R and RStudio
Introduction to R and RStudio

• R is a statistical powerhouse programming language with thousands of libraries containing various statistical functions. These include functions for:
  - Data aggregation and manipulation
  - Statistical analysis
  - Spatial analysis
    - Vector and raster
  - Data classification and prediction
  - … and more!

• RStudio is an integrated development environment (IDE) for R that provides a well-designed space to develop scripts, learn about packages and their functions, and visualize plots.
R-ArcGIS Bridge
Introduction to the R-ArcGIS Bridge

The R-ArcGIS bridge allows you to connect ArcGIS to R and enables the seamless transfer of data back and forth, along with the ability to create Geoprocessing tools based on R scripts.

Reasons you might need the bridge:

- A particular tool or action is easier to perform in ArcGIS or R.
- A particular tool or analysis only exists in ArcGIS or R.
- You want to share R functionality with others who are not familiar with R.
- You need easy access to spatial data contained in shapefiles, geodatabases or stored online.
Introducing the R-ArcGIS Bridge

Basic Functionality with Spice
Introducing R Script Tools
Expanding Workflows with Ease

```r
# Calculate Hierarchical Density-Based Spatial Clustering
arc.progress_label("Calculating Hierarchical Density-Based Spatial Clustering")
arc.progress_pos(60)
cat(paste0("\n", "Beginning Calculation..."),
hdb <- dbscan::hdbscan(x = coords, minPts =
cat(paste0("\n", "Hierarchical Density-Based Spatial Clustering (hdb)
t_spdfsCategory <- as.character(hdb$clusters)

# Write Output
arc.progress_label("Writing Output...")
arc.progress_pos(80)
if(!is.null(out_feature) && out_feature != "
arc.write(out_feature, t_spdfs)
arc.progress_pos(100)
```
Introducing Raster Functionality

Coming in Pro 2.1
Resources to Learn More

Getting Started:

• Analyzing Crime Using Statistics and the R-ArcGIS Bridge Learn Lesson
• Using the R-ArcGIS Bridge Introductory Web Course
  (https://www.esri.com/training/catalog/58b5e417b89b7e000d8bfe45/using-the-r-arcgis-bridge/)

Creating R Script Tools:

• Integrating R Scripts into Geoprocessing Tools Web Course
  (https://www.esri.com/training/catalog/58b5e578b89b7e000d8bfff5/integrating-r-scripts-into-arcgis-geoprocessing-tools/)
• **arcgisbinding** Package Vignette
  (https://r-arcgis.github.io/assets/arcgisbinding-vignette.html)
The R-ArcGIS Community

GitHub (https://r-arcgis.github.io/)
- Detailed information on the R-ArcGIS bridge installation.
- Community-based script tools and projects for collaboration.

GeoNet (https://geonet.esri.com/groups/rstats)
- Community support forums on questions or ideas you have.
- Additional resources like blogs, demo videos, and slides.
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Presenter Resources
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