Make GitHub Your Web-based Version-controlled Code Repository

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Outline

- Motivation

- Technical Background

- Accessing Remote Code Libraries

- %install_github Source Code

- Examples (time permitting)

- Questions

Motivation

- R ecosystem embraces collaboration
  - Hosting services like CRAN and GitHub promote exchange of code

- SAS ecosystem is less open
  - SAS provides base functionality
  - Code appears in PDFs, not on a hosting service

- Collaboration helps improve methods

- GitHub hosts and tracks changes to code

Technical Background: **Code Libraries**

- A collection of programs

- Stored locally, on a network, or remotely

- Accessing individual programs:

  - R: ```source('program.R')```

  - SAS: ```%include 'program.sas';```

- Accessing libraries:

  - R: ```.libPaths('code-library')```

  - SAS: ```option sasautos = 'code-library';```

Technical Background: **GitHub**

- *How people build software*

- Web-based or enterprise hosting service

- Code libraries organized by owner and repo

- Accessible by browser and by an application programming interface (API)

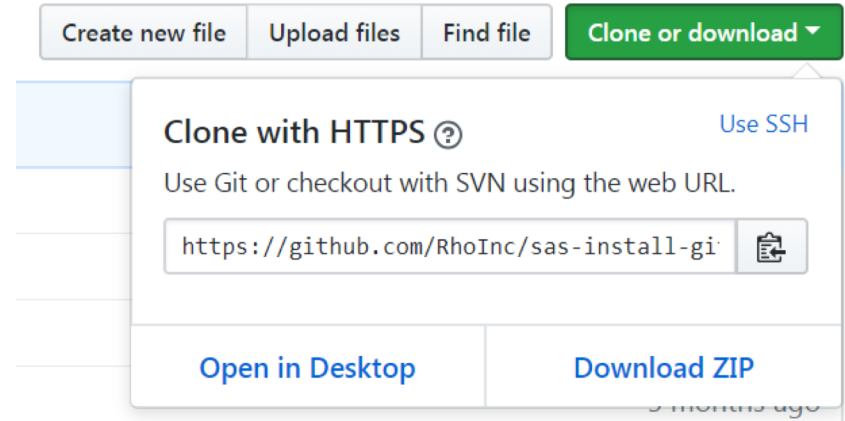- Public and private repos

- Cloud-based and enterprise offerings

Technical Background: **git**

- Distributed version control system
- Tracks changes to files including code

Accessing Remote Code Libraries: **Manually**

- Navigate to the repo

- Download the repo

- Unzip the repo

- Source the repo

- Use that code

Accessing Remote Code Libraries: **Programmatically**

with R

```
# source install_github
install.packages(
  'devtools'
)
# download repo
devtools::install_github(
  'owner/repo'
)
# source downloaded library
library(repo)
```

with SAS

```
* source install_github ;
%include 'install_github.sas';


* point to repo ;
%install_github(
  repo = owner/repo,

  /* source file or folder */
  file = <file path>,
  folder = <folder path>
);
```

%install_github Source Code

Sourcing a single remote file:

```
filename fileURL url "&fileURL";    *assign fileref;
  %include fileURL;                 *source fileref;
filename fileURL clear;             *clear fileref;
```

%install_github Source Code

Hitting the GitHub API:

```
filename inFolder temp;      *assign fileref;
proc http
  url = "&folderURL"  /*point to GitHub*/
  method = 'GET'      /*request data*/
  out = inFolder;     /*direct response to fileref*/
run;
libname inFolder json
    fileref = inFolder;     *assign libref to fileref;
```

R Example

```
devtools::install_github(
    'RhoInc/datadigest'
)


datadigest::codebook(
    data = mtcars
)
```

SAS Example

```
%install_github(
    repo = RhoInc/sas-codebook,
    folder = Macros
);

%codebook_generic(
    data = sashelp.cars
);
```
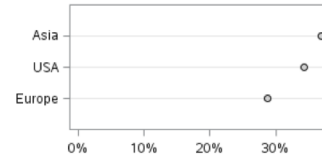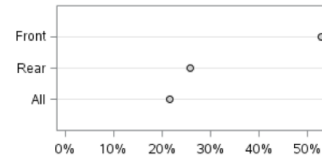

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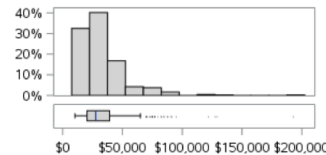n=428, missing=0, unique=3
Frequencies: Asia (158, 36.9%), USA (147, 34.3%), Europe (123, 28.7%)

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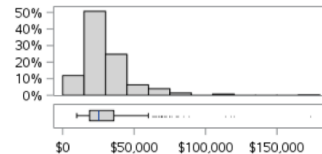n=428, missing=0, unique=3
Frequencies: Front (226, 52.8%), Rear (110, 25.7%), All (92, 21.5%)

msrp: -- no label -- {type=num, fmt=DOLLAR8.}
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Mean (StdDev) = $32,775 (19431.72)   Min, Max = $10,280, $192,465
Median [Q1, Q3] = $27,635 [$20,330, $39,215]

invoice: -- no label -- {type=num, fmt=DOLLAR8.}
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Mean (StdDev) = $30,015 (17642.12)   Min, Max = $9,875, $173,560
Median [Q1, Q3] = $25,295 [$18,851, $35,733]

Questions, Comments, Excellent

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