Research Computing Support

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http://oit.utk.edu/research
Our Mission

To help UT researchers use information technology and analytic methods to:

- Acquire Data
- Manage Data
- Visualize & Analyze Data
- Disseminate Results
- Archive & Share Data

Up to 15 hours per semester of free support
Acquiring Data

- How much to acquire?
- Secondary data from data archives
  see Data Services Librarian Chris Eaker
  http://libguides.utk.edu/data
- Extract data from existing files
  or relational databases
- Extract data from social media e.g. Facebook, Twitter…
- Extract data from published graphs
## Qualtrics Web Surveys
[http://oit.utk.edu/research/websurveys](http://oit.utk.edu/research/websurveys)

Please rate the following:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
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</thead>
<tbody>
<tr>
<td>The workshop material was clear/organized.</td>
<td></td>
<td></td>
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<tr>
<td>The topics covered were useful.</td>
<td></td>
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<tr>
<td>I learned from this workshop.</td>
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<td>The workshop benefits my college or career experience.</td>
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<td>The instructor communicated well.</td>
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<td>The computer lab was adequate.</td>
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<tr>
<td>Overall, this was a good workshop.</td>
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Scantron Forms
LabVIEW Instrument Control
Managing Data

- Cleaning data – finding potential errors
- Creating new variables
- Merge / Concatenate / Transpose
- Summarizing into counts or means by groups
- Backing up
- Archiving & Sharing Data / Results
  
  see Data Curation Librarian, Chris Eaker
  
  http://libguides.utk.edu/datamanagement
Data Visualization & Analysis

- Numbers
  - Math, Statistics
  - Data Mining
- Words
  - Qualitative Analysis
  - Content Analysis
  - Linguistics / Sentiment Analysis
  - Statistical
    - Latent Semantic Analysis
    - Latent Dirichlet Allocation
  - Content vs. Style
Data Analysis (continued)

- Images
  - Quantitative
  - Qualitative
- Audio & Video: Qualitative only for now
Disseminate Results

♦ Graphics & Visualization
♦ Tables
♦ Writing up results
We Fully Support
http://oit.utk.edu/research/software

<table>
<thead>
<tr>
<th>Data Acquisition</th>
<th>Qualtrics (web survey server)</th>
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<tbody>
<tr>
<td>Numbers</td>
<td>Amos, JMP, MATLAB, Maple, Mathematica, SAS, SPSS, R</td>
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<tr>
<td>Text</td>
<td>ATLAS.ti, QDA Miner, NVivo, WordStat</td>
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<tr>
<td>Images</td>
<td>ATLAS.ti, ImageJ, NVivo, QDA Miner</td>
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<tr>
<td>Audio/Video</td>
<td>ATLAS.ti, NVivo</td>
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<tr>
<td>We Provide</td>
<td><a href="http://oit.utk.edu/software">http://oit.utk.edu/software</a></td>
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<tr>
<td>AutoDesk Suite</td>
<td>Mplus</td>
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<td>MySQL Server</td>
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<td>ImageJ</td>
<td>R</td>
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<td>JGR</td>
<td>SamplePower</td>
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<td>LISREL</td>
<td>SAS Enterprise Guide</td>
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<td>Maple</td>
<td>SAS Enterprise Miner</td>
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<tr>
<td>Mathematica</td>
<td>SAS Graph</td>
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<tr>
<td>MATLAB</td>
<td>Graphics Editor</td>
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Hardware

- Computer Labs – >1,000 machines
- Apps@UT System  http://apps.utk.edu
  - Software appears to run on your computer
  - Opens/saves files stored on your computer
  - Prints to your printer
- Runs on Windows, Mac, Linux, iPad, iPhone…
Hardware (continued)

- **Newton Linux Cluster**
  - >5,000 cores
  - ¼ PB of disk space
  - Single node capacity: 48 cores, 128 GB
  - Infiniband high speed interconnect
  - Maple, Mathematica, MATLAB, R, SAS,…

- **Darter**
  - Cray XC30 (Cascade) supercomputer
  - 11,968 physical compute cores
  - 22.6 TB of compute memory
  - Peak performance of 240.9 TF
The Newton Project

5000 cores providing 150 TFLOPS
GPUs providing 64 TFTLOPS
56 Gbit/sec Infiniband network
Shared memory node with 1TB of RAM
Questions?