NPS PPV Data Entry Tool

Documentation for the repository to enter occupancy data within the National Park Service.

# Introduction

This repository contains R files for the RShiny web app that is used to enter Person Per Vehicle (PPV) data for the National Park Service.

# Overview

In order to estimate visitation to parks within the National Park Service, some parks will use vehicle counters in conjunction with PPV multipliers to get an estimate of the number of people that enter the park. This requires that the park staff survey vehicles entering the park during random sampling periods over the course of the year. These sampling periods are 1 hour long and include representation of all days of the week, all months of the year, and all times of the day. These data points need to convert into a consistent format that can be used for analysis.

# Motivation

Conducting PPV analysis of parks within the National Park Service can be a very time-consuming task. Various parks may have hundreds of cars that enter every hour, entering these data points can become very tedious. This RShiny web app is used as a tool to help automate the data entry process and allow more time for analysis.

# Running The App

You will need to have R installed and either R Studio or Visual Studio Code (VS Code) (preferred). The ‘setup.R’ file can be used to install the required packages and load them to ensure proper installation. The ‘ppvFunctions.R’, ‘server.R’, and ‘ui.R’ files are helper files and do not need to be loaded.

**IMPORTANT NOTES:** When installing software on DOI government computers it can be quite tricky. As software and policies change, the exact installation process may differ. Here are some notes to keep in mind when having IT install and download the software.

* It is best to install R Studio even if you will be using VS Code. R Studio plays nicer with R, however VS Code has better functionality.
* When downloading the VS Code installer, it is important to download **‘Visual Studio Code’ (Blue Icon)**, NOT **‘Visual Studio’ (Purple Icon)**. These are two different types of software, VS Code is an advanced text editor, whereas Visual Studio is an IDE for software development.
* When installing both R and VS Code, always check the box when regarding anything around ‘Add to PATH variable’. If you do not do this, the software will install but there will be no way to utilize it.

## Installing Packages

To install the necessary packages, double click the ‘setup.R’ file on the left hand side.

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This will open the file on the main panel. Then click the play button on the top right. This should run the entire file and install the necessary packages.

## Running The App

To start the app, double click on the ‘app.R’ file on the left, it is inside the same folder as the rest of the ‘.R’ files. Then click the play button on the top left. If a webpage does not pop up, you may need to place your cursor on the end of the first line and type ‘CMD/CTRL + ENTER’ repeatedly until each line is individually ran. This runs each line, and immediacy places the cursor on the next line, by repeatedly pressing ‘CMD/CTRL + ENTER’ it will run each line manually.

Once the webpage pops up, you should see something like this.

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You can open in your default web browser by clicking the box with the arrow on the top left. This essentially starts a local server that runs all of the python code in the background. This is only visible for you to see and no one else. To stop the server you can click the trashcan icon on the top left side of the terminal.

# App Structure

The app is broken up into 2 main sections: ***Data Entry*** and ***Insights***.

## Data Entry Page

This page is used to quickly enter data from the tally sheets to then be compiled into a table for confirmation and then at the end, exported.

### Output Options

First, enter the parks 4-character Unit Code to properly name the output file for reference. The ***“Append to existing excel doc?”*** option is used if you would like to append new data to an existing excel file. For this to work properly, you must select an excel file that was previously created by the app to ensure the format matches. Once you create the new excel file, the app will prompt you to select the existing excel file and concatenate the new data into a new excel file. This feature is particularly useful if you need to step away and continue entering data at a later date.

### Buttons

**“Add Tally Sheet” Button (Green):** This button is used to append entered data onto a new line in the table.

**“Remove Tally Sheet” Button (Red):** This button is used to remove the last and most recent line in the table. Useful for removing lines that contain typos.

**“Create Excel File” Button (Blue):** This button is used to compile the data into an excel sheet that is exported in the same directory as the app files. File names will be in the format *“<UNIT Code> <Most recent month of data> Raw PPV Data.xlsx”.* This is useful for comparing multiple exports of data to keep track of the most up to date version.

**“Reset Input’s” Button (Orange):** This button is used to reset each data entry field back to 0 (except for Unit Code, Entrance and Date). This makes it easy to enter data, add a new line, and reset the fields for rapid data entry.

### Entering Data

To start, begin by selecting the ‘Entrance’ drop down field and begin to enter the name of the first tally sheet entrance. While some parks may only have one ‘Main’ entrance, other parks may have multiple. This makes it super easy to quickly select previously entered entrances names for fast data entry and consistent results. To add a new entrance, type in the new name and click ‘Add <name>…’

Enter the date of the PPV tally sheet, this field should be intelligent enough to recognize most date formats but for consistent results it is recommended to use ‘mm/dd/yy’ date format.

Select either ‘AM’ or ‘PM’ from the ‘Time of Day’ dropdown. Each observation should be split with a comma ‘,’ and any spaces will be removed in computation.

Begin entering the number of cars for each passenger column, remembering to list out each actual number of occupants for cars with 7+ passengers.

Most parks will return Tally Sheets with one lane per entrance. However, larger parks may return counts split by up to 3 different lanes. Rather than doing the addition by hand or in your head, enter the data separately in each tab and the app will compile each lane into a single line. Clicking the orange ‘Reset Input’s’ button will reset all 3 lanes to 0 each time.

Each time you add a new tally sheet you will see the line update on the top row, with vehicle counts being summed on the very right. This is a useful metric to ensure you have entered the data correctly and compare with the tally sheet sum. If they do not match, either you or the data collector had an error.

Once you are done entering data, click the blue ‘Create Excel File’ button and the excel file will output in the same directory as the app files.

TIP: Sometimes bugs can happen, or issues related to the computer and it is recommended to periodically select “Create Excel File” to prevent large amounts of data loss if something were to happen.

## Insights Page

The insights page is useful for quick confirmation and overview of the data. To view raw data, click the blue ‘Load Data’ button and prompt window will open for you to select an excel file that was previously compiled using the app. ***PLEASE NOTE – For some reason the file selection windows sometimes like to open behind all windows so you may have to minimize all windows to find the file selection prompt.***

There are 4 tabs, ‘Data’, ‘Tables’, ‘Charts’, and ‘Custom’.

### Data Tab

This tab is used to quickly view, sort and filter the data to look for outliers or specific values. You can view the Tallysheets data or the Vehicles data separately.

### Tables Tab

This tab is probably the most useful, it quickly generates some statistics and summaries to identify the overall shape of the data and any outliers that may occur. This makes it fast to confirm the data looks as intended, matches the correct number of sheets, and counts the number of sheets with no observations (which may or may not be an error).

### Charts Tab

This tab displays the PPV by month using Poisson Regression and value counts.

### Custom Tab

Custom tab allows the grouping of months for park summaries but is somewhat limited in functionality and was really only implemented out of curiosity.