. 221; "Charleston, SC, in 1774 as Described by an English Traveler," ibid, 286.

that he could not confirm there were 25,000 people in the colony in 1751 because so many had died before the count was completed that it could not be depended upon. Maryland Lieutenant Governor John Hart (?-1740) told the Board of Trade in 1720, "Maryland is situated in the center of the British Plantations. The climate is unhealthy especially to strangers, occasion'd by the excessive heat in the summer and extreme cold in the winter; the vernal and autumnal quarters are attended with fevers, pleurisies, etc."[10]

Colonists began to adapt their traditional customs and buildings to the new climate. Early on Native Americans were employed to construct homes. In Charleston, South Carolina, it is known that this practice continued as late as 1702, when "John Seabrooke [agreed to] pay to Okala and his men 12 Hatchets or the value there of for Building his house."[11] The typical construction sequence was described in 1710 as "…a small wooden house or hut is first put up, then when the land is cleared and planting begun, by the third or fourth winter, persons of any substance provide Brick, Lime or other Materials, in order to build a good House…"[12] One factor for the inferior quality of construction was that there were few craftsmen early in the

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[10] ibid., p.235, 236 As cited from Hart to the Council of Trade and Plantations, Aug. 25, 1720, in *Maryland Historical Magazine,* XXIX (1934), 252; Carl Bridenbaugh, ed., *Gentleman's Progress: The Itineraruum of Dr. Alexander Hamilton,* 1744 (Chapel Hill, N.C., 1948),199. Glen, "An Attempt towards an Estimate of the Value of South Carolina, 1751," in Merrens, ed., *Colonial South Carolnia Scene,* 183.

[11] Allen R. Calmes, "T*he Culture and Acculturation of the Cusabo Indians, 1520-1720*" (University of South Carolina), p.60.

[12] Gene Waddell, *Charleston Architecture 1670-1860*, Vol.1 (Charleston, SC: Wyrick& Company, 2003), p.75.

colonial period. In South Carolina, only thirteen carpenters, two joiners and one brick layer were present in the first decade.[13] When the colony was first founded in 1670 it was not located in present day Charleston, but rather a few miles up the Ashley River on Albemarle Point and was called Charles Town, named for King Charles II.[14] Charles Town was only in place for ten years before the city was moved to the peninsula between the Ashley and Cooper Rivers. The tip of the peninsula was named Oyster Point, for the great number of oyster shells located there (the shells later became of great use as construction materials for mortar and paving needs). The move was greatly for defensive purposes and the new town become fortified to prevent Spanish invasion. The houses that were constructed here were largely made of local woods, such as cedar, pine and oak. In 1682 it was said that the new town "...hath now about a hundred houses in it, all which are wholly built of wood, though here is excellent Brick made, but little of it." By 1700, as few as five bricklayers had come to the province, and a total of 40 carpenters had also arrived (producing a ratio of 8 to 1, carpenters to bricklayers).[15] Charleston developed differently then many of the North American colonial cities, in that it was much denser and had an emphasis on attached dwellings; this was clearly stated in a pamphlet produced by the lead Proprietor of the colony, Anthony Ashley Cooper (for whom the Ashley and Cooper River are named). Ashley stated:

> ...IT IS REQUIRED OF THEM [all settlers] in order to their better settlement that they plant together in townes, & build not their houses

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[13] ibid., p.37

[14] Jonathan H. Poston, *The Buildings of Charleston, A Guide to the City's Architecture* (Columbia, South Carolina: Univerity of South Carolina Press, 1997), p.14.

[15] Waddell, *Charleston Architecture 1670-1860*, p.37

> straglingly one from another, such solitary dwellings being incapeable of that benefit of trade, ye. comfort of society and mutual assistance, wch. men dwelling together in Townes are capable of giving one another.[16]

The majority of the Charleston population was Brittish, but a variety of nationalities were represented; this is partly due to the fact that the colony had always been open to all religions, providing a safe haven for many exiled Europeans. Some of the Englishmen had come through Barbados; in 1680 about half of the political leaders had lived in Barbados at some time. Other groups included French Huguenots, Dutch, Sephardic Jews, Native Americans, and African-Americans.[17] While there were many diverse cultural groups in colonial Charleston, it is believed that the English style of architecture was predominant in the early stages of building. Rather then displaying their unique architectural styles, most cultural groups conformed to that of the crown.

Numerous fires ravaged the city; the fire of 1740 was the first to do great damage and may have helped change the architectural landscape of the growing municipality. Few houses exist on the peninsula today that pre-date the fire, but from those few extant it appears that the majority of homes would have been one and a half to two stories and made of wood. Often they would be built as row houses with gabled roofs parallel to the street. One remaining example that may have escaped the fire due to its brick construction is located on present day Tradd Street and is representative of this typical vernacular style house. Outside the peninsula, many of the plantation houses escaped fire and survive into the twentieth century. Most

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[16] ibid., p.38
[17] ibid., p.40,41

notable are Mulberry Plantation in Monks Corner and Brick House Plantation on Edisto Island; both were built of brick and are double houses with central doors opening directly into a dining room.[18] A new type of house evolved out of the ashes of the fire, the Charleston Single House. The basic design of the house is "a detached house two rooms deep with a central hall in between and with a piazza serving to connect the street and the entrance. It is an apparently simple vernacular dwelling, but its many advantages include adequate fire protection, good ventilation, and excellent light."[19] It is not known when the first Single House was constructed but from illustrations of the waterfront no Single Houses appear before the fire of 1740.

While the traditional belief had been that the Single House carried over from the Barbadians immigrating to the city, recent investigation into the sequence of construction theories indicates that the Single House was a reaction to the fire of 1740. According to Gene Waddell's *Charleston Architecture 1670-1820*, the Single House is derived from the traditional row house that was present in Charleston before 1740. After the fire, houses began to be spread apart and separated. Each house was placed in the corner of its lot, providing able room beside it and between the neighboring houses. Waddell insists that this late date of the first appearance of the Single House combined with similarity to the traditional row house disproves the supposed Barbadian connection.

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[18] ibid., p.44

[19] ibid., p.67

It has long been believed that the Single House had been designed to catch breezes and keep the house cool, but in recent years it has been determined that the characteristic piazzas that lend to the cooling properties of the homes may have been a later addition. Waddell again points out that the earliest Single Houses have very few windows and it does not appear that ventilation was an initial concern.[20] It may have quickly become apparent to Charlestonians that with the simple addition of windows, the already established form could easily be kept much cooler.

Another adjustment that had to be made by the residents of Charleston was made for reasons of health rather then physical comfort. John Drayton noted in 1802 that earlier settlers had considered the city to be unhealthy to occupy in the summer and planters largely deserted town from June to October. By the time Drayton was writing, the pattern had begun to reverse and many planters begun to spend the summers in town. This coincides with rice becoming the primary cash crop in the region. In the summers the rice fields were flooded with fresh, stagnant water and became a breeding ground for mosquitoes that carried malaria. The pattern would shift again several years later, when yellow fever made the cities unhealthy in the summer.[21]

By the 1750's architectural styles were changing to adapt to the hot and humid climate of Charleston. Advertisements of the time describe houses as having "all the conveniences necessary to remove the disadvantages proceeding from great heat and

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[20] ibid., p.67-69

[21] ibid. as cited from John Drayton, A View of South-Carolina as Respects Her Natural and Civil Concerns (W.P. Young, Charleston, 1802) p. 111,24

cold" and another was listed as being "remarkably commodious in many respects; it is both warm in winter, and deem'd the most airy in the summer of any house in the province, and open to the wholesome sea air…".[22] This shows the growing demand for proper ventilation and possibly the previous lack of ventilation in older homes. Regardless, the people of Charleston were acclimating and learning how to adjust their homes to the heat of the American south.

The introduction of the piazza or porches was a significant change in the way Charlestonians lived in their homes. The piazza became a common feature on all Charleston homes, specifically on Single Houses. The first style of piazza was seen before the fire of 1740 and was generally only a second story piazza, supported by posts and providing a covered walkway beneath. These spaces provided a much needed outdoor living space. As noted by Alexander Hewitt in 1779, "…these are found convenient and even necessary during the hot season, into which the inhabitants retreat for enjoying the benefit of fresh air…".[23] The idea piazza is located on the south or west side of the house so as to shelter the interior from the mid afternoon sun, but they were narrow enough to allow some light to come in during the winter months. Generally, the piazza will be two stories high, with the first floor being an entrance and possible work space while the second story functioned more as the outdoor room. Some houses have simple one story piazzas while other three story homes will have a piazza on each floor.[24]

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[22] ibid., p.72
[23] ibid., p.69
[24] ibid., p.69

Despite the summer heat that Charleston became known for, it was still necessary for houses to be heated, if only for a few short months. The most common technique of early heating was an open hearth. All Charleston houses, regardless of style or size were built with fireplaces. In large plantation houses, such as Drayton Hall, the house would be organized around one or two central flues and most if not all rooms would have a fireplace. Wood was in ample supply in the early Colonial period, as ground was rapidly being cleared by slaves so that agricultural planting could begin. As more and more colonists came to settle in the new world, wood was being used quickly, not only for heat but for framing, furniture, ships and storage items. While Charleston did not have the intense scarcity as in northern Colonies such as Boston, where in the winter of 1726, over five hundred loads of firewood were hauled in each day and it was still not enough for all the residents, Colonists still needed to search for more prudent methods of home heating. [25]

One of the first methods of increasing the efficiency of heating was to decrease the size of rooms and their hearths, except for cooking hearths in kitchens and grand, formal rooms in the houses of the wealthy. This combined refinement and necessity made the hearth became the centerpiece of the room, the most highly decorated object.[26] Despite the fact that fireplaces were not as much of a necessity in the south as in the north, this tradition of centering a room on a hearth continued throughout the Colonies.

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[25] Marshall B. Davidson, "American House- Warming," *The Metropolitan Museum of Art Bulletin* Vol. 3 (1945), p.177.
[26] ibid., p.179

Innovations in heating methods progressed with early imports to the Colonies from the Dutch and Germans; there is a record of an early porcelain stove in New England, possibly originating in Switzerland. Americans soon began to make their own stoves, mostly boxy six to ten plate metal stoves, with Pennsylvania becoming the epicenter of stove manufacturing.[27] As a result of the early wood shortages, coal began to be used as fuel for these stoves. The earliest coal was mined in Nova Scotia, then Pennsylvania; newspapers, inventories and letters indicate that coal was used throughout the Colonies in the eighteenth century.[28]

As for Charleston itself, it is known that Rumford fire boxes were in place by the beginning of the nineteenth century, at least in the houses of wealthy planters like the Draytons. Many of the planter families, including the Draytons, had personal connections to Philadelphia in addition to trade agreements, making it easy to share current technologies.

Charleston's Climate Conditions

Charleston, South Carolina, is classified as a sub-tropical Ecoregion of the United States. Its coordinates are 32°54' north and 80°02' west. Being a sub-tropical region, the area is subject to high heat and humidity, little to no freezing and high amounts of rain fall. While temperatures were hot when European settlers arrived, the conditions are not the same as they are today. Increases in the built environment have led to higher temperatures and a greater dependence on the heat

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[27] ibid., p.180
[28] ibid., p.182

index, to account for humidity when measuring the weather. A change of the average temperature by a few degrees indicates a significant change in the environment and the temperatures felt by residents on a daily basis.

Robert Mills, Charleston's noted architect, kept a record of temperatures recorded in Charleston from 1731-1808:

> THE DIFFERENCES BETWEEN our coolest and warmest summers, has ranged between 88 and 99, and the difference between our mildest and coolest winters, has ranged (on a few particular days,) from 50° to 17° of Fahrenheit; our greatest heat is sometimes less, and never more than what takes in the same season in Baltimore, Philadelphia, and New York; but the warm weather in these places does not, on the average, continue above six weeks, while in Carolina, it lasts from three to four months; our nights are also warmer than theirs; the heat of the days in Charleston in moderated by two causes, which do not exist in any equal degree, to the northward of it. The situation of this city, open, and near the sea, almost surrounded by water, and not far from the torrid zone, gives it a small proportion of the trade winds, which blowing from the southeast, are pleasantly cool. These generally set in about 10 A.M. and continue for the remainder of the day... The number of extreme warm days in Charleston, is seldom above thirty a year, and it is rare for these to follow each other. On the other hand, eight months out of twelve are moderate and pleasant. [29]

In addition to Mills's summary of the Charleston climate, he also noted specific high and low temperatures of each month for the year 1802: January 74/45; February 69/32; March 74/44; April 86/61; May 84/66; June 86/72; July 87/70; August 89/72; September 89/60; October 81/54; November 74/45; December

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[29] Gene Waddell, *Charleston Architecture 1670-1860*, Vol. Vol.2 (Charleston, SC: Wyrick& Company, 2003), p.268. As cited from Statistics of South Carolina Including a View of Its Natural, Civil, and Military History, General and Particular (Hurlbut and Lloyd, Charleston, 1826) p.133-134

70/33.[30] The highest temperature between 1750 and 1759 was 101° and the lowest 18°; these were both recorded in 1752 by John Drayton, the builder of Drayton Hall.[31] While John Drayton built and lived in Drayton Hall for a large part of his life, no precise location is given as to where these temperatures were taken. Drayton also had a house on the peninsula of Charleston and the temperatures could have been taken at either house or a separate location. Drayton continued recording temperatures and noted that between 1791 and 1798, the highest temperature was 93° (in 1792) and the lowest 17° (in 1796).[32]

Mills also recorded data on winds, keeping a table of wind directions each month and showed that winds out of the south prevail in the spring and out of the north in the fall and are equal from each direction in the summer and winter. Mills also attempted to measure rainfall, resulting in a measurement of the maximum rainfall from in between 1738-1807 being just over 83 inches in 1799, with an average of 45 inches during the period.[33]

In addition to heat and humidity, Charleston has also been faced with several hurricanes. Hurricanes were recorded in early in the city's history, beginning with 1686 with additional hurricanes in 1700, 1713, 1714, 1728, 1752(two), 1778, 1781, 1783, 1792, 1797, 1800, 1804, 1811, 1813 and 1854. Of these, the 1752 hurricane was

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[30] ibid., p.268 (Hurlbut and Lloyd, Charleston, 1826) p.136

[31] Waddell, *Charleston Architecture 1670-1860*, p.268 As cited from John Drayton, A View of South-Carolina as Respects Her Natural and Civil Concerns (W.P. Young, Charleston, 1802) p. 111, 24

[32] ibid., p.268 (W.P. Young, Charleston, 1802) p.23

[33] ibid., p.268

the most severe; about 95 people drowned.[34] Hurricanes are still a threat to Charleston today, with two category one storms, Hurricane Charley and Hurricane Gaston hitting the area in 2004, and Hurricane Hugo, a category five storm with winds up to 140 miles per hour, hitting in 1989.

Today the average temperatures in Charleston are higher then the actual highs and lows recorded by Robert Mills in 1802. While Mills recorded the highest and lowest temperature for each month, today the temperatures are recorded as the average for each month. While the temperatures are measured differently, it will still allow for an effective comparison. According to The Weather Channel, the average high and low temperatures in Charleston are: January 57/42; February 60/45; March 66/59; April 73/59; May 80/67; June 85/74; July 89/77; August 87/77; September 83/72; October 75/62; November 68/53; December 60/45.[35]

The current growing season is about 294 days, the first frost occurring in early December and the last in late February or early March. Average rainfall is 51.59" and the average humidity is 85% at 1 A.M., 86% at 7 A.M., 56% at 1 P.M., and 73% at 7 P.M.. Winds are typically northerly in the fall and winter, southerly in the spring and summer with sea breezes keeping the summer temperature several degrees lower

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[34] ibid., p.268 As cited from David M. Ludlum, History of American Weather: Early American Hurricanes, 1492-1870 (American Meteorological Society, Boston, 1963). Early accounts of Charleston hurricanes and temperatures have been collected in Robert Croom Aldredge's masters thesis entitled "Weather Observers and Observations at Charleston, South Carolina, 1670-1871" (College of Charleston, 1936)

[35] The Weather Channel, Monthly Averages for Charleston, SC
http://www.weather.com/weather/wxclimatology/monthly/graph/USSC0051

then it would be otherwise. Nearby bodies of water keep the winter temperature several degrees milder then in other regions.[36]

[36] ibid., p.268 As cited from Camile E. Edge and John C. Purvis, Climatological Data for Selected Sites in and Near South Carolina [South Carolina Water Resources Commission, Columbia, 1986] p.18-19

Chapter Three: House Histories

Three historic house museums were selected for this study: Drayton Hall, The Aiken-Rhett House and the Manigault House. They were chosen for the variety of climate control situations that they present.

Drayton Hall

The first house selected is Drayton Hall, a property of the National Trust for Historic Preservation is situated approximately eleven miles up the Ashley River from the city of Charleston. The house was built between 1738 and 1742 for John Drayton, who had been raised at Magnolia Plantation, located next to Drayton Hall. There are no records of the construction of the house and it is believed that it was built by a gentlemen architect who had studied the works of Andria Palladio (figures 1-6).[37]

While the primary focus during the design of the house was blending the Georgian and Palladian styles, consideration was also given to the climate of the South Carolina Low Country. The house faces the Ashley River, so that breezes flow directly through the house. The façade facing the river is the original front entrance and consists of a symmetrically placed staircase with a small landing leading into the entrance hall. The land front of the house was the more private side of the house and once overlooked an elaborate complex of utilitarian buildings, including two original

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[37] Gene Waddell, *Charleston Architecture 1670-1860*, Vol.1 (Charleston, SC: Wyrick& Company, 2003), p.98. As cited from Stoney, Simons, and Lapham, Plantations, 61; Lynne G. Lewis, Drayton Hall; Preliminary Archeological Investigations at a Low Country Plantation [University Press of Virginia, Charlottesville, 1978]

symmetrical flanking buildings that contained the kitchen and probably the wash house (figures 1,2). Other structures would have included slave quarters, stables, and smoke houses. This side of the house features a two-story portico that provides the house with shade and aids in air flow and natural ventilation. The two porches served as an outdoor living space during the warmer months.[38]

The house stands on a raised basement that provided a work space for slaves and a storage space for temperature-sensitive goods such as dairy products, meat, candles and port. This space was also used by the family as a respite from the heat in the summers, as its thick masonry walls and proximity to the ground naturally keep it cooler then the upper stories of the house. The interior space is laid out in an open floor plan, similar to a standard Charleston Double House but with an expanded center hall, referred to as the great hall, which was used as a receiving and entertaining space (figures 4,5).[39] Off of the center hall, two rooms are located at each end of the house. Each room occupies a corner with no fewer then four windows, to provide light and air flow into the house. The river side of the great hall holds the stair hall leading to the second story, laid out in a plan identical to the first floor. The only significant difference between the floors is a greater ceiling height of fourteen feet, versus the twelve feet on the first floor. The room over the great hall is the most formal room in the house, being the only one with Corinthian capitols on the pilasters and extensive hand-carved molding along the cornice. Here a door

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[38] ibid., pp.84-89 Waddell points out that Mark Girouard noted that "the 1600's saw the beginning of the practice of moving the kitchen out of the main block and putting it in a separate pavilion" (Life in the English Country House [Penguin Books, Harmondsworth, 1980], 151.)

[39] ibid., p.103

leads directly onto the second story portico, again providing a great source of ventilation. All other rooms are arranged on the corners of the house and have multiple windows. The attic story above was probably used strictly for storage; there is no evidence of residential use.[40]

Drayton Hall remained in the Drayton family from the time it was built until it was purchased by the National Trust for Historic Preservation in 1974. The property was originally a working plantation, growing Carolina Gold Rice as the staple crop and additional plantings of indigo and various vegetables. By the middle of the 19th century, the soil was failing and the majority of planting was done on larger tracts of Drayton owned land, mainly a rice plantation on Jehosee, an island along the southern cost of South Carolina. Drayton Hall remained the symbolic family home, although the family itself divided their time between the plantation and a home along the battery in Charleston.[41]

During the Civil War, Drayton Hall was one of the few plantations along the Ashley River not destroyed by Union troops when they marched up the Ashley River Road from Charleston in 1865**.** Why the house escaped destruction is unknown. The dominant theory is that Dr. John Drayton, the owner of the house at the time, was

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[40] Drayton Hall Employee Manual. Section 4.1 The History of Drayton Hall, revised 2001, by Drayton Hall Staff

[41] Drayton Hall Employee Manual. African American Connections Program, revised 2001 by Drayton Hall Staff. See Morgan, Phillip *Slave Counterpoint: Black Culture in the Eighteenth-Century Chesapeake and Lowcountry* (1998); Careny, Judith Ann *Black Rice: The African Origins of Rice Cultivation in the Americas*. (2001)

treating patients there including neighboring slaves, planters and possibly even Union troops and thus it was spared.[42]

After the Civil War, the Drayton family mined phosphate on the property from approximately 1870-1900. It is believed the outbuildings and possibly the house were used as office space during the mining operation and that the family did not reside in there again until the end of the 19th century. When they did return the house was used mainly for vacations until it was sold to the National Trust in 1974. Largely due to Drayton family's enduring respect for the authentic character of the house, and the fact that it was not a full time residence, no modern amenities were ever installed. There is no heating, air conditioning, plumbing, gas or electric in the house, allowing the visitors to have the most authentic climatic experience possible.[43]

The Aiken-Rhett House

The second property, The Aiken-Rhett house is recognized today as the best-preserved complex of antebellum domestic structures in Charleston (figure 7-10).[44] It is situated in the Wraggborough section of Charleston, in the northeastern section of the city. The borough is bound by Calhoun Street to the south, Meeting Street to the west, Mary Street to the north and East Bay Street to the east.[45] Aiken-Rhett is

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[42] Drayton Hall. "A Time Line of Drayton Hall" http://www.draytonhall.org/research/history/

[43] Drayton Hall "A Time Line of Drayton Hall" http://www.draytonhall.org/research/history/

[44] Jonathan H. Poston, *The Buildings of Charleston, A Guide to the City's Architecture* (Columbia, South Carolina: Univerity of South Carolina Press, 1997), p. 605.

[45] A defining feature of Wraggborough is that John Wragg, developer of the area, named all the streets after family members. Streets names include John, Henrietta, Ann, Elizabeth, Mary and Judith. Wragg Mall and Wragg Square were also laid out by the family as public green spaces. See Poston, *Society and Culture of Early Charleston* p. 585.

unique not only for its series of structures but also for the complex structural changes that have occurred throughout its history.

When the house was constructed, the Wraggborough section of the city was considered to be an up-and-coming suburb. The neighborhood was a mix of businesses and residents and was home to whites and free blacks, along with slaves who were allowed to "live out" or away from their master's homes.[46] The house was built in 1818 for John Robinson, a prominent merchant. In 1825, just seven years after building the house, Robinson was forced to sell to a consortium of investors to whom he was in debt. William Aiken Sr. (1778-1831), one of those investors, officially purchased the property in 1827 and used it as a rental property until his death in 1831. At that time the house was deeded to his son, William Aiken Jr. (1806-87) and his wife of one month, Harriett Lowndes Aiken (1812-92), who made the house their full time residence and embarked on an ambitious expansion project in 1833.[47]

According to the original advertisement placed by Robinson at the time of sale, the house had four rooms on each floor "all well finished, cypress and cedar piazzas and fences, and large cellars and store rooms under the dwelling."[48] The Aiken family's massive expansion lasted from 1833 to 1836 and included re-orienting the front entrance from Judith Street to Elizabeth Street and closing off the original

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[46] Susan L. Buck, "Chapter 12: Paint Discoveries in the Aiken-Rhett House Kitchen and Slave Quarters" In *Building Environments: Perspectives in Vernacular Architecture X*, ed. Breishch, Kenneth A. and Hoagland, Alison K., First Edition ed. (Knoxville, Tennessee: University of Tennessee Press, 2005), p.185.

[47] ibid., p.185

[48] Poston, *The Buildings of Charleston, A Guide to the City's Architecture*, p.605

stair hall which had been an open hall that allowed air to flow through the house. An entrance foyer was created on the west side of the house and a double parlor was created. A two story wing was added to the east side of the building to house a first floor dining room and a second floor formal ballroom with a servant's stair case connecting the two (figures 14-16). This staircase also led down to the basement and out to the rear yard, which was a work space bordered by two buildings, one on each side. One was a carriage house, the other a kitchen and laundry building. Both had slave quarters on their second floors, five over the kitchen and two in the carriage house.[49] The exterior piazza which had been the front of the house was continued to meet the new addition so that it was possible to walk from the dining room directly onto the piazza and be able to let air flow through the room.[50] This piazza was used by the Aiken family not only for ventilation but also as an outdoor room for entertaining. In 1850 Frederika Bremer attended a party given by Gov. and Mrs. William Aiken. She described the party as having

> very beautiful music; and for the rest, conversation in the [twin-parlor] room, or out under the piazzas, in the shade of blooming creepers, the clematis, the capifolium, and roses, [was] quite romantic in the soft night air. Five hundred persons, it is said, were invited, and the entertainment was one of the most beautiful I have been present at in this country.[51]

The third phase of building began in 1858, when the family returned from their year-long European tour, during which they collected numerous pieces of art requiring more space. At this time the family built an art gallery on the North West

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[49] Buck, *Chapter 12: Paint Discoveries in the Aiken-Rhett House Kitchen and Slave Quarters*, p.187

[50] ibid., P. 186-187

[51] Waddell p. 75 As cited from *Homes of the New World; Impressions of America,* trans. By Mary Howitt (A. Hall, Virtue & Co., New York, 1853;) p. 389

end of the house.[52] The gallery was done in the Rococo Revival style with decorative plaster and built-in shelves and stands for the newly acquired art.[53] The room also featured a skylight to allow natural light to illuminate the artwork. Another addition during this phase was a third story on the previously added wing on the east end of the house. The house was also redecorated at the time; French flocked and gilded wallpapers were hung in the parlors, dining room, and drawing room. [54] Gas lighting was also installed and many areas of the interior and exterior of the property were repainted(figures 12-13).

According to the census of 1850, William Aiken Jr. owned 878 slaves divided between Charleston and Colleton districts, making him one of the largest slave holders in South Carolina. Only seven of those slaves were specifically listed at his city house, while the rest were on his Jehossee Island plantation, the same place where the Drayton family had the majority of their land and slaves.[55] During the Civil War the family supported the Confederacy but opposed succession: after the war

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[52] ibid., p.188

[53] Poston, *The Buildings of Charleston, A Guide to the City's Architecture*, p.606

[54] Buck, *Chapter 12: Paint Discoveries in the Aiken-Rhett House Kitchen and Slave Quarters*, p.188

[55] ibid., p.189 Susan L. Buck also notes in her article, Paint Discoveries in the Aiken-Rhett House and Slave Quarters that by the Civil War there were at least thirteen slaves living on the grounds of the Aiken-Rhett House, six of whom were children. The housing of the slaves may have allowed for some privacy, with seven separate slave chambers in the kitchen and carriage houses, there would have been enough room so that two or three slaves shared each chamber. She goes on to note that some of the chambers appear to have locks on them so that the slaves could secure themselves and their belongings, and that paint analysis dictates that the rooms had been painted frequently and with bright colors and a decent amount of skill. This could be a reflection of cleanliness or the changing taste of various residents that came and went. See Abbott Lowell Cummings and Richard M. Candee, "Colonial and Federal America: Accounts of Early Painting Practices," in Paint in America: The Colors of Historic Buildings, ed. Roger Moss (Washington Preservation Press, 1994),15.

they continued to live in the house and even redecorated in 1876.[56] After the deaths of William and Harriett, the house passed to their daughter, Henrietta and her descendents, the Rhetts. The house stayed in the family and was lived in until 1976 when it was donated to the Charleston Museum.

Despite the fact that it was lived in for so long, little modernization or renovation took place. The family had closed off large portions of the house, using only four to six rooms as their living space.[57] A servant lived on the second floor of the kitchen building and the outbuildings were seldom, if ever used. A modern kitchen was built of cinder blocks between the northeast side of the house and the pre-existing kitchen building; it was subsequently demolished.[58] The main house was electrified and heated but never air-conditioned. The house was sold to the Historic Charleston Foundation in 1995 and has since been open to the public year-round (figure 11).

The Joseph Manigault House

The third house profiled in this study is the Joseph Manigault house, which is also located in the Wraggborough section of the city of Charleston. It was built in 1803 by Gabriel Manigault (1758-1809) for his brother Joseph as a present upon his marriage to Charlotte Drayton of Drayton Hall. Joseph inherited the land from his uncle, Joseph Wragg, the early developer of the area and for whom it was named.

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[56] Poston, *The Buildings of Charleston, A Guide to the City's Architecture*, p.606, Buck, *Chapter 12: Paint Discoveries in the Aiken-Rhett House Kitchen and Slave Quarters*, p.188

[57] According to Poston, the family occupied six rooms by the 1970's, while Buck notes it as four. See *Buildings of Charleston, p.606* and *Paint Discoveries in the Aiken-Rhett House and Slave Quarters p. 189*

[58] ibid., p.189

Gabriel Manigault was known at the time for being a gentlemen architect; he had already built the South Carolina Society Hall and would go on to build the Bank of the United States, now Charleston City Hall.[59]

The Neoclassical house was considered a suburban villa in a section of the city that was becoming fashionable at the time it was built (figures 17). It is three stories tall on a high basement and has a curvilinear bay on the north with an entrance to the house on the first floor and a Palladian window on the second floor. There is another curvilinear bay on the east side of the house and a semi-circular double tiered piazza on the west. The south façade has a two story, rectilinear piazza that faces the garden and served as the original front entrance (figure 18).[60]

The house remained in the Manigault family until 1852, when it was sold to George N. Reynolds, a carriage maker, who made the first of several changes to the land and the building. Reynolds reoriented the house to the south, using the entrance through the portico as the formal front door and removed the original staircase leading to the northern entrance. He also sold the southeast portion of the lot, which was then developed into housing. [61] At the time that the Manigault heirs sold the property, there were several outbuildings on the north end including a kitchen, privy, and slave quarters. These buildings were also sold by the Reynolds, at which time they were taken down and later replaced with a dry cleaning business.[62]

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[59] Poston, *The Buildings of Charleston, A Guide to the City's Architecture*, p.27
[60] ibid., p.612

[61] ibid., p.612
[62] ibid., p.613

The house continued to deteriorate into the early twentieth century, eventually becoming a tenement. When the house was threatened with demolition in the 1920's Susan Pringle Frost formed the Society for the Preservation of Old Dwellings, in order to save it.[63] The Society was unable to secure funds to restore and maintain the structure and had to sell the property again, in 1922. At this time Mrs. Ernest Pringle purchased the house but was forced to sell the garden to the Standard Oil Company for a filling station (figure 19).[64] The oil company used the gatehouse at the rear of the property as a "comfort station" and also offered complimentary tours of the house with every full tank of gas.[65]

In 1933, the house was auctioned off due to a default on the mortgage and it was purchased by the Charleston Museum. The museum director, Milby Burton, and Charleston Mayor, Burnet Maybank, reclaimed the garden from Standard Oil but did not have the funding for proper restoration work for another fifteen years.[66] During that time the house was used by the U.S.O (figure 20). As described by Beatrice St. Julian Ravenel in 1942, "Last spring, a housing shortage caused it to be sought by the U.S.O for a woman's club house. By arrangement between the U.S.O and the museum, several years' rent was made available immediately for the restoration."[67] It appears from the timing of Ms. Ravenel's writing, that at least the preliminary stages

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[63] ibid., p.613
[64] ibid., p.613
[65] ibid., p.613
[66] ibid., p.613
[67] Beatrice St Julian Ravenel, "the Restoration of the Manigault House ," Journal of the American Society of Architectural Historians Vol.2, no. No. 4, http://www.jstor.org/view/15449890/ap030007/03a00020/0?currentResult=15449890+ap030007+03a00020+0,0F&searchUrl=http://www.jstor.org/search/BasicResults?hp=25&si=1&gw=jtx&jtxsi=1&jcpsi=1&artsi=1&Query=joseph+manigault+house&wc=on (accessed 2/20/2008).

of restoration work were begun while the U.S.O was still using the house as a club house.[68]

Since its initial restoration in the 1940's, the Manigault house has continued to be operated as a house museum by the Charleston Museum. The Garden Club of Charleston was responsible for restoring the house's surrounding gardens, based on an 1820 watercolor by Charlotte Manigault.[69] Extensive archeology by the Museum, has lead to the discovery of the footprints of the original outbuildings, surrounding fences, and plantings. A conjectural staircase has been replaced on the north entrance of the house, where it had been removed by Reynolds in the 1850's.

The layout of the interior of the house adheres to the Neoclassical style, while also maintaining an open floor plan that allows air to circulate freely through the house. Beatrice St. Julian Ravenel believes that the house is the earliest example of Federal style architecture in South Carolina, and also one of the finest examples.[70] Ravenel also describes the evolution of the piazza to match the Federal architecture, describing Gabriel Manigault's "concession to the climate in the use of piazzas, but kept them subordinate, and integrated one of them with the plan by curving it to balance the curving dining room on the opposite side of the building."[71] An additional nod to the need for ventilation is seen in the stair hall, which is three

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[68] Ms. Ravenel's article was published in 1942, in which she mentions that there had been a housing shortage the previous spring, causing the house to be used by the U.S.O. She then goes on to describe the work that has been done recently to determine and re-apply paint color, meaning that for that amount of work to be done there must have been an overlap in occupancy and restoration work.

[69] Poston, *The Buildings of Charleston, A Guide to the City's Architecture*, p.613

[70] Ravenel, *The Restoration of the Manigault House* , p.30

[71] ibid.

stories high with a Palladian window on the second story and a tripartite window on the third floor. According to the interpreters at the site, these second and third story windows would have been traditionally opened to allow ventilation through the house (figure 21).

Three rooms on the first floor are open to the public, with a fourth, small room converted to a modern kitchen and used as the interpreters' break room. The three public rooms are the dining room, music room and library. The dining room is on the southeast corner of the house while the library is across the hall on the southwest corner and the small music room is adjacent to the office, in the northwest corner. The second floor holds the drawing and withdrawing rooms as well as a bedchamber, all rooms have Neoclassical detailing in the moldings, mantle pieces and door surrounds. The third floor consists of three bedchambers.

While this house was constructed near the beginning of Gabriel Manigault's architectural career, it shows signs of his growing desire for quality and longevity in his work, as well as a firm grasp on the particular climactic issues of Charleston. He laid a layer of lime between the floor and sub-floor to repel insects. In each story he laid a row of bricks inside the outer wall, at the back of the baseboard to keep vermin and insects like cockroaches from penetrating into the house. He also designed a "half-moon" window on the third floor with a system of counterbalancing weights used to raise and lower the window sash so that it would disappear into a pocket

above when raised. This allowed for air to flow through the house and helped keep it cooler in warm weather.[72]

This acknowledgement of the climate and how to manage it, along with quality craftsmanship have contributed to maintaining the Manigault house in good shape despite vagaries in its fortune (figure 22).

Conclusion of House Histories

These three house museums, Drayton Hall, the Aiken-Rhett House, and the Joseph Manigault House each represent different building periods and styles. The symmetrical Georgian-Palladian plantation house of the Drayton Family, the radically changed and complex urban estate of the Aiken and Rhett families and the stylish Federal period home of the Manigault family are all vital parts of Charleston history. One common thread among these houses is the sub-tropical climate of the city. The heat and humidity affects each site differently, depending on building orientation, surroundings and natural ventilation. Each has a different history of climate control. How those decisions affect the buildings and there contents, as well as their visitors will be explored further in this work.

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[72] ibid.

Chapter Four: Visitor Surveys

Methodology of Visitor Surveys

The goal of the survey was to obtain the opinion of the average visitor about his physical comfort level while visiting each of the selected house museums. The first step was to determine what information to collect. This included general demographic information such as age, sex, home city, and state, the purpose of which was to profile the average visitor in the hope of determining what factors affect comfort within the museum. For example, older visitors might be more sensitive to heat and humidity or younger visitors may have become so accustomed to climate controlled environments that they no longer had tolerance for the natural variations in a house without any climate control.

The visitors' home cities and states were asked to determine if there was a correlation between where they resided and if that affected their perceptions of the climate. For instance, a couple from Minnesota might find fifty degree weather in January more pleasant then a couple from Miami. The climate to which they are naturally accustomed may also determine any preconceived notions that they may have. Visitors' gender was asked to determine if there was a difference in comfort levels between men and women.

After the general demographics were established, questions were asked about visitors' experiences in the house.

The goal of the survey was to understand the comfort level of the average visitor to the site and to learn whether climate comfort contributes to the experience

of visiting Drayton Hall, the Aiken-Rhett House and the Joseph Manigault House. Another question was how much of a roll, if any climate control plays in the decision to visit each house. For example, were visitors hoping for an authentic experience, to know how it felt "back then" or did they want to be comfortable, regardless of the original occupants' experiences. Regardless of how the visitors decided to visit each house museum, the question was asked whether they were comfortable during the tour or if they were distracted by the temperature. This brought up another question, as to whether it was more distracting to the visitor to experience the natural climate and possibly be too hot or cold, or be in a climate-controlled environment with loud and obtrusive vents, window air conditioners and possibly an abrupt change from the outdoor temperature.

The decision was made to distribute the same survey at each site, despite the varying conditions, hours, tour schedules, and locations that each posses. This made some questions slightly lengthier and more densely phrased then had originally been planned, but it was necessary to maintain consistent information and opinions. Despite the complexity of the questions, an effort was made to obtain the necessary information but not be so complex as to prevent or deter visitors from participating. The survey had ten questions with a section for comments at the bottom. All questions, aside from demographics, were kept to yes and no answers so that filling it out would be simple, quick and as straight forward as possible. See appendix one for a copy of the survey.

The demographics questions began with age and gave broad groups of Under 18, 18 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64 and 65 and older, which yielded a general range without asking visitors to reveal too much about themselves. Gender

was the next question, followed by home city and state. Visitors were then asked how many times they had visited the site and again given a range of 0 to 1, 2 to 4 and 4 or more, this allowed a better understanding of what, if any, prior knowledge they had about the interior conditions at each house museum.

These demographic questions are similar to those in the 2006 Charleston Area Visitor Intercept Survey, conducted by the College of Charleston's Department of Hospitality and Tourism Management in the School of Business and Economics for the Charleston Area Convention and Visitors Bureau. This survey was targeted at obtaining an informed profile of who visits Charleston, what attractions they visit, what they spend money on, what they want and need and like and dislike. Surveys were conducted in four of the major tourist stops in the city, the Market, Waterfront Park, Marion Square and the Aquarium Wharf area. Many of the same demographic questions were asked such as age, distance traveled, and number of times visiting the city; by comparing these data it may validate the accuracy of the data collected in this study.

The next six questions asked about the experience each visitor had in the house. The first asked if they had prior knowledge of the type of climate control system, or lack thereof, in the house. The second asked if their prior knowledge effected their decision to visit the site. The third question asked if the temperature was comfortable while touring the house. Fourth, the visitors were asked if the lack of or presence of a climate control system affected the authenticity of the experience in the house. The fifth question asked if the lack of or presence of a climate control system was distracting during their time in the house, and the final question asked what other historic houses they had visited in Charleston.

Because of the tight academic schedule, the only time to visit Charleston was in January. Surveys were conducted January 5th to 9th, 2008. While the most uncomfortable temperatures in the south are typically in July and August, it was not feasible to visit Charleston during that time. With the intention to test extremes, it was hoped January weather would be cold enough to be uncomfortable, preferably in the 40's or lower. Unfortunately the lowest daytime temperature during the site visit was 50 degrees with a high temperature of 80 degrees.

Another limitation was access to the sites. At Drayton Hall full access was granted to talk to all visitors to the site on January 5th beginning at eleven-thirty in the morning and finishing at four in the afternoon. This happened to be the coolest of the four days, sunny with highs in the upper 50's. A total of twenty-seven surveys were collected. On January 7th, surveys were conducted at the Aiken-Rhett House, access was allowed to all guests throughout the day, from eleven in the morning to four in the afternoon. The weather this day was in the mid 60's and also sunny. A total of twenty surveys were collected. The January 8th surveys were conducted at the Joseph Manigault House. Site administrators at the Charleston Museum (owner of the Manigault House) requested that surveys be limited to no more then fifteen, so as to not "interfere" with the visitors' experiences at the site. The weather that day was sunny, with a high of 80 degrees. A total of fourteen surveys were collected. The result was a range in the amount of surveys collected, time spent at each site and temperatures experienced. Another difference between sites is that Drayton Hall was visited on a Saturday, Aiken-Rhett on a Monday and Manigault on a Tuesday; weekend versus weekday may have affected the number of visitors to each site.

Another limitation was in the way that tours are conducted and scheduled at each site. At Drayton Hall each tour begins on the hour and is limited to thirty people. When people arrive on site they are welcomed at a gate house and then directed to the museum shop to meet their guide and get maps of the grounds. A guide begins the tour with visitors seated on park benches about fifty feet away from the house; the tour proceeds through the house, and exits from the basement door on the west side of the house. When the tour is over guests are free to walk the grounds of the plantation, leave in their car, or return to the museum shop to purchase memberships in the Friends of Drayton Hall or souvenirs. This pattern of disbursement made it difficult to survey all visitors after the tours.

One technique used was to approach visitors exiting the basement door in order to capture their immediate reactions. However, only about two to five guests at a time could be approached in this manner, while most of the group scattered across the site. A slightly more effective method was to wait at the museum shop for visitors to return; because they were in smaller groups that were easier to stop and interview for a longer period of time. While Drayton Hall yielded the most surveys, the number was a small percentage of the total visitors. That day there were at least two full tours and an extra tour added due to demand, meaning that at least ninety people were on site during the afternoon, but only twenty-seven completed surveys.

At the Aiken-Rhett House, there were a smaller number of daily visitors than Drayton Hall and it had been expected that there would be a significantly lower number of surveys completed. However, it was much easier to stop visitors after their tours at this site. In addition, at the Aiken-Rhett House there are no formal tours; instead, visitors entered at random with self-guided audio tours of the house,

lasting approximately forty-five minutes. While only twenty-seven people visited the site between ten a.m. and one-thirty p.m., twenty surveys were collected. The slower, steadier pace and smaller number of visitors meant groups of two to four came in at a time, bought tickets in the museum shop, picked up their mp3 players in the next room, and returned the players to the same spot at the end. This collected the visitors, rather then scattering them about the site and made it easy to approach them. Visitors were also more inclined to stop and ask questions of the docents regarding the site, other sites to visit, or where to have lunch. Benches are also located in this area, so that the visitors can sit and collect themselves before they leave, which provided a successful place to discuss this project with them.

While the number of surveys conducted at the Joseph Manigault House was limited, it was also easy to speak with the visitors at this site. Like the Aiken-Rhett House, the Manigault House typically does not have as many visitors as Drayton Hall but the slower pace provided more opportunities to interact with them. The tour schedule at Manigault is one tour every half hour with an unofficial limit of fifteen to twenty people. Visitors arrive on the south portico and ring the doorbell to the house; a guide answers and depending on the time, will inform them of how much longer the wait will be. On the hour or half hour, the guide welcomes visitors into the house, sells the tickets inside, and conducts the tour through the house lasting just under thirty minutes. When the tour is complete, guests exit through the door they came in. Depending on the size of the tour, up to four people could be surveyed after each tour. With larger tour groups, it was harder to stop people, by the time three of four people finished filling out the surveys, the rest of the tour had left the site. Of the forty-nine people who visited the site before two p.m., fourteen surveys were

completed. One aspect of the tour set-up at the Manigault House that was helpful was the portico waiting area. By staying on the portico the majority of the time, it was easy to talk to guests before the tour, give them a general idea of what the survey would entail and notify them of the survey that would follow the tour. With this preparation, visitors were prepared and willing to take the survey after their tour.

While Drayton Hall yielded the highest number of surveys, the highest ratio of surveys completed occurred at sites with a slower, steadier pace of visitors. At these sites there was also a limited path that the visitors could take after the tour, making it easier to stop and survey them. The idea of leaving more surveys at each site for future visitors to fill out was considered but as it was not permitted at the Joseph Manigault House it was determined that leaving surveys only at Drayton Hall and the Aiken-Rhett House might distort the results.

Analysis of the Survey Data

The analysis of the survey data focused on discovering who visited the site, what they thought of the climate comfort during their visit, and how it affected their ability to learn the history of each site. The analysis also brought to light some of the successes and failures of the survey itself, the design and efficiency of the questions and the use of the yes or no check box. Most of the data are represented graphically the following pie charts.

The Joseph Manigault House

Some data did not warrant graphical representation. For example, at the Manigault House, all those surveyed answered they had previously visited the house

between zero and one times. They also agreed that they were not aware of the presence of or lack of climate control inside the house before visiting and that the temperature inside the house was comfortable during the tour. All visitors agreed that the lack of or presence of climate control was not distracting to their tour. Of course, the day the surveys were conducted at the Manigault House temperatures had reached 80 degrees late in the afternoon, with an average in the high 70's during the actual surveying. These warm temperatures may have contributed to the universal agreement on the comfort of the climate inside the house.

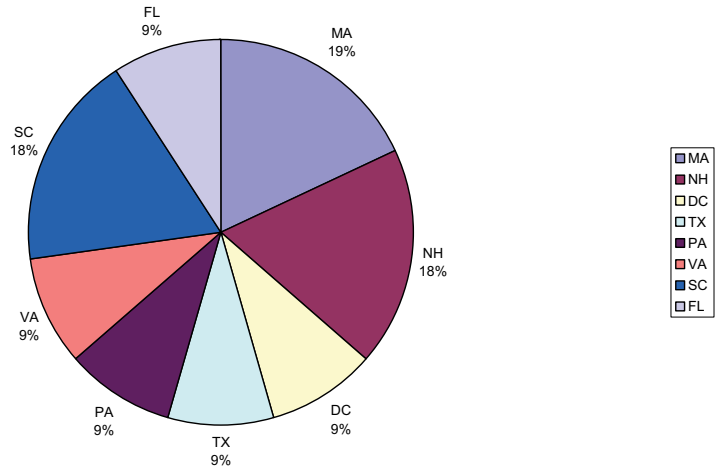
The surveys also showed that 46% of the visitors were from the Northeastern region of the United States specifically, New Hampshire, Massachusetts and Pennsylvania. An additional 9% were from Washington, DC, Texas, Virginia and Florida; 18% were from South Carolina. With this mix of visitors either escaping the cold in the north, or accustomed to the warmer temperatures of the south, it is no surprise that all agreed on the comfort level of the house.

Fifty-eight percent of visitors were over 55 years old, with the remaining 42% being between the ages of 18 and 24. The unusually large percentage of younger visitors resulted from a combination of local residents from the college using the "Tourist in Your Own Town" passes and of parents and children visiting together. No one between the ages of 25 and 54 was surveyed. Of those surveyed, 54% were women and 46% were men.

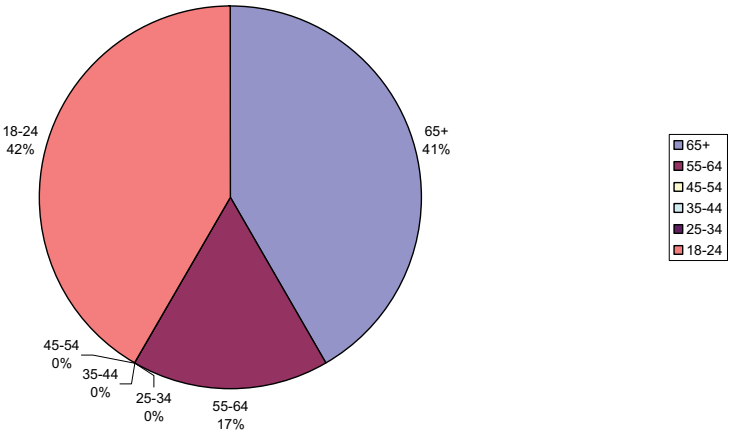
All the visitors stated they were not aware of the presence of or lack of climate control before visiting the house, but when asked if their prior knowledge of the climate control system affected their decision to visit the house there was a

discrepancy. Here 58% of those surveyed were not aware of the system, while 25% said it did not influence their decision to visit the house and 17% said that it did affect their decision to visit the house. This shows a fault in the survey itself. It is unknown if visitors were confused by the question, or if they were answering based on their supposition of how they would have been influenced if they had known. Either way no conclusion can be drawn from this information as to how the climate control system at the Manigault House affects visitors' decisions to visit the site.

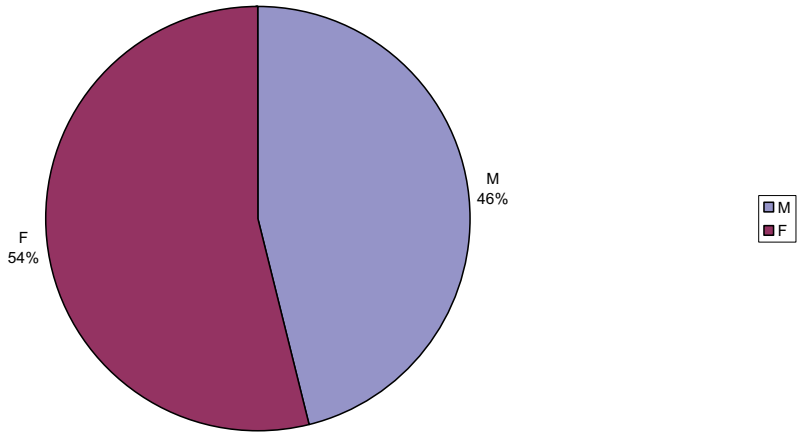
Where Visitors to The Manigualt House are From



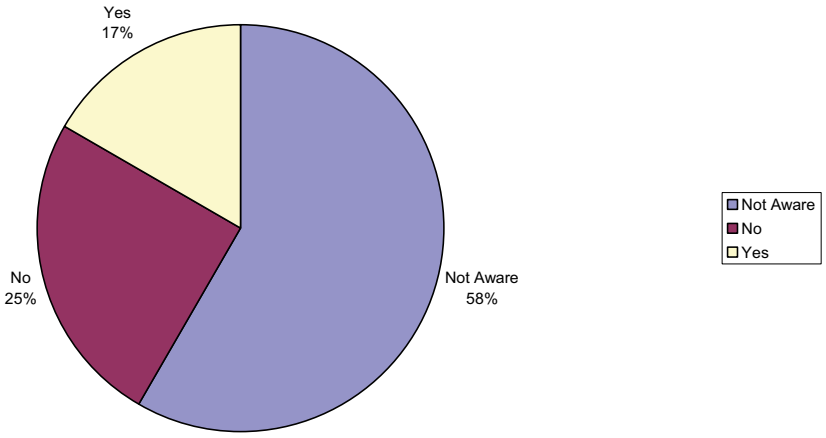
Age of Visitors to the Manigault House



Gender of Visitors to the Manigault House



If You Were Aware of the Climate Control System at The Manigault House, Did it Affect Your Decision to Visit the Site ?



The Aiken-Rhett House

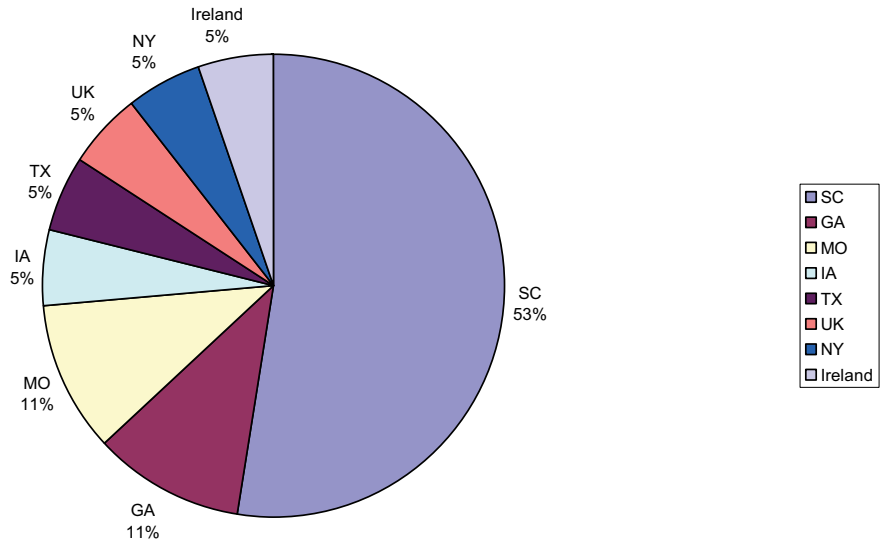
At the Aiken-Rhett House there was a similar situation, where all the visitors agreed on two questions; first, that the temperature inside the house was comfortable and second, that the presence of or lack of a climate control system was not distracting to the tour. Again the weather was comfortable the day the surveys were conducted, with temperatures in the 60's and full sun.

Unlike the Manigault House, a majority of visitors to the Aiken-Rhett House, (53%), came from South Carolina, followed by 11% from both Georgia and Missouri, followed by 5% from each Iowa, Texas, New York, the United Kingdom and Ireland. There was also a greater variety of ages with the largest percentage consisting of visitors over the age of 55. The actual percentages were 47% between the ages of 55 and 46 and 21% above 65. Only 5% of visitors were between the ages of 54 and 45; 16% between 35 and 44 and 11% between 25 and 35. Women greatly outnumbered men, by 84% to 16 percent male. As at the Manigault House, most visitors, 89%, have been to the site 0-1 times prior but here there were a few, 11%, who had been to the site more then two previous times.

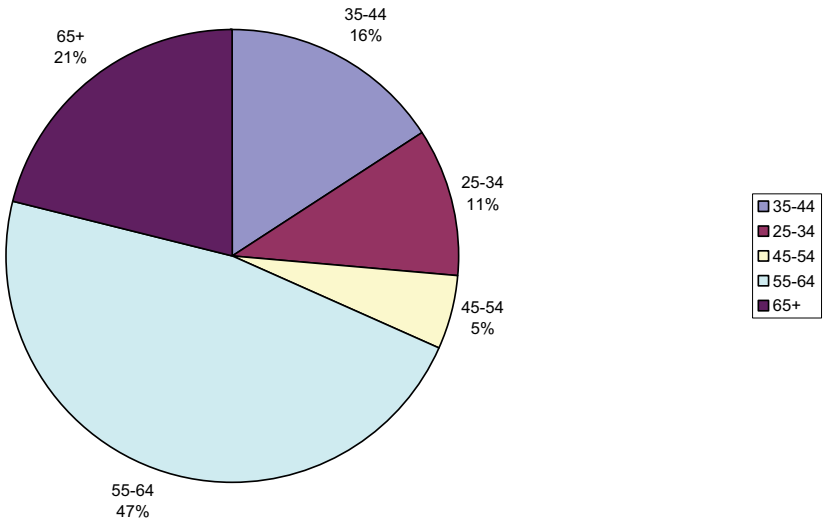
The percentage of visitors who knew about the presence of or lack of climate control at the Aiken-Rhett House had a direct correlation with previous visits. Here, 16% of visitors had prior knowledge of the interior climate of the house, while 84% had not previously known. This led to a more accurate answer for the question of whether or not their prior knowledge of the climate system affected their decision to visit the site; 58% said they had not been aware and 42% said it did not affect their decision. While this does not match up exactly to the percentages of people who

were familiar with the climate control system, it is a more accurate representation of the information then what was seen at the Manigault House. This proves that 42% of people were not affected by the climate control system, but the weather on this particular day was not uncomfortable and therefore does not illustrate how visitors' decisions to visit might be affected by extremely hot or cold weather.

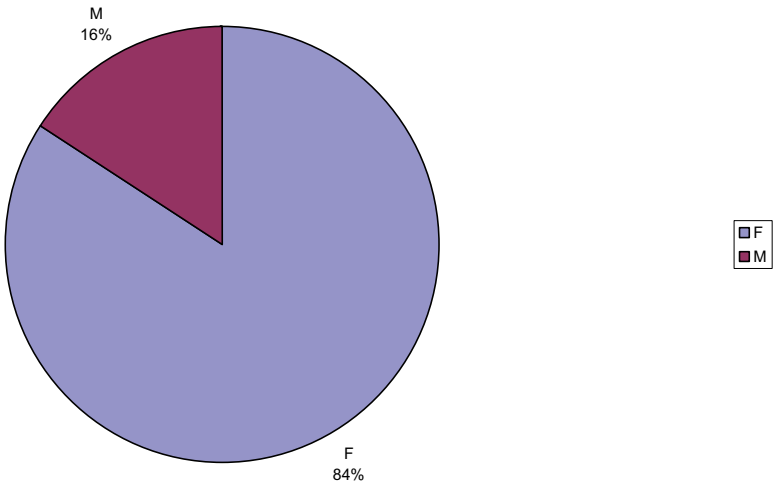
Where Visitors to The Aiken-Rhett House are From



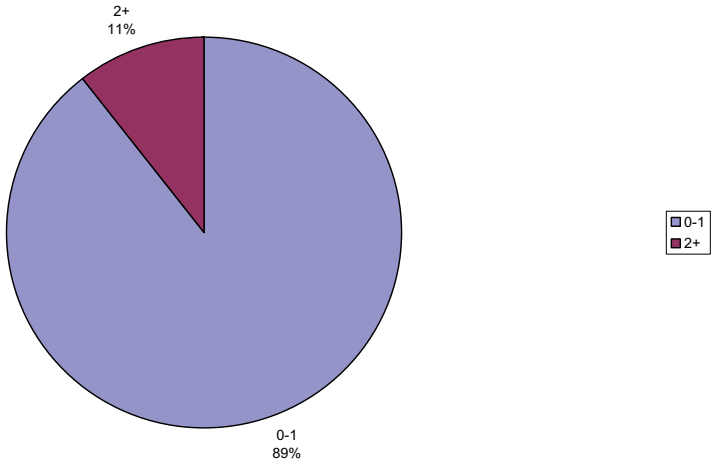
Age of Visitors to The Aiken-Rhett House



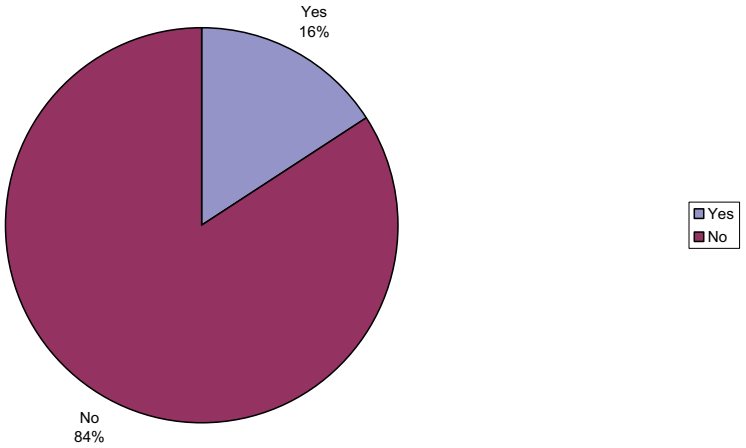
Gender of Visitors to the Aiken-Rhett House



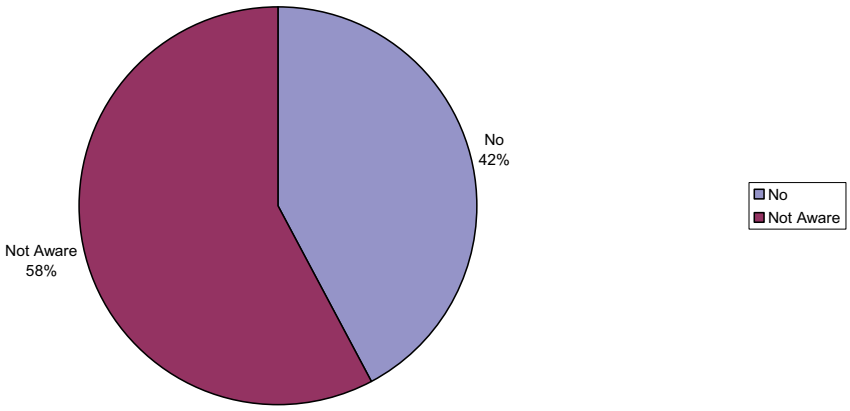
Number of Times Guests Have Visited the Aiken-Rhett House



Were You Aware of the Climate Control System Before Visiting the Aiken-Rhett House?



If You Were Aware of the Climate Control System at the Aiken-Rhett House, Did it Affect Your Decision to Visit the Site?



Drayton Hall

Drayton Hall is the only site where the visitors' answers were not consistent on any question. The surveys were conducted on the coolest day with highs in the fifty's and sunny. The variation between the opinions of the visitors may have been influenced by the lower temperatures and the varying degrees of coolness that the visitors were comfortable with.

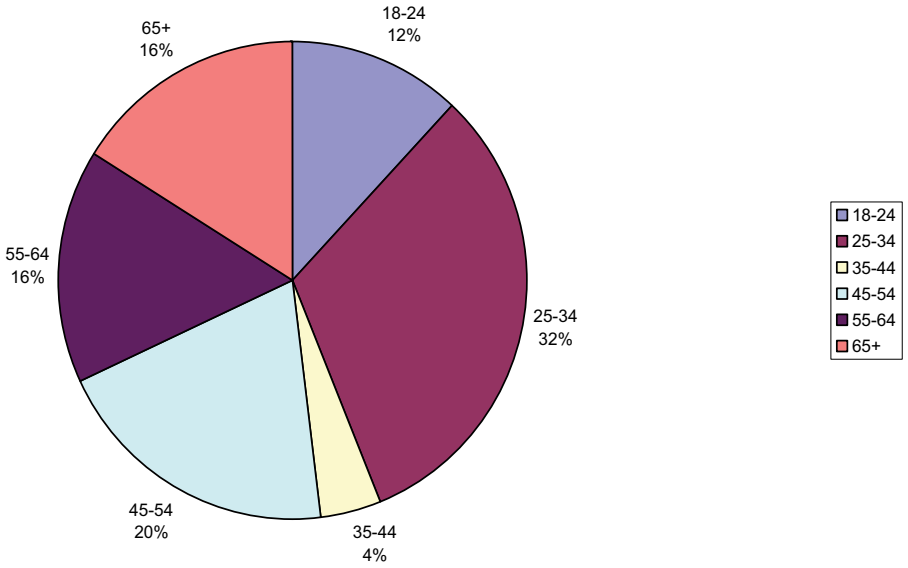
Like the Aiken-Rhett House, a large percentage of the visitors, 49%, were from South Carolina, followed by 11% from Pennsylvania, 10% from both Georgia and Minnesota, followed by 4% from each New York, New Jersey, Washington DC, Ohio and Tennessee. Drayton Hall represented the greatest diversity in age, and had a high percentage of visitors between 25 and 34, at 32%. The next largest group were visitors between the ages of 45 and 54, at 20% followed by both the 55 to 64 and 65 and older groups representing 16% or visitors, 18 to 24 year old visitors representing 12% and finally 35 to 44 at 4% of the visitors. With 44% of the visitors being under 34, Drayton Hall represented the youngest visitors of the three sites. There was a close ratio of 54% men to 46% women.

Drayton Hall also had the highest number of repeat visitors with 8% having been to the site four or more times. No other site had visitors who had been more then twice. Fifteen percent of visitors had visited the site two or more times and 77% had been there 0 to 1 times. Possibly as a correlation to this, Drayton Hall also had the highest percentage of visitors who had a prior knowledge of the lack of a climate control system in the house; here 27% of visitors were aware of the situation and 73% were not aware of the lack of climate control. None of those surveyed said that prior

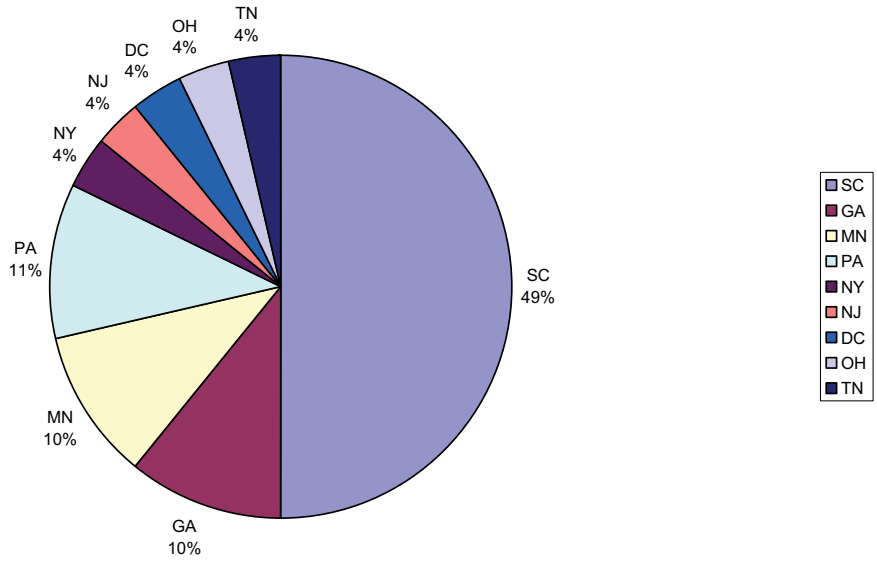
knowledge of the presence of or lack of a climate control system affected the decision to visit the site; instead, 54% said that they had not had prior knowledge of the climate control situation and 46% said they knew about it but it did not affect their decision to visit.

With the temperatures being lower the day of the surveys, some information could be gleaned of how the cold affected a visitor's experience in the house. This was the only survey in which visitors attested to being uncomfortable during the tour; 73% said they were comfortable in the house and 27% said that they were not comfortable during the tour. The temperature also contributed to their ability to concentrate on the information being given during the tour, 88% said that they were not distracted and 12% said they were distracted. No other houses had visitors who admitted to being distracted, and no other sites were visited during temperatures this low. This is a strong indication that visitors are not able to concentrate as well when they are physically uncomfortable during a tour.

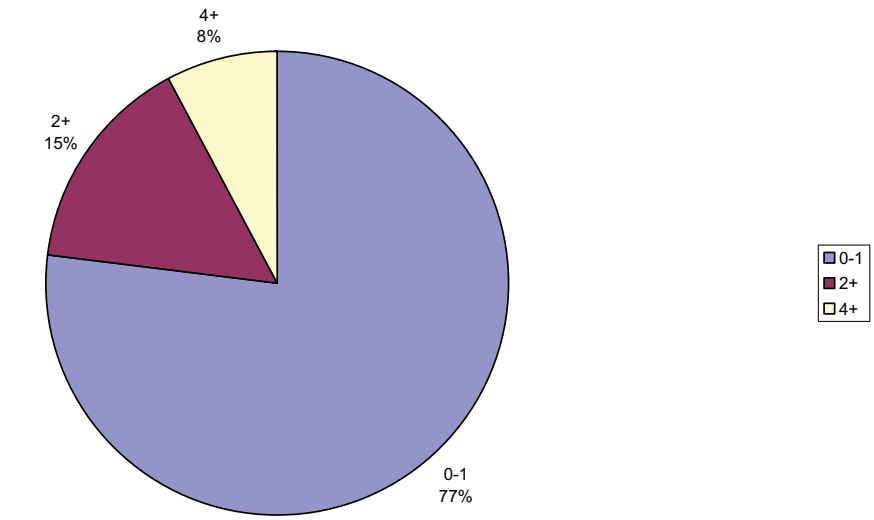
Age of Visitors to Drayton Hall



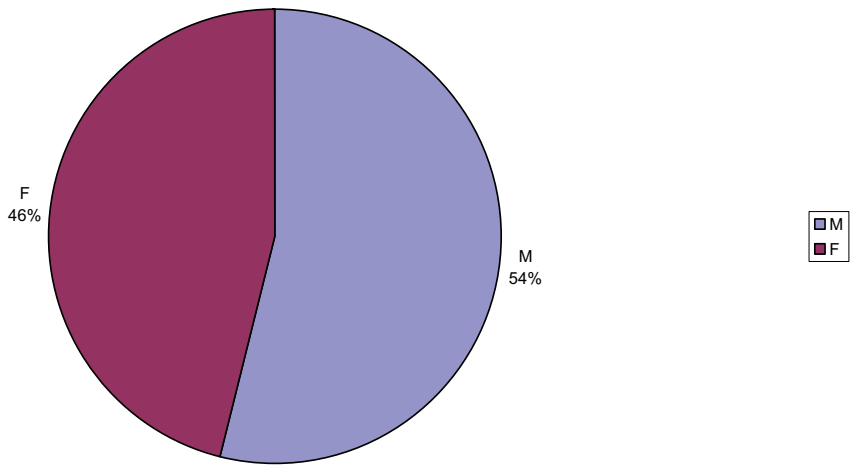
Where Visitors to Drayton Hall are From



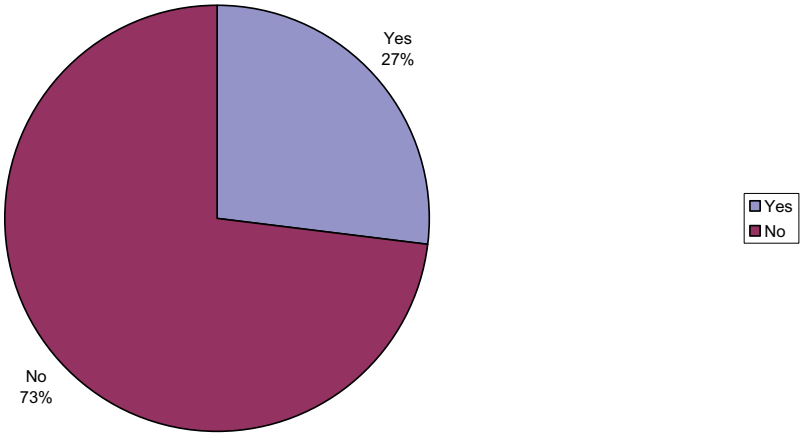
Number of Times Guests Have Visited Drayton Hall



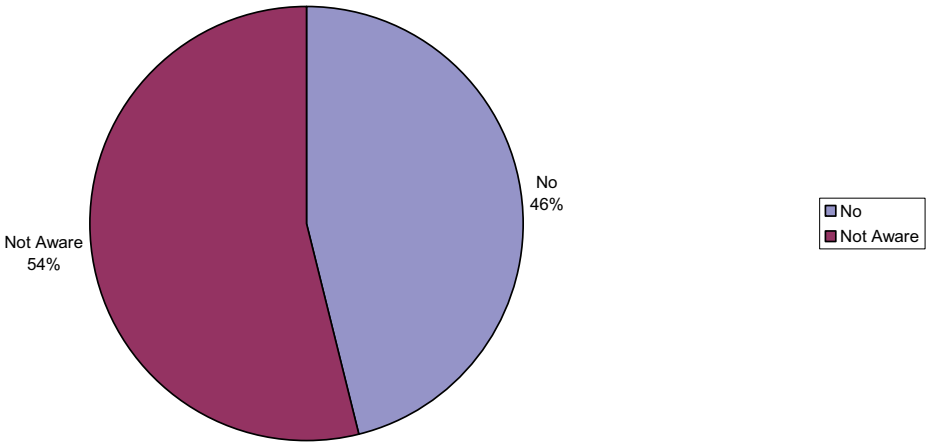
Gender of Visitors to Drayton Hall



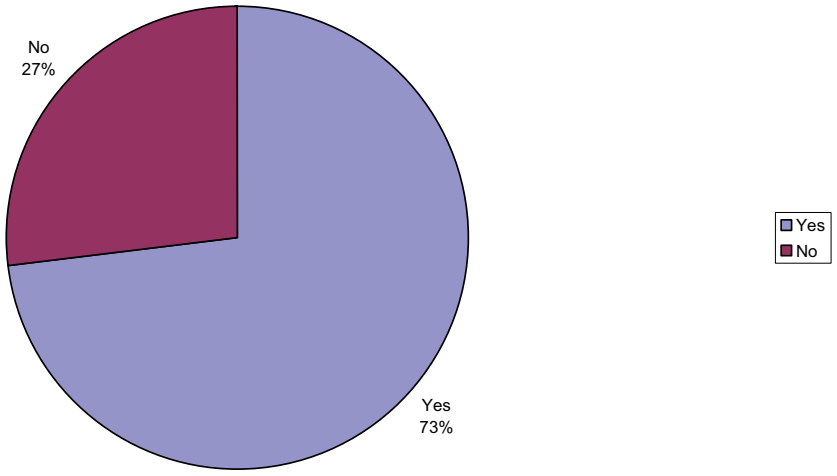
Were You Aware of the Climate Control System Before Visiting Drayton Hall?



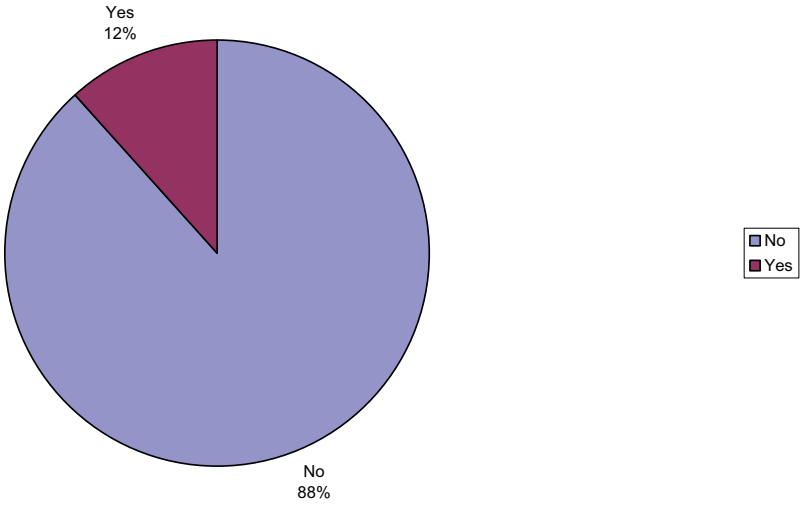
If You Were Aware of the Climate Control System at Drayton Hall, Did it Effect Your Decision to Visit the Site?



Was the Temperature Inside Drayton Hall Comfortable?



Was the Lack of or Prescence of a Climate Control System Distracting?



Survey Analysis

The most significant flaw in the survey was the phrasing of question four: "Did the lack of or presence of a climate control system affect the authenticity of the experience inside the house?" Like the other questions addressing the experience at the site, this question was to be answered by a yes or a no which proved confusing to the participants. Some believed that by answering "yes" it meant that it was an authentic experience in the house, while others answered "no" meaning it did not affect the authentic feeling of the climate. During the administration of the surveys, many participants had questions about how to answer the question while others were confused by the somewhat complicated phrasing of the question. Because of these problems, answers to question four were not included in the data analysis.

To gain a better understanding of the accuracy of these surveys, the responses were compared to data collected by the Charleston Area Convention and Visitors Bureau's (CACVB) 2006 surveys (see appendix II). The CACVB surveys were conducted from March to July and were given as take-home surveys. Of the 2,000 surveys distributed, 373 useable surveys were collected, a return rate of 18.7%. While these surveys were not conducted during the same time of year or in the same locations, it helps to understand the overall visitor profile for the city of Charleston.

According to the CACVB, the average age of those surveyed was 47 and the mode 55-60. More women visit the city, at 69.4% and the average size of a travel party is 3.3 people, two adults and one child. Like the surveys for this study, the CACVB found that most visitors, 15.5% were from South Carolina, followed by 12.9% from North Carolina and 7.2% from Georgia, 6% of visitors were from other

countries, the United Kingdom and Canada representing 3%. Most visitors had been to Charleston before, but the percentage was close, 56.3% had been before and 43.7% were first time visitors.

As for what attracted visitors to Charleston, the most popular reasons for visiting were History, Attractions and Word of Mouth Recommendations; Architecture was listed as the fifth most popular attraction. The top attractions were listed as Enjoy history/historic ambience (65.7%), Experience local culture (45.8%), and Visit Attractions (museums, heritage sites, aquariums, etc.) (47.7%).

Chapter Five: Guide Surveys

Because of the constraints on when visitors were surveyed, the guides were interviewed to gain a better understanding of the conditions in each house throughout the year. The questions focused primarily on conditions during the hot summer months. In most cases each guide interviewed had worked at the specific museum for at least two years, and thus had the experience necessary to discuss year-round climate conditions. The guides were also asked whether they were personally affected by the presence or absence of a climate control system while working and if they believed their ability was affected the comfort and enjoyment of the tour for the visitors. Unlike the visitor surveys, the guides were given open-ended questions so as to gain the most thorough and detailed answers possible. No charts or graphs have been used to visualize the data, see appendix III for a copy of the survey.

At the Aiken-Rhett House all but one guide interviewed was over the age of 55 and most had been working at the site for approximately ten years. The tour is given by an MP3 player (Digital Audio Player) and the guides are there to answer questions and ensure the visitors do not damage the house. One guide greets visitors in the basement and distributes the MP3 players, a second guide sits in the stair hall on the first floor; a third is stationed on the second floor; and a fourth in the dining room where a detailed display of a table set for Christmas dinner had been installed (when the installation is removed, no guide is needed in that room). The guides are allowed to move their chairs; for example, on colder days they may sit in the sun, and on warmer days, into the shade or a breeze. Guides work year-round, between one and four days a week and each shift lasts approximately five hours. Additional duties

include sanitizing the MP3 head phones used by visitors and opening and closing the house each day.

Four guides were interviewed at the Aiken-Rhett House. Each interview was brief, approximately ten minutes, between groups of visitors. The first question was "How does the climate control system, or lack of, affect the visitors? Are they distracted, do they ask about it, do they seem comfortable?" Responses varied with two stating that visitors only appeared to be uncomfortable when it was very hot and humid and that cold appeared to be less of a problem but admitted that visitors could be distracted in both cases. When it is hot a breeze is usually sufficient to keep the house comfortable. Both also stated that the hot temperatures make it difficult for overweight and elderly visitors to move through the house and climb the stairs.

In comparison, the third guide said that cold days are more distracting and visitors asked multiple questions about how the house was heated. During the summer many think that the basement is air conditioned because of its cool temperature. She also stated that the temperature did not distract from the tour. The fourth guide is a native Charlestonian who had worked at the house for more then ten years. She believed that some visitors "raise eyebrows" at first but will take the temperature for granted and accept it.

The second question was "Does the temperature affect your ability to give a quality tour?"[73] Only one guide said that he/she was truly affected by the

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[73] This question may have a different answer at the Aiken-Rhett House then the others selected because the A-R House guides do not actually give the tours, they are given by an MP3 player,

temperature while working in the house and even then the distraction came from the visitors fanning themselves and drinking water rather then the heat itself. The overall consensus was that the guides are accustomed to the heat and knew how to take precautions to prevent overheating, such as spending most of their time between the second story, where a strong breeze enter through the floor-to-ceiling windows, and in the basement where it is cooler.

The final question was "Do you feel the site or experience is more or less authentic due to the presence of or lack of a climate control system?" and all guides agreed that having no cooling system was a more authentic experience for the visitors. There were mixed responses to how often, if ever, visitors commented on it, but all guides agreed to the authenticity of the experience. The guides felt it was important for visitors to realize the historic conditions of the house and that any inconvenience or discomfort was part of the story. Several of the guides also commented that comfort level prompted visitors to ask questions about life in the house, such as how the family dressed, if they left during the summer, and how they stayed cool.

One element tied into authenticity at the Aiken-Rhett House is the physical condition of the interior of the house; it is presented as a preserved house, not a restored house. There are multiple layers of structure and decoration from different periods of occupancy present. There are several layers of wallpaper, paint, electrical elements, drapery and furniture that contribute to a less polished feel then typically

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therefore while their interaction with the visitors may be affected but not to the degree that it might be on a guided tour.

found in restored houses. There is a sense of occupancy not always presented in other house museums and this contributes to an authentic experience on the whole. Having a central heating and air conditioning system installed but leaving the house in its preserved state would interfere with the mission of the house, which is to show its evolution over the years.

The same set of questions were asked of two of the guides at Drayton Hall, both of whom had been at the site for over a year and had experienced the summer heat. When answering the first question pertaining to the climates' affect on the visitors, both guides said that it was a great distraction. In hot weather the visitors are distracted and uncomfortable; they fan themselves, bring bottles of water into the house, and lose interest.[74]

Both guides agreed that the heat can be distracting when giving a tour. Neither guide was affected greatly by the cold, saying that it is easy to dress warmly and be comfortable. In the heat, however, they were preoccupied by keeping themselves and the visitors cool, moving in front of fans, onto the porticos to catch a breeze, get outside the house, or down into the basement. Another concern voiced by the guides was appearance, agreeing that it is hard to present oneself as a professional when hot and sweating. One guide stated that she knew that it caused a difficulty in hiring and retaining staff, because several had quit once they worked in the heat.

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[74] Beverages are typically not allowed into Drayton Hall, but on hot days many visitors will have bottles of water and are permitted to carry them into the House but not open them while inside. It becomes distracting to a guide in these conditions because visitors naturally want to drink their water while inside the House. It becomes difficult for guides to concentrate on the topic at hand when they are constantly monitoring visitors' water bottles.

Both guides agreed that the visitor experience was more authentic without any type of climate control system. They also agreed that visitors commented on the authenticity of the site, asking why there is no furniture inside the house and if there are plans to install any but they seem to agree that it is a more authentic and realistic representation of the historic conditions of the site. Like the Aiken-Rhett House, the lack of climate control at Drayton Hall inspires the visitors to think about everyday life in the house and ask questions about how the Draytons lived, such as where they took their meals to be comfortable. Visitors can physically experience the breezes blowing through the house and have a better understanding of historic room use and how dependent the early residents were on natural conditions such as daylight, breezes, and airflow. Another point made by one of the guides is that the absence of a climate control system eliminates the need to disguise modern equipment such as vents, electrical outlets, or wires and thus keeps the house visually authentic.

Time constraints at the Manigault House prevented the guides from filling out the full survey but the information was gained through casual conversation with the three women on staff that day. Also while studying the Manigault House, a visit was added to the Heyward-Washington House, the other house museum owned and operated by the Charleston Museum. The purpose of the visit was to see a house with a fully functional heating and air conditioning system and to speak with guides who work at both houses; those guides at the Heyward-Washington House were given the survey and their data is included in this section.

When asked how visitors were affected by the climate inside the Manigault House, all guides agreed that in hot and humid weather the visitors are always very hot. When they enter the house and find that the first room, the dining room, has a

window air conditioner it is hard to get them interested in the house or in seeing the rest of it; most visitors are only concerned with coming in and cooling off. Through the rest of the house they fan themselves, stand in front of the stationed electric fans, and drink water. The guides also agreed that they do not believe the visitors are learning as much about the house when they are in these conditions, because visitors will often ask a question that had just been answered by the guide, try to sit where not permitted, or speak to one another rather then listen to the guide. Another observation was that some people will ask about the current heating and air conditioning system since the air-conditioner and heating vents are visible, but that those who ask are generally people with an apparently deeper understanding of history and house museums.

When asked if the temperature affected the guides' ability to work, all affirmed it did. Guides said they positioned themselves in front of fans to stay cool, drank a lot of water, and took frequent breaks. One guide said that while working on the second floor of the Manigault House she had felt dizzy on more then one occasion and that the heat caused many staffing issues. Most of the guides at the Manigault House are older women, who have refused to work in the heat. Carl Borick, Assistant Director of the Charleston Museum, acknowledged this problem and said they try to schedule one extra person during the warmer months of the year to compensate for this problem. Another issue for the guides during hot weather is the dress code. The dress code for women guides at both the Manigault House and the Heyward-Washington House has been to wear skirts that are knee-length or longer with stockings or pantyhose. Not until the summer of 2007, and only in July and August, were women allowed to wear slacks or skirts without stockings or pantyhose. Guides

attested to the great discomfort that the older dress code gave them while working in the heat and the cold. They also felt that the dress code gave the houses a more antiquated feeling than many other sites in the city and that it could be a deterrent to visitors who are looking for a more contemporary tour. One guide said that while they do have a professional dress code, it is hard to feel professional while working in the heat, sweating, and standing in front of a fan to cool off.

When it came to the authenticity of the house many guides said that they believe it is a more authentic experience but they did not know if the visitors agreed. At the Manigault House, many bus tours visit the site as part of package tours and guides said that these visitors do not seem to be concerned with authenticity, just about getting through quickly and seeing as many sites as possible. Another guide mentioned that visitors will ask about the furniture in the house and how well it is being cared for if there is no climate control system. Many visitors perceive the collection as not being well cared for if it is not in a controlled environment, but few visitors notice that the most damaged piece in the house is a Federal-era side board in the dining room with peeling veneer due to the extreme temperature changes in the one air-conditioned room in the house (figures 23,24).

Hot Weather Guidelines

Most house museums in hot climates take standard precautions during extreme hot weather, to protect both visitors and guides from dehydration, heat stroke, and other injuries, and acknowledge the need to keep visitors safe and comfortable while touring southern house museums.

Drayton Hall

At Drayton Hall, the "Hot Weather Procedures" are sent as a memo to all staff members, are posted on site, and are renewed each year, a copy of this memo is located in appendix IV. The temperature used for all readings is the heat index given on the Weather Channel's website, www.weather.com. When the heat index is below ninety-five degrees there are no specific precautions to take but guides are advised to take advantage of cooler spots outside and inside the house and be sure to tell visitors of locations of the water coolers. At 95° guides are also encouraged to monitor visitors for signs of discomfort.

Between ninety-five degrees and 105° precautions are implemented such as limiting time on the first and second floors to less then thirty minutes, spending more time in the shade where the tour starts, on the portico, in the great hall if there is a breeze, and in the basement. Guides are again asked to remind the visitors of the location of the water coolers and to monitor the amount of water in the cooler and cups available and ensure that they stay fully stocked throughout the day.

When the heat index is between 105° and 115°, guides spend no more then fifteen minutes on the first and second floors of the house. Guides are encouraged to stay mainly in the great hall and on the porticoes, giving visitors information on the other rooms and quickly walking through but not spending time in them. Again visitors are given the locations of water coolers, especially the one located just outside the house. If a visitor does not feel capable of taking the tour, he or she is offered a video tour of the house inside the air-conditioned library.

When the heat index rises above 115°, tours of the house are suspended and visitors are only sold grounds passes. Senior staff is notified and refunds may be given at the front gate. All guides are asked to stay on site to answer visitors' questions in the museum shop, under the tent where the connections program is given, or to show the video tour of the house.[75] While visiting Drayton Hall, guides noted that the house was closed once in the summer of 2007 when the heat index went above 115°.

The "Hot Weather Procedures" give guides a summary of the symptoms of heat stroke and heat exhaustion and an explanation of how our bodies cool themselves. Signs of heat exhaustion include cool, clammy, pale skin, sweating, dizziness, fatigue, headache, and nausea. If a visitor is experiencing these symptoms, he or she should drink cool water, move to a cool, shaded place, preferably indoors, remove tight clothing, and eat salty foods to retain moisture. Symptoms of heat stroke include a high temperature, hot and dry skin, no sweating, deep breathing and fast pulse, dilated pupils, confusion and convulsions. Guides are warned that heat stroke sets in quickly and instructed to call 911 if a visitor is showing these symptoms.

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75 The connections program is a forty-five minute long presentation given thrice daily on the African-American History of the Low Country and Drayton Hall specifically. The program is regularly given under a tent located between the main House and the museum shop. The tent is located in a wooded area and benches are provided for the visitors, creating an escape from the heat.

Aiken-Rhett House

The Aiken-Rhett House has a similar memorandum that is sent to guides each year and a copy of this memo is located in appendix V. The two documents are similar in nature but the Aiken-Rhett guidelines begin with a definition of heat index and lists heat disorders for people in higher risk groups, saying that with a heat index of eighty to ninety degrees fatigue is possible with prolonged exposure or physical activity. With a heat index of ninety to one-hundred and five degrees heat cramps and heat exhaustion are possible with prolonged exposure. When there is a heat index between one-hundred and five and one-hundred and thirty, heat cramps or heat exhaustion are possible with continued exposure. When the heat index is above one-hundred and thirty degrees heatstroke is highly likely with continued exposure. The memorandum defines people at increased risk as the elderly, small children, chronic invalids, those taking certain medications or drugs, and persons with weight or alcohol problems. To prevent these symptoms the guides are encouraged to drink plenty of water and take frequent breaks in an air-conditioned room. Signs of heat disorders are listed as leg and abdominal muscle cramps, heavy sweating, weakness, dizziness, rapid pulse, and cold, pale and clammy skin. Signs of severe heat illness and medical emergency include fainting, vomiting, disorientation, hot and dry red skin; these are signs of a medical emergency.

Precautions that should be taken while tours are in the A-R House begin when the heat index raises above eighty degrees, fifteen degrees lower then what is recommended at Drayton Hall. At eighty the senior docent on site will begin to record the temperature as read on the Chaney Heat Index Thermometer located inside the house on the first floor. When the heat index is between eighty and ninety

degrees docents are issued bottled water from the gift shop for their own consumption. With the heat index between ninety and ninety-five degrees docents will spend ten minutes of each hour in the air-conditioned area of the building on the ground floor, between ninety-five and one-hundred, docents will spend twenty minutes of each hour in the air-conditioned area of the building. If the heat index is to rise to between one-hundred and one-hundred and five degrees, docents will spend thirty minutes of each hour in the air-conditioned area of the building and if the heat index is above one-hundred and five the house will be closed. While visiting the Aiken-Rhett House, guides noted that the house was closed at least once in the summer of 2007 due to a heat index over one-hundred and five.

To close the house, the senior docent must notify the Director of Museums and all museum staff including guides who may be scheduled later in the day. The Nathaniel Russell House, the other house museum owned by the Historic Charleston Foundation, must be notified so that no more tickets are sold to tour the Aiken-Rhett House and any tickets are given a refund. Any visitors already inside the Aiken-Rhett House may continue their MP3 tour. A sign is placed on the front door notifying visitors of the closing due to weather. Once the house is closed it will not reopen that day; any staff scheduled to work that day will be paid for their scheduled hours.

Guides are also advised of what to do if a visitor or colleague shows signs of a heat disorder. If the symptoms appear to be mild, the victim should be removed to a cool or air-conditioned room, be given cool water to drink, and any tight clothing should be loosened. If the symptoms are serious, including fainting, vomiting, disorientation and red, hot skin it indicates a medical emergency and 911 is called

immediately with the previously mentioned first aid applied. Guides are advised not to attempt to have the victim drink water if unconscious.

Manigault House

In comparison to the thorough protocol at Drayton Hall and the Aiken-Rhett House, the Manigault House has no formal set of heat precautions. According to staff the only changes that take place during hotter days are an extra guide scheduled each day in July and August to lessen the burden on the staff so that more breaks can be taken. The guides have a break room that is air-conditioned and the tour starts in an air-conditioned room.

Conclusion

While each house has shaped its hot weather guidelines to its needs, it is interesting to note the differences between them. At Drayton Hall the emphasis seems placed on maintaining a comfortable and safe experience more for the visitors then the guides, while the opposite appears to be the case for the Aiken-Rhett House. At Drayton Hall there is a much higher tolerance for the heat, which could be due to a number of factors ranging from a generally younger guide staff to having a greater amount of flexibility with the tour route then what is offered with the MP3 player at the Aiken-Rhett House. It is possible that with no furniture, numerous open windows and doors, and a more rural location, Drayton Hall is able to cope with the heat to a higher degree then some of the city houses.

The Aiken-Rhett policy appears to focus on the comfort and safety of the guides, with less consideration to the visitor experience in their standards. There

was no mention of free water being offered to the visitors, no altering of the tour to take advantage of the cooler areas of the house, and no alternate methods of educating the visitors about the house during hot weather. Again this could be attributed to the smaller and much older staff at the Aiken-Rhett House versus then Drayton Hall. Many members of the A-R staff are in the high risk category for heat disorder and must take precautions for their own health before being concerned for the visitor. It is important that both sites listed the symptoms of both heat exhaustion and heat stroke and gave detailed instructions on how to react to these symptoms to prepare guides for any emergencies that may arise.

It is surprising that the Manigault House has no formal set of precautions for hot weather. It is true that this is the only house in the study with any form of air-conditioning available for visitors but they are in the air-conditioned room for only a portion of the tour. Visitors also wait for the tour to begin outside on the portico, which even in January can be quite warm when the sun is shining. Many of the guides at the Manigault House are older and are in a high risk category for heat disorder; it is helpful to have extra staff during the hottest months and does allow the guides to take more breaks.

It is recommended that the Manigault House create a set of guidelines similar to those at Drayton Hall and the Aiken-Rhett House. This would set out a standard set of procedures to take, whether it is spending more time in the dining room, with the air-conditioning, shortening tours or offering water to visitors. It is also important for the guides at this site to recognize signs of heat illness so that they can be fully aware of the comfort of their visitors and their fellow employees. In order for the guides of historic house museums to properly do their jobs and provide a high

level of satisfaction to the visitors' experience they must be equipped with the knowledge, skills and abilities to do so.

The Effects of Central Air Conditioning

In the course of this paper no visitor surveys were conducted in house museums that are fully climate controlled. Therefore there the data are missing to form a complete picture of the visitor experience in southern house museums. This decision was made partially due to the fact that the only visit that could be conducted to Charleston, SC was in January and none of the house museums with air conditioning had the systems activated at the time. Other factors were accessibility and time.

There are several air-conditioned house museums in Charleston that could be studied in the future including the Nathaniel Russell House, the Heyward-Washington House, Magnolia Plantation, and Middleton Place Plantation. One air conditioned house, the Heyward-Washington House was visited during this study but the day of the visit was the annual cleaning day, when the house is closed to the public and employees clean and perform basic maintenance in the house.

Despite the house being closed to the public, valuable information was gathered from the guides present. Both guides interviewed stated that the visitors to the house are greatly appreciative to come into the air conditioning in the hot summer months. The visitors' relief can also be a problem, as they do not want to leave the house once inside and can be hard to motivate to begin the tour because once inside they want to just rest and cool off, not immediately jump into a tour. At the Heyward-Washington House this is complicated by the fact that neither other

house museums or the Visitor Center is near by. The guides said the Visitor Center will tell visitors it is a short walk to the Heyward-Washington House when it is actually a mile away. When visitors walk that distance in the heat they are tired and dehydrated by the time they arrive at the house. Regardless of where the visitors come from it can be difficult to keep people moving when they first arrive at the house in hot weather and it can create a security issue. If visitors fall behind the tour or stop to sit down they become unsupervised and may pose a threat to the house.

Once the visitors acclimate to the temperature inside the house the guides (who both also work at the Manigault House) agree that it is evident that they are able to retain more information with the air conditioning then without it. The modern ventilation system will also encourage visitors to ask about the system in place, how the ventilation was installed and where the ducts are located (in the closet in this case).

While visitors are able to focus on the tour, both guides agree that the experience is less authentic at the Heyward-Washington House then at the Manigault House. In addition to the visible ventilation system, the shutters are kept closed to prevent sun damage to the furnishings, making the house much darker then originally intended. The house has historically had moisture problems and which are only compounded by the air conditioning system. One day in the summer of 2007 the air conditioning system broke and moisture trapped in the house caused condensation on the windows and the furniture. The dehumidifiers were not sufficient and the windows were painted shut and could not be opened to relieve the moisture. The house was closed to the public for the day but guides had to remain to keep the doors open and empty the humidifiers.

One of the constant problems at the Heyward-Washington House is that controls for the heating and air conditioning systems being are regulated from Columbia, South Carolina, one hundred and twenty miles away, with no controls being available on site. The system automatically turns off at night once the site closes and turns back on at 7am. The climate in Columbia is hotter and more humid than in Charleston, with almost no breeze; therefore the temperatures and humidity levels in the two cities are not always the same and can cause the interior temperatures in the Heyward-Washington House to be hotter or colder then necessary.

Air Conditioning in New Orleans House Museums

While researching this paper a visit was made to two air-conditioned house museums in the French Quarter of New Orleans, Louisiana: the Hermann-Grima and Gallier Houses. The visit occurred on March 18, 2007, temperatures were in the high 70's and the air conditioning systems were on and functioning. The visit was made to experience how house museums in other hot and humid locations manage the climate for the comfort of their staff and visitors. In both cases the air conditioning systems were installed when the houses were modified from private properties to public house museums during the second half of the twentieth century. The systems have not been replaced and are old and out of date, causing many problems.

Executive Director Mamie Sterkx Gasperecz pointed out the air-conditioning system and issues resulting in the Hermann-Grima House. When the house was converted it was deemed too expensive to install a central heating and air-conditioning system so it was decided to install window units. These units were

installed into windows that had originally extended form floor to ceiling: when modified for the air conditioners the bottom section of the windows were replaced with boards and spaces cut out for the instillation of the air conditioners. This physical change has altered the original appearance of the house more so then in centrally air conditioned houses; instead of a vent, the entire unit is visible.

The air-conditioning system is old and unreliable. Individual units must be cleaned and serviced frequently, which is a financial burden on the limited budget of the site. Even if a central system required repairs, there would only be one unit to service; in the Herman-Grima House multiple units can break independently of one another, resulting in expensive visits from technicians. The air-conditioning units also attract dust so the furniture and window dressings near each unit have to be constantly monitored and cleaned to keep them in stable condition. The system also produces a high level of humidity, to the point that some units expel drops of water that also gather on pieces in the collection, causing damage. This high level of moisture can be felt immediately when entering the house, despite the fact that it was not a very humid day outside and that were are several running dehumidifiers inside the house.

The conditions inside the Gallier House were worse. The Gallier House was built by a prominent local architect, James Gallier Jr. in 1857 as his personal home. When building the house he took the opportunity to experiment with several forms of ventilation, including vents in the ceiling to allow better air flow through the house. Some of the experiments proved to be effective while others did not. When the house became a museum a central heating, ventilation and air conditioning system was installed with vents clearly visible throughout the house. One notable

example is in the parlor where the vents are on the wall about two feet below the ceiling and are extremely obvious. Drawing more attention to the vents is the orientation of the tour, the parlor is partitioned off, and so visitors walk about two feet into the room and are stopped by a Plexiglas barrier. The vents are directly opposite the barrier, putting them immediately in the visitors' lines of site.

The air conditioning system at the Gallier House also produces a high level of humidity and the dehumidifiers in the house cannot handle the large quantity of water collected and have overflowed on several occasions. This has caused damage to the original wood floors and reproduction carpets. The plaster walls in the kitchen and adjoining hallway are rapidly deteriorating and spawling, with large sections crumbling and falling off. Similar damage is also present in the former slave quarters in the back wing of the house, which is also climate controlled.

While the visitor experience was not heavily discussed while visiting these sites, the staff felt the problems associated with the air-conditioning systems prevented the houses from being presented in an authentic state. Furniture is jeopardized; the physical structure of the houses has been altered and is being damaged further by excess moisture. Ms. Gasperecz stated that she hopes to make changes to the systems in the near future to counteract these problems, including investing in a new heating, cooling and air-conditioning system for the Hermann-Grima House and stabilizing the system in the Gallier House.

Another example of the dangers of installing heating and air conditioning systems into historic house museums comes from Charleston, where the Edmondston-Alston House recently experienced a minor fire in October, 2007,

caused by the malfunction of a window unit heater/air conditioner. The fire was contained to one room, no one was injured, and no artifacts were damaged.[76] While the damage was minimal, this is an example of the harm that can come with modernizing historic house museums.

[76] Straub, Audry "Small Fire Affects Historic Home" *Charleston Post and Courier* November 8,2007
http://www.charleston.net/news/2007/nov/08/small_fire_affects_historic_home21583/

Chapter Six: Conclusion

Based on the information collected in the visitor surveys it appears that visitors are not affected by the lack of climate control found in the Aiken-Rhett House, Joseph Manigault House and Drayton Hall. Overwhelmingly visitors said they were comfortable while going through these houses and were not distracted by the temperature while listening to the information being provided on the tour. Drayton Hall was the only site where visitors were distracted by the temperatures, but this correlated with the only day when the temperatures were cool. This indicates that these limited surveys are not enough to make a decisive statement of how visitors are affected by the presence or lack of climate control in Charleston's house museums. What they do indicate is that on warm days with low humidity it is comfortable to be in the house and while the majority of Charleston's days fit into this description, there are many days in the summer and winter that do not.

The format of the visitor survey was created so that it could be quickly completed by visitors and be easy for them to understand. This goal may not have been met. There appeared to be a degree of confusion on some of the answers. For example at the Manigault House all those surveyed stated that they were not aware of the presence of or lack of climate control in the house before visiting, but when asked if their prior knowledge of the climate control system affected their decision to visit the house, seventeen percent said yes.

This was seen as a mistake on the part of the survey; the question asking if the visitors' awareness of the climate control system affected their decision may have been phrased in a way that was confusing to visitors who were moving quickly.

The most prominent example of a flaw in the survey was question four, which asked "Did the lack of or presence of a climate control system affect the authenticity of the experience inside the house?" The choice of answer was either yes or no. Visitors were confused by this question and some asked for clarification while taking the survey. Some interpreted the question as yes, it was an authentic experience, while others took it as, no the experience was not affected. Both answers were given to an almost equal percent and this question, which could have been the most important on the survey, had to be eliminated from the survey analysis due to its inaccuracy.

For a future project it would be suggested that the questions be given more thought in how they are phrased and be tested more thoroughly before being applied in the field to ensure that they are well understood by survey takers. One reason that this question was phrased in this manner is because Drayton Hall has no climate control system, while the other two houses have a minimal system. It could have been more effective to have a different set of surveys for Drayton Hall where the phrasing simply stated "Did the lack of climate control create a more or less authentic experience inside the house?" With the answer options being more authentic and less authentic, this would have clarified the objective of the question and made it easier for visitors to understand.

Some of the most useful information came from interviews with the guides. These interviews gave insight on the annual temperature changes at each site and how visitors react to them. The format of an interview rather then a survey proved to be helpful in obtaining a wide range of information about visitors' reactions to the climate conditions and physical appearance of the house, as well as their personal

opinions. Without this open format details would not have been discovered, including changes to the dress code, particular comments that have been made by visitors and the effects of the climate on certain architectural elements and pieces of the collection.

There was not ample time during this study to survey visitors throughout the year and gain a full perspective of how temperatures affect the visitor experience. Undoubtedly the more extreme temperatures are felt in the summer and winter, and it would be imperative to survey visitors at those times to gain a more dramatic reaction to the conditions. A recommendation to future researchers examining this topic would be to allow enough time to visit each site at east once each winter, spring, summer and fall. Ideally the researcher would allow enough time to visit each site more then once per season, because as was displayed in this study, with temperatures up to eighty degrees in January, the weather will not always reflect the season. A minimum of one year of research would be necessary for an accurate depiction of the weather conditions and visitors reactions to them.

Visiting on multiple occasions would also help to collect a variety of opinions from a wide range of visitors. The visitors to the site in January may not reflect the average visitor the rest of the year, partially due to the popular program in Charleston County, “Be a Tourist in Your Own Town”. This program gives discount admissions to county residents visiting historic and cultural sites during the month. Therefore the visitors in this survey may have represented a disproportionate number of local residents compared to the spring and fall when more out-of-town tourists are visiting. The second week of January is not typically a busy week for tourism; it usually is the end of winter break for most schools and colleges, and many

families have just spent a large sum of money over the holidays making it impractical to vacation or incur unnecessary expenses. The majority of visitors during this time were over the age of fifty-five and probably are not affected by academic schedules.

More visits would also provide opportunities to interview more guides. No more than four guides were surveyed at each site. Each site ranges in the number of employees and volunteers they have giving tours and interacting with the public but an effort should be made to interview as many of them as possible. These house museums appear to have a mix of guides, some who are retired from previous careers and have worked at the site for many years as well as guides who are recent college graduates specializing in the fields of historic preservation, education, public history, American history, and archeology. These two types of guides may differ greatly in how they are able to cope with hot and humid temperatures and may have different perceptions of how the visitors are affected by it. A future researcher should interact with guides of all ages and backgrounds to obtain the most accurate idea of how climate control affects the visitors and the guides' abilities to perform.

Another suggestion for future researchers would be to include a house museum that is fully heated and air conditioned, such as those listed in chapter five. Without this type of house museum the full range of climate control situations is not being explored. Particularly in hot and humid weather it would be important to survey these sites and understand where visitors place their priorities in selecting a house museum to visit. This would be one of the best ways to understand the value of authenticity versus comfort. Interviewing the guides at these sites, as was briefly done for this study by interviewing the guides at the Heyward-Washington House,

will also give insight to the working conditions and the effectiveness of a tour in a climate controlled situation.

Many of these sites are furnished and a thorough exploration of the affects of climate control on the collections was not explored in this work. It was noted by guides at both Drayton Hall and the Aiken-Rhett House that with no climate control or collection visitors had the impression that the house was not being well cared for in general. While at the Manigault House the piece of furniture with the most damage is in the only room with an air conditioner and the house is generally perceived to be well cared for by the public. While the level of care does not impact the visitors' comfort level while touring the house, it does affect their perception of the house and their willingness to visit. This topic could be explored in depth as a separate work.

One final topic that could not be thoroughly explored in this study was the effectiveness of historic methods of heating and cooling and how those could be reinstated to aid in the visitors' comfort where modern systems have not been installed. Some of this has been done. For example, at Drayton Hall louvered shutters that were put on the house in the late 19th century were reinstalled so that guides can now adjust the amount of light coming into the house as the sun moves through the day. One suggestion would be to reexamine writings of the early occupants of the house to determine what they used to heat and cool themselves. At the Manigault House there is discussion of opening a clerestory window in the stair hall to increase air circulation. Allegedly one of the guides had come across a Manigault family document referring to the great amount of comfort that was added

to the house by opening that window to let air move through the house. Other examples are sure to be found at each house.

In conclusion it was determined that while visitors were generally comfortable inside Drayton Hall, the Aiken-Rhett House and the Manigault House not enough surveying was completed to reach a definite conclusion. The only question on the visitor survey directly questioning the authenticity of the experience was convoluted and misunderstood and could not provide an accurate answer. The opinion of the guides generally was that visitors were comfortable during tours year round and that they benefited from and appreciated experiencing the interior climate the way that the occupants of the houses would have. To be able to reach a definitive conclusion year round surveys of both guides and visitors will have to be conducted and further examination will have to be done concerning the historic conditions in and around each house.

Figures

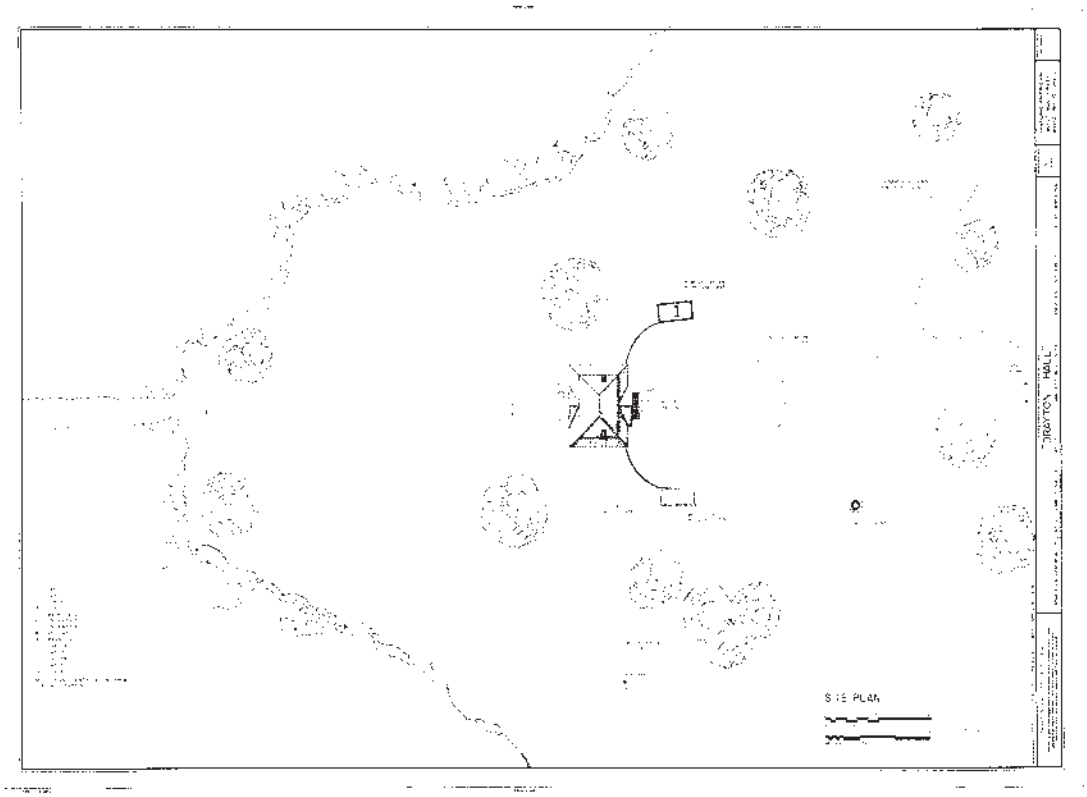

Figure 1 : Plan View, Drayton Hall, HABS SC 377 (1973)

Figure 2: Facade, Drayton Hall, HABS SC 10-CHARV 8-10 (1933)

Figure 3: Facade, Drayton Hall, January, 2008 photo by author

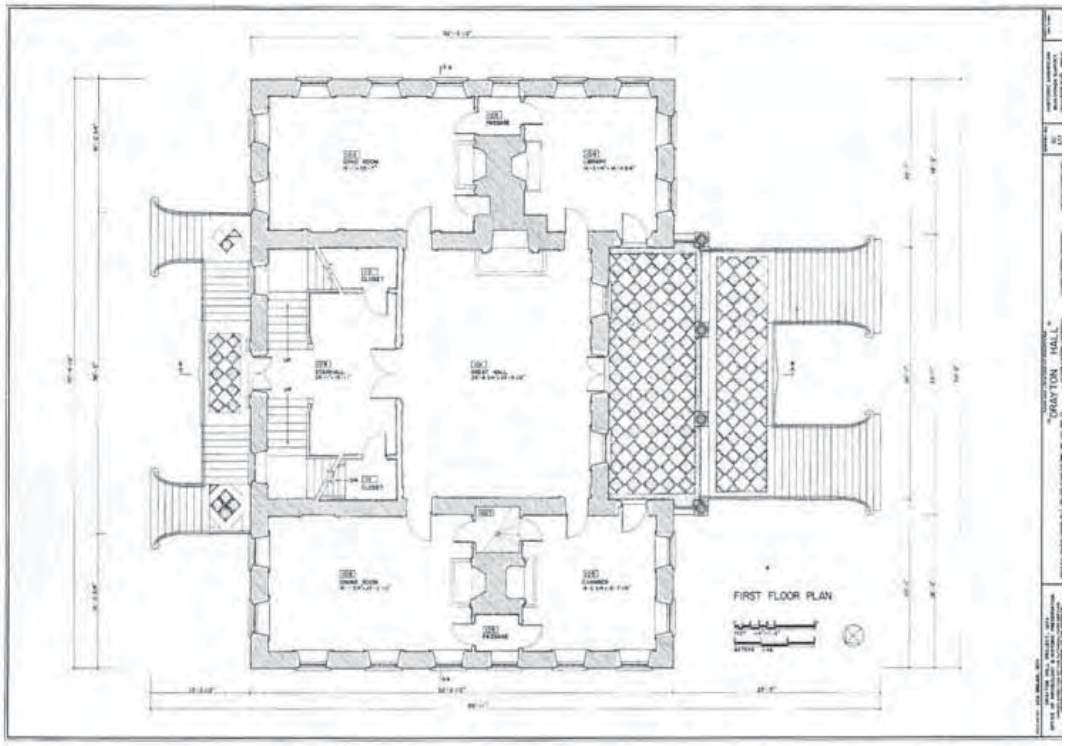

Figure 4 : First Floor Plan, Drayton Hall,HABS SC- 377 (1973)

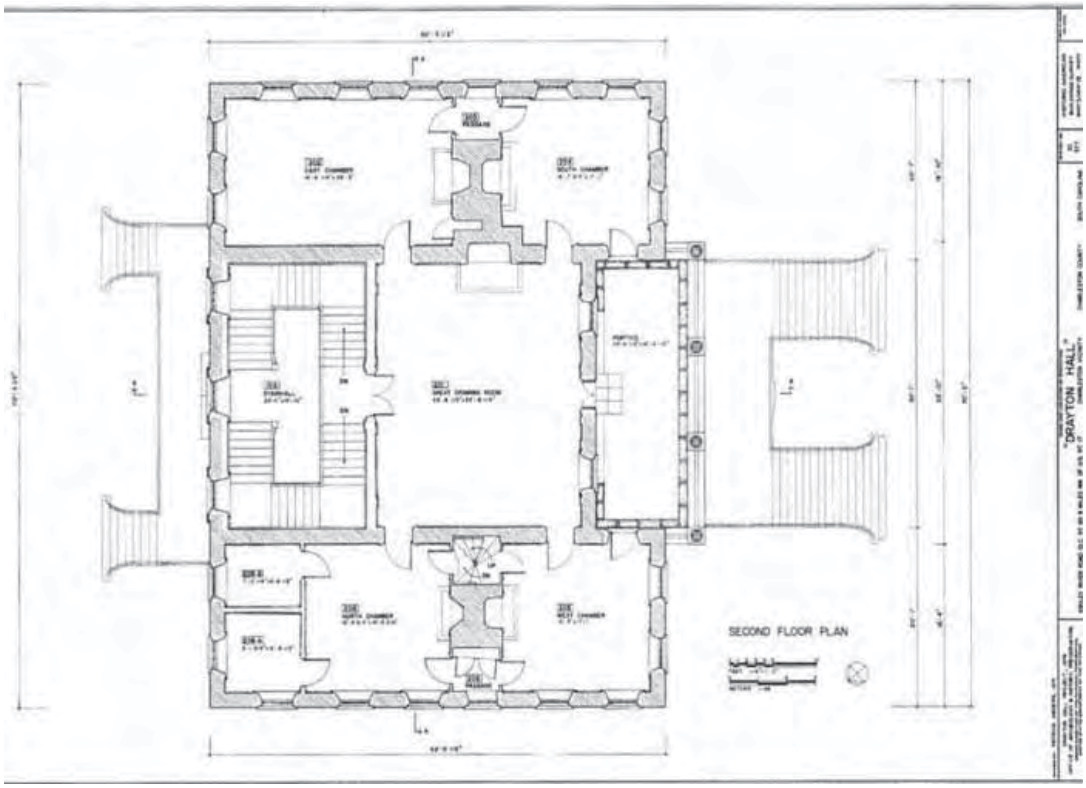

Figure 5: Second Floor Plan, Drayton Hall, HABS, SC 377 (1973)

Figure 6: Visitors on the Second Story Portico, Drayton Hall, January 2008, photo by author

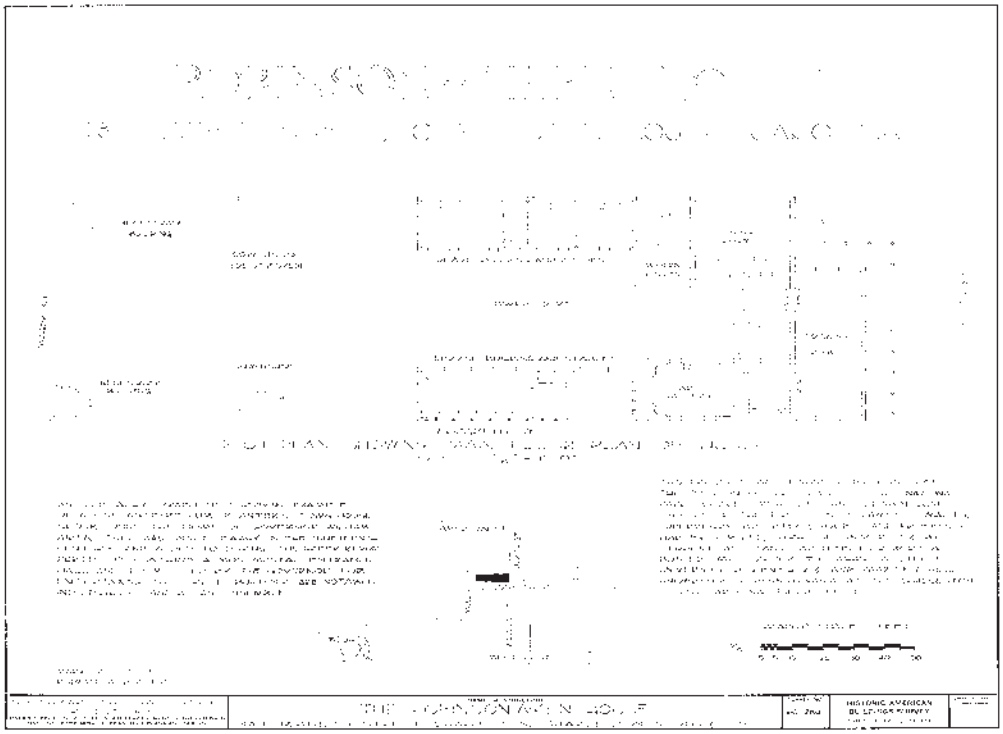

Figure 7: Plan View, Aiken-Rhett House, HABS SC 269 (1963)

Figure 8: Southern facade, Aiken-Rhett House,
HABS SC 10-CHAR 177-9

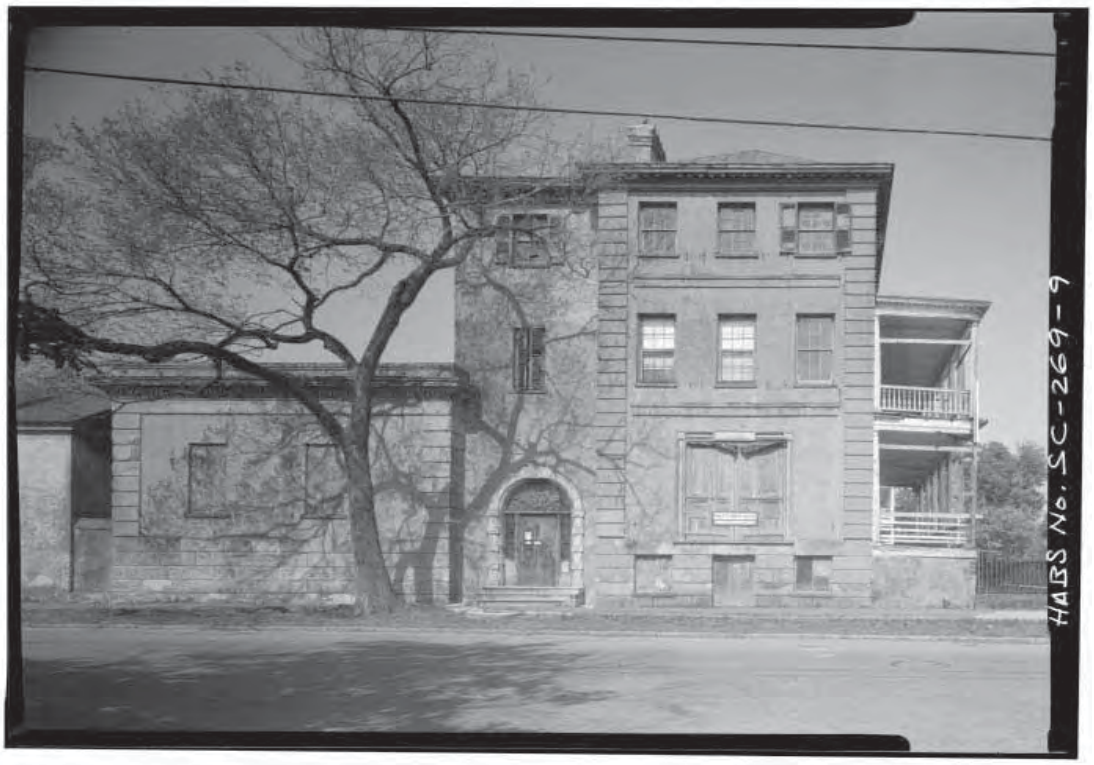

Figure 9: West facade, Aiken-Rhett House,
HABS SC 10-CHAR 177-9

Figure 10: Rear Courtyard, Aiken-Rhett House,
HABS SC 10-CHAR 177-17

Figure 11: Southern Facade, Aiken-Rhett House, Jan. 2008
photo by author

Figure 12: Double Parlor, Aiken-Rhett House,
HABS SC 10-CHAR 177-66

Figure 13: Southeast Parlor, Aiken-Rhett House, HABS SC 10-CHAR 177-67

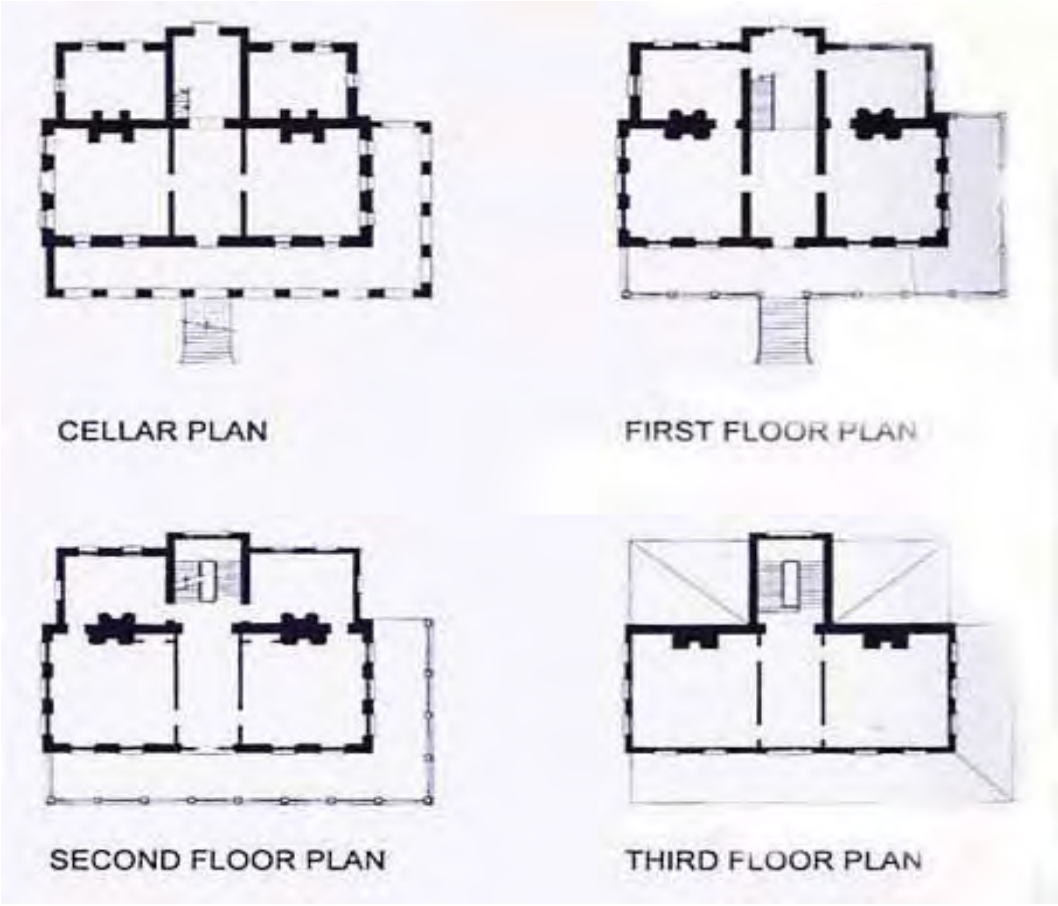

Figure 14: First period of construction, Aiken-Rhett House, Drawings from Buck, Susan L., *Paint DIscoveries in the Aiken-Rhett House Kitchen and Slave Quarters*. (2005)

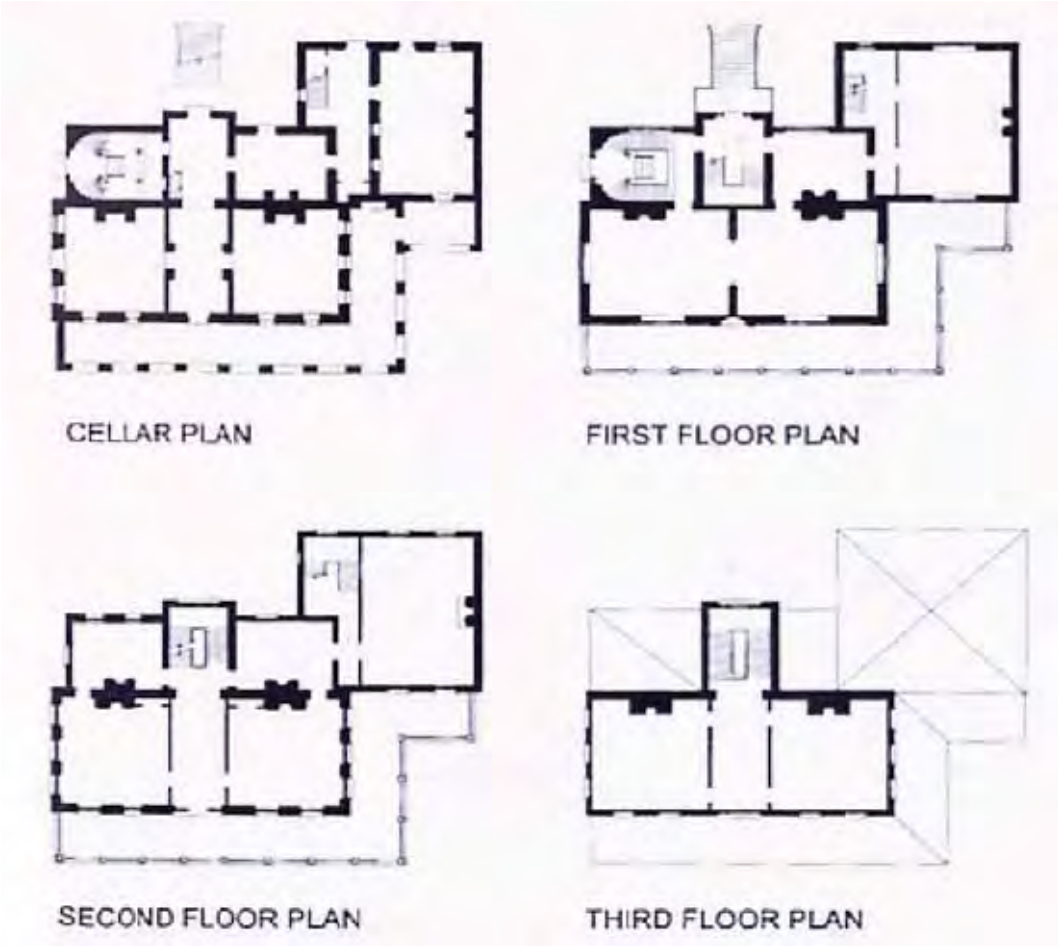

Figure 15: Second period of construction, Aiken-Rhett House, Drawings from Buck, Susan L., *Paint DIscoveries in the Aiken-Rhett House Kitchen and Slave Quarters*. (2005)

Figure 16: Third period of construction, Aiken-Rhett House, Drawings from Buck, Susan L., *Paint DIscoveries in the Aiken-Rhett House Kitchen and Slave Quarters*. (2005)

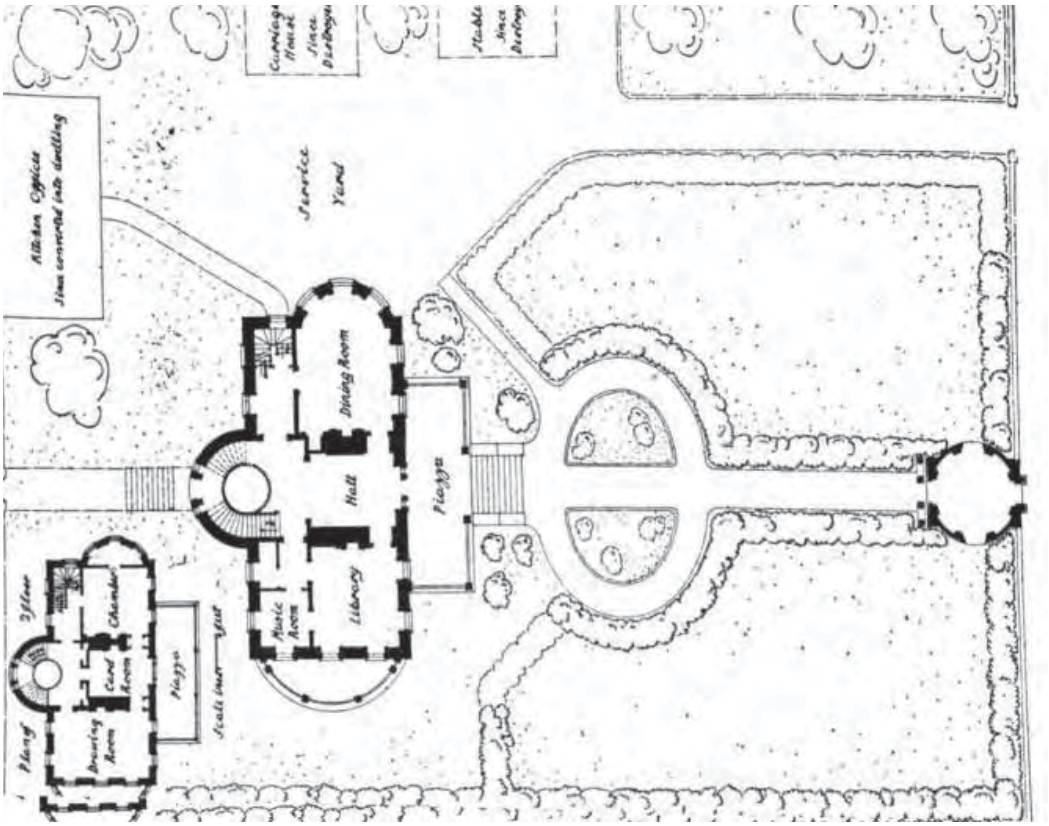

Figure17 : Plan View, Joseph Manigault House,
HABS SC 67-5 (194?)

Figure 18: South Facade, Joseph Manigault House, HABS SC 67-6 (1977-78)

Figure 19: North and West Facades, Joseph Manigault House, HABS SC 67-7 (1977-78)

The Joseph Manigault House, 350 Meeting Street, built c. 1803. Gabriel Manigault, architect. *(Tom Peck)*

Figure 20: South Facade, Joseph Manigault House, Julian, Carl *Architects of Charleston (1945)*

Figure 21: Second Story Stair Hall, Joseph Manigault House,
HABS SC, 10-CHAR, 21-5 67-6 (1977-78)
This window is said to have been used by the Manigault family to improve ventilation in the house

Figure 22: South Facade, Joseph Manigault House,
photo by the author October 2007
The tour begins on this portico

Figure 23: Federal-era Sideboard, Joseph Manigault House,
photo by author, January, 2008
This is the most highly damaged piece of furniture in the house,
note missing veneer on left side bottom and on the left
side of the midle drawer

Figure 24: Federal-era Sideboard , Joseph Manigault House, photo by author, January, 2008
Note the large crack in the veneer on the cabinet door

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Appendix I

Climate Control Visitor Survey

Please be sure to answer each question, we recognize your time is valuable and have kept the survey brief.
The survey is strictly confidential and the data will only be used for research purposes to contribute to a study on How Climate Control Effects the Visitor Experience in Charleston House Museums.
Thank you in advance for taking the time to participate, for further information or with questions please contact Elizabeth Kleinfelder at kleinfa@design.upenn.edu

Personal Data:

What is your age?

- ☐ Under 18
- ☐ 18- 24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65 and older

What is your sex?

- ☐ Male
- ☐ Female

Where are you from?

City ..... State.....

How Many Times Have You Visited This Site?

- ☐ 0-1
- ☐ 2-4
- ☐ 4 or more

Questions About Your Visit

1.) Prior to your visit, were you aware of the type of climate control system (or lack thereof) at this site?

☐ Yes ☐ No

2.) If you did know about the type of system in place, did it effect your decision to visit?

☐ Yes ☐ No ☐ Was not aware

3.) Was the temperature inside the house comfortable?

☐ Yes ☐ No

4.) Did the lack of or presence of a climate control system effect the authenticity of the experience inside the house?

☐ Yes ☐ No

5.) Was the lack of or presence of a climate control system distracting; i.e. was it too hot, too cold , visually obtrusive or loud?

☐ Yes ☐ No

6.) What other House Museums have you visited in Charleston? .....

Comments and Questions:.....

.....

.....

Appendix II

2006 CHARLESTON AREA VISITOR INTERCEPT SURVEY

PRELIMINARY RESULTS FOR MARCH – JULY 2006

September 19, 2006

Department of Hospitality and Tourism Management
School of Business and Economics
College of Charleston

Funding provided by the Charleston Area Convention and Visitors Bureau and Office of Tourism Analysis at College of Charleston

TABLE OF CONTENTS

INTRODUCTION

The Charleston Area Convention and Visitors Bureau (CACVB) conducts a visitor intercept survey through the Office of Tourism Analysis at the College of Charleston on an ongoing basis. The Charleston area receives more than four million visitors every year. Understanding their travel behavior, expenditures, wants and needs, and likes and dislikes is crucial for target marketing as well as improving service quality of tourism in Charleston and increasing guests' satisfaction levels.

RESEARCH METHODS

This study is a follow-up of the intercept study conducted for the CACVB by the College of Charleston in 2004 and 2005. The population of the study was individuals who visited attractions in downtown Charleston from March to July 2006. Data collectors (several undergraduate students from the College of Charleston) approached visitors randomly in four prime tourism areas in the historic district during a broad cross section of times of the day time on randomly selected days of the week to ask for their voluntary participation in this visitor survey. A postage paid mail-back survey was provided to the visitor in addition to a complimentary bottle of water as an incentive. In agreement with the CACVB, the four areas of survey distribution were the Aquarium Wharf complex, the City Market, Waterfront Park, and Marion Square. The survey form is appended (Appendix B). Potential respondents were pre-qualified to ensure that their home was outside the Charleston Tri-County area. No more than one person per travel party was asked to participate. A total of 373 useable survey forms were returned among the estimated 2,000 survey forms handed out yielding a response rate of 18.7%. The major questions this study attempts to answer are: Who are these Charleston visitors? How much do they spend in the Charleston area? Where are they from? What information sources are they using, both for deciding where to visit and planning their trips?

PROFILES OF CHARLESTON VISITORS

The results reveal that Charleston visitors are more likely to be female (64.9%), married (67.6%), university/college educated (55.0%) (Table 1). Their mean age is 47.8 and the mode is 55-60 (see Figure 1). The average travel party was composed of 3.3 adults (the mode is 2) traveling with 1 child (the mode is 0).

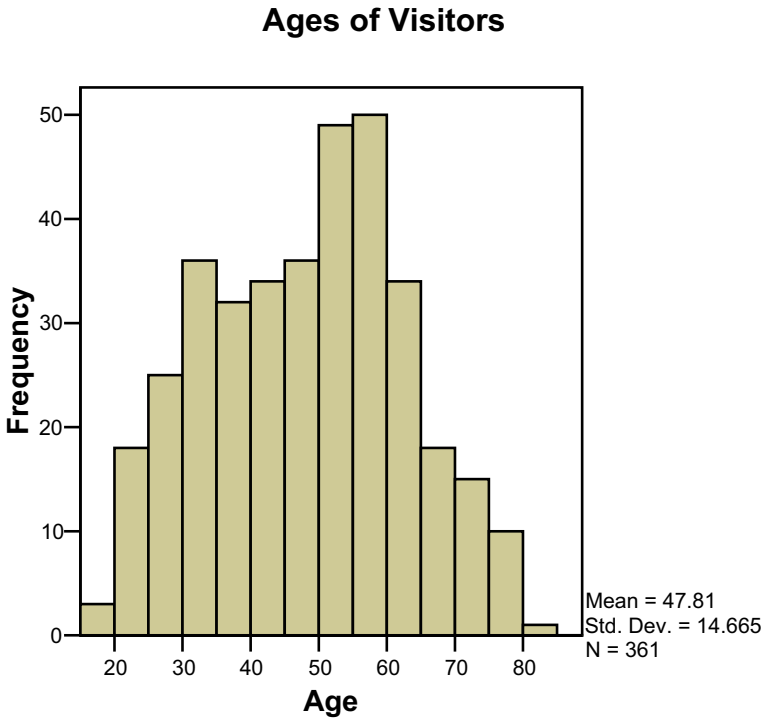


Figure 1. Age Distribution of Charleston Visitors

Table 1. Education Level

Educational Attainment	#	%
College Graduate	113	30.3
Masters/Graduate Degree	92	24.7
Some College	63	16.9
Doctoral Degree	27	7.2
High School Graduate	26	7.0
Some Graduate School	23	6.2
Technical/Trade School	10	2.7
Less than 12 years	7	1.9
Unanswered	12	3.2

Table 2. Income Levels

Annual Household Income	#	%
Up to 49,999	50	13.4
50,000-59,999	45	12.1
60,000-74,999	43	11.5
75,000-99,9999	60	16.1
100,000-124,999	47	12.6
125,000-149,999	26	7.0

$150,000-199,999	24	6.4
$200,000+	32	8.6
Unanswered	46	12.3

Respondents were primarily full-time employees (49.6%) or retired (21.4%) (Appendix A). Seven out of ten respondents (70.9%) reported an annual household income of $60,000 or more; 15.0% have an annual income of $150,000 or more (Table 2).

These Charleston visitors were mainly from South Carolina and adjacent states. Specifically, the top three origins were South Carolina (15.5%), North Carolina (12.9%), and Georgia (7.2%) (Table 3).

Table 3. Visitors' Top Origin States

State	Percentage	State	Percentage
SC	15.5	MI	3.2
NC	12.9	TX	2.7
GA	7.2	NJ	2.4
FL	5.9	TN	2.4
NY	5.6	CA	2.1
VA	5.6	WI	1.9
PA	4.8	MD	1.6
OH	4.3	AL	1.1
MA	3.2	DC	1.1

- *Around 6% are international visitors; the two top countries of origin are UK and Canada (a total of 3%).*

USE OF INFORMATION SOURCES

Asked "Did you consider any other destinations when planning your trip?" a high 66.5% indicated that they did. Asked , "What other cities did you consider?" a high 17.4% of all respondents considered Savannah, followed by Hilton Head Island (6.4%) and Myrtle Beach (3.2%). These results should not be considered loss of market share since these visitors considered the alternatives and chose Charleston anyway. It does, however, indicate that the visitors consider alternatives and are active information seekers.

Visitors use a variety of information sources to make their destination choices and plan their trips, including both commercial and non-commercial information sources. Chief among these information sources is information available on the World Wide Web. The question "Which of the following sources of information on the Internet did you use in planning this trip" revealed the most frequently used source of information was Google, followed by the CACVB web site, Expedia.com, an individual hotel's website and the AAA site (Table 4). Considering Google is a search engine and directory, the CACVB web site is the most used content web site for researching destinations.

Table 4. Information Sources Visitors Used in Researching Destinations

Web Site	#	%
Google	111	31.4
Don't use the Internet	68	18.2
Charlestoncvb.com	53	14.2
Expedia	53	14.2
Individual Hotel Web Site	44	11.8
AAA.com	39	10.5
Yahoo	35	9.4
Travelocity	35	9.4
Other*	30	8.0
Individual Airline Web Site	20	5.4
Orbitz.com	18	4.8
Hotwire	14	3.8
AOL Travel	7	1.9
TripAdvisor	4	1.1
Sidestep	2	0.5

**The most often cited "Other" Internet web sites include hotel.com, MapQuest, and SpoletoUSA.*

Table 5. Information Sources that Influenced the Decision to Visit Charleston

Influential Factors	#	%
Friend or Relative's Recommendation	163	43.7
Visited Charleston before	132	35.4
Other*	59	15.8
Official Charleston Area Visitors Guide	34	9.1
Charleston Area Convention and Visitor Bureau Web Site	27	7.2
Brochure	22	5.9
Festival/Special Event	20	5.4
Magazine/Newspaper Article	18	4.8
Television Show	4	1.1
Magazine Ad	4	1.1
Travel Agent	6	1.6

**Other includes business, conferences, and VFR.*

The question in researching various destinations, "Which of the following influenced

your decision to visit Charleston?," revealed the most influential source of information to be advice from friends or relatives, followed by prior visiting experience (Table 5). Specifically, greater than two in five respondents reported being influenced by friends and relatives; one in three drew upon their past experiences in arriving at the decision to visit Charleston again. It is interesting to note that the CACVB's visitor guide and website was the third and fourth most influential source of information.

Table 6. Information Sources for Planning the Trip

Resources/Tools used to plan your trip?	**#**	**%**
Friend or Relative's suggestions	150	40.2
Travel web sites	93	24.9
Official Charleston Area Visitors Guide	71	19.0
Travel books and Brochure	70	18.8
Local AAA Office	62	16.6
Charlestoncvb.com	56	15.0
Individual hotel web sites (such as Hilton.com)	45	12.1
Individual airline web sites (such as USAirways.com)	20	5.4
Other*	37	9.9
Travel Agent	14	3.8

**Other consists of MapQuest, Island Reality web site, and visited before.*

The inquirers were also asked about the information sources they used to plan the trip. Advice from friends and relatives (40.2%) and travel web sites (24.9%) were the two most frequently mentioned sources of information (Table 6). It is also worth noting that nearly one in five (19%) of all respondents indicated the CACVB official visitor guide was influential in planning their trips to Charleston. In terms of their trip planning behavior, greater than a half (54.2%) of the respondents reported they searched online for information. Some 40.7% of the visitors who stayed at a hotel or inn booked their hotel rooms online; 44.0% of those who used a rental car booked it online and 5.6% booked a travel package online.

The question "What are the magazines you regularly read" generated a wide gamut of readership behaviors (See Appendix A). Chief among them are *AAA Magazines, Southern Living, Better Homes and Gardens*, *National Geographic*, and *Coastal Living* (Table 7 shows the top 5 magazines).

Table 7: Magazine Readership

Magazines you read regularly	%
AAA Magazine (s)	22.0
Southern Living	19.8

Better Homes & Gardens	15.0
National Geographic	12.9
Coastal Living	11.0

VISITATION BEHAVIOR

More than half (56.3%) of visitors are first-time visitors. The average group size was 3.3 adults (mode is 2) with 1 child (average is 0.98). Approximately 75.0% of respondents arrived in the area by either their own cars or rental cars. In addition, a high 16.1% arrived via airplane (Table 8). On average, the respondents who have visited Charleston before indicated that they had previously visited the area an average of 5.1 times. The most frequently used accommodation types while in the Charleston area were hotels/motels (52.3%), staying with friends and relatives (15.5%) or Inns (7.5%) (Table 9). They spent an average of 4.0 nights in Charleston, with a mode of 2 nights.

Table 8. Transportation mode to the Charleston area

Transportation	#	%
Own Car	256	68.6
Airplane	60	16.1
Rental Car	24	6.4
Flew To Another City Then Rented a Car	11	2.9
Other	7	1.9
Private Boat	5	1.3
Chartered Bus	4	1.1
Cruise Ship	1	0.3
Unanswered	5	1.4

Table 9. Accommodation Choices

Accommodations	#	%
Hotel and motel	195	52.3
Staying with friends or relatives	58	15.5
Inn	28	7.5
Resorts or Villas	18	4.8
Bed and Breakfast	16	4.3
Other*	11	2.9
Unanswered	47	12.7

**Other mainly consists of rental house and condo.*

The primary trip purpose reported was for vacations (64.1%), followed by visiting friends and relatives (VFR) (9.9%) and for business (5.6%) (Table 10). Alternatively, when asked about their reasons for visiting the Charleston area, most visitors

responded: experiencing history, visiting its attractions, recommendations by friends or families, close to other cities, architecture, and beach. The top attractive qualities of the Charleston area are its historic ambience, local culture, attractions, architecture, a place where it is easy to relax, and fine dining (see Appendix A).

Table 10. Trip Purpose

Purpose of Visit	#	%
Vacation	239	64.1
Visiting Friends and Relatives	37	9.9
Business	21	5.6
Just Pass Through	20	5.4
Attending a Conference or Meeting	20	5.4
Other	19	5.1
Attending Event or Performance	17	4.6

**Other includes day trips from another city, spring break, bridge run and visiting colleges*

Approximately 66.5% of the respondents reported visiting an official Charleston Area Visitor Center. A high 97.4% of these visitors agreed or strongly agreed with the statement that "I thoroughly enjoyed my stay in the Charleston area". When asked about how long it will be until they return to the Charleston area for another visit, the mean repeat intention averaged 2.9 years with a mode of 0-1 year.

VISITOR SPENDING

The survey also asked the respondents to report their expenditures while in the Charleston area. Table 10 shows the break down of the visitor expenses. Visitors who stayed overnight spent an average of $216 per adult per day. In addition, 70.3% of VFR visitors have $0 lodging expense. The survey also asked the respondents to report their expenses. Table 10 shows the break up of the visitor expenses.

Table 11. Breakup of Overnight Visitor Expenses

Category	Per Day per Person	Per Person per Visit	Per Travel Party per Visit
Food and Dining	$49	$151	$399
Lodging	$75	$288	$813
Local Transportation	$16	$82	$200
Airfare	$111	$405	$1153
Admission and Tours	$21	$64	$180
Shopping	$35	$169	$368
Other	$15	$45	$122
Total Local Expenditure*	$216	$532	$1394

** The sum of all categories does not equal total expenditure because each category is calculated based on non-zero values; airfare is not included in local expenditures.*

VISITORS' LIKES AND DISLIKES

Respondents were also asked to report in their own words the three things they enjoyed most, as well as the three things they enjoyed least, about visiting the Charleston area. A total of 968 enjoyable responses and 213 non enjoyable responses were provided yielding a ration of 4.5 to 1. Table 12 and Table 13 are summaries of those responses. Greater than two out of every five respondents indicated that Charleston's food and dining opportunities was their most enjoyable experience suggesting that Charleston has emerged as a culinary destination. The reader is encouraged to carefully review Table 12 for other enjoyable aspects of these respondents' trip to Charleston.

Table 12. Most Enjoyed Things from an Open-Ended Question

	#	%		#	%
Food and Dining	157	42.1	Culture	13	3.5
Whole Destination	129	34.6	Cleanliness	12	3.2
History	98	26.3	Hotels	10	2.7
Architecture	81	21.7	VFR	8	2.1
Heritage Tours/Rides	78	20.9	Area Islands	7	1.9
Charm and Hospitality	75	20.1	Location	7	1.9
Attractions	63	16.9	Meetings and Conventions	7	1.9
Ambiance	56	15.0	Festivals and Events	6	1.6
Weather	41	11.0	Bars and Nightlife	4	1.1
Shopping	38	10.2	College	4	1.1
Miscellaneous*	28	7.5	Bed and Breakfast	3	0.8
Transportation	26	7.0	Beverage	3	0.8
The Arts, Music, & Museums	16	4.3			

**Miscellaneous includes boating, fishing, and many things to do.*

Table 13. Least Enjoyed Things from an Open-Ended Question

	#	%		#	%
Nothing	93	24.9	Tour Guides	6	1.6
Cost in general	19	5.1	Cost of Food	5	1.3
Vendors and Sidewalk Salesmen	19	5.1	Road Construction	5	1.3
Restrooms	13	3.5	Surrounding Area	5	1.3
Food	12	3.2	Transportation	5	1.3
Hours of Operation	12	3.2	Building Conditions	4	1.1
Navigating in the City	12	3.2	Cleanliness	4	1.1
Weather	12	3.2	Commercialized	4	1.1
Congestion	11	2.9	Cost of Parking	4	1.1

Parking	11	2.9	Insects	4	1.1
Smell	10	2.7	Night Life	4	1.1
Road Signs	9	2.4	Shopping	4	1.1
Driving	8	2.1			
Hotel Rates	7	1.9	Traffic	4	1.1
Hotel in General	6	1.6	Walking Downtown	4	1.1
Poverty	6	1.6			

For every dislike reported there were several likes suggesting that visitors are satisfied with their visit. This high satisfaction was further evidenced by the high number of respondents who wrote in describing the things visitors enjoyed least about their visit to Charleston. Specifically, a high one in four (24.9%) of respondents indicated "nothing" in the least enjoyed category.

CONCLUSION

The profile of Charleston's visitors appears to be very stable. Drawing from responses to an onsite visitor intercept survey, Charleston's visitors are primarily middle-aged, college educated and have upper-middle income. One in three is from SC, NC and GA. More than half of the visitors are first-time visitors. The mode travel party is 2 adults without children. Most visitors arrive by car, followed by airplane. More than half of them stay in hotels or motels, followed by staying with friends or relatives. They spend an average of 4 nights in Charleston. Around two in three visitors come to Charleston on a vacation, followed by visiting friends and relatives (VFR) (approximately 10%).

Visitors use a variety of information sources to make their destination choices and plan their trips. The most frequently used source of information was Google, followed by the CACVB web site, Expedia.com, an individual hotel's website and the AAA site. The most influential source of information in their decision making is advice from friends or relatives, followed by prior visiting experience. CACVB's visitor guide and website was the third and fourth most influential source of information. Advice from friends and relatives and travel web sites were the two most frequently mentioned sources for planning their trips. The top five magazines the visitors read are *AAA Magazine(s)*, *Southern Living*, *Better Homes and Gardens*, *National Geographic*, and *Coastal Living*.

More than half of all respondents searched for information online; 2 in 5 booked their hotel rooms online; and more than 2 in 5 booked their rental car online. Approximately 2 in 3 visitors used an official visitor center. More than 97% of them enjoyed their stay in the Charleston area.

Overnight tourists spent an average of $216 per adult per day. Food and dining, whole destination, and history and architecture are the things enjoyed most by visitors of Charleston; cost, street vendors, and the availability of restrooms are the least enjoyed things.

APPENDIX A. RESULTS OF ALL QUESTIONS IN 2006 SURVEY

Question 1. Is this your first trip to the Charleston area?

	#	%
Yes	210	56.3
No	163	43.7

If No, how many times have you visited the Charleston area in the last five years?

Number of Visits to Charleston	#	%
0	29	13.8
1	25	11.9
2	36	17.1
3	35	16.7
4	12	5.7
5	14	6.7
6	10	4.8
7	4	1.9
8	5	2.4
9	1	.5
10	12	5.7
15	5	2.4
20	8	3.8
24	1	.5
25	2	1.0
30	3	1.4
50	1	0.5
Unanswered	8	3.7

**The mean is 5.1 times.*

Question 2. Including yourself, how many people are in your travel party?
(Number of Adults and Number of Children under 18)

Number of Adults	#	%
1	32	8.6
2	229	61.4
3	37	9.9
4	40	10.7
5	8	2.1

6	6	1.6
7	2	.5
8	2	.5
9	2	.5
10 and above	15	4.2

**Average is 3.31 adults; mode is 2*

Number of Children	#	%
0	201	53.9
1	33	8.8
2	40	10.7
3	10	2.7
4	5	1.3
5	6	1.6
6	1	.3
7	1	.3
Unanswered	75	20.1

**Average is 0.98; mode is 0*

Question 3. How did you come to the Charleston area?

Transportation	**#**	**%**
Own Car	256	68.6
Airplane	60	16.1
Rental Car	24	6.4
Flew To Another City Then Rented a Car	11	2.9
Other	7	1.9
Private Boat	5	1.3
Chartered Bus	4	1.1
Cruise Ship	1	0.3
Unanswered	5	1.4

City From Which Rented Car	#	%
Savannah, GA	5	1.3
Atlanta, GA	3	0.8
Columbia, SC	2	0.6
Charlotte, NC	1	0.3
Myrtle Beach, SC	1	0.3

Other Way Came to	#	%

Charleston		
Motor Home	4	1.0
AMTRAK	1	0.3
Church Bus	1	0.3
Friend's Car	1	0.3
Motorcycle	1	0.3
Private Plane	1	0.3
Taxi	1	0.3
Train	1	0.3

Question 4. How many nights in total will you be staying in the Charleston area?

Number of Nights you stayed in Charleston	#	%
0	50	13.4
1	34	9.1
2	83	22.3
3	79	21.2
4	29	7.8
5	14	3.8
6	16	4.3
7	29	7.8
8	4	1.1
9	1	.3
10	3	.8
11	1	.3
12-120	6	1.6
	24	6.2

** The average of night stayed is 4.0 nights.*

Your accommodations:

Accommodations	**#**	**%**
Hotel	195	52.3
Staying with friends or relatives	58	15.5
Inn	28	7.5
Resorts or Villas	18	4.8
Bed and Breakfast	16	4.3
Other*	11	2.9
Unanswered	47	12.7

**Other mainly consists of rental house and condo.*

Question 5. What was the main purpose for this visit to the Charleston area?

Purpose of Visit	#	%
Vacation	239	64.1
Visiting Friends and Relatives	37	9.9
Business	21	5.6
Just Pass Through	20	5.4
Attending a Conference or Meeting	20	5.4
Other	19	5.1
Attending Event or Performance	17	4.6

**Other includes day trip from another city, spring break, bridge run and visiting colleges*

Question 6. Why did you decide to visit the Charleston area?

Major Reasons
History
Attractions
Friends or family recommendations
Close by or close to other cities
Architecture
Beach and water

Top Attractions for Visiting	#	%
Enjoy history/historic ambience	245	65.7
Experience Local Culture	171	45.8
Visit Attractions (museums, heritage sites, aquarium, etc.)	178	47.7
View Architecture	194	52.0
Relaxation	193	51.7
Enjoy Fine Dining	123	33.0
Visit the Beach	101	27.1
Visit Art Galleries	30	8.0
Attending Performing Arts Events	30	8.0
Play Golf	23	6.2
Fishing/boating	24	6.4

Question 7. Did you do any of the following before you came to the Charleston area?

	#	%
Searched for Charleston related information	202	54.2
Booked hotel online*	90	40.7
Booked rental car online**	40	44.0

Booked a travel package online	21	5.6

** Among those visitors who stayed at a hotel or inn;*
*** Among those visitors who used a rental car.*

Visit a Visitor Center	#	%
Yes	145	38.9%
No	224	60.1%

Question 9. Please estimate how much money in total your travel party will spend/have spent in the Charleston area for each of the following categories:

Breakup of Visitor Expenses*

Expense Category	Average Expenses per day per person*
Food and Dining	49
Lodging	75
Local Transportation	16
Air Fare	111
Admission and Tours	21
Shopping	35
Other	15

*Missing data were ignored;
*Average $217 per adult per day for all overnight tourists;
*70.3% of VFR visitors have $0 lodging expense.

Question 10. Please indicate how you feel about your trip to the Charleston area by responding to the following questions.

I thoroughly enjoyed my stay in the Charleston Area.

	#	%
Strongly Agree	258	69.2
Agree	105	28.2
Disagree	5	1.3
Strongly Disagree	2	0.5
Unanswered	3	0.8

Question 11. I probably will visit the Charleston area again within the next _____ years.

	#	%

0-1 year	158	42.4
2-3 years	72	19.3
4-5 years	56	15.0
6-20 years	31	8.3
Not Answered	56	15.0

Question 12. Please list three things you enjoyed most about your visit to the Charleston area:

	#	%		#	%
Food and dining	157	42.1	Culture	13	3.5
Whole destination	129	34.6	Cleanliness	12	3.2
History	98	26.3	Hotels	10	2.7
Architecture	81	21.7	VFR	8	2.1
Heritage Tours/Rides	78	20.9	Area Islands	7	1.9
Charm and Hospitality	75	20.1	Location	7	1.9
Attractions	63	16.9	Meetings and Conventions	7	1.9
Ambiance	56	15.0	Festivals and Events	6	1.6
Weather	41	11.0	Bars and Nightlife	4	1.1
Shopping	38	10.2	College	4	1.1
Miscellaneous*	28	7.5	Bed and Breakfast	3	0.8
Transportation	26	7.0	Beverage	3	0.8
The Arts, Music, & Museums	16	4.3			

**Miscellaneous includes boating, fishing, and many things to do.*

Question 13. Please list three things you enjoyed least about your visit to the Charleston area:

	#	%		#	%
None	93	24.9	Tour Guides	6	1.6
Cost in general	19	5.1	Cost of Food	5	1.3
Vendors and Salesmen	19	5.1	Road Construction	5	1.3
Restrooms	13	3.5	Surrounding Area	5	1.3
Food	12	3.2	Transportation	5	1.3
Hours of Operation	12	3.2	Building Conditions	4	1.1
Navigating in the City	12	3.2	Cleanliness	4	1.1
Weather	12	3.2	Commercialized	4	1.1
Congestion	11	2.9	Cost of Parking	4	1.1
Parking	11	2.9	Folly Beach	4	1.1
Smell	10	2.7	Insects	4	1.1

Road Signs	9	2.4	Night Life	4	1.1
Driving	8	2.1	Shopping	4	1.1
Hotel Rates	7	1.9	Traffic	4	1.1
Hotel in general	6	1.6	Walking Downtown	4	1.1
Poverty	6	1.6			

Question 14. Many people use the Internet to research travel destinations. Which of the following web sites did you use when planning this trip?

Web Site	#	%
Google	111	31.4
Don't use the Internet	68	18.2
Charlestoncvb.com	53	14.2
Expedia	53	14.2
Individual Hotel Web Site	44	11.8
AAA.com	39	10.5
Yahoo	35	9.4
Travelocity	35	9.4
Other*	30	8.0
Individual Airline Web Site	20	5.4
Orbitz.com	18	4.8
Hotwire	14	3.8
AOL Travel	7	1.9
TripAdvisor	4	1.1
Sidestep	2	0.5

**The most often cited "Other" Internet web sites include hotel.com, MapQuest, and SpoletoUSA.*

Question 15. Did you consider any other destinations when planning your trip?

Other Destinations	#	%
Yes	248	66.5
No	125	33.5

Other cities considered:

Competing Cities	#	%
Savannah, GA	65	17.4
Hilton Head, SC	24	6.4
Myrtle Beach, SC	12	3.2
Asheville, NC	6	1.6

St. Augustine, FL	5	1.3
Beaufort, SC	4	1.1
Tampa, FL	4	1.1

Question 16. In researching various destinations, which of the following influenced you to consider the Charleston area?

Influential Factors	**#**	**%**
Friend or Relative's Recommendation	163	43.7
Visited Charleston before	132	35.4
Other*	59	15.8
Official Charleston Area Visitors Guide	34	9.1
Charleston Area Convention and Visitor Bureau Web Site	27	7.2
Brochure	22	5.9
Festival/Special Event	20	5.4
Magazine/Newspaper Article	18	4.8
Television Show	4	1.1
Magazine Ad	4	1.1
Travel Agent	6	1.6

**Other includes business, conferences, and VFR.*

Question 17. Once you selected this destination for this trip, what resources or tools did you use to plan your visit?

Resources/Tools used to plan your trip?	**#**	**%**
Friend or Relative's suggestions	150	40.2
Travel web sites	93	24.9
Official Charleston Area Visitors Guide	71	19.0
Travel books and Brochure	70	18.8
Local AAA Office	62	16.6
Charlestoncvb.com	56	15.0
Individual hotel web sites (such as Hilton.com)	45	12.1
Individual airline web sites (such as USAirways.com)	20	5.4
Other*	37	9.9
Travel Agent	14	3.8

**Other consists of MapQuest, Island Reality web site, and visited before.*

Question 18. Listed below are magazines that many people read. Please indicate the magazines which you regularly read.

Magazines you read regularly	**%**
AAA Magazine (s)	22.0
Southern Living	19.8
Better Homes & Gardens	15.0
National Geographic	12.9
Coastal Living	11.0
Oprah Magazine	10.5
Reader's Digest	10.2
Good Housekeeping	8.3
Cooking Light	8.0
Other*	8.0
New York Times	7.5
New Yorker	7.5
Ladies Home Journal	6.8
House & Garden	6.7
Family Circle	6.4
Conde Nast Traveler	6.2
Real Simple	5.9
Food & Wine	5.7
Woman's Day	5.4
Travel & Leisure	5.4
Gourmet	4.0
Bon Appetit	3.5
Cottage Living	3.2
Sky (Delta Airlines in-flight magazine)	2.7
Country Home	2.4
Midwest Living	2.2
Arthur Frommer's Budget Travel	2.1
Endless Vacation	2.1
Attache	2.1
Family Fun	0.8
Preservation	0.8
Traditional Home	0.5
American Legacy	0.3
Saveur	0.3

**Other consists of Newsweek, People, and the Economist.*

Question 19. From the above list, what are your favorite magazines?

Favorite Magazine	#
Southern Living	35
Oprah	15
Reader's Digest	13
National Geographic	12
Real Simple	10
Coastal Living	7
New York Times	7
Smithsonian	6
Conde' Nast Traveler	5
Food and Wine	5
House & Garden	5
Better Homes & Gardens	4
Cooking Light	4
Ladie's Home Journal	4
Time	4
Travel & Leisure	4

Question 20. Where do you live?

State	Percentage	State	Percentage
SC	15.5	MI	3.2
NC	12.9	TX	2.7
GA	7.2	NJ	2.4
FL	5.9	TN	2.4
NY	5.6	CA	2.1
VA	5.6	WI	1.9
PA	4.8	MD	1.6
OH	4.3	AL	1.1
MA	3.2	DC	1.1

Question 21. Gender:

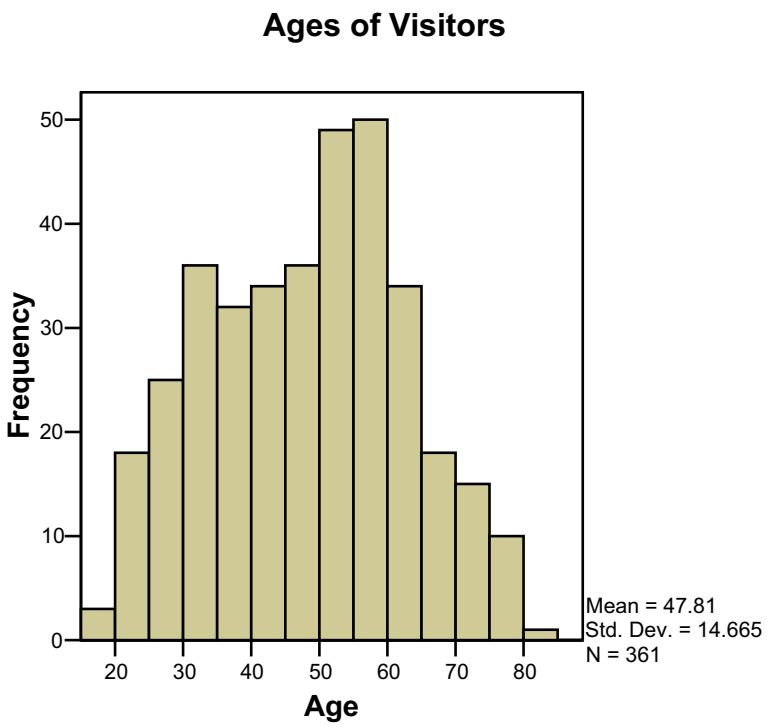
Gender	**#**	**%**
Female	242	64.9
Male	121	32.4
Unanswered	10	2.7

Question 22. Marital Status:

Marital Status	**#**	**%**
Married	252	67.6
Single	84	22.5
Separated	15	4.0

Widowed	10	2.7
Unanswered	12	3.2

Question 23. Your age:



Their ages range from 18 to 81 with an average of 47.8.

Question 24. How many children under 18 years old do you have in your household?

Number of Kids	Frequency	Percent
0	213	57.1
1	50	13.4
2	39	10.5
3	12	3.2
4	4	1.1
6	1	0.3
Unanswered	54	14.5

Question 25. Indicate your highest education level.

Educational Attainment	#	%
College Graduate	113	30.3
Masters/Graduate Degree	92	24.7
Some College	63	16.9
Doctoral Degree	27	7.2
High School Graduate	26	7.0
Some Graduate School	23	6.2
Technical/Trade School	10	2.7
Less than 12 years	7	1.9
Unanswered	12	3.2

Question 26. Which of the following best describes your current employment status?

Employment Status	#	%
Full-time Employed	185	49.6
Retired	80	21.4
Home maker	33	8.8
Part-time Employed	31	8.3
Full-time Student	17	4.6
Unanswered	17	4.6
Unemployed	6	1.6
Part-time Student	3	.8
Other	1	.3

Question 27. In what category is your annual household income?

Annual Household Income	#	%
Up to 49,999	50	13.4
50,000-59,999	45	12.1
60,000-74,999	43	11.5
75,000-99,9999	60	16.1
100,000-124,999	47	12.6
125,000-149,999	26	7.0
$150,000-199,999	24	6.4
$200,000+	32	8.6
Unanswered	46	12.3

APPENDIX B. 2006 CHARLESTON INTERCEPT SURVEY INSTRUMENT

2006 Charleston Area Visitor Intercept Survey

Your response is very important!

Questions?
Please email Dr. Bing Pan at panb@cofc.edu

Sponsored by

CHARLESTON AREA SOUTH CAROLINA Convention & Visitors Bureau

Conducted by

College of Charleston

TOURISM ANALYSIS COLLEGE OF CHARLESTON

Section A: Your Trip to the Charleston Area

In this section we ask you about this trip to Charleston area. Please answer each question as completely as possible.

1. Is this your first trip to Charleston?

   ❑ Yes ❑ No

   If No, how many times have you visited Charleston in the last five years?

   _____

2. Including yourself, how many people are in your travel party?

   _____ Adults _____ Children (under 18)

3. How did you come to Charleston?

   ❑ Own Car ❑ Rental Car ❑ Airplane
   ❑ Chartered Bus ❑ Private Boat ❑ Cruise Ship
   ❑ Flew to Another City Then Rented a Car (please specify the city)

   _____

   ❑Other_____

   ____

4. How many nights in total will you be staying in the Charleston area? _____ Nights

   Your accommodations:
   ❑ Hotel
   ❑ Inn
   ❑ Bed and Breakfast
   ❑ Staying with Friends or Relatives
   ❑ Trailer or Camping Sites
   ❑ Resorts or Villas
   ❑ Other _____

5. What is the main purpose for this visit to Charleston? (*please check one*)

   ❑ Vacation
   ❑ Business
   ❑ Visiting Friends or Relatives
   ❑ Attending a Conference or Meeting
   ❑ Attending a Special Event or Performance
   ❑ Just Passing Through by Automobile

❑ Layover from Cruise Ship
❑ Just Passing Through by Private Boat or Yacht
❑ Other, Please explain _____

6. If you are visiting Charleston on a **vacation**:

Why did you decide to visit Charleston?

_____

What specifically attracted you and members of your party to Charleston? *(Please check all that applies)*

❑ Relax and Escape from Everyday Life
❑ View Architecture
❑ Experience History
❑ Visit Attractions (tours, museums, heritage sites)
❑ Experience Local Culture
❑ Play Golf
❑ Visit Art Galleries
❑ Attend Performing Arts Events
❑ Experience Fine Dining and the Culinary Arts
❑ Visit the Beach
❑ Fishing
❑ Participate in Water Sports

7. Have you conducted any of the following activities before you came to Charleston?

❑ Searched for Charleston related travel information online (hotels, restaurants, and attractions);
❑ Booked my airline ticket on the Internet;
❑ Booked my hotel rooms on the Internet;
❑ Booked my rental car on the Internet;
❑ Booked a travel package on the Internet.

Lodging (motels, hotels, campgrounds)	$_____
Airline Tickets	$_____
Automobile Operation (gas, oil, repair)	$_____
Taxi, Bus, Limousine Fares	$_____
Admissions to Attractions and Entertainment (include golf fees)	$_____
Tours (carriage rides, motor coach tours)	$_____
Eating and Drinking Places	$_____
Food and Supplies Bought at Stores	$_____
Retail Shopping (clothing, antiques, etc.)	$_____
Other Purchases (gifts, souvenirs, fishing supplies, etc.)	$_____
Please Estimate the Total Spending of Your Travel Party in the Charleston Area	$_____

8. Did you or members of your party visit an official Visitor Center in the Charleston area?

□ ❑ Yes □ ❑ No

9. Please estimate how much money in total your **travel party** will spend/have spent in the Charleston area for each of the following categories:

10. Please indicate how you feel about your trip to the Charleston area by responding to the following questions.

I thoroughly enjoyed my stay in Charleston Area (*please check one*)

❑Strongly Agree ❑ Agree
❑Disagree ❑ Strongly Disagree

11. I probably will visit Charleston within the next _____ years.

12. Please list three things you **enjoyed most** about your visit to the Charleston area:

_____

_____

_

_____

_

13. Please share with us three things you **enjoyed least**:

_____

_____

_

_____

_

Section B: Your Trip Planning to the Charleston Area

In this section, we ask you about the way you planned this trip to the Charleston area. Please include everything you know, including the uses of these sources if someone else in your travel party planned the

14. Many people use the Internet to research travel destinations. Which of the following web sites have you used when planning this trip? *(Check all that apply)*

❑Google ❑Travelocity ❑Expedia ❑Yahoo
❑Hotwire ❑AOL Travel ❑TripAdvisor.com ❑Orbitz
❑AAA.com ❑sidestep.com ❑Concierge.com
❑Charleston Area Convention & Visitors Bureau Website
❑Individual Airline Website (such as USAirways.com)
❑ Individual Hotel Web Site (such as Hilton.com)
❑Other _____
❑I Do Not Use the Internet to Research Travel Destinations

15. Did you consider any other destinations or cities when planning your trip?

❑Yes. City _____State _____
City _____State _____
City _____State _____
❑ No.

16. In researching various destinations, which of the following influenced you to consider the Charleston area? *(Check all that apply)*

❑Friend or Relative's Recommendations
❑Charleston Area Visitors Guide
❑ Charleston Convention & Visitors Bureau Website
❑Magazine/Newspaper Article
❑Brochure
❑Researched Information on a Number of Cities/Destinations in Addition to Charleston
❑Festival/Special Event
❑Magazine Advertisements
❑Television Show
❑Travel Agent
❑Visited Charleston Before
❑Other *(please specify)* _____

17. Once you selected the Charleston area for this trip, what resources or tools did you use to plan your visit? *(Check all that apply)*
❑ Friend or Relative's Suggestions ❑ Local AAA Office
❑ Travel Websites ❑ Individual Hotel Websites (such as hilton.com)

❑Travel Books and Brochure ❑Travel Agent
❑ Individual Airline Websites (such as USAirways.com)
❑ Charleston Area Visitors Guide
❑ Charleston Area Convention & Visitors Bureau Website
❑Other *(please specify)* _____

18. Listed below are magazines that many people read. Please indicate the magazines which you regularly read. *(Check all that apply)*

❑ AAA Magazine(s) ❑ American Legacy
❑ Arthur Frommer's Budget Travel ❑ Attache' (US Airways in-flight magazine)
❑ Better Homes & Gardens ❑ Bon Appetit ❑ Coastal Living
❑ Conde' Nast Traveler ❑ Cooking Light ❑ Cottage Living
❑ Country Home ❑ Country Living ❑ Endless Vacation
❑ Family Circle ❑ Food & Wine ❑ Good Housekeeping
❑ Gourmet ❑ House & Garden ❑ Ladies Home Journal
❑ Midwest Living ❑ National Geographic Traveler
❑ National Geographic Times ❑ New Yorker ❑ New York
❑ Oprah Magazine ❑ Preservation ❑ Reader's Digest
❑ Real Simple ❑ Saveur
❑ Sky (Delta Airlines in-flight magazine) ❑ Smithsonian
❑ Southern Living ❑ Traditional Home ❑ Travel & Leisure
❑ Woman's Day

❑ Other: _____

19. From the above list, what are your favorite magazines?

_____
___

Section C: Your Demographic Information

The following questions ask about your demographic information. The information you provide will not be connected with you in anyway. Instead your responses will be combined with the responses of all other

20. Where do you live?

_____ _____ _____
State Zip Code Country (if not USA)

21. Gender: ❑ Male ❑ Female

22. Marital Status:

❑ Single ❑ Married/Living with a Partner
❑ Separated/Divorced ❑ Widowed

23. In which year were you born? 19_____

24. How many children under 18 years old do you have in your household?

I have _____ children under 18 years of age.

Their ages are:

1. Age_____ 2. Age_____ 3. Age _____

4. Age _____ 5. Age _____6. Age _____

25. Indicate your highest education level (check only one).

❑ Less than 12 years ❑ High School Graduate ❑ Technical/Trade School ❑ Some College ❑ College Graduate ❑ Some Graduate School
❑ Masters/Graduate Degree ❑ Doctoral Degree

26. Which of the following best describes your current employment status?

❑ Full Time Homemaker ❑ Student (Part-Time) ❑ Student (Full-Time)
❑ Unemployed ❑ Retired ❑ Employed Full-Time
❑ Employed Part-Time ❑Other (Specify) _____

27. In what category is your annual household income?

❑ Up to $44,999 ❑ $45,000 -$59,999 ❑ $60,000 - $74,999

❑ $75,000-$99,999 ❑ $100,000 -$124,999 ❑ $125,000 - $149,999

❑ $150,000 - $199,000 ❑ $$199,000 +

Thank You for Participating!

Please provide additional comments you may have at the space

When finished, please place the questionnaire in the attached envelope and drop it into a convenient mail box. The postage has been paid. If you have further questions or comments , please email us at panb@cofc.edu.

Thank you very much for your participation! Hope to see you next time at Charleston…

Appendix III

Staff Survey:

Name:

Position:

Years at site:

- How does the climate control system or lack there of, affect the visitors? Are they distracted, do they ask about it, do they seem comfortable?

- Does the temperature affect your ability to give a quality tour?

- Do you feel the site/ experience is more or less authentic due to its system?

Appendix IV

Drayton Hall MEMORANDUM

To: All Interpreters, Shop Staff and Gate Staff
From: Craig Tuminaro
Subject: Hot Weather Procedures
Date: June 20, 2006; Redistributed June 8, 2007

The following is an update regarding extreme heat and humidity procedures at Drayton Hall. This memo supersedes all earlier memos on this topic.

During extreme hot weather, all guides must check the "**Feels Like**" temperature or **Heat Index** at www.weather.com on the membership computer (or others) prior to giving a house tour. House tours will need to be adjusted according to the following guidelines. During warm weather, please encourage visitors to drink plenty of water and to inform you if they feel light-headed or are experiencing any other problems due to the warm temperatures.

This memo was developed with the participation of staff at all levels and in many departments; if you have ideas or suggestions to clarify these guidelines, I would welcome your input.

Heat Index at 95 degrees or below

The tour does not need to be changed. However, even if it is not dangerously hot, some of our guests may become uncomfortable. You may want to spend more time in the shade and in the basement. Use your judgment. If you have to shorten your tour, your guests will probably be grateful.

Heat Index at 95 – 105 degrees

Limit your time in the upper two floors of the house to less than 30 minutes. Spend more time at the benches, in the shade, in the Great Hall if there is good air circulation, and in the basement, and less time in the hotter rooms. Offer water before and after the tour and monitor guests for signs of heat exhaustion. There are water coolers and cups by the benches and outside the basement door. Check to make sure they are filled throughout the day. If they are empty or nearly empty, please inform the Maintenance personnel.

Heat Index at 105 – 115 degrees

Limit your time in the upper floors and hotter rooms of the house to no more than 15 minutes. Spend more time at the benches, in the shade, and in the basement. Restrict your time in the upper two floors to the cooler spaces such as the great halls and portico where you can describe the other rooms and then just walk through those rooms. Offer water before and after the tour and monitor guests for signs of heat exhaustion; reference material is included at the end of this memo to help you identify the symptoms. Answer all questions in the museum shop. If guests seem hesitant, you can offer the video tour in the conference room or the Kennedy Library.

Heat Index at 115 degrees and above

Tours of the house will not be given when the heat index reaches 115 degrees; only grounds tickets will be sold. When the heat index reaches 115 degrees, immediately notify a senior staff member so that the gate, shop, front desk, and maintenance can be notified. Any visitor who purchased tickets for a house tour may obtain a refund at the gate.

Guides are to remain on site to answer questions and talk about Drayton Hall to interested visitors either under the Connections tent, in the conference room, or in the Kennedy Library, using Connections and Connoisseur packets. The video tour should also be offered for guests.

It is very important that we make our visitors aware of the dangers of extreme and excessive heat. If the tours have to be shortened, explain to your visitors why and assure them that you will be available after the tour to answer as many questions as they may have. There are no price reductions for shortened tours. As always, if a visitor is not satisfied with a tour, they may request a refund at the gate.

Please also refer to the Drayton Hall Interior Conditions Management Guidelines & Procedures document for information on setting and adjusting fans, the louvered shutters, and the procedures for unexpected summer storms.

Heat Exhaustion

Sweat acts like our natural air conditioner. As sweat evaporates from our skin, it cools us off. Our personal cooling system can fail, though, if we overexert ourselves on hot and humid days. When this happens, our body heat can climb to dangerous levels, and can result in heat exhaustion or a heat stroke, which is life-threatening.
Heat exhaustion takes time to develop. Fluids and salt are vital for health. They are lost as children and adults sweat a lot during exercise or other strenuous activities. It is very important to drink lots of liquids before, during, and after exercise in hot weather. As strange as it seems, people suffering from heat exhaustion have low, normal, or only slightly elevated body temperatures.
Signs and Symptoms of heat exhaustion include:

- Cool, clammy, pale skin
- Sweating
- Dry mouth
- Fatigue, weakness
- Dizziness
- Headache

- Nausea, sometimes vomiting
- Muscle cramps
- Weak and rapid pulse

First Aid for Heat Exhaustion
- Move to a cool place indoors or in the shade.
- Loosen clothing.
- Take fluids such as cool or cold water. If available, add ½ teaspoon of salt to a quart of water and sip.
- Have salty foods such as saltine crackers, if tolerated.
- Lie down in a cool, breezy place.

Heat Stroke
Heat stroke, unlike heat exhaustion, strikes suddenly, with little warning. When the body's cooling system fails, the body's temperature rises fast. This creates an emergency condition. Call 911.
Signs of heat stroke include:
- Very high temperature (104 degrees F or higher)
- Hot, dry, red skin
- No sweating
- Deep breathing and fast pulse - then shallow breathing and weak pulse
- Dilated pupils
- Confusion, delirium, hallucinations
- Convulsions
- Loss of consciousness

Chronic medical conditions such as diabetes, use of alcohol, and vomiting or diarrhea can put children and adults at risk for a heat stroke during very hot weather. Heat stroke in children is not only due to high temperatures and humidity, but also to not drinking enough fluids.

Appendix V

MEMORANDUM

To: Aiken-Rhett House Staff

CC: Museum Department

From: Fielding Freed

Date: June 11, 2007

Subject: Heat Safety Policy for Summer Operations at the ARH

PURPOSE: This policy directs changes in the operation of the ARH that are contingent upon significant elevations of ambient temperature and humidity as measured by the Heat Index (HI).

BACKGROUND:

Heat Index: The expected daily high temperature in Charleston during the summer months is 85 to 89°F. Heat Index was developed by the National Weather Service (NWS) to more accurately reflect, rather than temperature readings alone, the physiologic stress on the body on hot, humid days. The HI, given in degrees F, is

an accurate measure of how hot it really feels when effect relative humidity (RH) is added to the actual air temperature. HI may vary widely from day to day with similar temperatures because of changes in RH.

Possible heat disorders for people in higher risk groups:

Heat Index of 130° OR Higher: Heatstroke highly likely with continued exposure,

Heat Index of 105°- 130°: Heat cramps or heat exhaustion likely, and heatstroke possible with prolonged exposure and/or physical activity.

Heat Index of 90°- 105°: Heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.

Heat Index of 80° - 90°: Fatigue possible with prolonged exposure and/or physical activity.

People at Increased Risk: The severity of heat disorders tend to increase with age-heat cramps in a 17-year-old may be heat exhaustion in someone 40, and heat stroke in a person over 60. Elderly persons, small children, chronic invalids, those on certain medications or drugs (especially tranquilizers, antidepressants, heart meds, diuretics and anticholinergics), and persons with weight and alcohol problems are particularly susceptible to heat reactions.

Prevention: Drink plenty of water. Avoid prolonged exposure to the heat by taking frequent breaks in an air conditioned room.

Signs of Heat Disorders: Leg or Abdominal muscle cramping, heavy sweating, weakness, dizziness, rapid pulse, cold, pale and clammy skin. Normal temperature is

possible early. Fainting (unconsciousness), vomiting, disorientation, and red, hot, dry skin are all signs of severe heat illness (heat stroke)–a medical emergency.

ACTIONS:

At temperatures greater than 80°F the senior docent will record the HI hourly from the Chaney Heat Index Thermometer (located on the table near the first floor rear door).

HI 80-90: Docents will be issued bottled water from the gift shop supply for their consumption on the floors.

HI 90 - 95: Docents will spend 10 minutes of each hour in the air conditioned area of the building on the ground floor.

HI 95 - 100: Docents will spend 20 minutes of each hour in the air conditioned area of the building on the ground floor.

HI 100 - 105: Docents will spend 30 minutes of each hour in the air conditioned area of the building on the ground floor.

HI 105: House will be closed [see closing procedure below].

Senior docent responsibilities:

– Monitor and record HI hourly when ambient indoor temperature is 80°F or greater.

– Ensure docents receive water and breaks as directed for the HI levels indicated above.

– Monitor all docents and guests for signs of heat disorder and administer first aid as appropriate for anyone manifesting sings of a heat disorder.

– Continue the use of MP3 recorded tours. Do not change to abbreviated docent guided tours.

Closing Procedure:

1. The Senior Docent on duty notifies the Associate Director of Museums, House Administrator, or Director of Museums of the need to close.
2. The Senior Docent is then responsible for notifying all Museums staff of the closing. This includes telephoning the next shift scheduled to work that day if applicable.
3. The Senior Docent notifies the retail staff of the closing. The retail staff member telephones the Russell House gift shop to stop sales of combination tickets *for use that day*. Any combination tickets can be used later or refunded at the Russell House. The retail staff at the Aiken-Rhett notifies next shift of closing if applicable.
4. Any guests on tour may finish their tour as normal.
5. The Senior Docent puts the weather closing sign on the front door.
6. Once the house closes, it does not reopen that day.
7. Staff scheduled to work that day, but do not due to closing will be paid for scheduled hours.

First Aid for Heat Disorders:

For mild signs: Cool the body by removing the victim to a cool air conditioned room, loosening tight clothing and applying wet cloth. Give cool water to drink.

For signs of serious illness, fainting (unconsciousness), vomiting, disorientation, and red, hot, dry skin – a medical emergency – CALL 911 IMMEDIATELY. Then start first aid as above. Do not attempt to have the victim drink if unconscious.

REFERENCES:

"Heat Index." National Weather Service. 15 May 2007 <http://www.weather.gov/om/heat/index.shtml>.

First Aid - Responding to Emergencies. 4th ed. Yardly, PA: American Red Cross, 2005. 350-358.

Thank you,

Fielding

Policy Approved:

_____ Date

_____

Kitty Robinson

Executive Director

Historic Charleston Foundation

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