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A message from the CIO

By John Hooper, Acting Vice President for Information Technology and Chief Information Officer

Recently I moved into the role of Acting Vice President for Information Technology and Chief Information Officer. I am very appreciative of the confidence that Dr. Rawlins has entrusted to me. I also realize the importance of this position and of information technology at the University of North Texas (UNT) at this point in history.

Read more   BOOKMARK ...

New Features in UNT Bulk Mail

By Dr. Philip Baczewski, Director of Academic Computing and User Services

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Read more   BOOKMARK ...

JAWS 12 has arrived and is available for use

By Dr. Elizabeth Hinkle-Turner, Assistant Director - Academic Computing and User Services

Jaws 12, Freedom Scientific's screen reader for Windows has been released and is available to qualified members of the UNT community.

Read more   BOOKMARK ...

TANDBERG Video Conferencing and Telepresence Showcase

By the Numbers

ACUS Classroom Computing Services

Classroom: DP-B140
(48-seat, Windows)

Sections: 15

Credit Hrs: 43

Classroom: DP-B142
(48-seat, Windows)

Sections: 12

Credit Hrs: 30

Classroom: DP-D212
(24-seat, Windows)

Sections: 9

Credit Hrs: 27

Classroom: DP-D215
(40-seat, Mac OS X)

Sections: 10

Credit Hrs: 25

46 course sections totaling 125 credit hours plus 5, 9-hour single meetings in DP-D215

A **CLEAR** Event Announcement

The TANDBERG Video Conferencing and Telepresence Showcase is coming to UNT! There are two sessions that you can choose from; registration is required. Lunch will be served between the two sessions as part of the tailgating event. Come join us for BBQ, lots of fun and door prizes.

Read more   BOOKMARK

Thanksgiving Hours

By Claudia Lynch, *Benchmarks Online* Editor

The Thanksgiving Holiday is just around the corner and so are holiday closings.

Read more   BOOKMARK

UNT Messaging Systems Group and Directory Services Team Combine

By Claudia Lynch, *Benchmarks Online* Editor

The UNT Messaging Systems Group has combined with the Directory Services Team creating a new group called *Enterprise Messaging and Directory Services.* Along with a new group name comes a new website, emds.unt.edu.

Read more   BOOKMARK

TODAY'S CARTOON

Click on the link above for an information age laugh.

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Recently I moved into the role of Acting Vice President for Information Technology and Chief Information Officer. I am very appreciative of the confidence that Dr. Rawlins has entrusted to me. I also realize the importance of this position and of information technology at the University of North Texas (UNT) at this point in history.

As a 19 year veteran of the university and CITC, I have a broad understanding of the workings of both. There is still much for me to learn, however, about the nearly 70 information technology services provided by CITC to UNT and other components of the university system as well as the many IT services provided by organizations outside of CITC. Currently I am meeting with CITC staff to get a more detailed understanding of the services we provide. Further, I want to have similar discussions with the non -CITC IT organizations at UNT and other system components to learn how CITC can support their missions and collaborate on common challenges going forward.

This is a transformational time for information technology both at UNT and within universities nationwide. In the UNT System, and in many other systems and universities, a shared service initiative is under way to enhance collaboration and sharing of services across the system with an eye toward increasing efficiency and services across the system without increasing costs. Information technology and human resources are the early focus of this initiative. A system CIO is being recruited that will serve as the focal point of the information technology transformation.* Beyond the UNT System, technology is continually becoming more critical to the mission and the transformation of universities. The expansion and evolution of alternative methods for delivering instruction through distance learning and other technologies such as lecture capture continue unabated. Services to students will be delivered anytime, anywhere and anyhow as more content is pushed to mobile devices. Analytical capabilities will be enhanced to improve measurement of effectiveness but just as important to support data mining to enhance recruitment and retention efforts. As UNT moves toward tier 1 research status, enhancement of research administrative functions as well as continued provision of computing resources will be critical.

These are exciting challenges. No one in information technology will be bored as the demands will continue to exceed the resources. Careful governance is required to be sure that information resources are concentrated on the projects that most closely align with the strategic plan of the university while never losing sight of the fact that a significant effort is required to "keep the lights on" – i.e., supporting and enhancing existing services.

In closing, I want to express my appreciation to Maurice Leatherbury who had this role for the previous five years. Thanks to his stewardship and leadership of CITC through a dynamic period, I have inherited an outstanding organization composed of talented and committed folks who are dedicated to UNT and the other components of the UNT System. We welcome the challenges going forward.

----

*UNT System's shared services blog, launched by Terry Pankratz, Vice Chancellor for Finance, offers more information on the shared services initative. An article about the shared services blog appeared in *InHouse* in September.

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By Dr. Philip Baczewski, Director of Academic Computing and User Services

The UNT Bulk Mail system has been upgraded to support new features that have been requested by Bulk Mail users. Bulk Mail's operation has also been migrated to a new server platform in order to ensure reliable operations. The Bulk Mail System allows designated individuals to send e-mail to groups of students at UNT. It is designed to better facilitate the distribution of important information to UNT students.

The new features supported within Bulk Mail include:

- Support for up to 5 attachments

- Support for HTML content in Bulk Mail messages

- Support for department administrators to send mail to students based on their course enrollment for any courses falling under the Chair's scope of authority.

Authorized users can access UNT Bulk Mail by logging in with their EUID and Password at https://bulkmail.unt.edu/.For detailed information on using UNT Bulk Mail, please see the Bulk Mail help page. If you experience any problems with Bulk Mail or have questions about the new features, please contact the CITC Helpdesk (helpdesk@unt.edu).

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MyUNT   EagleConnect   Blackboard   People & Departments   Maps   Calendars   Giving to UNT

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Home » issues » 2010-11 » JAWS 12 has arrived and is available for use

JAWS 12 has arrived and is available for use

By Dr. Elizabeth Hinkle-Turner, Assistant Director - Academic Computing and User Services

Jaws 12, Freedom Scientific's screen reader for Windows has been released and is available to qualified members of the UNT community. JAWS users should contact their network managers for installation of the product. Network managers should have access to the CITC ACUS STATAPPS volume for installation, and licensing management has not changed from previous versions of the application. Any questions regarding the installation and licensing of JAWS can be directed to me at ehinkle@unt.edu.

Network managers - the screenshot below shows the location of the 32-bit and 64-bit versions of JAWS 12:
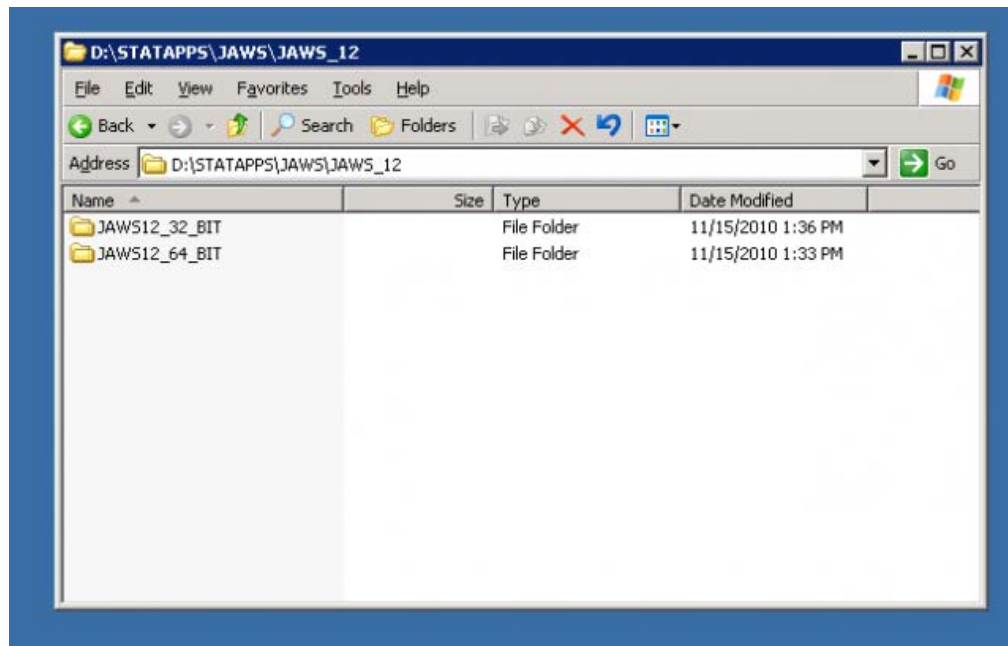
Please note that 64-bit JAWS works fine with 32-bit Windows 7 or 32-bit Office and we have tested it in all variety of 32-bit and 64-bit environments and have found no inconstancies or incompatibilities.

New features in JAWS 12 are listed and extensively discussed at this link. A summary of new features includes a Settings Center which allows the user to customize and store settings for discreet applications all in one place, a virtual ribbon menu, enhancements for use with MS Word and a text analyzer.

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TANDBERG Video Conferencing and Telepresence Showcase

A CLEAR Event Announcement

The TANDBERG Video Conferencing and Telepresence Showcase is coming to UNT! There are two sessions that you can choose from; registration is required. Lunch will be served between the two sessions as part of the tailgating event. Come join us for BBQ, lots of fun and door prizes.

If you run into any error or need help in reserving a spot feel free to contact Brenda Ritz at ritz@unt.edu or (940) 369-7877 for assistance with registration.

See Hello.
The Future Is Here with Cisco TelePresence.

TANDBERG   TANDBERG is now part of Cisco.   CISCO

We have loaded up gear, refreshments and some of our videoconferencing experts to bring you a Technology Showcase experience like you have never seen....

RSVP Now!

Choose your session! Tailgating lunch will be served between sessions - then don't forget to tour the technology tailgate truck and get a sneak peek at the next generation of TANDBERG videoconferencing and telepresence.

Agenda

- **Introduction & Overview -** Steve Smith, Tandberg, now part of Cisco

- **Distance Learning Strategies:** Content & Curriculum Resources - Julia Heighway, CILC

- **Technology Demonstration:** Tools you can use in and out of the classroom - Dr. Lance Ford, Tandberg, now part of Cisco

- **Funding Strategies**: Find sources to fund your technology programs - Veronica Garcia, Tandberg Grant Services

Date & Location:

November 29th
University Of North Texas
Chilton Hall Room 245
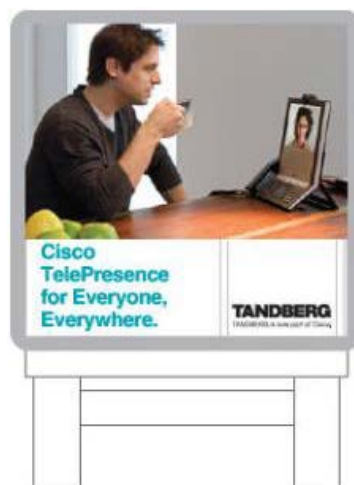410 Avenue C
Denton, TX 76203

10:30am - 2:00pm

Two presentation times to choose:

Session 1: 10:30 AM - 12:00 PM
Session 2: 12:30PM - 2:00PM

For more detailed location information, see our list of Upcoming Events

Door prizes provided by CCS Presentations!

To join the Tailgate Party, RSVP Now!

RSVP Now!

Cisco TelePresence for Everyone, Everywhere.

TANDBERG

CCS

Presenting Better Solutions

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By Dr. Philip Baczewski, Director of Academic Computing and User Services

Puttin' on the Wits

In case you missed it, the big technology happening this week was the Web 2.0 Summit held in San Francisco, California. Held annually since 2004, this meeting is the brainchild of Tim O'Reilly whose company has published geek classics such as *Unix in a Nutshell* and the *Perl Cookbook* (no really -- those actually are classics.) The Web 2.0 conference is dedicated to discussing current and anticipated trends of Internet technology and this year features the "usual suspects", including Eric Schmidt of Google, Mark Zuckerberg of Facebook, and Evan Williams of Twitter, along with representatives from a number of other technology companies including Comcast Cable, Adobe, HP & Palm, RIM (the Blackberry folks), Yahoo, AT&T, LinkedIn, and many others.

Registration for the Web 2.0 Summits are by invitation only reportedly "to maintain an intimate setting and foster dialogue among all participants." We can only assume that this is also to be sure that these IT luminaries aren't having to interact with the normal geek rabble you find at events such as consumer electronic shows and Apple product announcements. The $4000-plus price tag for the event will also provide similar assurances.

Let the games begin!

An interesting theme of this year's summit is the idea of "points of control" representing established Internet technology and media interests' efforts to hold onto the market share they've already established, while using their position to exert even more influence on their product or service realm. This is illustrated by an interactive map complete with political divisions like the "Union of Social Networks" with Facebook holding the greatest real estate, the "Land of Search" with a prominent area covered by Google, and the "Kingdom of Commerce" divided between Amazon and eBay, all surrounded by mythical bodies of water with names like "Government PoliSeas" and "Straits of Neutrality." The map is subtitled "The Battle for the Network Economy" and looks like it is ready for a rip-roaring game of geek Risk.

In one case, there seems to be an invasion of territory. Early in the week, Facebook founder Mark Zuckerberg introduced a Facebook e-mail service that gives a @facebook.com e-mail address to any user who wants one but eliminates the confusing and formal e-mail elements like subject lines and cc or bcc fields (because teenagers don't want to be bothered by subjects). Facebook also promises to show you the "messages that matter" in your "social inbox" that collects messages from your friends and family, while shunting your bank statements to a different folder.

Who? What? Where?

As the Web 2.0 Summit continues to ponder the question of what the Internet is, the question arises as to where the Internet is. People are increasingly accessing the Internet via mobile devices on cellular networks. It's not surprising that AT&T and Research in Motion (Blackberry) were featured on the program, and HP brought along Jon Rubinstein who they acquired with Palm and who developed the Pre. Eric Schmidt made news during his session at the Web 2.0 summit by waving around what was assumed to be the next Google phone and predicting that devices like it would replace credit cards for point of sale purchases.

So much more ...

If there's a weakness to this Web 2.0 Summit it's that it appears to place too much emphasis on the Internet as a communication and commerce platform. Missing from the map are any references to online learning, online scholarship, political and social interaction, creative pursuits, and much more that the Internet is and can be. So

while it's interesting to see (from afar) the Internet inteligencia that can be gathered for this event, I think we need to acknowledge that there are other values to be considered when discussing the once and future Internet. I, for one, place much more importance on the Internet's ability to allow us to share information than to sell it.

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Drugs and Alcohol:
Information for Students, Faculty and Staff

Alcohol, drug policies explained; it's the law

As strated in a recent *InHouse* article, UNT is required by law to establish a drug and alcohol prevention program for its students and employees. UNT also is required to provide this information to students, faculty and staff when hired and annually. The program provides resources and information about alcohol and other drugs.

- Find a flyer about the law.

Learn more from these university policies:

- Illegal Drugs and Alcohol Policy

- Drug-Free Workplaces Policy

- Drug-Free Workplaces Statement

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Helpdesk FYI

By Jonathan "Mac" Edwards, Assistant Manager of the CITC Helpdesk

EagleNet Workaround

Last month the "Helpdesk FYI" was an update & reminder regarding the Campus VPN. In addition to allowing users to connect remotely to on-campus resources we have found the VPN to be a useful workaround to an EagleNet issue that pops up from time to time.

- **Issue**: While using EagleNet users are unable to access off campus websites, but are still able to access on campus websites such as my.unt.edu. This issue can be particularly frustrating when trying to use the Library electronic resources.

- **Symptom**: When trying to access an off-campus website the browser will hang, and may eventually time out. Users are normally able to initially log-in to Eaglenet.

- **Verification**: To verify that you are experiencing this particular problem first attempt to access an off-campus website, I generally recommend www.yahoo.com. If the browser hangs, try accessing www.unt.edu. If you are able to access the www.unt.edu website, but not yahoo then you are most likely experiencing the issue described here.

- **Work-around**: Go to vpn.unt.edu and log in. Follow the instructions found in last months article found here.

If you are experiencing this problem, and need to access multiple off campus websites, you may also want to consider installing the Cisco VPN client, also described last month.

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IRC News

Minutes provided by Christine Valenzuela Recording Secretary*

The IRC -- unofficially now known as the INFORMATION TECHNOLOGY COUNCIL (ITC) -- is currently undergoing a reorganization, see the May 20, 2008 minutes for more information.**>

September 21, 2010

Members present: Judith Adkison (COE), Philip Baczewski (CITC & DSMT), Michael Baggett (COVA), Cengiz Capan (COB), Tim Christian, (CAS), Matt Cooper (HSC), Katy Gallahan (President's Office), Jane Himmel (LEPG), Elizabeth Hinkle-Turner (SCPG), John Hooper (CITC & AIS &EIS), Bruce Hunter (CAS & IAS), Scott Jackson (Libraries), Troy Johnson (Enrollment Management), Maurice Leatherbury (CITC), Kasey Close (GALMAC), William Moen (Academic Admn.), Michael Monticino (CAS/Chair), Jon Nelson (COM), Patrick Pluscht (CLEAR), Charlotte Russell (CITC & AC), Joey Saxon (Finance Admn.), Will Senn (Decision Support), Christine Valenzuela (CAS Transcriptionist) **Members absent**: Joe Adamo (CITC & AIS), Joel Arredondo (SGA), Jim Byford (COECS), Will Clark (UNT System Ctr.), Jim Curry (Classroom Suppt.), Renee Drabier (IRT-HSC), Yunfei Du (SLIS), Abraham John (Student Development), Ramu Muthiah (CPACS), Patty Palumbo (Admn. Affairs HRS), Ruthanne Thomas (RED), Scott Warren (Faculty Senate), and Kiseol Yang (MHM). **Guest(s) Present:** Peter Sneehan (Decision Support)

The minutes of the previous ITC meeting, July 20th, 2010 were approved without corrections.

Tim Christian opened the meeting for Dean Monticino.

Student Computing Planning Group

Elizabeth submitted her Digital Communication report from StuComm of the Student Computing Planning Group for review by the Council; a final proposal will be submitted at the Council's November meeting.

New technology evaluation

Will Senn brought forward a preliminary for creating new technology evaluation. He stated new technology is rapidly emerging, and the University must consider to open, and adopt a new direction with the capacity to communicate remotely (globally) while maintaining security. He will send a formal proposal at a later date.

Charge for a Presidential IT Council

Charge for a Presidential IT Council – the target is Faculty. Tim Christian suggested looking into UTC's model. Will Senn stated boundaries for this group have to be defined.

A question arose for an update on the iPhone application for UNT; there are a few applications but none are not institution-wide; URCM emphasis is in mobile website; there has not been a mandate for mobile applications.

Lecture Capture Technology Solution

Jane Himmel submitted her report of the Lecture Capture Technology Solution findings and recommendations for the Council to review. Cengiz Capan stated it is necessary to find out what solution works for each college; Clarification: pilot project offers hosting, valuable connection is the increase in future enrollment; face-time with the content is helping the students; Maurice Leatherbury stated bandwidth is not going to be an issue provision for the performance and have non-proprietary solution; will require 24/7 support, video, and tutoring; He reminded Council that there will may another 10% budget cut.

Cengiz Capan will send a link to the MitOpenCourseware web site which target courses with the larger enrollment classes, and said it will bring UNT back in competitive advantage. Jane Himmel will place it on Wiki for demonstration. Michael Monticino stated the decisions to move forward with the Pilot project will be voted

electronically.

Michael Monticino requested everyone to send recommendations of what should be considered for the Presidential IT Council. Michael Monticino clarified that the difference between Committees and Councils is that "Councils" make decisions.

Introductions, upcoming events

Tim Christian introduced Christine Valenzuela who is replacing Susan Richroath as Transcriptionist, and noted Maurice's retirement beginning November 1st, and acting CIO in his place will be John Hooper.

Tim Christian informed Council that the United States Mexico Technology Summit is on September 29, 2010 in Dallas, Texas. It is being represented by Dallas Regional Chamber, Tech America, and UNT. Will Senn also informed everyone that October 18th, 2010 is the date for the SECC Golf Tournament, and needs UNT representatives.

The next UNT ITC meeting is scheduled for November 16th, 2010 in GAB 210M.

Meeting adjourned.

---

*For a list of IRC Regular and Ex-officio Members click here (last updated 12/12/08). Warren Burggren is now the Chair.

**DCSMT Minutes can be found here.

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Research and Statistical Support
University of North Texas

How to Identify and Impute Multiple Missing Values using R

Link to the last RSS article here: How to Install LaTeX2HTML on a Windows (32-bit) XP machine -- Ed.

By Dr. Jon Starkweather, Research and Statistical Support Consultant

As with many functions or tasks in R, there are a great many ways to accomplish the goals of identifying, displaying, and imputing multiple missing values. The following article discusses only a few ways to identify, display, and impute missing values using three packages in the statistical software R. For those new to R, I would suggest reviewing the Research and Statistical Support (RSS) Do-it-Yourself (DIY) Introduction to R short course. A script file containing all the commands used in this article can be found here.

1. Identify and Display Missing Values.

Generally speaking, R identifies missing values with NA. So, running a simple summary(x) where 'x' is the data frame will provide the number of NA's (missing values) for the variable(s). Several examples of the 'summary' function are listed throughout this article.

1.1. The VIM package

The Visualization and Imputation of Missing values package (VIM; Templ, Alfons, & Kowarik, 2010a; Templ, Alfons, & Kowarik, 2010b), provides several functions for identifying and displaying missing data. It provides some very intuitive graphical displays which allow the user to easily identify missing data. Missing data is often displayed in bright red on otherwise grayscale or blue figures. When you load the package, you'll notice two things. First, it has several dependencies and second, it has its own Graphical User Interface (GUI). Generally, I do not use the GUI and instead rely on script which I simply prefer.
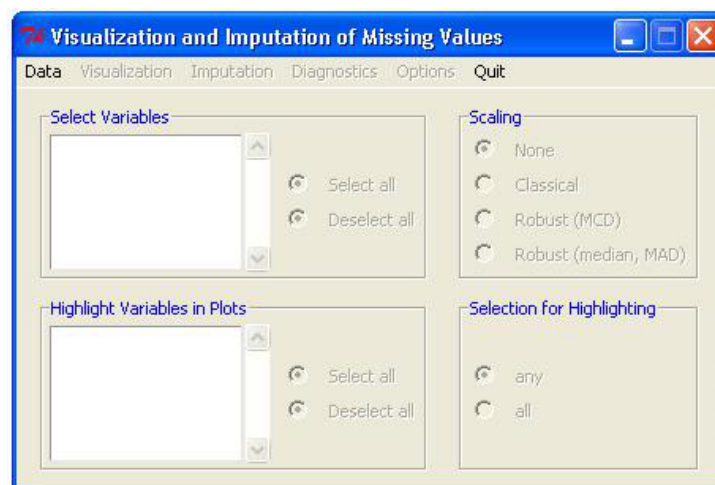
The function 'aggr' aggregates missing data and can be used to count or plot the *amount* of missing-ness for each variable as well as some combinations of variables. Use the examples provided in the documentation to replicate what is provided below (Templ, Alfons, & Kowarik, 2010a).

```
> data(sleep)
 > a <- aggr(sleep)
> a

>

 Variable Count

     NonD    14

    Dream    12

    Sleep     4

     Span     4

     Gest     4
```

You will also notice the graphical display which shows the proportion of missing-ness for each variable as well as some combinations (displayed below)
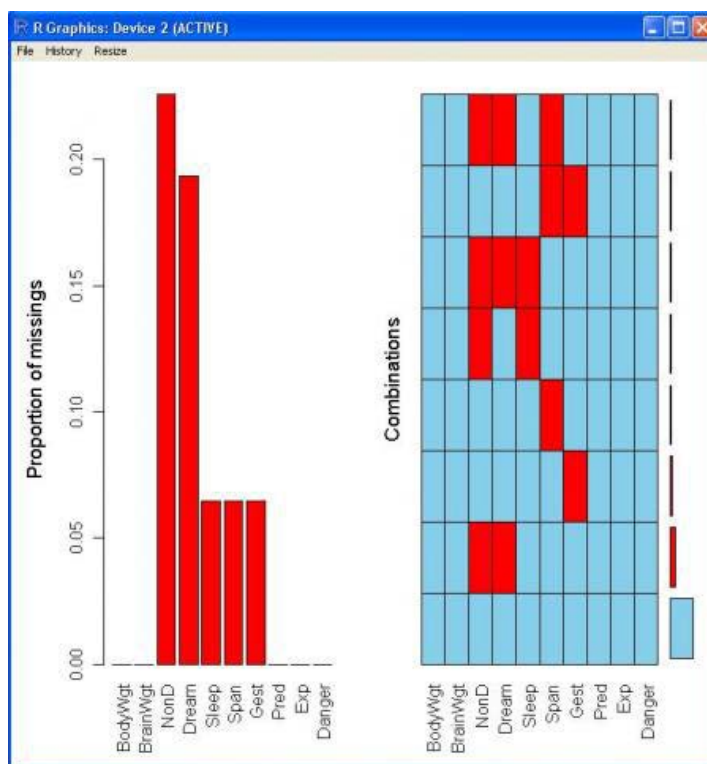
The function 'barMiss' can be used to produce bar charts which display the proportion of missing values of each variable using the color red in the lower part of each bar, the upper portions are displayed in blue.

```
> data(sleep)
> x <- sleep[, c("Exp, "Sleep")]
> summary(x)


      Exp            Sleep

 Min.   :1.000   Min.   : 2.60

 1st Qu.:1.000   1st Qu.: 8.05

 Median :2.000   Median :10.45

 Mean   :2.419   Mean   :10.53

 3rd Qu.:4.000   3rd Qu.:13.20

 Max.   :5.000   Max.   :19.90

                 NA's   : 4.00

> barMiss(x)
```

Click in the left margin to switch to the previous variable or in the right margin to switch to the next variable. To regain use of the VIM GUI and the R console, click anywhere else in the graphics window.

```
 >
```
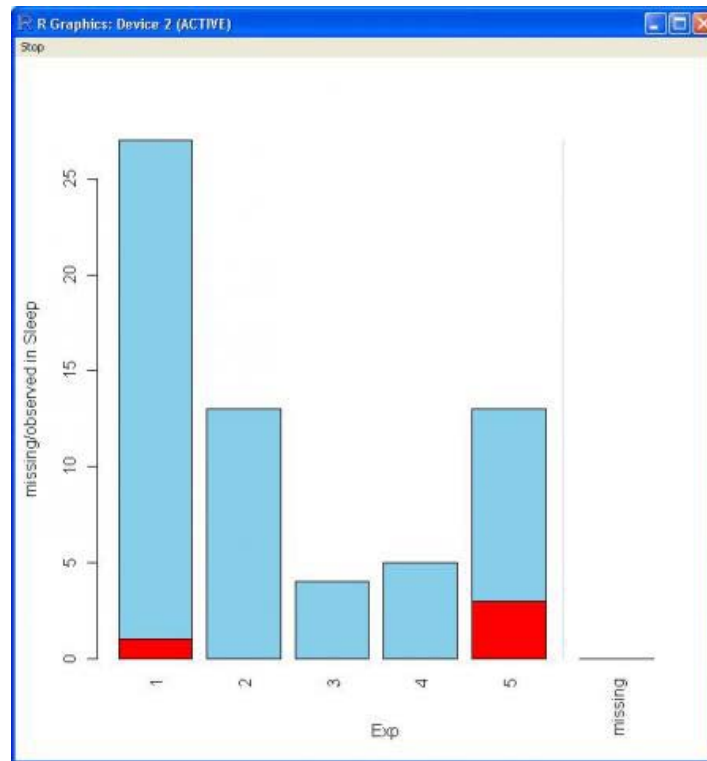
The 'histMiss' function performs the same way the 'barMiss' function does but, obviously with histograms instead of bar graphs.

```
> data(tao)

> y <- tao[, c("Air.Temp", "Humidity")]

> summary(y)




> histMiss(y)
```

Click in the left margin to switch to the previous variable or in the right margin to switch to the next variable. To regain use of the VIM GUI and the R console, click anywhere else in the graphics window.

```
>
```
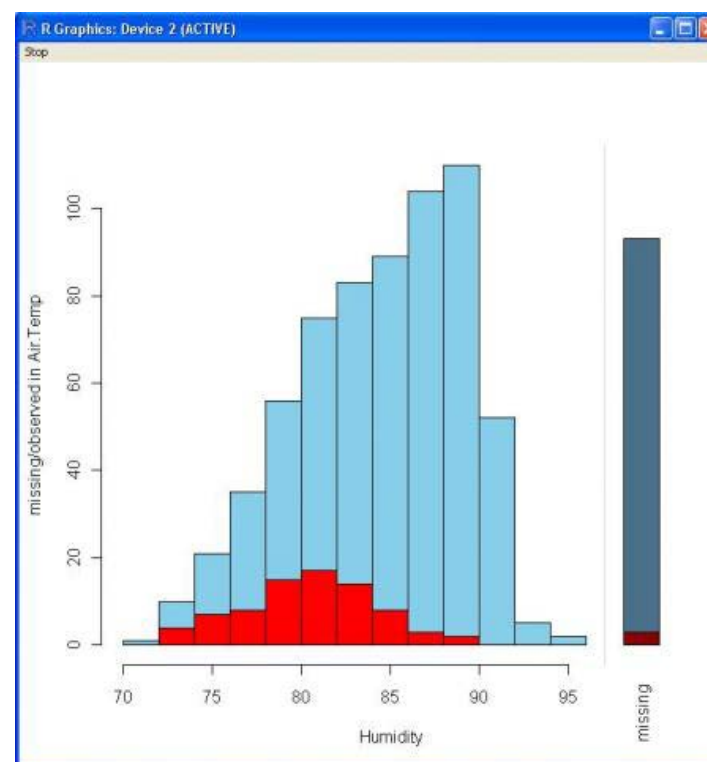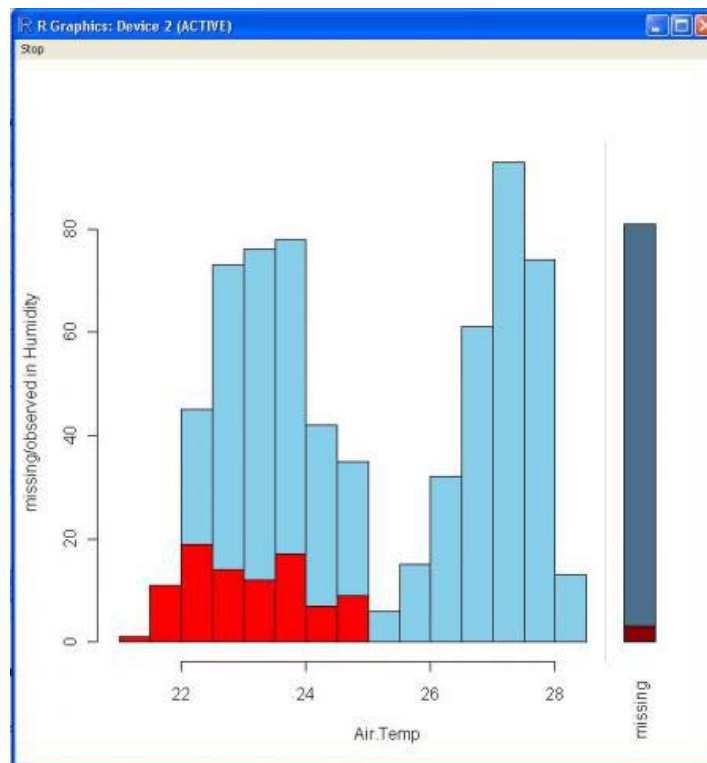
The function 'marginmatrix' creates a scatter plot matrix with information about missing values in the plot margins of each panel. In the margins box plots in blue represent the (non-missing) data. Single variable scatter plots and boxplots in red represent missing data and are located along the axis for each variable.

```
> data(sleep)

> z <- sleep[, 1:5]

> z[,c(1,2,3)] <- log10(z[,c(1,2,3)])

> summary(z)
```

```
        BodyWgt              BrainWgt            NonD                Dream
 Min.    :-2.3010    Min.    :-0.8539    Min.    : 0.3222    Min.    : 0.000
 1st Qu.:-0.2260     1st Qu.: 0.6263     1st Qu.: 0.7958     1st Qu.: 0.900
 Median : 0.5240     Median : 1.2367     Median : 0.9217     Median : 1.800
 Mean    : 0.5809    Mean    : 1.3638    Mean    : 0.8927    Mean    : 1.972
 3rd Qu.: 1.6781     3rd Qu.: 2.2199     3rd Qu.: 1.0414     3rd Qu.: 2.550
 Max.    : 3.8231    Max.    : 3.7568    Max.    : 1.2529    Max.    : 6.600
                                         NA's    :14.0000    NA's    :12.000

     Sleep
 Min.    : 2.60
 1st Qu.: 8.05
 Median :10.45
 Mean    :10.53
 3rd Qu.:13.20
 Max.    :19.90
 NA's    : 4.00


> marginmatrix(z)

>
```
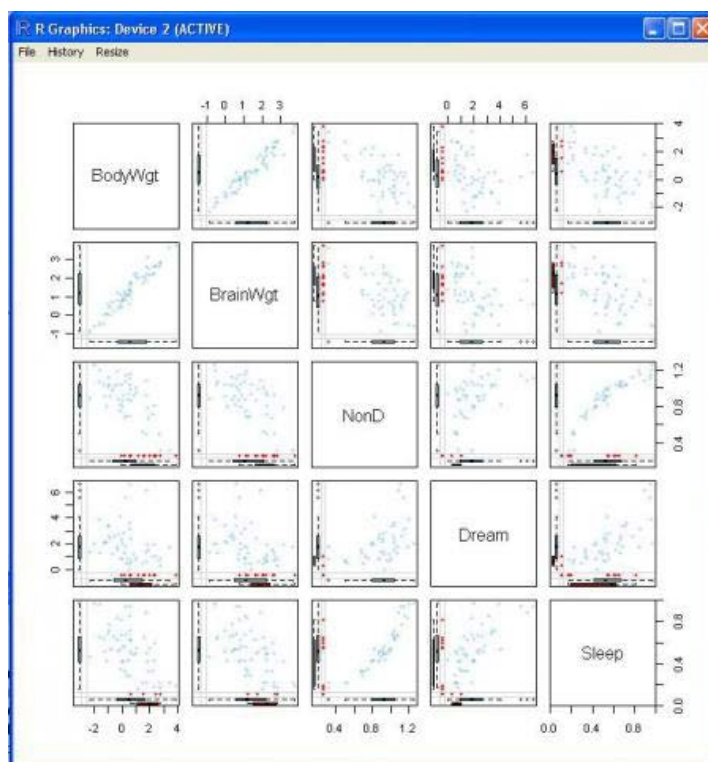
The function 'marginplot' performs essentially the same operation as 'marginmatrix' but for a standard two variable scatter plot – which makes it much easier to see and interpret. The red numbers (81 & 93) are the number of missing values for each variable; the single number in the lower right-most panel represents the number of cases which are missing values for both variables.

```
> data(tao)
```

```
> marginplot(tao[,c("Air.Temp", "Humidity")])
```

```
>
```
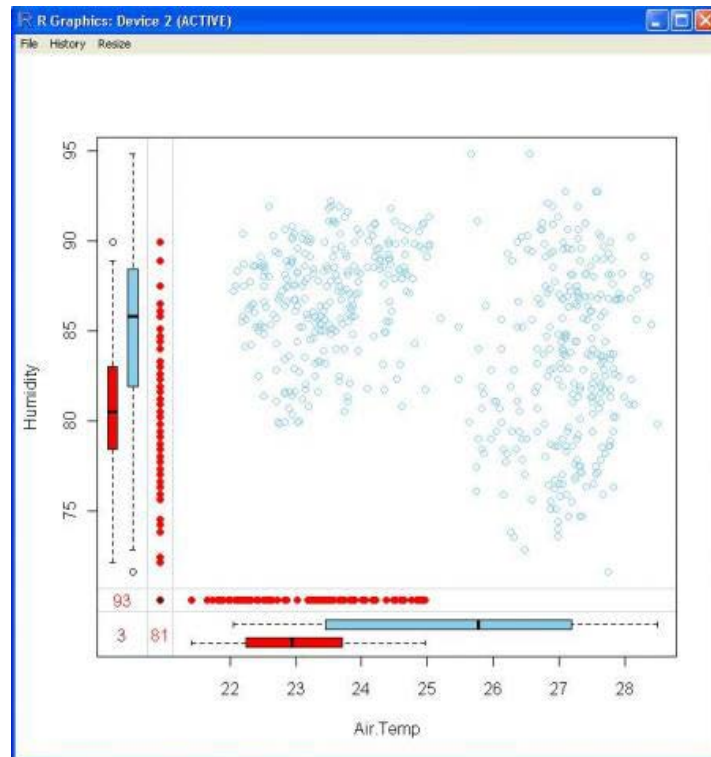

The function 'matrixplot' creates a color matrix plot in which the data cells are represented by a colored rectangle. Each cell is color coded along a continuum from white to black by default and missing data cells are given a clearly recognizable color (i.e. bright red by default). The data matrix plot can also be sorted by clicking inside the plot space on the variable's column which you want to sort by.

```
> data(sleep)
```

```
> b <- sleep[, -(8:10)]
```

```
> b[,c(1,2,4,6,7)] <- log10(b[,c(1,2,4,6,7)])
```

```
> matrixplot(b, sortby = "BrainWgt")
```

```
Click in a column to sort by the corresponding variable.
```

```
To regain use of the VIM GUI and the R console, click outside the plot region.
```

```
Warning message:
```

```
In matrixplot(b, sortby = "BrainWgt") :
```

```
  variable 'Dream' contains infinite values
```

```
>
```
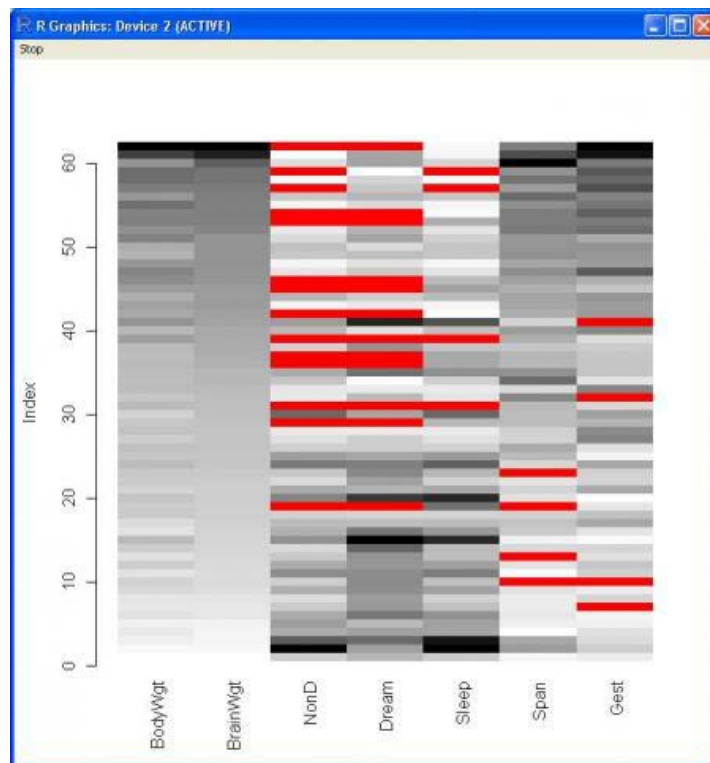
2. Imputation Techniques for Missing Values.

2.1 The VIM Package.

The VIM package can also be used to do multiple imputation using the 'irmi' function which does what it stands for, Iterative Robust Model-based Imputation. The function runs iterative regression analysis in which each iteration uses one variable as an outcome and the remaining variables as predictors. If the outcome has any missing values, the predicted values from the regression are imputed. Iterations end when all variables in the data frame have served as an outcome. Again, using the package documentation provided examples allows a brief introduction to the function (Templ, Alfons, & Kowarik, 2010a). Notice below, the variables Sea.Surface.Temp, Air.Temp, and Humidity all have missing values.

```
> data(tao)

> summary(tao)
```

Year	Latitude	Longitude	Sea.Surface.Temp
Min. :1993	Min. :-5.000	Min. :-110.0	Min. :21.60
1st Qu.:1993	1st Qu.:-2.000	1st Qu.:-110.0	1st Qu.:23.50
Median :1995	Median :-1.000	Median :-102.2	Median :26.55
Mean :1995	Mean :-1.375	Mean :-102.5	Mean :25.86
3rd Qu.:1997	3rd Qu.: 0.000	3rd Qu.: -95.0	3rd Qu.:28.21
Max. :1997	Max. : 0.000	Max. : -95.0	Max. :30.17
			NA's : 3.00

Air.Temp	Humidity	UWind	VWind
Min. :21.42	Min. :71.60	Min. :-8.100	Min. :-6.200

```
 1st Qu.:23.26    1st Qu.:81.30    1st Qu.:-5.100    1st Qu.: 1.500

 Median :24.52    Median :85.20    Median :-3.900    Median : 2.900

 Mean   :25.03    Mean   :84.43    Mean   :-3.716    Mean   : 2.636

 3rd Qu.:27.08    3rd Qu.:88.10    3rd Qu.:-2.600    3rd Qu.: 4.100

 Max.   :28.50    Max.   :94.80    Max.   : 4.300    Max.   : 7.300

 NA's   :81.00    NA's   :93.00
```

```
> imputed.tao <- irmi(tao)

> summary(imputed.tao)



>
```

2.2. The Amelia Package.

Another way of dealing with missing data is to use the Amelia package. The Amelia package (Honaker, King, & Blackwell, 2010a) is specifically designed to do multiple imputation on a variety of data types, as long as the data is in a matrix or data frame. The imputation function is the 'amelia' function, which creates new data sets which include multiple imputation of incomplete multivariate data values in place of missing values by running a bootstrapped EM algorithm. The 'amelia' function has a variety of optional arguments, including the ability to provide an initial priors matrix and bounds for missing values. Working with the documentation provided examples offers a brief introduction to the function (Honaker, et al., 2010a).

```
> library(Amelia)

Loading required package: foreign

##

## Amelia II: Multiple Imputation

## (Version 1.2-18, built: 2010-11-04)

## Copyright (C) 2005-2010 James Honaker, Gary King and Matthew Blackwell

## Refer to http://gking.harvard.edu/amelia/ for more information

##

> data(africa)

> summary(africa)




>
```

Next, we can use the 'amelia' function to create the new data set(s). Notice the summary (below) tells us there were "5 imputed datasets" created. We could increase the number of data sets created by changing 'm=5' (default) to whatever number of data sets we wanted; however, Honaker, King, and Blackwell (2010b) state "unless the rate of missing-ness is very high, $m = 5$ (the program default) is probably adequate" (p. 4).

```
> a.out <- amelia(x=africa,m=5,cs="country",ts="year",logs="gdp_pc")

-- Imputation 1 --

1   2  3
```

```
-- Imputation 2 --

 1  2  3

-- Imputation 3 --

 1  2

-- Imputation 4 --

 1  2  3  4

-- Imputation 5 --

 1  2
```

```
> summary(a.out)

Amelia output with 5 imputed datasets.

Return code:  1

Message:  Normal EM convergence.

Chain Lengths:

--------------

Imputation 1:  3

Imputation 2:  3

Imputation 3:  2

Imputation 4:  4

Imputation 5:  2


Rows after Listwise Deletion:  115

Rows after Imputation:  120

Pattern of missingness in the data:  3


Fraction Missing for individual variables:

-----------------------------------------


> plot(a.out)


>
```
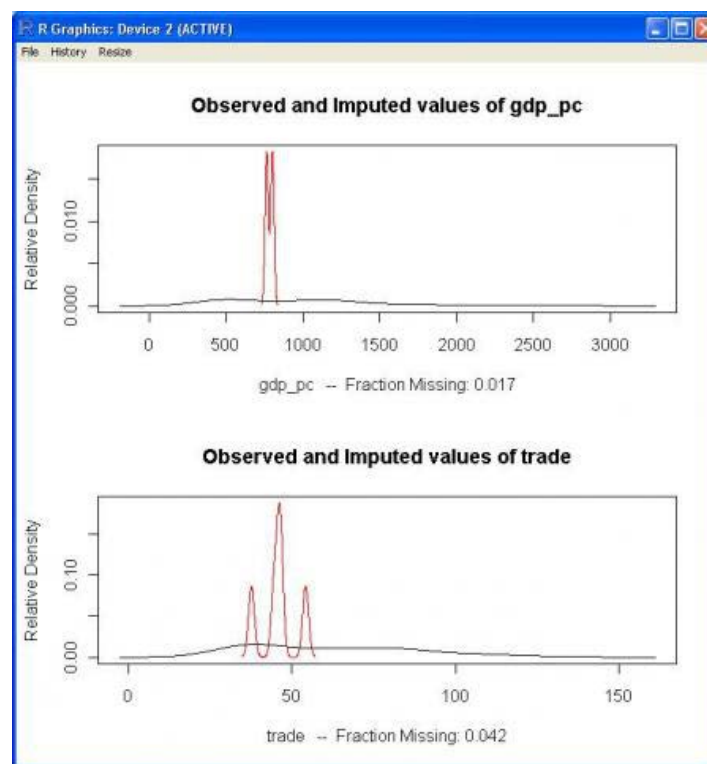
Next, we can write the data sets created and store them (by default) in our working directory. The following function 'write.amelia' takes all the imputed data sets created using the 'amelia' function and writes them as new data files. In this case, specified with the names: "africa.outdata1.csv", "africa.outdata1.csv", "africa.outdata3.csv", "africa.outdata4.csv", and "africa.outdata5.csv". The 'csv' extension refers to *comma separated values* which is a form of text (.txt) data file with values separated by commas.

```
> write.amelia(a.out,"africa.outdata",extension=NULL,format="csv")

>
```

Now we can load any of these 5 new data sets into R from the working directory. Generally, the last iteratively produced data set offers the best estimates of the missing values/data because; it is based on the previous estimates (i.e. priors).

```
> a.out5 <- read.table("C:/Documents and Settings/user/Desktop/WorkStuff/

        africa.outdata5",header=TRUE,sep=",",na.strings="NA",dec=".",

        strip.white=TRUE)

>
```

Now, we can perform a summary to take a look at how the missing values may have changed the central tendency and or distribution of the variables.

```
> summary(a.out5)

>
```

```
      X                 year           country          gdp_pc

 Min.   :  1.00   Min.   :1972   Burkina Faso:20   Min.   : 376.0

 1st Qu.: 30.75   1st Qu.:1977   Burundi     :20   1st Qu.: 511.8

 Median : 60.50   Median :1982   Cameroon    :20   Median :1015.5

 Mean   : 60.50   Mean   :1982   Congo       :20   Mean   :1048.6

 3rd Qu.: 90.25   3rd Qu.:1986   Senegal     :20   3rd Qu.:1232.2

 Max.   :120.11   Max.   :1991   Zambia      :20   Max.   :2723.0
```

```
      infl              trade             civlib            population
 Min.   : -8.400   Min.    : 24.35   Min.    :0.0000   Min.    : 1332490
 1st Qu.:  4.760   1st Qu.: 38.41   1st Qu.:0.1667   1st Qu.: 4332190
 Median :  8.725   Median : 58.84   Median :0.1667   Median : 5853565
 Mean   : 12.753   Mean    : 61.52   Mean    :0.2889   Mean    : 5765594
 3rd Qu.: 13.560   3rd Qu.: 80.79   3rd Qu.:0.3333   3rd Qu.: 7355000
 Max.   :127.890   Max.    :134.11   Max.    :0.6667   Max.    :11825390
```

>

2.3. The mvnmle Package.

Another way of dealing with missing data involves using the 'mvnmle' package (Gross & Bates, 2009) to create a complete variance/covariance matrix which will include maximum likelihood estimates for missing values. Notice, this is very different from the previous two methods. The previous methods were concerned with retrieving a new (imputed) data file. The mvnmle method is concerned only with a complete variance/covariance matrix based on maximum likelihood values imputed where previously missing values existed. This can be useful for some multivariate analysis (e.g. structural equation modeling, principal components analysis, etc.). Again we will be using the examples provided in the package documentation (Gross & Bates, 2009).

```
> library(mvnmle)
```

```
> data(apple)
```

```
> summary(apple)
```

Take a look at the covariance matrix for 'apple'.

```
> cov(apple)
```

```
        size worms
size  94.8065    NA
worms     NA    NA
```

>

Notice that because of the 6 missing values on the variable 'worms' we get 'NA' for 3 of the 4 entries of the variance/covariance matrix. We can conduct the multiple imputation using the 'mlest' function, which applies maximum likelihood estimates for missing values so that the variance/covariance matrix can be computed.

```
> mlest(apple)

$muhat

[1] 14.72227 49.33325


$sigmahat

          [,1]      [,2]

[1,]  89.53415 -90.69653

[2,] -90.69653 114.69470
```

```
$value

[1] 148.4350


$gradient

[1]   4.996200e-06   2.891530e-06   9.105833e-07   1.684765e-05   -1.073488-04


$hessian

NULL



$stop.code

[1] 1



$iterations

[1] 34

>
```

To extract only the variance/covariance matrix and assign it a name (imputed.cov.apple):

```
> imputed.cov.apple <- mlest(apple)$sigmahat

> imputed.cov.apple

            [,1]        [,2]

[1,]   89.53415 -90.69653

[2,] -90.69653 114.69470
```

Then, this matrix can be sent to another function for the primary analysis.

2.4. The SeqKnn and rrcovNA Packages.

Finally, another way of dealing with missing data is the *k* nearest neighbor (knn) approach. This method is quite simple in principle but is effective and often preferred over some of the more sophisticated methods described above. Nearest neighbors are records that have similar completed data patterns; the average of the *k*-nearest neighbor's completed data are used to impute the value for a variable that is missing it's value (where *k* can be set by the analyst or R user). Hastie, et al., (1999) have shown a *k* ranging from 5 to 10 is adequate. The advantage of the knn approach is that it assumes data are missing at random (MAR) meaning, missing data only depends on the observed data; which in turn means, the knn approach is able to take advantage of multivariate relationships in the completed data. The disadvantage of this approach is it does not include a component to model random variation; consequently uncertainty in the imputed value is underestimated. As an example of the simplicity of the knn approach, consider the following:

```
Data frame:

----------------------------------------------

case v1 v2 v3 v4 v5 v6

 1      3   3   4   3   4   4  -|

 2      3   3   4   3   4   4   |- 4 nearest
```

```
3      3 2 4  4  4  4  |    neighbors

4      3 2 4  4  4  4 -|

5      3 2 4  ?  4  4 --- missing v3

------------------------------------------------

5      3 2 4  ?  4  4 before imputation

5      3 2  4 3.5 4  4 after imputation

                       |

           imputed value
```

To implement the knn approach in R, Kim and Yi (2009) have made available the 'SeqKnn' package, which performs a sequential knn procedure using the 'SeqKnn' function. Again, using the example provided in the package documentation offers a quick introduction to the function. It is a simple function which simply uses the data name (matrix or data frame) and k = the user defined number of nearest neighbors (k = 10 below).

```
> library(SeqKnn)

> data(khan05)

> imputed.k05 <- SeqKNN(khan05,10)

2208

>
```

Summaries were not included above because; the khan05 dataset has 64 variables and the summary outputs would fill an unnecessary amount of space in this article. To get the summaries for comparison, simply type:

```
summary(khan05)

summary(imputed.k05)
```

The package 'rrcovNA' (Todorov, 2010) also has a function for conducting sequential nearest neighbor imputation ('impSeq'), as well as a function ('impSeqRob') which is a robust variant of the former. Similar to the 'SeqKNN' in terms of simplicity, the function 'impSeq' simply requires the data in matrix or data frame format. The difference between the 'impSeq' function and the 'SeqKNN' from above is the manner in which distances between neighboring cases are determined. The 'SeqKNN' function uses Euclidean distances while 'impSeq' uses statistical measures of distance (mean & covariance). In the case of 'impSeqRob' the distances are determined by robust estimates of location and scatter. The 'rrcovNA' package requires several other packages (listed below in the output). Again, using the examples provided in the library documentation shows how easy it is to use these functions.

```
> library(rrcovNA)

Loading required package: rrcov

Loading required package: robustbase

Loading required package: pcaPP

Loading required package: mvtnorm

Scalable Robust Estimators with High Breakdown Point (version 1.1-00)

Loading required package: norm

Scalable Robust Estimators with High Breakdown Point for

Incomplete Data (version 0.3-00)

> data(bush10)

> summary(bush10)
```

```
          V1                V2                V3                V4

 Min.   : 78.00   Min.   : 66.0   Min.   : 10.0   Min.    :110.0

 1st Qu.: 88.00   1st Qu.:108.5   1st Qu.:185.5   1st Qu.:200.0

 Median : 94.00   Median :137.0   Median :260.5   Median :215.0

 Mean   : 99.85   Mean   :130.3   Mean   :278.1   Mean    :230.6

 3rd Qu.:112.00   3rd Qu.:155.2   3rd Qu.:378.5   3rd Qu.:246.0

 Max.   :146.00   Max.   :181.0   Max.   :577.0   Max.    :344.0

 NA's   :  5.00   NA's   :  2.0   NA's   :  6.0   NA's    :  5.0

          V5

 Min.   :188.0

 1st Qu.:260.0

 Median :273.0

 Mean   :284.1

 3rd Qu.:301.0

 Max.   :380.0
```

Below is an example of the standard 'impSeq' function.

```
> imputed.b10 <- impSeq(bush10)
```

```
> summary(imputed.b10)
```

```
          V1                V2                V3                V4

 Min.   : 78.00   Min.   : 66.0   Min.   : 10.0   Min.    :110.0

 1st Qu.: 88.25   1st Qu.:105.5   1st Qu.:187.2   1st Qu.:193.1

 Median :100.50   Median :137.0   Median :252.9   Median :213.5

 Mean   :102.92   Mean   :129.7   Mean   :288.9   Mean    :227.8

 3rd Qu.:113.00   3rd Qu.:155.0   3rd Qu.:379.5   3rd Qu.:246.0

 Max.   :146.00   Max.   :181.0   Max.   :599.7   Max.    :344.0

          V5

 Min.   :188.0

 1st Qu.:260.5

 Median :274.5

 Mean   :286.6

 3rd Qu.:301.0
```

```
Max.   :380.0
```

Below is an example of the robust sequential imputation, 'impSeqRob' function with the default value of alpha shown. Also notice when retrieving the imputed data from the output of the 'impSeqRob' function, you must apply a dollar sign and x to the name you provided (dataname$x).

```
> rob.imputed.b10 <- impSeqRob(bush10, alpha=0.9)

> summary(rob.imputed.b10$x)
```

```
        V1                V2                V3                V4
 Min.   : 73.39   Min.   : 66.0   Min.   : 10.0   Min.   :110.0
 1st Qu.: 88.00   1st Qu.:105.5   1st Qu.:189.3   1st Qu.:192.7
 Median : 97.00   Median :137.0   Median :255.6   Median :213.5
 Mean   :102.73   Mean   :129.2   Mean   :288.9   Mean   :227.5
 3rd Qu.:113.00   3rd Qu.:155.0   3rd Qu.:379.5   3rd Qu.:246.0
 Max.   :156.85   Max.   :181.0   Max.   :589.4   Max.   :344.0
        V5
 Min.   :188.0
 1st Qu.:260.5
 Median :274.5
 Mean   :286.6
 3rd Qu.:301.0
 Max.   :380.0

>
```

3. Conclusions

Keep in mind; the techniques discussed in this article represent a very small percentage of the available methods for identifying, displaying, and imputing missing values. A *partial* list of packages implementing various functions to handle missing values and missing value imputations is given below (below the References and Resources section). Additionally, the CRAN Multivariate Task View (Hewson, 2010) has a listing of several packages and what they can do for missing data. Also notice that most of the packages discussed above contain more functions than the ones reviewed here. Lastly, there are some limitations to the techniques discussed above. Most assume the data are multivariate normal. Also, the mlest function is limited to 50 variables or less.

Until next time; you may say I'm a dreamer, but I'm not the only one...

4. References and Resources

Gross, K., & Bates, D. (2009). Package 'mvnmle'. Available at:
http://cran.r-project.org/web/packages/mvnmle/mvnmle.pdf

Hastie, T., Tibshirani, R., Sherlock, G., Eisen, M., Brown, P. and Botstein, D., Imputing Missing Data for Gene Expression Arrays, Stanford University Statistics Department Technical report (1999),
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http://cran.r-project.org/web/packages/VIM/vignettes/VIM-EU-SILC.pdf

Templ, M. (2010). CRAN Task View: Official Statistics & Survey Methodology. Available at:
http://cran.r-project.org/web/views/OfficialStatistics.html

Todorov, V. (2010). Package 'rrcovNA'. Available at:
http://cran.r-project.org/web/packages/rrcovNA/rrcovNA.pdf

5. Packages implementing various functions to handle missing values and missing value imputations (note: this is only a partial list):

- Amelia
- arrayImpute
- bcv
- cat
- crank
- CVThresh
- crank
- compositions
- Design
- dprep
- eigenmodel
- EMV
- FAwR
- Hmisc
- impute
- imputeMDR
- MADAM
- mclust
- Mfuzz
- mi
- mitools
- mice
- missMDA
- mimR
- mix
- mix

- MImix
- MIfuns
- monomvn
- mvnmle
- norm
- nnc
- optmatch
- pan
- pcaMethods
- prabclus
- rama
- randomForest
- rconifers
- relaimpo
- robCompositions
- rrp
- scrime
- SDisc
- simsalabim
- VIM
- vmv
- yaImpute

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Columns

Network Connection

Link of the Month

Helpdesk FYI

ITC News

RSS Matters

Short Courses

Staff Activities

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Short Courses

Instructor-led courses are still on hold. Please contact an RSS member or Claudia Lynch if you are interested in taking such a class or wish to have someone offer a class for your students. **SPSS and SAS courses; they are now offered _online_ only**. RSS staff will be still be available for consultation on those topics, however. Another class available online is **_Introduction to R_**.

Surf over to the Short Courses page to see instructions for accessing the SPSS and SAS online learning and other training that is available to you. You can also see the sorts of instructor led courses that have been offered in the past..

Special classes can always be arranged with the RSS staff. See "Customized Short Courses" below for further information. Also, you can **_always_** contact the RSS staff for one-on-one consultation. **Please read the FAQ before requesting an appointment though.**

Especially for Faculty and Staff Members

In addition to the ACS Short Courses, which are available to students, faculty and staff, staff and faculty members can take courses offered through the Human Resources Department (they have a new comprehensive training curriculum), and the Center for Learning Enhancement, Assessment, and Redesign. Additionally, the Center for Achievement and Lifelong Learning offers a variety of courses, usually for a small fee.

EIS training is available. Questions or comments relating to EIS training should be sent to EISTCA@unt.edu.

Microsoft E-Learning

Microsoft E-Learning courses are now available for **_faculty and staff_** via our UNT-Microsoft Campus Agreement and some new Microsoft Office 2010 courses were recently added. Please contact Claudia Lynch at lynch@unt.edu for instructions on accessing this training.

Microsoft Outlook Tutorials and much more

The Enterprise Messaging and Directory Services Group has all sorts of useful information on their website, including tutorials and FAQs. The home page displays a list of their newest tutorials with tutorial topic pages displaying the most accessed pages. You can search the site for whatever you're interested via a Search Box on the left-hand side of the page.

Central Web Support

Consult Central Web Support for assistance in acquiring "Internet services and support." As described on their website:

CWS provides Internet services and support to UNT faculty, staff and students. Services include allocating and assisting departments, campus organizations and faculty with web space and associated applications. Additionally, CWS assists web developers with databases and associated web applications, troubleshooting problems, support and service.

CLEAR (was Center for Distributed Learning)

CLEAR offers courses especially for Faculty Members. A list of topics and further information can be found here.

The center also offers a "Brown Bag" series which meets for lunch one **Wednesday** a month (recently changed from the first Thursday of each month) at Noon in Chilton 245. The purpose of this group is to bring faculty members together to share their experiences with distributed learning. One demonstration will be made at each meeting by a faculty member with experience in distributed learning. More information on these activities can be found at the CLEAR Website. Scheduled meeting dates for the rest of the school year are:

- October 20

- November 17

- December 15

-

- January 26

- February 23

- March 23

- April 20

UNT Mini-Courses

There are a variety of courses offered, for a fee, to UNT faculty, staff and students as well as the general public. For additional information surf over to http://www.unt.edu/minicourses/

Information Security Awareness

The UNT Information Security team has been offering Information Security Awareness courses to all UNT faculty and staff. Topics to be covered will include workstation security, sensitive data handling, copyright infringement issues, identity theft, email security, and more.

For more information, or if you would like to request a customized course to be taught for your department, contact Gabe Marshall at x4062, or at security@unt.edu.

Also, Information Security Training is now available through Blackboard Vista (formerly known as WebCT).

Alternate Forms of Training

Many of the General Access Labs around campus have tutorials installed on their computers.
See http://www.gal.unt.edu/ for a list of labs and their locations. The Willis Library, for example, has a list of Tutorials and Software Support. The Library Instructional Unit also offers workshops and training, including "tech skills" training. Visit their websites for more information: http://www.library.unt.edu/library-instruction

The Training Website has all sorts of information about alternate forms of training. Computer Based Training (CBT) and Web-based training are some of the alternatives offered, although due to the rising costs of training, shrinking budgets and changing technology, computer-based training at UNT is in a state of transition. For up-to-date information on CBT at UNT, see the CBT website.

Gartner Research Services

Way back in 2006 we announced *Gartner Core Research Services Now Available to the UNT Community*. Our subscription for Gartner services has always included **all** UNT faculty, students, and staff. All you need to do to access the subscription is to log into the UNT Gartner portal page at https://gartner.unt.edu/. Gartner is now offering "Webinar Wednesdays." To view all the offerings see: http://my.gartner.com/portal/server.pt?tbb=webinarcalendar You can also listen to Gartner podcasts here: http://www.gartner.com/it/products/podcasting/asset_137461_2616.jsp.

State of Texas Department of Information Resources

Another possible source of training for staff and, perhaps, faculty members is the Texas Department of Information Resources. A look at their Education and Training website reveals some interesting possibilities.

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1155 Union Circle #310709
Denton, TX 76203 USA
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Transitions

New Employees:

- **Ales Bahlburg**, CSS Tech, Classroom Support Services (part-time).

- **Christopher Blackmon**, CSS Tech, Classroom Support Services (part-time).

- **Caitlin Currie**, CSS Tech, Classroom Support Services (part-time).

- **Evan Pritchard**, CSS Tech, Classroom Support Services (part-time).

- **John Wing**, CSS Tech, Classroom Support Services (part-time).

- **Chad Stevenson**, CSS Tech, Classroom Support Services (part-time).

- **Luis Sanchez**, Distributed Computing Support.

- **Aaron Glover**, Operations Student Technician (part-time).

No longer working in the Computing and Information Technology Center:

- **Hemangi Galinde**, Programmer Analyst, Student Records Team (AIS).

- **Charlie Brien**, Facilities Support (AIS). Transferred to another department within UNT.

- **James Ziegler**, Information Security Intern (part-time).

Changes, Awards, Recognition, Publications, etc.

Presentations

Patrick McLeod, Host Systems Administrator (ACUS) attended LISA10 (Large Installation System Administration conference 2010) from November 8-12 in San Jose, California. He presented two poster sessions on ACUS' work with TxCDK on developing the open source LimeSurvey platform for both administrative and academic research needs. He has been asked to present a technical paper on this project at LISA11 in Boston.

Meet the new President of the UNT Parents Association

Congratulations to **Brian Richman**, Programmer/Analyst, CITC Infrastructure & Technical Services, who was elected president of the UNT Parents Association at the October Family Weekend event. He was also interviewed for NTTV about the association and what they are looking forward to for the next year. Richman states "The UNT P.A. represents over 1300 families and sponsors many major campus events, such as Family Weekend and Parent Orientation. You can see some of the things we do by visiting the P.A. web site. We 'share' a full time staff person (Jaime Blanton) in the offices of the Student Success Programs under Melissa McGuire."

Service to UNT

Congratulations to **Joann Luksich**, Data Manager, Academic Computing and User Services, who was recently recognized by *InHouse* for her **15 years** of service to UNT.

Awards

Dr. Elizabeth Hinkle-Turner, Assistant Director - Academic Computing and User Services, won 3rd in creative empty hand kata and third in sparring at the 31st Annual Southern Karate Championships. She also won second in creative empty hand kata at the local Red Tiger Karate tournament. (Don't mess with her :).

Fun Fact Winner

We have another *InHouse* prize winners. Congratulations to **Philip Baczewski**, Director of Academic Computing and User Services. was a winner in the November 3 *InHouse* prize giveaway.

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Thanksgiving Hours

By Claudia Lynch, *Benchmarks   Online* Editor

The Thanksgiving Holiday is just around the corner and so are holiday closings. The Helpdesk will close at 6 p.m. on Wednesday, November 24 and will be **closed** on Thanksgiving Day. They will reopen for normal hours on Friday, November 26. The University is **officially closed** November 25 - November 28.

- **Data Management Services** will be **closed** over the Thanksgiving holiday.

- The **ACS General Access/Adaptive Lab** (ISB 104):

   The Science and Technology Library is closed for renovations, but the ACS lab remains open, except:

   Closed: Thursday, November 25 & Friday November 26
   Reopen: Saturday, November 27, resume normal hours

Hours for Other Campus Facilities

General Access Labs

- WILLIS:

   Close: 7:50 p.m. Wednesday, November 24
   Closed: Thursday, November 25
   Open: 8 a.m.-5:50 p.m. Friday November 26
   Open: 9 a.m. Saturday, November 27, resume 24hr schedule

- College of Information General Access Computer Lab (CI-GACLab) (B205):

   Closed: Thursday, November 25 -- Sunday November 28
   Reopen: 8 a.m. Monday, November 29, resume normal hours

- MUSIC:

   Close: 5 p.m. Wednesday, November 24
   Reopen: 7:30 a.m. Monday, November 29, resume normal hours

- PACS Computing Center (Chilton Hall):

   Close: Noon Wednesday, November 24
   Reopen: 7 a.m. Monday, November 29, resume normal hours

- CVAD (formerly SOVA):

Close: 11 p.m. Wednesday, November 24
Reopen: 7:30 a.m. Monday, November 29, resume normal hours

- [COE](#):

Close: 5 p.m. Wednesday, November 24
Reopen: 7 a.m. Monday, November 29, resume normal hours

- [COBA](#):

Close: 4 p.m. Wednesday, November 24
Reopen: Noon Sunday, November 28, resume normal hourss

- [CAS](#):

GAB 330

Close: 10 p.m. Wednesday, November 24
Closed: Thursday, November 25 & Friday November 26
Reopen: Saturday, November 27, resume normal hours

GAB 550

Close: 5 p.m. Wednesday, November 24
Reopen: 8 a.m. Monday, November 29, resume normal hours

Terrill 220

Close: 6 p.m. Wednesday, November 24
Reopen: 8 a.m. Monday, November 29, resume normal hours

Wooten 120

Close: 8 p.m. Wednesday, November 24
Reopen: 8 a.m. Monday, November 29, resume normal hours

- **UNT [Dallas Campus](#) - 155A**

No break hours available at this time

- **[Engineering](#) General Access Lab (englab@unt.edu, Discovery Park, B129, 891-6733)**

Close: 5 p.m. Wednesday, November 24
Reopen: 9 a.m., Monday, November 29, resume normal hours

Remember:

[Get your alerts fast in case of inclement weather](#)	
Visit the Emergency Management [website](#)	
City of Denton Residents, [sign up](#) for the CodeRED Emergency Notification System	

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UNT Messaging Systems Group and Directory Services Team Combine

By Claudia Lynch, *Benchmarks   Online* Editor

The UNT Messaging Systems Group has combined with the Directory Services Team creating a new group called *Enterprise Messaging and Directory Services.* Along with a new group name comes a new website, emds.unt.edu. Links to the messaging.unt.edu website will be redirected to the new site, but only for 180 days (starting on November 1).

The new group and the services they provide are detailed on the Enterprise Messaging and Directory Services website as follows:

The UNT Enterprise Messaging and Directory Services Group (EMDS), is a division of the Enterprise Systems and Technical Services (ESTS) area of the Computing and Information Technology Center (CITC), at the University of North Texas (UNT).

We maintain and manage these communication systems for the UNT System (UNT Denton, Health Science Center, UNT Dallas):

- Microsoft Exchange 2007
- Microsoft Office Communications Server 2007 R2 (OCS)
- Microsoft Live Meeting 2007 (LM)
- Blackberry Enterprise Services (BES)
- Listserv / Mailhost / Ironport, spam.unt.edu
- Eagleconnect (Outlook Live)

We maintain and manage these directory services for the UNT System (UNT Denton, Health Science Center, UNT Dallas):

- Active Directory
- LDAP / Account Management Systems
- Microsoft Premiere Support
- Live@Edu student/alumni cloud computing services

If you require support for one of the systems we manage, please contact your network IT support staff for assistance. For after hours help contact the UNT helpdesk at (940)565-2324.

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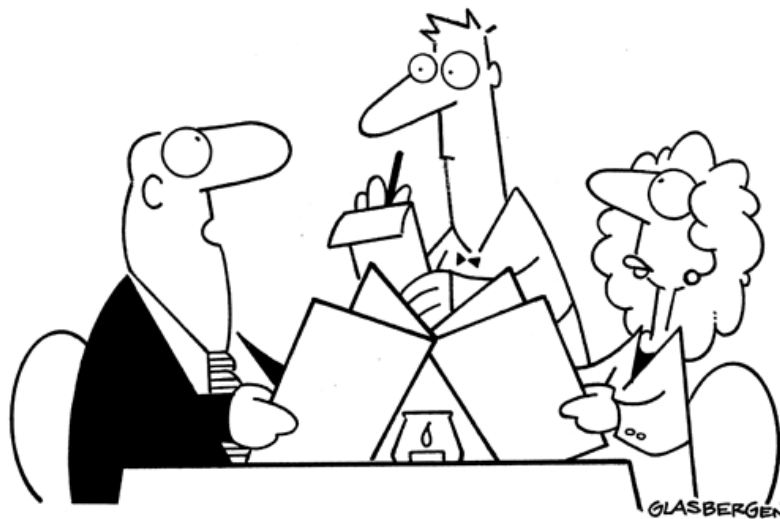Link of the Month

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Today's Cartoon

From "Today's Cartoon by Randy Glasbergen", posted with special permission.
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