Resilience and Disaster Recovery (RDR) Tool Suite Workshop

Pre-Workshop Steps

Please complete the following steps in advance of the training.

A. Install Software Dependencies

You will need to install **Anaconda** (or **Miniconda)** and **Tableau Reader** in advance of the training. RDR requires a conda dependency management system (e.g., Anaconda, Miniconda) and Tableau to run and view results. Anaconda and Miniconda also include installations of the Python coding language, which is the native language of RDR. You may optionally install **Notepad++** and **ArcGIS Pro** as well. ArcGIS Pro is required if you run the RDR Exposure Analysis Tool or certain other helper tools, while Notepad++ is a useful software tool for editing RDR scenario files.

Anaconda / Miniconda

1. Download a copy of Anaconda or Miniconda here. Miniconda is a miniature version of Anaconda that only includes conda, its dependencies, and Python, if you are concerned about disk space.
2. Follow the installation instructions provided. We recommend you install Anaconda / Miniconda at the user level, e.g., C:\Users\%USERNAME%.

Tableau Reader

1. Download a copy of Tableau Reader here. If you or your organization has access to a Tableau or Tableau Enterprise license, you can download Tableau Desktop instead for additional functionality.
2. Once the software has been installed, please confirm or adjust the display settings for Tableau:
    a. Locate the tableau.exe file, which will be in a folder like C:\Program Files\Tableau\Tableau 2023.1\bin.
    b. Right-click on the tableau.exe file, open “Properties”, and go to the “Compatibility” tab.
    c. Click the “Change high DPI settings” button.
    d. Check the box to override high DPI scaling behavior. Set the “Scaling performed by” drop-down box to “System”. Click “OK” twice.

Note: You do not need to install Tableau Reader if you already have Tableau Desktop on your computer.

Notepad++

1. Download a copy of Notepad++ here.

ArcGIS Pro

1. Contact your organization to install ArcGIS Pro.
2. You will need an ArcGIS Pro license with the Spatial Analyst extension to use the RDR Exposure Analysis Tool and certain other helper tools.

B. RDR Overview

1. The RDR GitHub repository contains all of the RDR Tool Suite's supporting documentation materials. Once you have downloaded RDR, these files will also be located in the "documentation" subfolder of your RDR installation.
2. There are six documentation files. **Please take a quick look through these files in advance of the workshop:**

Document	Description
Getting Started with RDR ***RDR_GettingStarted_final.pdf***	Installation instructions and details on how to run your first RDR scenario.
User Guide ***RDR_UserGuide_final.pdf***	Guidance on customizing scenarios, identifying data, creating input files, and interpreting results.
Technical Documentation ***RDR_TechnicalDocument_final.pdf***	Manual on how RDR works, the underlying methodology and assumptions, and RDR's structures and functions.
Reference Scenarios Document ***RDR_ScenarioExamples_final.pdf***	How-to guide for running Reference Scenarios demonstrating RDR's different tools.
Scenario Run Checklist ***RDR_Checklist_final.pdf***	Step-by-step checklist of input data specifications required for creating an RDR scenario.
RDR Tool Suite Flyer ***RDR-Tool-Flyer_final.pdf***	2-page overview of the RDR Tool Suite and its use cases.

C. Install RDR

For the TRB workshop, you will need to download and install the RDR Tool Suite from an alternate location in order to receive the training demos as well. The installation steps are the same, just with a different source zip file. Follow the steps below.

Note: Periodically, the RDR Tool Suite will release a new version of the codebase. These can be found on the RDR GitHub repository. To install the latest version, follow the instructions in the "Getting Started with RDR" documentation on the RDR GitHub repository.

1. To install the RDR Tool Suite for the TRB workshop, navigate to the zip file at the following Huddle link: https://public.huddle.com/b/nDdlKW/index.html. This link is also available in the TRB workshop instructions on the RDR landing page: https://volpeusdot.github.io/RDR-Public/TRB_workshop.html. Download the zip file from Huddle.
2. Extract the contents into a new directory located at "`C:\GitHub\RDR`" on your local machine.
3. Ensure that the first layer inside your RDR directory includes subfolders called "`Data`", "`documentation`", "`helper_tools`", "`metamodel_py`", and "`scenarios`" (see Figure 1). The User Guide provides explanations of the directory folders and files.

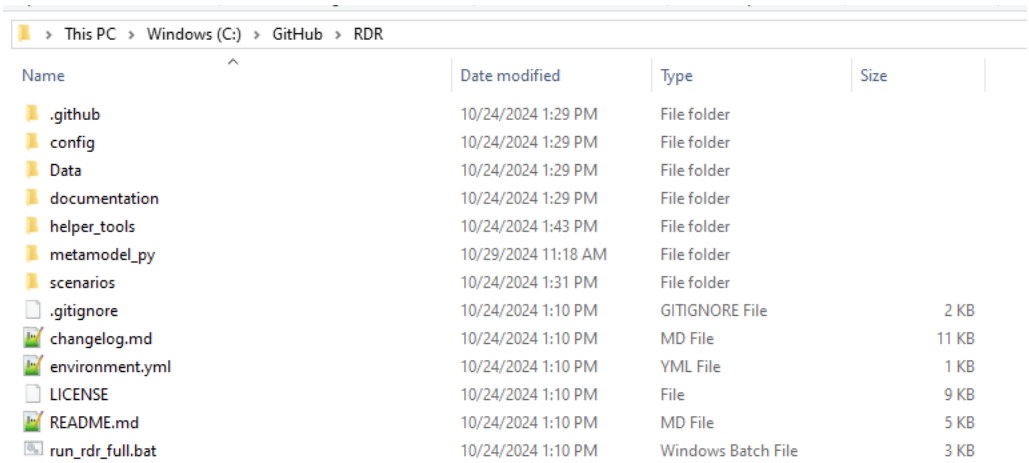

Figure 1: RDR directory structure

The RDR Tool Suite is run from a custom conda environment, detailed in the `'environment.yml'` file. The `'environment.yml'` file lists the specific Python and R dependencies and versions used by the tool suite. In order to run the RDR Tool Suite, you will first need to create the conda environment from the `'environment.yml'` file:

1. Open an Anaconda Prompt terminal window. Searching for "Anaconda Prompt" in the Start menu should locate the application.
2. In the Anaconda Prompt terminal window, navigate to the location of the RDR directory containing the `'environment.yml'` file using the "`cd`" command:
   - `cd C:\GitHub\RDR`

   In the above command, replace "`C:\GitHub\RDR`" with the full file path location of your RDR directory if it is not `C:\GitHub\RDR`.
3. Run the following commands in the terminal window:
   - `conda env create -f environment.yml`
   - `conda info --envs`

   Note that there is one hyphen in "`-f`" in the first command and two hyphens in "`--envs`" in the second command.
4. The second command in step 3 should output a list of available conda environments in the terminal window. Check that an environment named "`RDRenv`" shows up as an available environment.
5. (Optional) If you are updating an existing installation of RDR or for some reason the "`RDRenv`" conda environment is not functioning as expected, remove the environment using the following command, then start again at step 2. Refer to the conda documentation for details.
   - `conda env remove --name RDRenv`

   Note that there are two hyphens in "`--name`".

Once the conda environment has been created following the steps laid out above, you are ready to run the Quick Start example. The Quick Start example will confirm that you correctly installed the RDR Tool Suite on your machine and provides a walkthrough of key components of the tool.

D. Run Quick Start 1 (QS1)

Before the workshop, run Quick Start #1 to confirm RDR is installed correctly. You can follow the instructions in the Getting Started with RDR document. Instructions are also below:

1. Open the C:\GitHub\RDR\scenarios\qs1_sioux_falls folder.
2. Double-click the run_rdr_full.bat file to run it. Alternatively, open a Command Prompt window, drag and drop the .bat file to the Command Prompt, click into the window, and hit enter.
3. The scenario will run in the Command Prompt in a few minutes. (Note that running your first RDR scenario may take additional time as required R libraries will be installed on your machine.) When it is complete, a Tableau workbook will automatically open with scenario results. You should also see a new "generated_files" folder within the "Data" directory.
4. Compare the Benefit Cost Analysis dashboard in the Tableau workbook with the screenshot seen below to confirm RDR was successfully installed on your machine. Note that net benefits and benefit-cost ratio values may not exactly match due to the randomness of the Latin hypercube sampling module.

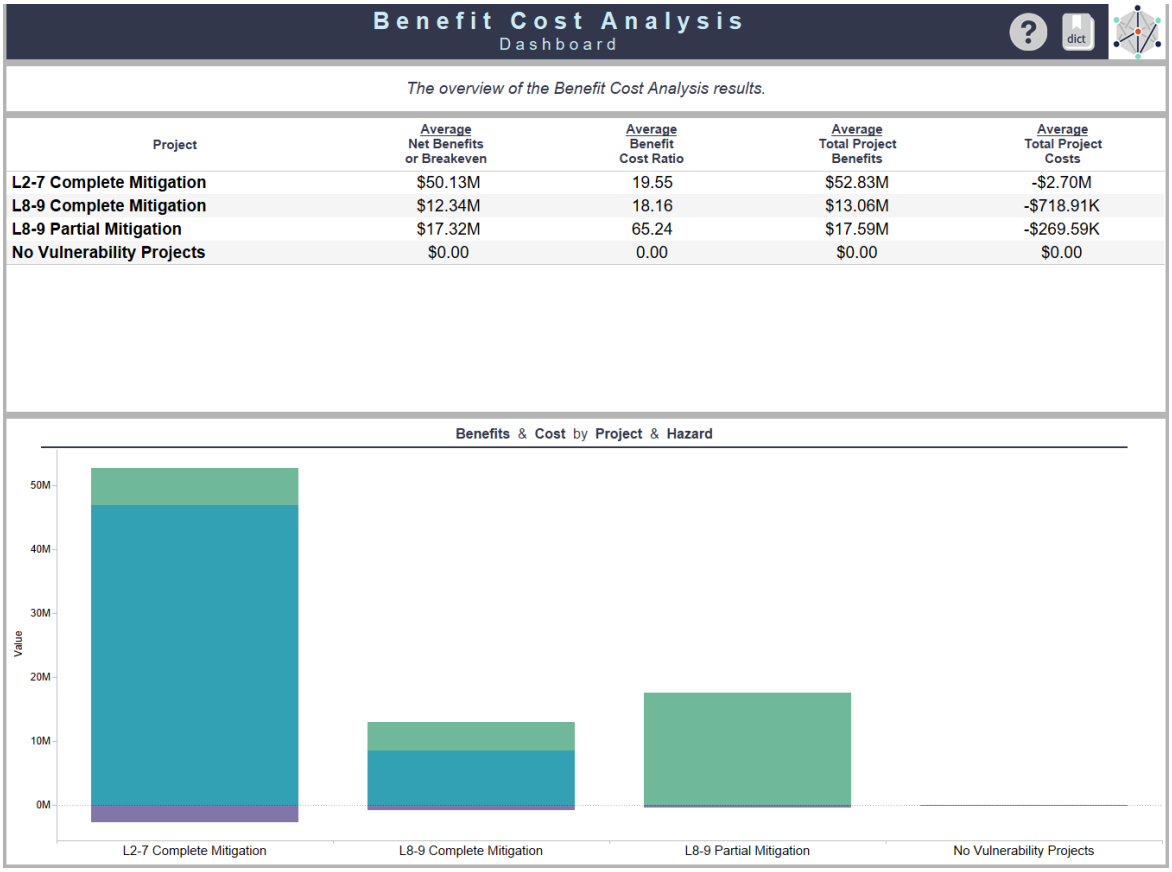

Figure 2: BCA Tableau dashboard for Quick Start 1

E. Confirm Download of RDR Demos

In your RDR directory, navigate to “C:\GitHub\RDR\Data\Training_Demos”. Confirm there are four folders within the directory, one for each training demo that will be run during the TRB workshop.

See you at the TRB workshop on January 9, 2025!