Doing Research with The Digital Archaeological Archive of Comparative Slavery: A Workshop

Handouts and Datasets available at: http://www.daacs.org/research/workshops/

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October 3, 2015
The Four Key Website Sections for Research
http://www.daacs.org/

1. Archaeological Sites
2. Query the Database
3. About the Database
4. Research

Access these section here...

And here...

Archaeological Sites
Browse summaries of archaeological fieldwork for each Archives site. Explore site plans and stratigraphic diagrams.

Query the Database
Query the DAACS database for information on artifacts and their contexts. Download the results for further analysis.

About the Database
Learn more about the DAACS database and how to make the most of your query.

Papers & Manuscripts
Check out recent conference papers and reports that use DAACS data.

About DAACS
Find out more about the goals and organization of the DAACS project.

What’s New?
- Apply for a DAACS Fellowship.
  Deadline: November 1, 2015
- DAACS receives grant from Mellon Foundation for innovative collaborative project known as The DAACS Research Consortium
- The South Carolina Institute for Anthropology and Archaeology and DAACS receive Save America’s Treasures Grant
How to Find Archaeological Sites and Plantations

1. Use Atlantic Sites Map to locate sites
   http://www.daacs.org/archaeological-sites-map/

2. Use fly-out menu and region maps to select specific sites

   North America: http://www.daacs.org/regions/north-america/

   Caribbean: http://www.daacs.org/regions/caribbean/
Navigable Maps Locate Plantations and Sites

http://www.daacs.org/archaeological-sites-map/
Navigate to Plantations
Navigate to Individual Sites

http://www.daacs.org/regions/caribbean/
Montpelier House 37

http://www.daacs.org/sites/house-37/
You can also navigate to specific Plantations and Sites using...

The fly-out menu

The left-hand navigation bar
Archaeological Sites Pages
The first place to start researching an archaeological site.

Every archaeological site in DAACS has a suite of seven related content pages that provide a researcher with a site report, chronology, Harris matrix, downloadable maps and images, as well as critical information that will aid in the analysis of data from each site.

Researchers need to spend time with these pages prior to accessing the site’s context and artifact data.

The seven content pages are:
1. Site Home
2. Background
3. Before You Begin
4. Features
5. Chronology
6. Harris Matrix
7. Images
Site Home Page

1. Provides a map detailing the full extent of the site’s excavation. Downloadable maps available through the Site Images page.

2. Provides an at-a-glance summary of the site’s location, when it was excavated, and by whom.
1. Site background pages are most often written by the project’s principal investigator.

2. Every site background page has the same four subheadings: Overview, Documentary evidence, Excavation history, procedure and methods, and Summary of research and analysis.

3. Site Images are expandable and downloadable.
Before You Begin Page: A must read!

1. Provides a list of things a researcher needs to know before using the data from the site.

2. Provides a quick view of excavation methods, as well as any parts of the collection that may be digitally translated, cataloged with different protocols, or that are missing.

Things you need to know about Middleburg excavations before you use the data:

- Measurements are in meters and centimeters.
- All sediment was screened through 1/4 inch mesh, with the exception of a few sediment samples that were floated.
- Some contexts that were excavated but that contained artifacts were not designated as a final Specimen Number (FSN) in the field. In order to represent these contexts in the archive, DACS has created FSNs for these negative contexts. DACS assigned context numbers for these contexts beginning with the same number as the context number above the layer in question, and have a "N" suffix. For example, "2001", the context ID for the sediment layer below context 2002, had no contexts. The following DACS-assigned FSNs were given to contexts that had no artifacts: 1072, 1054, 6042, 0053, 0121, 0132, 2081, 2251.
- All OSL assay做了 one value per 10 cubic inches, with the exception of a few sediment samples that were floated. Artifacts were recovered for some of the OSL assay. Radiocarbon samples were assigned FSNs, as well as negative layers within a core. In order to represent the assignment of sediment layers in the core samples, whether they were negative or positive, and/or layers of locations, DACS assigned context numbers for all layers. The cores have been assigned context numbers beginning with "290", "104", "105", and so on.
- Please see the site's Features page for detailed information on features at Middleburg.

Middleburg Site Maps:

- Magnetic N is 30 degrees east of grid north for Middleburg excavations.
- Quadrants are identified by their southwest corner coordinates, which also serve as Grid Refs:
  - A grid map that contains all quadrants and features was generated for the Middleburg excavations.
  - Each site map included the DACS website by Leslie Cooper, DACS Archaeological Analyst. Cooper used Microstation and AutoCAD with hundreds of artifacts and features to create hundreds of artifacts and features to create hundreds of artifacts and features. Cooper created these small individual feature and context maps with two large area survey maps produced by Ferguson and Knecht in the site's 1990s. Ferguson consulted extensively with Cooper on the production of the Middleburg/DACS site maps and they believe they are the best representations of the contexts and feature data at Middleburg between 1988 and 1996.

Good Hope Village:

- In the DACS database, the Good Hope Village site is designated as Project "12/0210," with FSN numbers assigned to features associated with the village. Features begin with the 12/0210 prefix.
- Measurements are in inches and centimeters.
- Each site component was assigned a unique identification number using the DACS platform. The Good Hope Village site was divided into two areas: Site A and Site B. Site A was divided into five subareas, each with a corresponding identification number. Site B was divided into two subareas, Site B1 and Site B2. Site C was divided into two subareas, Site C1 and Site C2. Site D was divided into two subareas, Site D1 and Site D2. Site E was divided into two subareas, Site E1 and Site E2. Site F was divided into two subareas, Site F1 and Site F2. Site G was divided into two subareas, Site G1 and Site G2. Site H was divided into two subareas, Site H1 and Site H2. Site I was divided into two subareas, Site I1 and Site I2. Site J was divided into two subareas, Site J1 and Site J2. Site K was divided into two subareas, Site K1 and Site K2. Site L was divided into two subareas, Site L1 and Site L2. Site M was divided into two subareas, Site M1 and Site M2. Site N was divided into two subareas, Site N1 and Site N2. Site O was divided into two subareas, Site O1 and Site O2. Site P was divided into two subareas, Site P1 and Site P2. Site Q was divided into two subareas, Site Q1 and Site Q2. Site R was divided into two subareas, Site R1 and Site R2. Site S was divided into two subareas, Site S1 and Site S2. Site T was divided into two subareas, Site T1 and Site T2. Site U was divided into two subareas, Site U1 and Site U2. Site V was divided into two subareas, Site V1 and Site V2. Site W was divided into two subareas, Site W1 and Site W2. Site X was divided into two subareas, Site X1 and Site X2. Site Y was divided into two subareas, Site Y1 and Site Y2. Site Z was divided into two subareas, Site Z1 and Site Z2.
Site Features

1. Summarizes how features were identified and excavated at the site. The page provides readers with an overview of the features.

2. If features were excavated at the site, provides summary tables that group features Feature Groups and provides quick identifying information. The Context Queries in the Query the Database section provide many more details on individual features.
Site Chronology

1. DAACS has developed an uniform set of methods to infer intra-site chronologies for all of the sites included in the archive. Each Chronology page describes the frequency seriation and correspondence analysis methods used to develop the site chronology.

2. Occupation phases are assigned for each site, and a table provides the accompanying MCD, BLUEMCD, TPQ, TPQ90 and TPQ95. The DAACS Glossary defines these terms.

3. The Query the Database section of the archive provides vanilla Mean Ceramic Dates by Context, Feature Numbers, Feature Types, Feature Groups, Stratigraphic Groups, Phased, and Sites.
Harris Matrix

1. The Harris Matrix summarizes stratigraphic relationships among excavated contexts and groups of contexts that DAACS staff has identified as part of the same stratigraphic group.

2. DAACS staff create the Harris Matrix based on data on stratigraphic relationships recorded among contexts in the DAACS database. It also includes color codes contexts, features, and stratigraphic groups by phase.

3. The Harris Matrix is drawn with the ArchEd application ([http://www.ads.tuwien.ac.at/arched/index.html](http://www.ads.tuwien.ac.at/arched/index.html)) and are downloadable.
Images

1. The Image Page provides expandable and downloadable photographs of the site and some of the recovered artifacts. All images related to the site can be found using an Image Query in the Query the Database section of the website.

2. Site maps, in .pdf, .dgn, and .dxr formats, are also available for download and use through the Images page.
Bibliography

1. Provides a detailed bibliography of published and presented papers relating to the site.

- Boyd, C. Clifford, Jr., and Donna C. Boyd
  1996 An Osteological Analysis of 18th Century Human Skeletal Remains from Utopia I (44C32), Kingsmill on the James, James City County, Virginia. Manuscript on file, James River Institute for Archaeology, Inc., Williamsburg, Virginia.

- Bray, James, II

- Burwell, Lewis, IV

- Carson, Cary, William M. Kelso, Dell Upton, Gary Wheeler Stone, and Norman F. Barka

- Fosler, Garrett

- Fosler, Garrett

- Fosler, Garrett

- Fosler, Garrett
  2004a From Houses to Homes: An Archaeological Case Study of Household Formation at the Utopia Slave Quarter, ca. 1675 to 1775. Ph.D. dissertation, Department of Anthropology, University of Virginia, Charlottesville, Virginia.
Plantation Home Page

1. Provides schematic map of plantation, with archaeological sites that are in DAACS located by orange “bulls-eyes”.

2. Provides links to the archaeological sites from the plantation currently in DAACS
Plantation Background

1. Provides detailed background information, including summaries about what is known about the plantation from documentary and archaeological sources.

2. Provides links to expandable and downloadable images.
Plantation Images

1. Provides downloadable images and maps of the plantation.
Query the Database

http://www.daacs.org/query-the-database/
**Artifact Queries** provide users with access to all of the artifact data in the DAACS. The queries return data on assemblage content for one or more sites at varying levels of details and aggregation.

Citing Your Query
The data in DAACS are freely available to all researchers. We encourage the use of DAACS data in published papers, theses and dissertations, class assignments, and other research projects. DAACS website content is under copyright. DAACS data, like any published material, should be cited.

Please provide the following information in a bibliography when citing data from DAACS:

1. The query from which data was used, e.g. Artifact Query 1.
2. The date the data was downloaded, e.g. May 22, 2013.
3. The Archive name and website address.

For additional information on citing other DAACS website content, see Guidelines.

Why Documenting Your Query is Important
The DAACS database is periodically updated to include data from newly analyzed archaeological sites. Since data in the database may change after an update, it is important for a researcher to record the database version used when querying.

http://www.daacs.org/query-the-database/artifact-queries/
Context Queries

Context Queries return detailed data on excavated contexts for the chosen site or sites.

1. **Context Query 1: Basic Information**
   Returns basic information on excavated contexts. Context northings and eastings, size, and deposit type are just some of the attributes returned by this query. Choose the site or sites.

2. **Context Query 2: Detailed Context Information**
   This query allows the user to select one or all of the context attributes for one or more sites. Users can subset by Feature Number, Feature Type, or Unit Type.

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**Citing Your Query**

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Please provide the following information in a bibliography when citing data from DAACS:

1. The query from which data was used, e.g. Artifact Query 1.
2. The date the data was downloaded, e.g. May 22, 2013.
3. The Archive name and website address.

For additional information on citing other DAACS website content, see **Guidelines**.

**Why Documenting Your Query is Important**

The DAACS database is periodically updated to include data from newly analyzed archaeological sites. Since data in the database may change after an update, it is important for a researcher to record the database version used when querying.

Notification of updates will be posted on the What’s New page. If you would like to be notified of updates to the Archive, please contact us. We’d be happy to put your name on our mailing list that notifies researchers of database updates, new content, fellowship announcements, and other DAACS-related news.

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http://www.daacs.org/query-the-database/context-queries/
Object Queries

Object Queries provide users with access to data on all of the Objects cataloged in the DAACS.

http://www.daacs.org/query-the-database/object-queries/
The Site Query gives users access to all of the meta-data collected on an archaeological site or sites.

http://www.daacs.org/query-the-database/site-information-queries/
Image Queries

Image Queries return image data for chosen sites.

http://www.daacs.org/query-the-database/image-queries/
Mean Ceramic Date Queries

A mean ceramic date offers a quick and rough indication of the chronological position of a ceramic assemblage. DAACS offers two different mean ceramic date queries. The first provides mean ceramic dates for the chosen level of aggregation. The second provides ware-type frequencies.

http://www.daacs.org/query-the-database/meanceramicdate-queries/
Document Queries
(only for Nevis and St. Kitts sites)

Document Queries provide users with access to primary documentary material from the Jessups, New River, and Spring Village sites on the islands of Nevis and St. Kitts. Currently, primary source material is not available for other sites in the Archive.

How Queries Work: an example

Before You Begin

Each query is different, offering a range of options for summarizing and aggregating the data.

The first query of any given query type provides the most basic data (the fewest fields) and few aggregation options.

Subsequent queries within a query type offer more options for getting the data you want.

All query results can be downloaded for use in the stats package of your choice (or excel).
How Queries Work: an example

Step 1: Aggregate/Subset Data

Here we chose Phase

Specify Phase or leave blank and get data for all Phases
Step 2: Choose Site or Sites

Selected Building o
### Query Results

**Artifacts Query 1: Basic Inventory by Category**

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>PROJECT ID</th>
<th>DRAKE PHASE</th>
<th>TOTAL COUNT</th>
<th>ARTIFACT TYPE</th>
<th>ARTIFACT CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>1</td>
<td>Buttons, Shelf</td>
<td>Buttons</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>1</td>
<td>Buttons, Flat Disc</td>
<td>Buttons</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>3</td>
<td>American Stoneware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>2</td>
<td>British Stoneware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>5</td>
<td>Course Earthenware, unidentified</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>65</td>
<td>Creamware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>26</td>
<td>Delftware, Dutch/British</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>1</td>
<td>Jackfield Type</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>1</td>
<td>Porcelain</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>31</td>
<td>Porcelain, Chinese</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>3</td>
<td>Rockware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>2</td>
<td>Refined Earthenware, unidentified</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>1</td>
<td>Staffordshire Brown Stoneware</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>2</td>
<td>Stoneware, unidentified</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>3</td>
<td>Whitewash/Washed</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>10</td>
<td>White Grit Glaze</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>9</td>
<td>Bird</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>5</td>
<td>Chicken</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>8</td>
<td>Domestic, Cow</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>1</td>
<td>Domestic, Goat</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>16</td>
<td>Domestic, Pig</td>
<td>Faunal</td>
</tr>
<tr>
<td>Building 0</td>
<td>1000</td>
<td>P01</td>
<td>5</td>
<td>Domestic, Sheep or Goat</td>
<td>Faunal</td>
</tr>
</tbody>
</table>
About the Database

DAACS Cataloging Manuals
- View and print DAACS cataloging manuals.

DAACS Stylistic Elements
- Learn about the DAACS Stylistic Element Initiative. View image glossaries.

Database Structure
- Learn about the database that drives the Archive. View DAACS data structures.

Interpreting Query Results
- Need help reading query results? Get explanations of concatenated data and related data formats here.

DAACS Color Data
- Find out more about how DAACS records color on artifacts.

3D Laser Scanned Artifact Images
- Read about DAACS’s efforts to create and present 3D laser scans of archaeological objects.

Guidelines for Use
- Learn how to cite Archive content and read about the details of the DAACS Creative Commons License.

Project List
- View a list of DAACS projects.

Glossary
- Definitions of terms and concepts used throughout the Archive.

http://www.daacs.org/about-the-database/
About the Database: Cataloging Manuals

The DAACS Cataloging Manuals provide researchers using DAACS data with a comprehensive manual describing how those data were created and insure data consistency between catalogers through the duration of the project by explicating cataloging protocols.
About the Database: Stylistic Elements

DAACS Stylistic Elements

DAACS offers two approaches to recording and analyzing decoration on ceramics, the DAACS Stylistic Element Initiative and DAACS Ceramic Genres. The DAACS Stylistic Element Initiative records individual decorative elements on the sherd level, providing researchers with detailed data on decorative elements and motifs. DAACS Ceramic Genres provide a way of understanding decoration on ceramics by using traditional types, based on decorative technique and patterns. Both are described below.

DAACS Stylistic Element Initiative

The DAACS Stylistic Element Initiative explores an approach to measuring variation in applied decoration on ceramics that is novel in historical archaeology. Traditionally historical archaeologists have measured decorative variation at the level of the sherd or vessel. This means that a single sherd or vessel has to be assigned to a single decorative category or genre. This approach produces useful results (and we have followed it in the DAACS ceramic genre field), but it may obscure decorative variation when there are multiple decorative elements on a single
About the Database:
Guidelines for Use Copyright and Citation Information

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Jillian Galle, Project Director
Monticello Archeology, DAACS
P.O. Box 316
Charlottesville, VA 22902

How to Cite Archive Content
DAACS provides users with a wide variety of content, from discursive site reports presented on the Archaeological Sites pages and detailed chronologies to archaeological data, digitized maps, and images. The following guidelines provide

Citing Archaeological Sites and Plantation Home Pages:
Some DAACS web site pages, such as the Archaeological Sites and Plantation pages, are signed by their author. Pages with author signatures should be cited by author name and the appropriate page title.

Please provide the following information in a bibliography when citing signed website content.

1. The Author and context title.
Research

http://www.daacs.org/research/
Research: Papers and Manuscripts

http://www.daacs.org/research/papers-manuscripts/
Research: Galleries

New Street, Port Royal
- Examine items recovered during excavations carried out at New Street Tavern in Port Royal, Jamaica.

The Triplex
- View personal items recovered from the Triplex site at Andrew Jackson’s the Hermitage.

The South Grove Midden
- Explore objects found in the South Grove Midden, a site at George Washington’s Mount Vernon.

Colomwore
- View exceptional examples of colomwore vessels from sites in Virginia and South Carolina.

The Dry Well
- The Dry Well is one of the most artifact-rich archaeological features at Monticello.

http://www.daacs.org/research/galleries/
Use of DAACS by Historians
(that we know about)

Morgan, P. D., and A. J. O’Shaughnessy

Bly, Antonio
2008 “Pretends he can read”: Runaways and Literacy in Colonial America, 1730-1776” Early American Studies 6.2 (Fall 2008): 261-294.
http://history.appstate.edu/sites/history.appstate.edu/files/Bly,%20Pretends%20he%20can%20read.pdf

DAACS figures in historians’ reflections on the ways in which archaeological data might advance their understanding of changing slave life ways

Morgan, Phillip D.

Other Digital Resources for Teaching Slavery and Archaeology

Data Rich

• Voyages: The Trans-Atlantic Slave Trade Database: http://www.slavevoyages.org/tast/index.faces

• The Digital Archaeological Record (tDar): http://core.tdar.org/

• Chaco Research Archive: http://www.chacoarchive.org/cra/

• The Comparative Archaeological Study of Colonial Chesapeake Culture: http://www.chesapeakearchaeology.org/index.cfm

Qualitative historical data but quantitative data could be gleaned

• Two Plantations (companion to Richard Dunn’s 2015 book, A Tale of Two Plantations): www.twoplantations.com

• Slave Revolt in Jamaica, 1760-1761: A Cartographic Narrative: http://revolt.axismaps.com/
Working with data is an iterative process!
An example from MCD Queries

Monticello’s Building t and the “Negro Quarter”
Negro Quarter:

--Occupied 1770s-1790s.
--Log house with four rooms, each with their own subfloor Pit (F01-F04).
--Possibly home to Issac Jefferson and his parents, Ursala and Great George.
--Constructed between 1793 and 1795.
--One subfloor pit (F05)
--Described by Jefferson on his 1796 Mutual assurance plat

which as well as s. and t. are servants houses of wood with wooden chimneys, & earth floors, 12. by 14. feet, each and 27. feet apart from one another. from t. it is 85 feet to F. the stable.
Mean Ceramic Date Query 1
The DAACS Mean Ceramic Date Query 1 calculates two types of Mean Ceramic Dates

**Regular MCDs**: Are calculated using established beginning and ending manufacturing dates for ceramic ware types.

**BLUE MCDs** (BLUE stands for Best Linear Unbiased Estimator): Uses the same beginning and ending manufacturing dates but gives less emphasis to ceramic ware with long manufacturing spans.

\[
MCD_{\text{blue}} = \frac{\sum_{i=1}^{t} m_i p_i \left( \frac{1}{s_i/6} \right)^2}{\sum_{i=1}^{t} p_i \left( \frac{1}{s_i/6} \right)^2}
\]

Where \( m_i \) is the manufacturing midpoint for the \( i^{th} \) ceramic type, \( p_i \) is its relative frequency, and \( s_i \) is its manufacturing span.

**Mean Ceramic Date Query 1**: Aggregate by site.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>MCD</th>
<th>BLUE MCD</th>
<th>TOTAL COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building 1</td>
<td>1800.0</td>
<td>1796.0</td>
<td>3320</td>
</tr>
</tbody>
</table>
### Mean Ceramic Date Query 1: Aggregate by Feature Group

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>FEATURE GROUP</th>
<th>FEATURE GROUP INTERPRETATION</th>
<th>MCD</th>
<th>BLUE MCD</th>
<th>TOTAL COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building t</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1800.0</td>
<td>1785.0</td>
<td>102</td>
</tr>
<tr>
<td>Building t</td>
<td>FG02</td>
<td>East-West fenceline running through both the Negro Quarter and Building t.</td>
<td>1796.0</td>
<td>1791.0</td>
<td>26</td>
</tr>
<tr>
<td>Building t</td>
<td>FG03</td>
<td>East-West fenceline located along the south wall of Building t.</td>
<td>1788.0</td>
<td>1791.0</td>
<td>12</td>
</tr>
<tr>
<td>Building t</td>
<td>FG04</td>
<td>East-West fenceline running along the north edge of the site and passing through the Negro Quarter and Building t.</td>
<td>1760.0</td>
<td>1760.0</td>
<td>1</td>
</tr>
</tbody>
</table>
Mean Ceramic Date Query 1: Aggregate by Feature Number.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>FEATURE NUMBER</th>
<th>FEATURE GROUP</th>
<th>FEATURE GROUP INTERPRETATION</th>
<th>MCD</th>
<th>BLUE MCD</th>
<th>TOTAL COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building t</td>
<td>F01</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1823.0</td>
<td>1815.0</td>
<td>60</td>
</tr>
<tr>
<td>Building t</td>
<td>F02</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1789.0</td>
<td>1774.0</td>
<td>16</td>
</tr>
<tr>
<td>Building t</td>
<td>F03</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1737.0</td>
<td>1759.0</td>
<td>15</td>
</tr>
<tr>
<td>Building t</td>
<td>F04</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>1778.0</td>
<td>1783.0</td>
<td>11</td>
</tr>
<tr>
<td>Building t</td>
<td>F05</td>
<td></td>
<td></td>
<td>1781.0</td>
<td>1794.0</td>
<td>13</td>
</tr>
</tbody>
</table>
MCDQ2: Ware Type Frequencies

--Step 1: Select Feature 01
--Step 2: Select Building t.

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>FEATURE NUMBER</th>
<th>FEATURE TYPE</th>
<th>FEATURE GROUP</th>
<th>FEATURE GROUP INTERPRETATION</th>
<th>WARE TYPES</th>
<th>COUNT</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building t</td>
<td>F01</td>
<td>Pit, subfloor(&lt; 28 sq. ft)</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>American Stoneware</td>
<td>49</td>
<td>436.6993</td>
</tr>
<tr>
<td>Building t</td>
<td>F01</td>
<td>Pit, subfloor(&lt; 28 sq. ft)</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>Creamware</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>Building t</td>
<td>F01</td>
<td>Pit, subfloor(&lt; 28 sq. ft)</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>Delftware, Dutch/British</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>Building t</td>
<td>F01</td>
<td>Pit, subfloor(&lt; 28 sq. ft)</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>Porcelain, Chinese</td>
<td>2</td>
<td>4.1</td>
</tr>
<tr>
<td>Building t</td>
<td>F01</td>
<td>Pit, subfloor(&lt; 28 sq. ft)</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>Redware</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Building t</td>
<td>F01</td>
<td>Pit, subfloor(&lt; 28 sq. ft)</td>
<td>FG01</td>
<td>Negro Quarter subfloor pits.</td>
<td>White Salt Glaze</td>
<td>1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

What do we know about American Stoneware?
--Long manufacturing span!
--Being 1750, end 1820 (DAACS dates).

Next step, recalculate MCD without Stoneware
## Backend view of tblCeramicWare in the DAACS database

<table>
<thead>
<tr>
<th>WareID</th>
<th>Ware</th>
<th>ObjectTypeID</th>
<th>BeginDate</th>
<th>EndDate</th>
<th>CeramicMaterialID</th>
</tr>
</thead>
<tbody>
<tr>
<td>97</td>
<td>Agate, refined (Whieldon-type)</td>
<td>4</td>
<td>1740</td>
<td>1775</td>
<td>1</td>
</tr>
<tr>
<td>118</td>
<td>Albisola</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>52</td>
<td>American Stoneware</td>
<td>4</td>
<td>1750</td>
<td>1920</td>
<td>3</td>
</tr>
<tr>
<td>31</td>
<td>Astbury Type</td>
<td>4</td>
<td>1725</td>
<td>1775</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>Bennington/Rockingham</td>
<td>4</td>
<td>1830</td>
<td>1900</td>
<td>1</td>
</tr>
<tr>
<td>122</td>
<td>Biot</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>61</td>
<td>Black Basalt</td>
<td>4</td>
<td>1750</td>
<td>1820</td>
<td>3</td>
</tr>
<tr>
<td>115</td>
<td>Bristol Glaze Stoneware</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>3</td>
</tr>
<tr>
<td>53</td>
<td>British Stoneware</td>
<td>4</td>
<td>1671</td>
<td>1800</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Buckley</td>
<td>4</td>
<td>1720</td>
<td>1775</td>
<td>8</td>
</tr>
<tr>
<td>56</td>
<td>Burslem</td>
<td>4</td>
<td>1700</td>
<td>1725</td>
<td>2</td>
</tr>
<tr>
<td>88</td>
<td>Canary Ware</td>
<td>4</td>
<td>1780</td>
<td>1835</td>
<td>1</td>
</tr>
<tr>
<td>103</td>
<td>Caribbean Coarse Earthenware, hand built</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>117</td>
<td>Caribbean Coarse Earthenware, unid.</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>116</td>
<td>Caribbean Coarse Earthenware, wheel thrown</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>99</td>
<td>Cauliflower ware</td>
<td>4</td>
<td>1760</td>
<td>1780</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Coarse Earthenware, unidentified</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>16</td>
<td>Colonoware</td>
<td>4</td>
<td>(Null)</td>
<td>(Null)</td>
<td>8</td>
</tr>
<tr>
<td>23</td>
<td>Creamware</td>
<td>4</td>
<td>1762</td>
<td>1820</td>
<td>1</td>
</tr>
<tr>
<td>106</td>
<td>Creamware, Carolina</td>
<td>4</td>
<td>1765</td>
<td>1775</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>Delftware, Dutch/British</td>
<td>4</td>
<td>1600</td>
<td>1802</td>
<td>1</td>
</tr>
<tr>
<td>95</td>
<td>Derbyshire</td>
<td>4</td>
<td>1750</td>
<td>1800</td>
<td>8</td>
</tr>
<tr>
<td>35</td>
<td>Faience</td>
<td>4</td>
<td>1700</td>
<td>1800</td>
<td>1</td>
</tr>
</tbody>
</table>
Case Study: Pipes from Utopia II
Chronology and Social Dynamics
Sub-Floor Pit Hypotheses

- Africanisms
- “Hidey holes”
- Winter root-crop storage
- Safe-deposit boxes
Source:
Harrington, JC
1954    Dating stem fragments of 17th and 18th century tobacco pipes. *Quarterly Bulletin of the Archaeological Society of Virginia*
Chronology

Harrington Histograms

- A form of frequency seriation
Harrington's "data": $y = 1919.1 - 36.06x$

Binford's formula: $y = 1931.85 - 38.26x$
Pipes as Signals

- Bore diameter decrease is driven by the demand for longer thinner stems, in costly signaling arms race in the 17th and early 18th centuries.

- Three measurements are sensitive to this process:
  - Bore diameter
    - \( \text{mm} \)
    - \( \frac{1}{64}\text{-inch} \)
  - Exterior stem diameter
  - Stem length for *whole* pipes

- A complication:
  - Local vs. Imported pipes
  - DAACS field: *Material*
Estimating Pipe Length in Assemblages

\[
\text{Pipestem Index} = \frac{\# \text{ Stem Fragments}}{\# \text{ Stem Fragments} + \# \text{ Bowl Fragments}}
\]

DAACS Field: Tobacco Pipe Completeness

Base, Bowl
Base, Bowl, Rim
Bowl Fragment
Bowl, Rim
Mouthpiece, Stem
Stem
Stem, Base
Stem, Base, Bowl
Stem, Bowl
Stem, Bowl, Rim
Unidentified
Estimating Pipe Length in Assemblages

\[
\text{Pipestem Index} = \frac{\# \text{ Stem Fragments}}{\# \text{ Stem Fragments} + \# \text{ Bowl Fragments}}
\]

\# Bowl Fragments =
- Base, Bowl +
- Base, Bowl, Rim +
- Bowl Fragment +
- Bowl, Rim

\# Stem Fragments =
- Mouthpiece, Stem +
- Stem +
- Stem, Base
Data Analysis Plan

- Artifact Query 3
- "Select All" attributes
- Download the .xls
- Excel: Pivot Table
- Select ("filter") imported pipes only
- Compute mean metric bore diameters for Feature Groups
- Convert to 64th inches and estimate dates. \((64\text{th inches} = 0.03937\text{mm} \times 64)\)
- Check order against proportion local pipes
- Compute mean exterior stem diameters for Feature Groups
- Compute pipe stem index for Feature Groups
Utopia III, your turn! Calculate the Pipestem Index for Structures 40 and 50.

1. First, check out the Utopia III site map. Find it in the Archaeological Sites Pages, Images.
2. Check out the differences between Structure 40 and Structure 50.
3. Then go to Artifact Query 3. Select Tobacco Pipes, Feature Numbers, Utopia III.
4. Run, download data. Open Data in Excel
5. Insert Pivot Table. Rows = Feature Number, Columns = Completeness, Values = Count
5. Filter on all Bowl Completeness. Copy Feature Row and Bowl Grand Total Row to create a new table below the pivot table. Use paste special values.
6. Revise pivot table. Filter on All Stem Completeness. Copy Stem Grand Total Row into the table below the pivot table. Use paste special values.
7. Now you have a new table with three columns: Feature Number, Bowl Count, and Stem Count.
8. Now calculate the Pipestem Index in the Column to the right of Stem Count. Your Formula will look like = Pipestems/(Pipestems+Bowls). Calculate for each Feature.
9. Insert Scatter Plot.
Utopia III, your turn! Calculate the Mean Exterior Pipe Bore Diameter and Plot it For Structures 40 and 50.

1. In the same excel workbook you calculated the index, return to the data page.
2. Insert Pivot Table. This new pivot table will appear in a different worksheet. Rows = Feature Number, Columns = None,
3. Add Exterior Stem Diameter to the Values field. Left click: Value Field Setting “Count”
4. Drag a second Exterior Stem Diameter to the Values Field. Left Click: Value Field “Average”
5. Copy fields and paste special into a new table below the Pivot Table.
6. Delete all features with a less than 15.
7. Insert Scatter Plot.
Estimating a Confidence Interval

Sample from a Gaussian distribution (e.g. a mean bore diameter)

\[
\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}
\]

The mean

\[
s^2 = \frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}
\]

The variance (standard deviation squared)

\[
se = \frac{s}{\sqrt{n}}
\]

Standard error

\[
\bar{x} \pm se \times t.inv(1 - \frac{\alpha}{2}, df)
\]

The confidence interval

where \(\alpha=0.05\)

\(df = (n-1)\)
Estimating an Confidence Interval

Sample from a binomial distribution (e.g. a proportion)

\[ \hat{p} = \frac{\text{# successes}}{N} \]

\[ p' = \frac{\text{# successes} + 2}{N + 4} \]

\[ se = \frac{p'(1-p')}{\sqrt{N+4}} \]

\[ p' \pm se \times 1.96 \]
Spatial distribution maps are visual aids that can reveal and document spatial relationships and patterns.

Archaeological applications:
• Provide visual representations in reports that serve as a quick way of displaying artifact patterning.
• Aid in predictive modeling that can inform future fieldwork.

Creating Artifact Spatial Distribution Maps using DAACS data
Spatial distribution maps are created using **interpolation**

**Interpolation** is a procedure used to predict the values of cells at locations that lack sampled points. It is based on the principle of *spatial autocorrelation* or spatial dependence, which measures the degree of relationships/dependence between near and distant objects.

*i.e. Cells in close proximity are more alike than cells farther apart*

**Steps to creating interpolated map**

1. Acquire artifact and spatial data

2. Load data table into ArcGIS

3. Create a feature layer using coordinates (STP centroids) from data table

4. Use Kernel Density tool in ArcToolbox to create interpolated surface

Resulting map is a visual representative of the count of artifacts per area
Which DAACS data fields do we need to create the table?

1. Site
2. Context
3. Unit Type (e.g. STPs, Quadrats/Units)
4. Northing/“Y” coordinate
5. Easting/”X” coordinate
6. Artifact type
7. Artifact count per context (you could alternatively use weight)
Artifact Distribution Query 1 (ADQ1) at www.daacs.org
Step 1: Select artifact type

Query the Database

Step 1: Select artifact type and attributes

- BEAD
- BUCKLE
- BUTTON
- CERAMICS
- FAUNAL
- GLASS
- TOBACCO PIPE
- UTENSIL
Artifact Distribution Query 1 (ADQ1) at www.daacs.org

Step 2: Subset data by STP or quadrat/unit
Artifact Distribution Query 1 (ADQ1) at www.daacs.org

Step 3: Choose site

Summary of query selections

Query Selections

<table>
<thead>
<tr>
<th>Step 1: Attributes</th>
<th>Step 2: Subset Data By</th>
<th>Step 3: Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass:</td>
<td>STP</td>
<td>Papine Village</td>
</tr>
</tbody>
</table>
Artifact Distribution Query 1 (ADQ1) at www.daacs.org

Query Results

Data are downloaded as an .xls
Create a new file in ArcMap
Load query results Excel file into ArcMap
Create a feature layer using coordinates (STP centroids) from data table

Right click on Papine Data table in Layers
Choose “Display XY Data”
Use Kernel Density tool in ArcToolbox to create interpolated surface
(This requires the Spatial Analyst extension for ArcGIS)

Toolbox ➔ Spatial Analyst tools ➔ Density ➔ Kernel Density

“Events” layer created in last step is source layer for interpolation
“Quantity” field is data field used for interpolation

Minimum radius would be the smallest distance between points:
(STP interval = 6 meters at Papine Village)

Maximum radius would be the maximum distance over which things are autocorrelated:
Historical sites like this = approx. 20 meters
What is Kernel density estimation (KDE)?

The basic idea (in one dimension): **We want to go from this:**

Where each point is an artifact, whose location is plotted in space (in this case, the Easting coordinate)

**To this:**

Where the height of the blue line is an estimate of the density of artifacts at a given point in space (in this case, the Easting coordinate)
Voila! KDE surface is created and added as a layer in ArcMap Table of Contents
Site 8 (c. 1770-1800)

Partially excavated sub-floor pits under Structures 3 and 4

Partially-excavated, brick-lined sub-floor pit under Structure 2
Site 8 (c. 1770-1800)

Delft (1600-1802)

Creamware (1762-1820)

Pearlware (1775-1830)

Redware

Chinese Porcelain

CA-based Chronology
Site 8 (c. 1770-1800)
Monticello

- Virginia Piedmont: One of four adjacent farms in the Charlottesville area owned by Jefferson, nearly 5000 acres in total
- “Mountaintop”: mansion, dependencies, path lined with slave workshops and dwellings known as Mulberry Row
  - Also a number of agricultural fields, domestic quarters, and outbuildings
- Two phases of mansion construction after the mountain was cleared: Monticello I (1770 – 1796) and Monticello II (1796 – the present)
  - This transition also marks Jefferson’s reorganization of the Monticello landscape, including enslaved domestic dwellings and field boundaries, with wheat cultivation
Monticello Archaeology

• Active in archaeological research of the mountaintop and surrounding areas since 1979

• Since the late 1990s: Research focus on chronology of sites across the landscape and the impact of Jefferson’s transition from tobacco to wheat in the 1790s on enslaved people
Monticello: Four Sites for Comparison

- Monticello Mansion
- Building o
- Elizabeth Hemings Site
- Stewart-Watkins Site
- Site 8
Building o

• Domestic slave quarter site on Mulberry Row, near Monticello mansion

• Two distinct construction episodes
  – Log cabin constructed c. 1770s (Monticello I)
  – Second wood-frame house built early 1790s (Monticello II); contained one sub-floor pit (Neiman 1997)

• First excavated by William Kelso 1981; part of reassessment initiated by DAACS in 2000
Elizabeth (Betty) Hemings Site

- Enslaved matriarch of Hemings family at Monticello
- Her final residence, constructed c. 1795, for approximately ten years until her death in 1807
- Lack of subfloor pits suggests that residents had greater control over visitors
Home Farm Quarter: Site 8

• Enslaved laborer Quarter site dating from c. 1770 to c. 1800, downslope from the Mansion
  – Four structures identified
• Houses with more than two subfloor pits, also brick-lined cellar and borrow pit; maintained yard space between houses
• Buildings demolished for wheat cultivation
• Plowzone site discovered through shovel test pit survey
Stewart-Watkins

- White skilled laborers hired by Jefferson: William Stewart (blacksmith) until c. 1808; Elisha Watkins (carpenter) less than 2 years in residence
- Two building episodes: Core structure during first phase, eastern addition in second phase; dismantled c. 1810
- Unvaried and worn ceramics, quantity of salvaged industrial materials and tools (Heath 1999)
17th - 18th Century Consumer Trends

• A Consumer Revolution started in Europe in the late-17th century

• A proliferation of both tangible goods (ceramics, silver, linens, houses) and comestibles (tea, sugar, coffee, chocolate, spices).

• Emphasis on consumption and display

• Consumer goods = status markers

• The name of the game was differential access to not only costly goods, but also the specialized knowledge required to use them in culturally and socially appropriate settings.
Consumer Revolution

• Quickly expanded out of Europe and into the colonies in the New World. The “revolution” was in full force in the British colonies by the beginning of the 18th-century.

• A never-ending stream of newcomers, growing populations, and quickly changing demographics reinforced elite’s need for inexpensive, movable, and fashionable objects.

• People at all economic scales, including enslaved individuals, were actively participating and making their own consumer choices.
Consumer Revolution

New goods produced

Individuals want new goods to continue to improve their lives/signal status

Costly goods bought by individuals of all classes to meet perceived needs

Larger percentage of population consumes once-costly goods when prices drop

Time passes/demand shrinks/price drops
Consumer Revolution and Archaeology

The Upsides:

• The increase in variety and abundance of materials is great for archaeologists!

• Ceramics are ideal artifacts to study consumption patterns, as styles and ware types change quickly in response to consumer demand. They provide insight into consumption patterns and enslaved individuals’ differential access to markets. Also great for archaeologists!

The Downsides:

• Many materials were organic and did not survive in the archaeological record. Luckily, ceramic vessel form can often tell us about many of the foods and drinks consumed, or at least aspirations for consumption.

• Archaeological sites contain thousands of artifacts! Archaeologists have an obligation to develop the methodological (analytical, statistical) skills for effectively analyzing all data from a site, not a handful of artifacts. It is only through the analysis of complete assemblages that statistically significant results are produced.
Chinese Porcelain
Delft/Tin-glazed Earthenware

Plate/Charger

Punch bowl

Ointment jar

1 www.chipstone.org
White Salt Glaze

Chocolate/Coffee Mug

Plate¹

Coffee Pot²

Platter³

Teabowl

Creamware

From left to right: ovular platters, fruit basket, plates, tureen lid

Close up of fruit basket and tureen lid

Chamberpot
Pearlware

Platter

Pitcher

Dinner service

Mug

Teabowl

Handpainted
Handpainted
Molded Edge
Factory Made Slip
Handpainted and Transfer Printed
How to compare sites dug by different people, using different methods?

**Relative Frequencies:** Commonly used. Problematic because they are based on the assumption that the artifact class in the numerator is independent of the denominator. Enslaved households with greater access to costly adornment items, likely had greater access to all goods.

**Artifact Densities:** Provides a good estimate of per capita discard if population density and occupation among sites are constant. OR if site formation processes don’t impact density.

**Abundance Indices:** Provides estimates of discard that are relative to a baseline discard rate, with the assumption that the baseline discard does not change, or if it does, it does so in a predictable manner.
Abundance Index (AI)=
Artifact Group 1/(Artifact Group 1 + Artifact Group 2)

Artifact Group 1 is the artifact class
whose discard rate you wish to measure.

Artifact Group 2 is the baseline artifact class,
whose baseline discard does not change
(or that changes in a predictable manner).

Compare this to relative frequencies:
=Artifact Group 1/Artifact Group 2
Excel Formula

=A1/(A1+A2)
Plot the Abundance Index By Time

Add MCD field.

Go to Insert Tab, Select Scatter Plot
**X Axis** = Time (MCDs)

**Y Axis** = Abundance Index
With Scatterplots, you add sites to the plot one at a time.

- **Series Name** = Site Name
- **X Axis** = Time (MCDs)
- **Y Axis** = Abundance Index