

Data Analyst

Making HMIS Work for You



What I will cover today

- ▣ **Part I:** Getting **big data**... *fast!*
- ▣ **Part II:** Making customized forms and reports
- ▣ **Part III:** Suggested tools for client intake

The software I will recommend

- R
 - Open-source
 - Costs nothing
 - Not pretty, but lightning-fast
- FileMaker
 - Cheap licenses available for PCs
 - Slower and more clumsy than R, but can make some nice-looking layouts
 - Free apps allow for easy, portable viewing

Goals of this presentation

- Increase the **customizability** and **share-ability** of HMIS tools in Georgia.
- Enable our data analysis to be more **flexible** and more **collaborative**.



Data Connect

- All the tools in this presentation make use of a capability called **Data Connect** (aka ODBC).
- It makes it possible for software to access HMIS through a “back door.”
- Contact Pathways if you are interested in installing Data Connect on your computer (no cost).

Part I

Getting **big data**... *fast!*

Wouldn't it be great if...

- ▣ You could get **hot-off-the-press** HMIS statistics and charts?
 - ▣ **Instantaneously?**
 - ▣ **AND effortlessly?**

Instead of...

- ▣ Having to sort through a PED export every time?

About R software

- The R Project was launched as a **free** alternative to expensive statistical software like SPSS and SAS.
- Many programmers and academics have volunteered their time and expertise to create a reliable product.
- Today, it is widely accepted by statisticians and data miners.

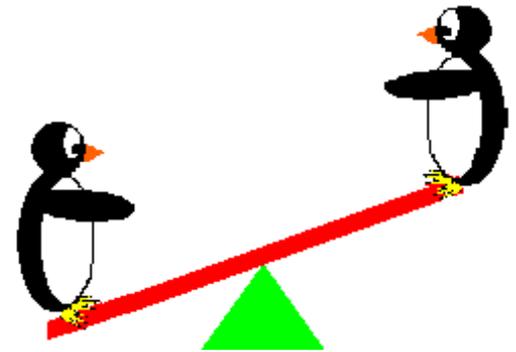
The ups and downs of R

- Ups

- It is **fast**
- Scripts are easily **share-able**
- It was built for **data** and **statistics**

- Downs

- The interface might be **intimidating** for non-programmers



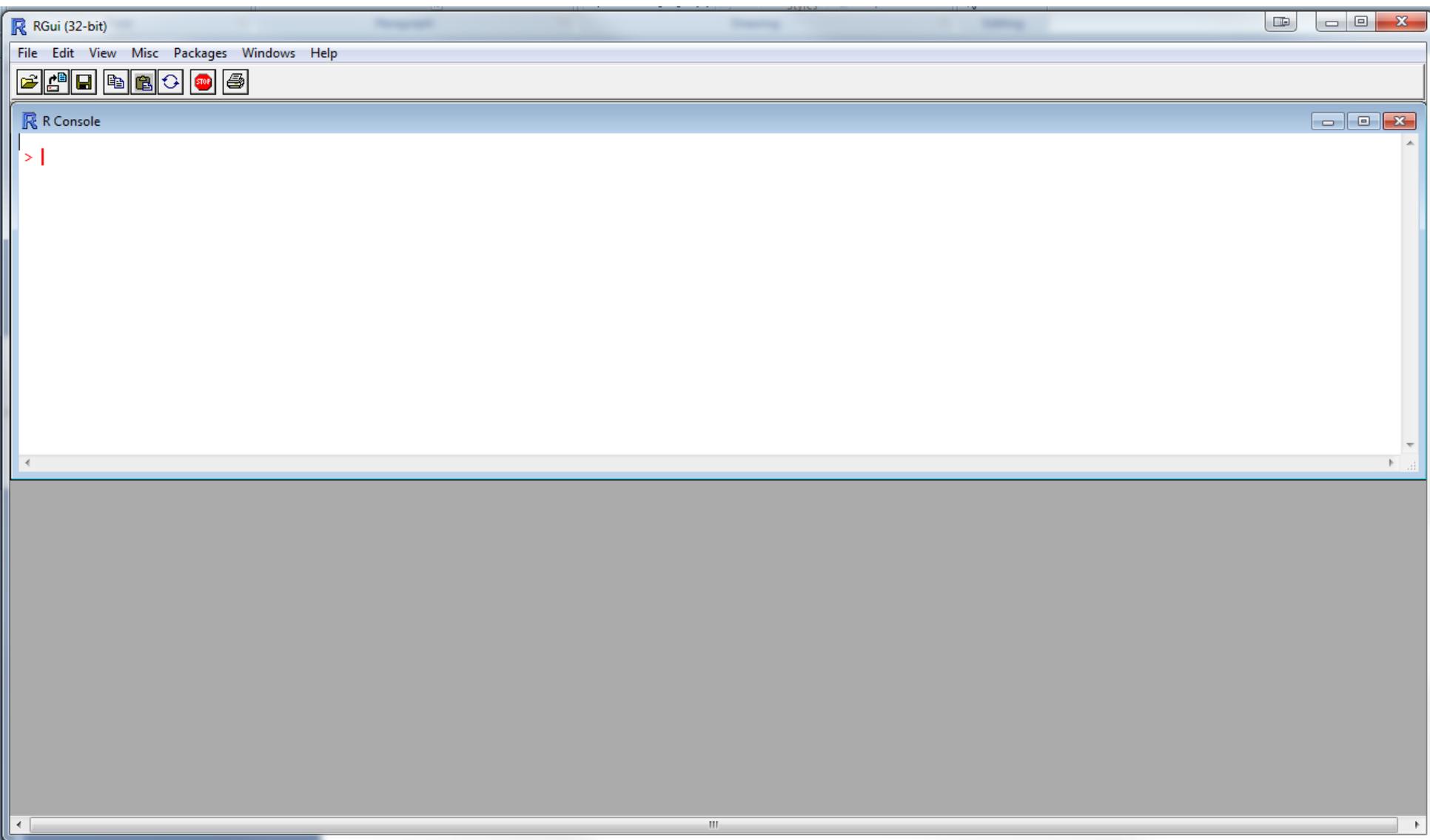
But it can be as easy as 1-2-3

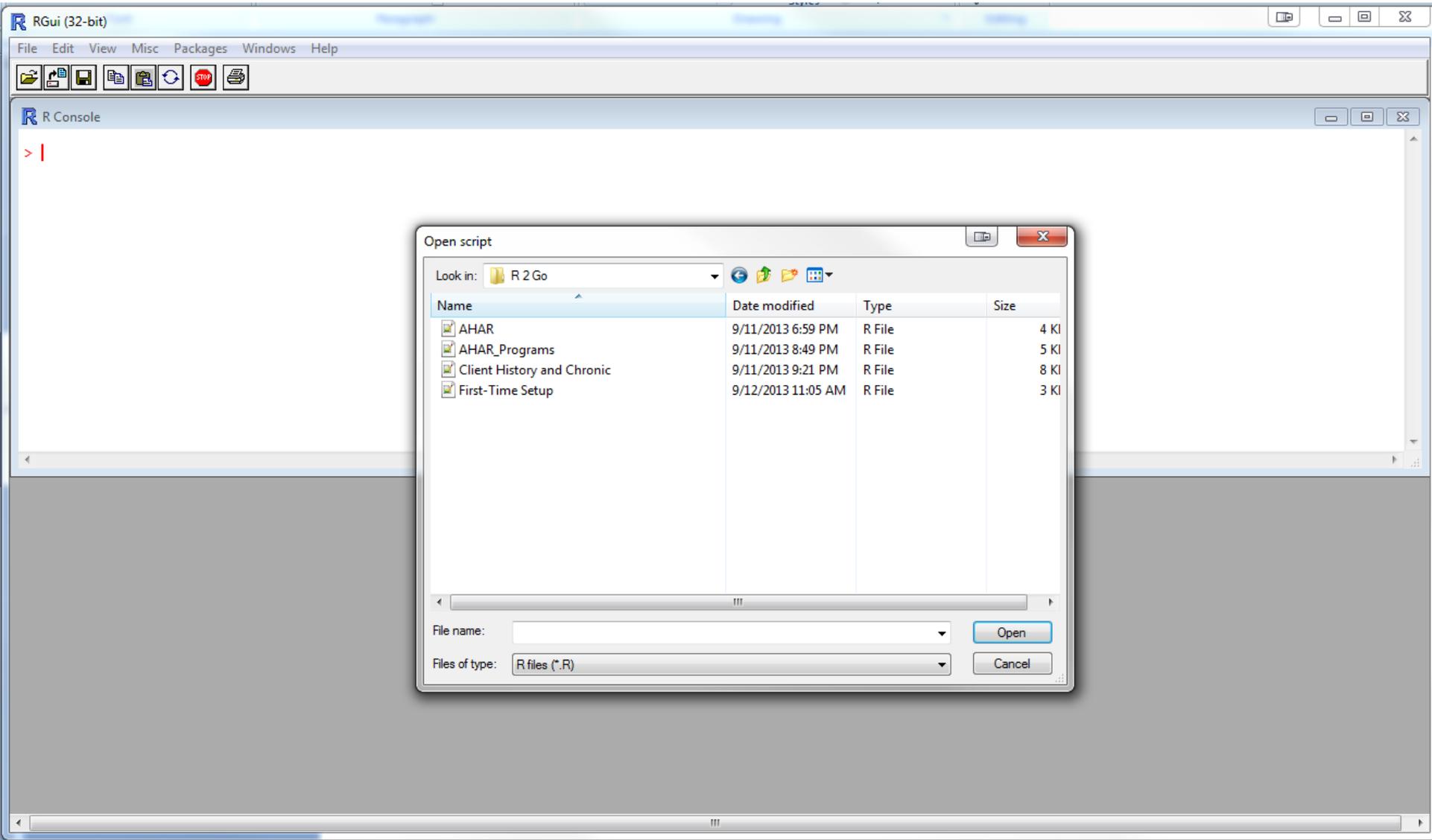
1. **Open** a script
2. **Press** ctrl-A (to highlight)
3. **Press** ctrl-R (to run the code)



That's it!

You don't need to be a programmer!





Open script

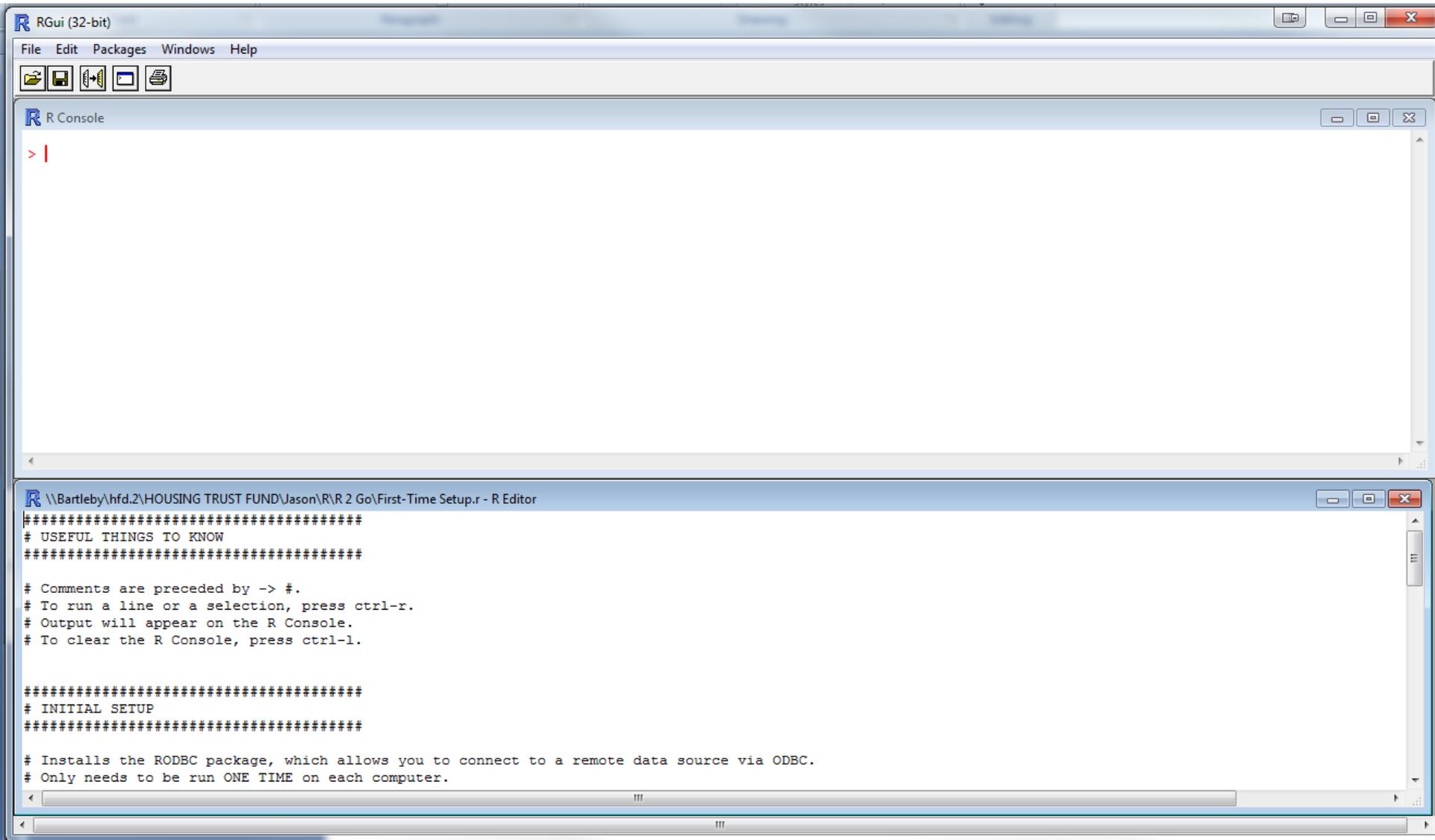
Look in: R 2 Go

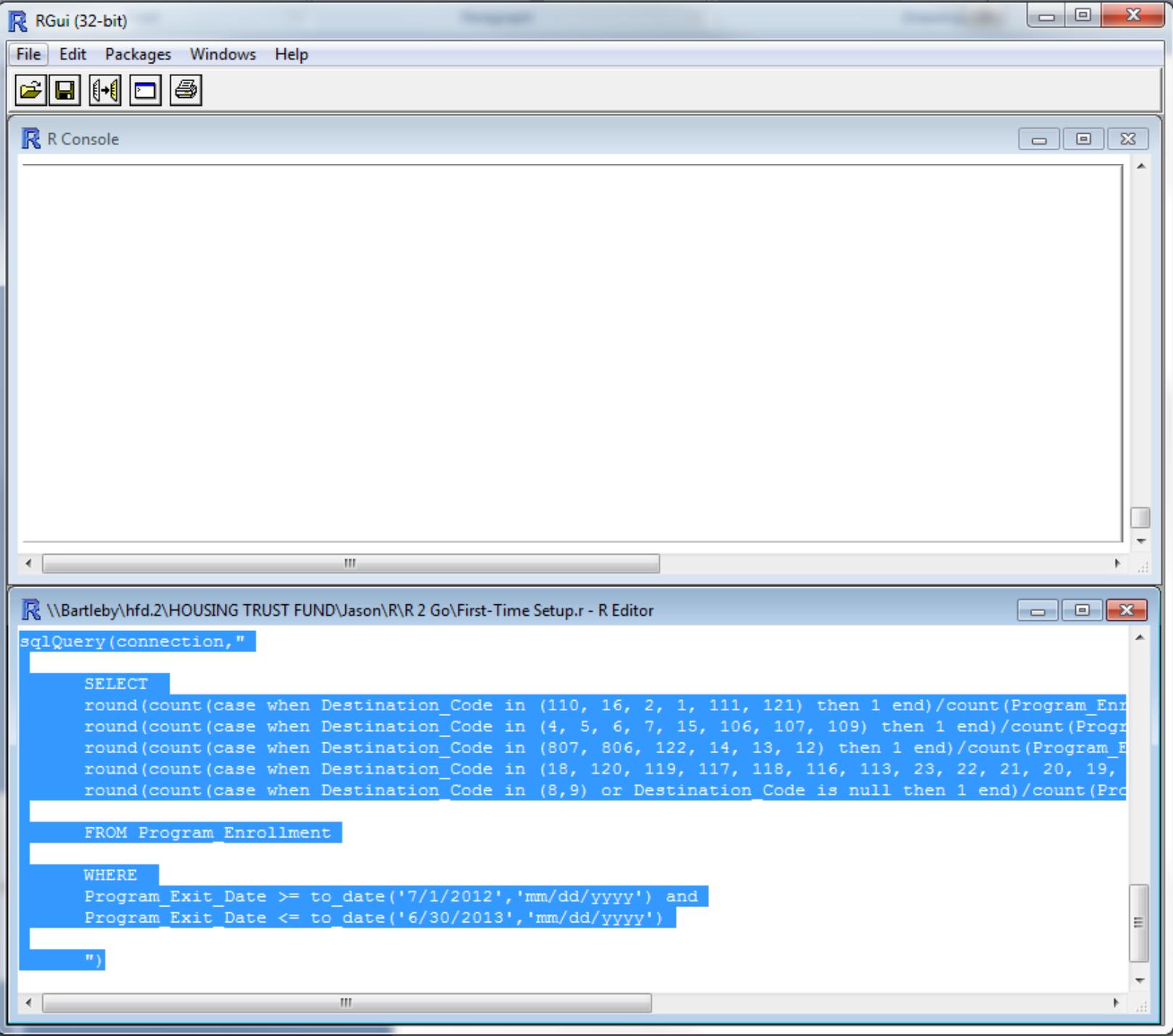
Name	Date modified	Type	Size
AHAR	9/11/2013 6:59 PM	R File	4 KI
AHAR_Programs	9/11/2013 8:49 PM	R File	5 KI
Client History and Chronic	9/11/2013 9:21 PM	R File	8 KI
First-Time Setup	9/12/2013 11:05 AM	R File	3 KI

File name:

Files of type: R files (*.R)

Open Cancel





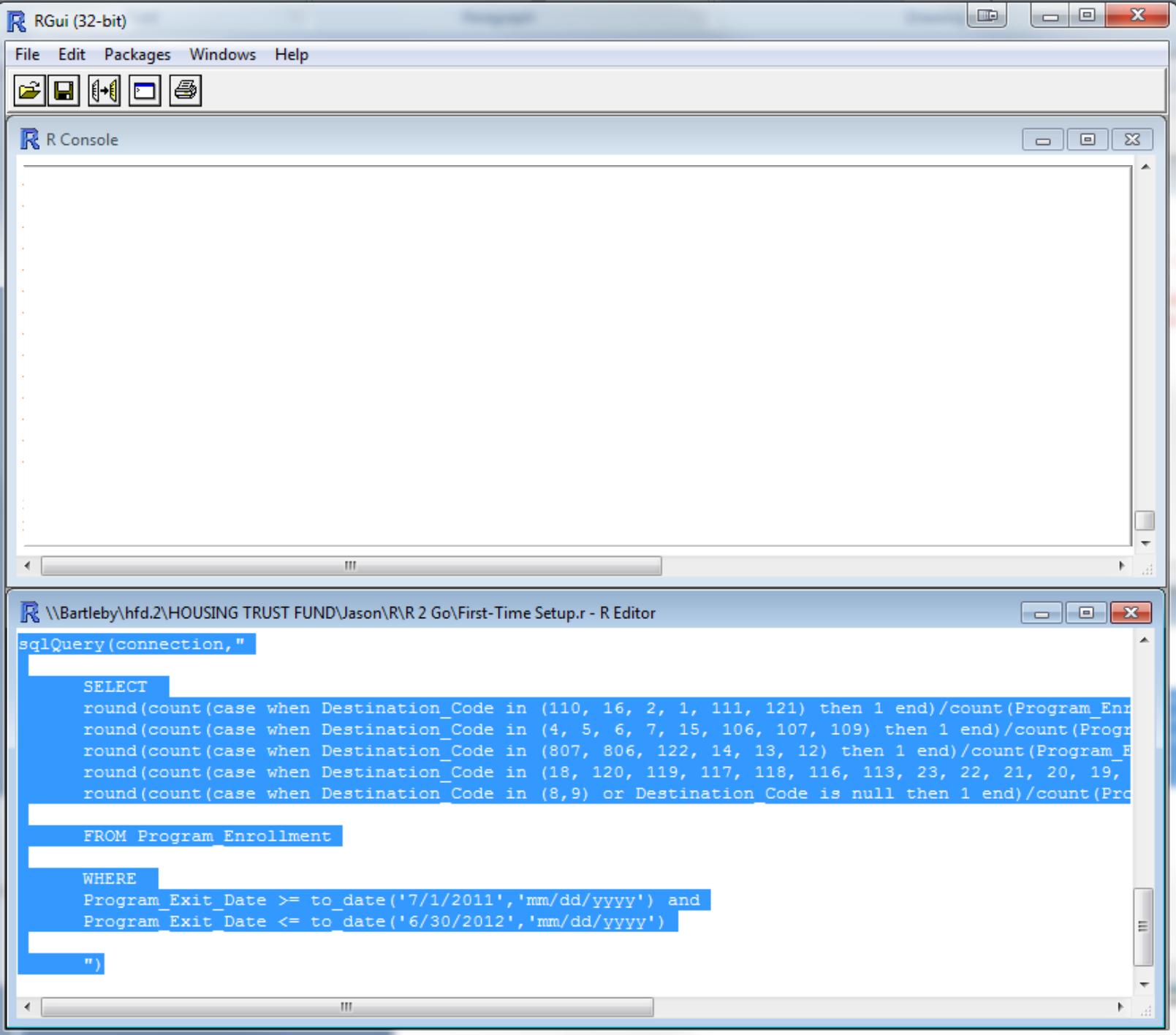
```
RGui (32-bit)
File Edit Packages Windows Help
+ SELECT
+ round(count(case when Destination_Code in (110, 16, 2, 1, 111, 121) then 1 end)/count(Program_Enrol$
+ round(count(case when Destination_Code in (4, 5, 6, 7, 15, 106, 107, 109) then 1 end)/count(Program$
+ round(count(case when Destination_Code in (807, 806, 122, 14, 13, 12) then 1 end)/count(Program_Enr$
+ round(count(case when Destination_Code in (18, 120, 119, 117, 118, 116, 113, 23, 22, 21, 20, 19, 11$
+ round(count(case when Destination_Code in (8,9) or Destination_Code is null then 1 end)/count(Progr$
+
+ FROM Program_Enrollment
+
+ WHERE
+ Program_Exit_Date >= to_date('7/1/2012','mm/dd/yyyy') and
+ Program_Exit_Date <= to_date('6/30/2013','mm/dd/yyyy')
+
+ ")
HOMELESS INSTITUTIONAL TEMPORARY PERMANENT UNKNOWN
1 44.63% 1.56% 8.81% 30.5% 11.47%
> |
```

```
R \Bartleby\hfd.2\HOUSING TRUST FUND\Jason\R\R 2 Go\First-Time Setup.r - R Editor
sqlQuery(connection,"
SELECT
round(count(case when Destination_Code in (110, 16, 2, 1, 111, 121) then 1 end)/count(Program_Enr
round(count(case when Destination_Code in (4, 5, 6, 7, 15, 106, 107, 109) then 1 end)/count(Progr
round(count(case when Destination_Code in (807, 806, 122, 14, 13, 12) then 1 end)/count(Program_E
round(count(case when Destination_Code in (18, 120, 119, 117, 118, 116, 113, 23, 22, 21, 20, 19,
round(count(case when Destination_Code in (8,9) or Destination_Code is null then 1 end)/count(Pro

FROM Program_Enrollment

WHERE
Program_Exit_Date >= to_date('7/1/2012','mm/dd/yyyy') and
Program_Exit_Date <= to_date('6/30/2013','mm/dd/yyyy')

")
```



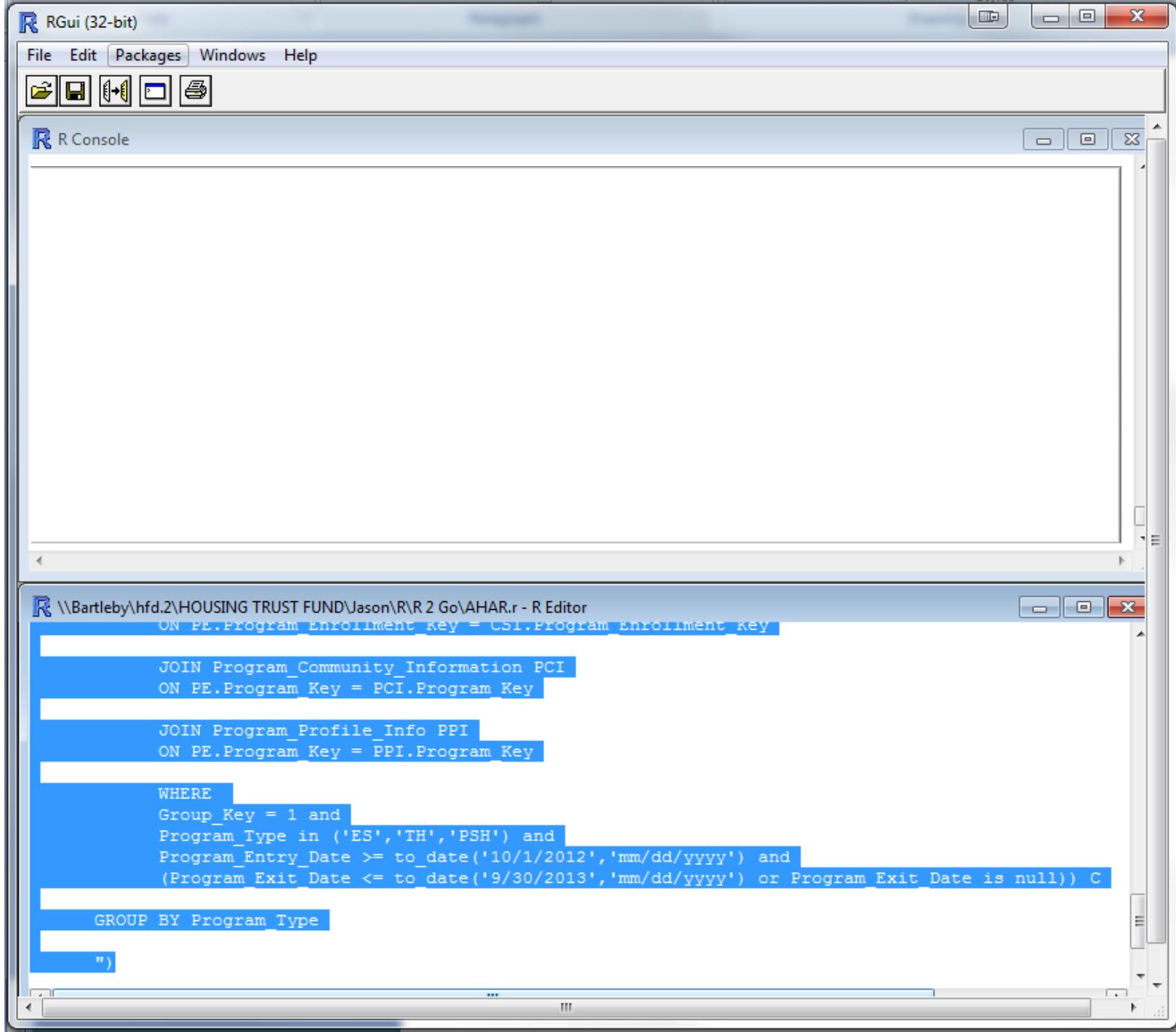
```
RGui (32-bit)
File Edit Packages Windows Help
+ SELECT
+ round(count(case when Destination_Code in (110, 16, 2, 1, 111, 121) then 1 end)/count(Program_Enrol$
+ round(count(case when Destination_Code in (4, 5, 6, 7, 15, 106, 107, 109) then 1 end)/count(Program$
+ round(count(case when Destination_Code in (807, 806, 122, 14, 13, 12) then 1 end)/count(Program_Enr$
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+ round(count(case when Destination_Code in (8,9) or Destination_Code is null then 1 end)/count(Progr$
+
+ FROM Program_Enrollment
+
+ WHERE
+ Program_Exit_Date >= to_date('7/1/2011','mm/dd/yyyy') and
+ Program_Exit_Date <= to_date('6/30/2012','mm/dd/yyyy')
+
+ ")
  HOMELESS INSTITUTIONAL TEMPORARY PERMANENT UNKNOWN
1  30.67%      1.61%      6.88%      34.83%      21.87%
> |
```

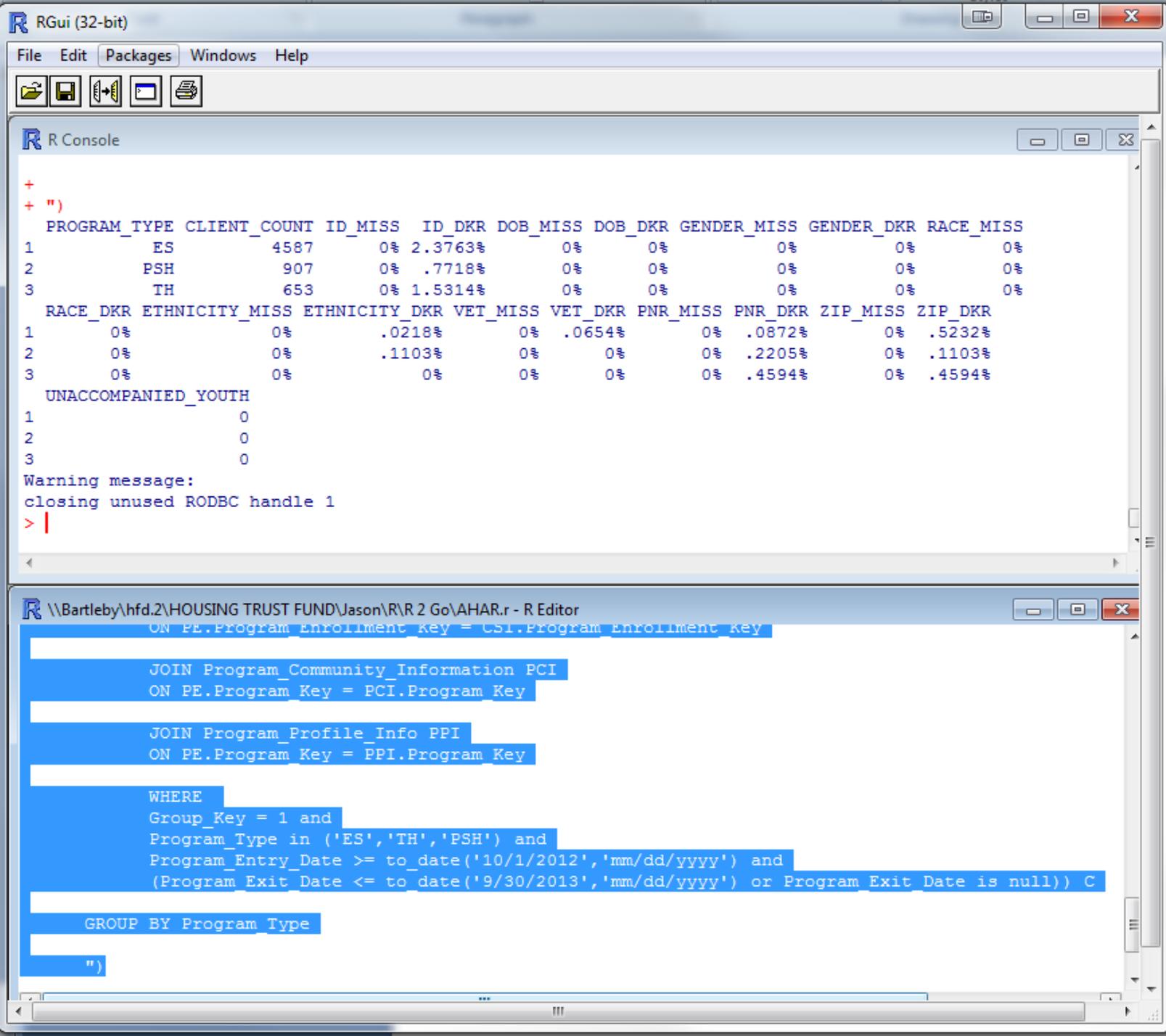
```
\\Bartleby\hfd.2\HOUSING TRUST FUND\Jason\R\R 2 Go\First-Time Setup.r - R Editor
sqlQuery(connection, "
SELECT
round(count(case when Destination_Code in (110, 16, 2, 1, 111, 121) then 1 end)/count(Program_Enr
round(count(case when Destination_Code in (4, 5, 6, 7, 15, 106, 107, 109) then 1 end)/count(Progr
round(count(case when Destination_Code in (807, 806, 122, 14, 13, 12) then 1 end)/count(Program_E
round(count(case when Destination_Code in (18, 120, 119, 117, 118, 116, 113, 23, 22, 21, 20, 19,
round(count(case when Destination_Code in (8,9) or Destination_Code is null then 1 end)/count(Pro

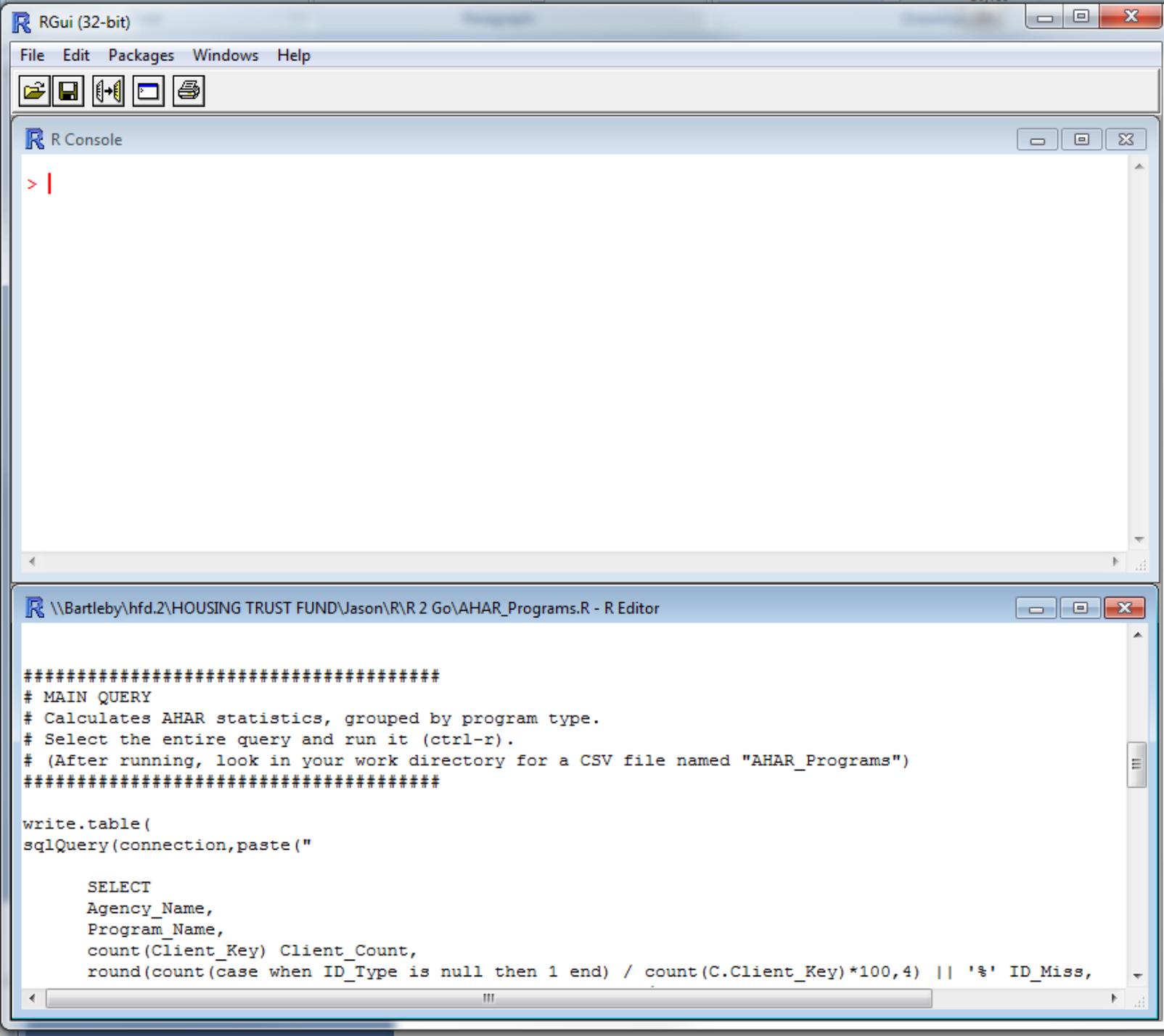
FROM Program_Enrollment

WHERE
Program_Exit_Date >= to_date('7/1/2011','mm/dd/yyyy') and
Program_Exit_Date <= to_date('6/30/2012','mm/dd/yyyy')

")
```







```
RGui (32-bit)
File Edit Packages Windows Help
[Icons]

R Console
+
+ JOIN Program_Community_Information PCI
+ ON PE.Program_Key = PCI.Program_Key
+
+ JOIN Program_Profile_Info PPI
+ ON PE.Program_Key = PPI.Program_Key
+
+ WHERE
+ Group_Key = 1 and
+ Program_Type_Code in ('',Prog,') and
+ Program_Entry_Date >= to_date('10/1/2012','mm/dd/yyyy') and
+ (Program_Exit_Date <= to_date('9/30/2013','mm/dd/yyyy') or Program_Exit_Date is null)) C
+
+ GROUP BY Agency_Name, Program_Name
+
+ ")), file="AHAR_Programs.csv", quote=TRUE, sep="," , na="",row.names=FALSE, col.names=TRUE)
> |
```

```
\\Bartleby\hfd.2\HOUSING TRUST FUND\Jason\R\R 2 Go\AHAR_Programs.R - R Editor
JOIN Program_Community_Information PCI
ON PE.Program Key = PCI.Program Key

JOIN Program_Profile_Info PPI
ON PE.Program Key = PPI.Program Key

WHERE
Group_Key = 1 and
Program_Type_Code in ('',Prog,') and
Program_Entry_Date >= to_date('10/1/2012','mm/dd/yyyy') and
(Program_Exit_Date <= to_date('9/30/2013','mm/dd/yyyy') or Program_Exit_Date is null)) C

GROUP BY Agency_Name, Program_Name

")), file="AHAR_Programs.csv", quote=TRUE, sep="," , na="",row.names=FALSE, col.names=TRUE)
```

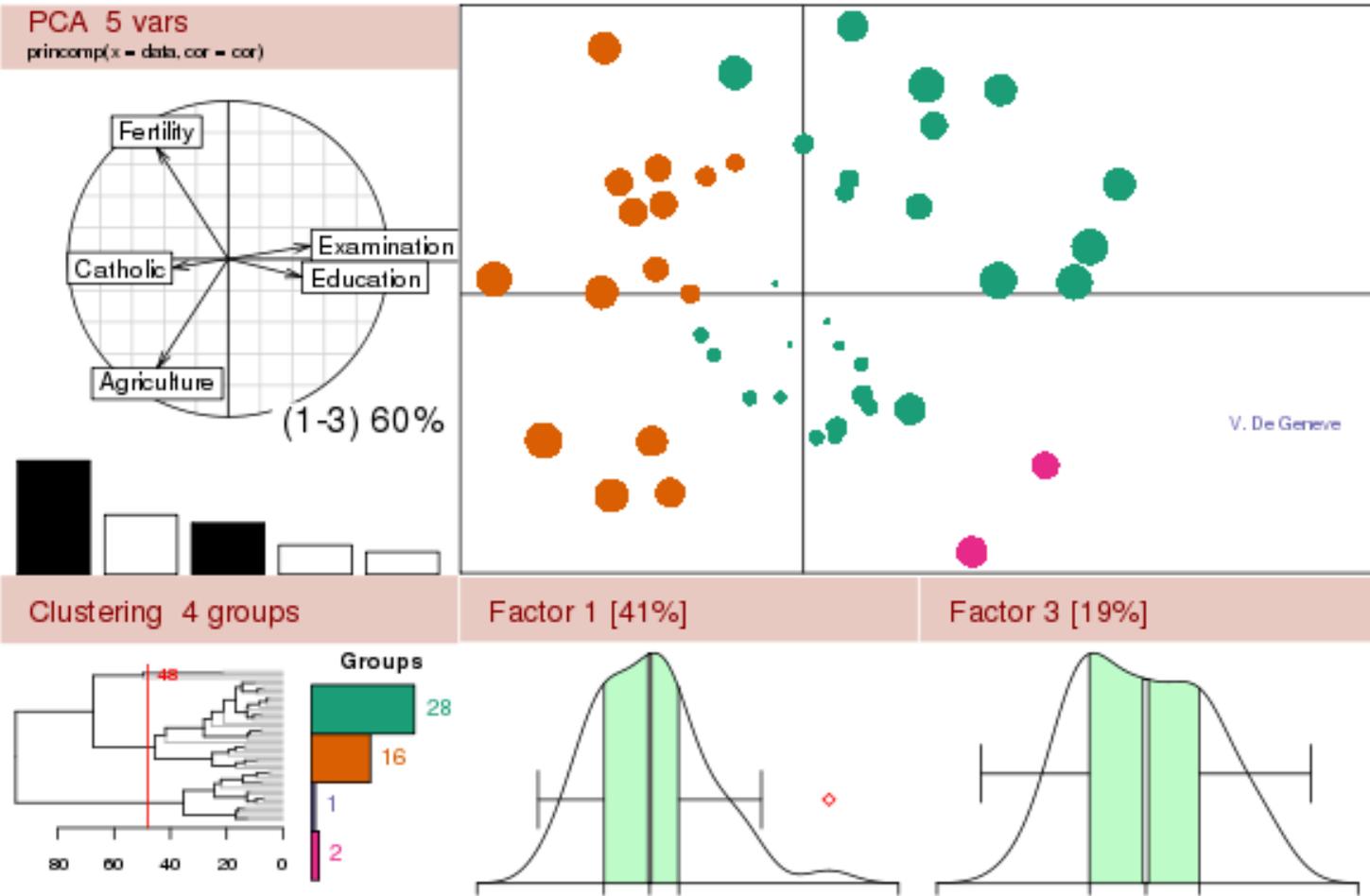
Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Clipboard Font Alignment Number Styles Cells Editing

A1 AGENCY_NAME

	A	B	C	D	E	F	G	H	I	J	K
1	AGENCY	PROGRAM	CLIENT_CCID	MISS	ID_DKR	DOB_MISS	DOB_DKR	GENDER_M	GENDER_F	RACE_MISS	RACE_DKR
2	Norcross	ESG Shelte	109	0%	0%	0%	0%	0%	0%	0%	0%
3	Faith Com	Faith Com	12	0%	0%	0%	0%	0%	0%	0%	0%
4	The Salvat	ESGP	365	0%	0.27%	0%	0%	0%	0%	0%	0%
5	Rainbow	Garden of	325	0%	4%	0%	0%	0%	0%	0%	0%
6	Calvary Re	Emergenc	1104	0%	4.26%	0%	0%	0%	0%	0%	0%
7	Habershar	Shelter	155	0%	0%	0%	0%	0%	0%	0%	0%
8	The Salvat	Emergenc	146	0%	0%	0%	0%	0%	0%	0%	0%
9	Lowndes	ESG Overf	4	0%	0%	0%	0%	0%	0%	0%	0%
10	The Salvat	TSA Shelte	69	0%	56.52%	0%	0%	0%	0%	0%	0%
11	Dalton-Wi	Emergenc	18	0%	0%	0%	0%	0%	0%	0%	0%
12	Voluntary	The Bridge	124	0%	0%	0%	0%	0%	0%	0%	0%
13	Norcross	ESG Shelte	9	0%	0%	0%	0%	0%	0%	0%	0%
14	Lowndes	Motel Vou	6	0%	0%	0%	0%	0%	0%	0%	0%
15	The Hope	Emergenc	84	0%	1.19%	0%	0%	0%	0%	0%	0%
16	The Salvat	Emergenc	184	0%	0%	0%	0%	0%	0%	0%	0%
17	The Salvat	ESGP Shel	582	0%	0.15%	0%	0%	0%	0%	0%	0%

R has great charts



R Commander add-on

RGui (32-bit)

File Edit View Misc Packages Windows Help

R Console

```
> library("Rcmdr")
Loading required package: splines
Loading required package: car
Loading required package: knitr
Loading required package: markdown

Rcmdr Version 2.0-0

> |
```

R Commander

File Edit Data Statistics Graphs Models Distributions Tools Help

New data set... data set View data set Model: <No active model>

Load data set...

Merge data sets...

Import data

- from text file, clipboard, or URL...
- Data in packages
 - from SPSS data set...
- Active data set
 - from SAS xport file...
 - from Minitab data set...
 - from STATA data set...
- Manage variables in active data set
 - from Excel, Access or dBase data set...

Output

Submit

Messages

```
RGui
with the single-document interface (SDI); see ?Commander.
```

R Commander add-on

The image shows a screenshot of the R Commander add-on interface. The main window is titled "R Commander" and has a menu bar with "File", "Edit", "Data", "Statistics", "Graphs", "Models", "Distributions", "Tools", and "Help". The "Statistics" menu is open, showing options like "Active data set", "Numerical summaries...", "Frequency distributions...", "Count missing observations", "Table of statistics...", "Correlation matrix...", "Correlation test...", and "Shapiro-Wilk test of normality...".

In the background, the "R Console" window is visible, showing the following output:

```
> library("Rcmdr")
Loading required package: splines
Loading required package: car
Loading required package: knitr
Loading required package: markdown

Rcmdr Version 2.0-0

Loading required package: RODBC
> |
```

The "R Commander" window also shows a "Data set:" field with a dropdown menu, and a "Dataset" field with the text "Dataset <- sqlQuery(channel = 1, select * from [DATA\$])". Below this, the "Output" window shows the following code:

```
> Dataset <- sqlQuery(channel = 1, select * from [DATA$])
> names(Dataset) <- make.names(names(Dataset))
```

The "Messages" window at the bottom shows the following message:

```
These have been changed to:
X18_24_IN_HH
```

Any input?

- ▣ What would you like to see?



Part II

Making customized
forms and reports

Wouldn't it be great if...

- You could create a nice-looking report with the latest HMIS data automatically mixed into it?

Instead of...

- Spending hours editing a Word document to replace old statistics with new statistics?

About FileMaker

- It's a relational database, like MS Access
 - FM is much more visual, but a little slower
- You can create your own layouts
 - Everything is “drag and drop”
- Any layout can be shared with someone else who has FileMaker
 - (You have to send them the whole database file)

HMIS DATA QUALITY REPORT FOR ESG

SAMPLE AGENCY

Sample Program (99999)

12/30/2011 - 4/12/2012

Missing and "Don't Know"/"Refused" Responses

Data Element	Applicable Records	%		
		M	DKR	M+DKR
Total Clients	18			
Total Adults	15			
Total Unaccompanied Children	0			
Total Leavers	5			
First Name	18	0	5	27.78%
Last Name	18	0	5	27.78%
Social Security Number	18	3	1	22.22%
Date of Birth	18	1	0	5.56%
Race	18	0	0	0.00%
Ethnicity	18	0	0	0.00%
Gender	18	0	0	0.00%
Veteran Status	15	0	0	0.00%
Disabling Condition	18	0	0	0.00%
Residence Prior to Prog. Entry	15	0	0	0.00%
Zip Code of Last Permanent Address	15	0	0	0.00%
Housing Status (at entry)	18	0	0	0.00%
Income (at entry)	18	11	2	72.22%
Income (at exit)	5	0	1	20.00%
Non-Cash Benefits (at entry)	18	12	1	72.22%
Non-Cash Benefits (at exit)	5	0	1	20.00%
Physical Disability (at entry)	18	7	0	38.89%
Physical Disability (at exit)	5	1	0	20.00%
Developmental Disability (at entry)	18	11	0	61.11%
Developmental Disability (at exit)	5	1	0	20.00%
Chronic Health Condition (at entry)	18	11	0	61.11%
Chronic Health Condition (at exit)	5	1	0	20.00%
HIV/AIDS (at entry)	18	6	0	33.33%
HIV/AIDS (at exit)	5	1	0	20.00%
Mental Health (at entry)	18	11	0	61.11%
Mental Health (at exit)	5	1	0	20.00%
Substance Abuse (at entry)	18	10	0	55.56%
Substance Abuse (at exit)	5	1	0	20.00%
Domestic Violence (at entry)	15	8	0	53.33%
Domestic Violence (at exit)	15	0	0	0.00%
Destination	5	0	1	20.00%
Total	426	97	17	26.76%

Miscellaneous

Data Element	# or %
	%
Total Beds	21
Average Bed Utilization*	98.31%
Excessive Length of Stay**	0.00%
Impartial or non-SSN ID	5.56%



* A very high or low bed utilization could be an indication that bed inventory is not accurate. High utilization could also be caused by a failure to discharge clients from HMIS, and low utilization could be caused by a failure to enroll clients in HMIS. The ideal bed utilization is between 65% and 105%.

** An excessive length of stay can be a sign that the client left the program without being discharged from HMIS. Please double-check the enrollment status of clients who are flagged under this category.

HMIS ASSESSMENT FOR SHELTER-PLUS-CARE

SAMPLE AGENCY

Sample Program (99999)

7/1/2012 - 10/2/2012

Missing and "Don't Know"/"Refused" Responses

Data Element	Applicable			%
	Records	M	DKR	
Total Clients	67			
Total Adults	67			
Total Unaccompanied Children	0			
Total Leavers	36			
First Name	67	0	0	0.00%
Last Name	67	0	0	0.00%
Social Security Number	67	0	0	0.00%
Date of Birth	67	0	0	0.00%
Race	67	0	0	0.00%
Ethnicity	67	0	0	0.00%
Gender	67	0	0	0.00%
Veteran Status	67	0	0	0.00%
Disabling Condition	67	0	0	0.00%
Residence Prior to Prog. Entry	67	0	0	0.00%
Zip Code of Last Permanent Address	67	0	0	0.00%
Housing Status (at entry)	67	0	0	0.00%
Income (at entry)	67	1	0	1.49%
Income (at exit)	36	0	0	0.00%
Non-Cash Benefits (at entry)	67	2	0	2.99%
Non-Cash Benefits (at exit)	36	0	0	0.00%
Physical Disability (at entry)	67	7	0	10.45%
Physical Disability (at exit)	36	2	0	5.56%
Developmental Disability (at entry)	67	9	0	13.43%
Developmental Disability (at exit)	36	3	0	8.33%
Chronic Health Condition (at entry)	67	9	0	13.43%
Chronic Health Condition (at exit)	36	3	0	8.33%
HIV/AIDS (at entry)	67	10	0	14.93%
HIV/AIDS (at exit)	36	3	0	8.33%
Mental Health (at entry)	67	7	0	10.45%
Mental Health (at exit)	36	3	0	8.33%
Substance Abuse (at entry)	67	8	0	11.94%
Substance Abuse (at exit)	36	2	0	5.56%
Domestic Violence (at entry)	67	9	0	13.43%
Domestic Violence (at exit)	67	0	0	0.00%
Destination	36	0	0	0.00%
Total	1798	78	0	4.34%

Miscellaneous

Data Element	# or %
Total Beds	40
Average Bed Utilization*	81.32%
Total Units	1
Total HH	65
Head of HH is not Disabled	9.23%
Stability Rate for Heads of HH	13.85%
% HH Maintained or Increased Income	67.69%

Overall Data Health

■ M ■ DKR ■ OK



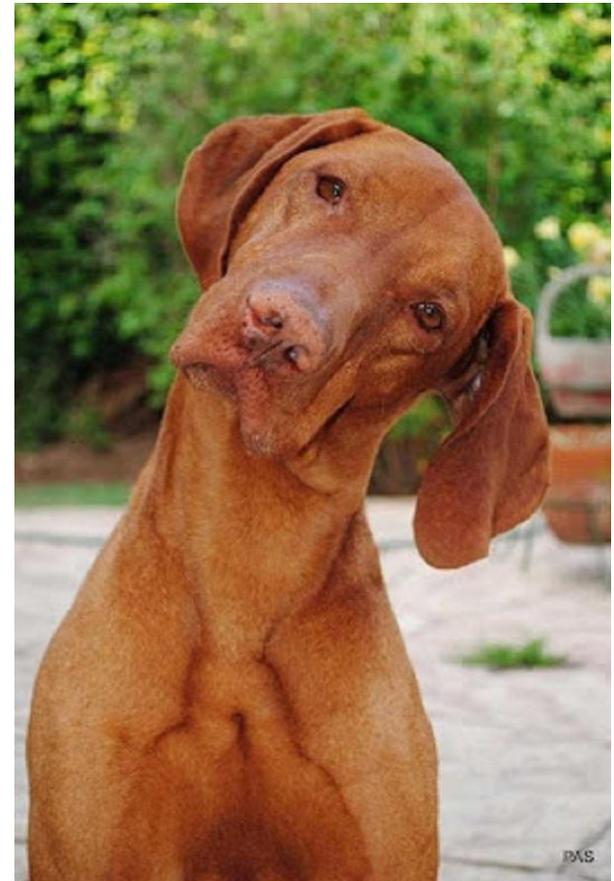
ESG APPLICATION REVIEW

7/1/2011 - 3/31/2012

APP MATCH	BEDS	TYPE	CLI	ENR	LTS	UC	ID		DEMOG		RES		DEST		INCOME		BENEFITS		B	RAW SCORE	APP SCORE	!!!		
							Miss	DK/R	Miss	DK/R	Miss	DK/R	Miss	DK/R	Miss	DK/R	Miss	DK/R					Miss	DK/R
3	2	ES	44	44	0	0	4	0	1	8	0	0	8	0	3	28	1	28	0	1	34	4.00	✓	
					0%	0%		0%	0%		0%	0%		0%	7%	34%	1%	34%	0%					
3	3	TH	29	29	3	0	2	0	0	8	0	0	8	0	3	0	0	0	0	2	34	4.00	✓	
					10%	0%		0%	0%		0%	0%		0%	23%	0%	0%	0%	0%					
3	3	TH	41	41	0	0	4	0	0	8	0	0	8	0	0	3	0	3	0	3	37	4.00	✓	
					0%	0%		0%	0%		0%	0%		0%	0%	5%	0%	5%	0%					
3	3	TH	43	43	0	0	4	0	2	7	0	0	8	0	2	0	0	0	0	3	36	4.00	✓	
					0%	0%		0%	1%		0%	0%		0%	8%	0%	0%	0%	0%					
3	0	TH	239	239	0	0	4	3	69	6	4	0	8	2	0	257	12	254	17	1	28	2.29	✓	
					0%	0%		0%	7%		0%	0%		1%	0%	58%	2%	57%	3%					
3	0	TH	125	126	0	0	4	0	0	8	1	1	8	2	3	6	29	30	30	28	1	31	3.14	✓
					0%	0%		0%	0%		0%	0%		0%	1%	5%	12%	13%	13%	12%				
3	0	TH	56	57	0	0	4	0	0	8	0	0	8	0	2	7	18	6	21	1	32	3.43	✓	
					0%	0%		0%	0%		0%	0%		0%	5%	7%	18%	6%	21%					
		ES	106	109	4	0	3	1	3	8	1	9	7	0	0	5	22	4	21	1	26	1.71	✓	
					3%	0%		0%	0%		0%	1%		0%	0%	2%	11%	2%	10%					
1.5	3	TH	39	43	0	0	4	1	0	6	0	0	8	1	4	6	8	7	8	1	28.5	2.43	✓	
					0%	0%		1%	0%		0%	0%		1%	4%	7%	9%	8%	9%					
1.5	3	ES	17	18	0	0	4	0	0	8	0	1	7	0	0	0	1	1	1	3	34.5	4.00	✓	
					0%	0%		0%	0%		0%	1%		0%	0%	0%	2%	2%	2%					
0	0	ES	23	25	0	0	4	0	2	7	0	0	8	0	0	13	9	14	9	1	28	2.29	✓	
					0%	0%		0%	2%		0%	0%		0%	0%	28%	20%	31%	20%					
1.5	0	TH	34	35	0	0	4	0	0	8	0	0	8	0	6	10	1	9	3	0	29.5	2.71	✓	
					0%	0%		0%	0%		0%	0%		0%	23%	16%	1%	14%	4%					

Any input?

- What would you like to see?



Part III

Suggested tools for client intake

Picture this scenario

- You sit down with a homeless client.
- You log into your computer.
- You run a search for your client.
- In 10 seconds, a screen pops up that shows you...
 - His chronic homelessness status
 - His special needs
 - A historical timeline of his homeless experience
 - Other helpful “big picture” information

Re-introducing FileMaker

- FileMaker is the software being used for this demonstration.
- Its ease of creating and distributing layouts make it ideal.

Program Enrollment #2

ENROLLMENT INFORMATION

General

Agency: [Redacted]

Program: [Redacted]

Program type: ES

Entry

Entered program on: 6/8/2009

Prior night's residence:

Disabling condition at entry: No

Exit

Exited program on: 7/6/2009

Destination at exit: Other

Destination type: Unknown

CLIENT HOMELESS STATUS

Chronic Status (as of entry): **Not Chronic**

This enrollment occurs during occasion #: 1

This occasion began on: 3/6/2009

Estimated length of this homeless occasion (as of entry): 94 days

Estimated length of this homeless occasion (as of exit): 122 days

Client exited homelessness after this enrollment: No

Days until next confirmed homeless experience: 0 days

Homelessness Timeline



Program Enrollment #13

ENROLLMENT INFORMATION

General

Agency: [Redacted]

Program: [Redacted]

Program type: ES

Entry

Entered program on: 2/8/2013

Prior night's residence:

Disabling condition at entry: Yes

Exit

Exited program on:

Destination at exit:

Destination type:

CLIENT HOMELESS STATUS

Chronic Status (as of entry): **CHRONIC**

This enrollment occurs during occasion #: 4

This occasion began on: 1/24/2012

Estimated length of this homeless occasion (as of entry): 381 days

Estimated length of this homeless occasion (as of exit): ? days

Client exited homelessness after this enrollment: No

Days until next confirmed homeless experience: 0 days

Homelessness Timeline



Any input?

- What would you like to see?



Get closer to using these tools

- Install the Data Connect driver onto your computer
- Download R and/or obtain FileMaker
- Attend the Data Analyst training in November (either in person or via GoToMeeting)
- Contact me at jason.rodriguez@dca.ga.gov if you have any additional questions

WE WANT THIS!



NOT THIS!