

Technical Skill Cluster Workshop #1: File Paths

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1. Path Syntax by Operating System

System	Separator	Example Path (Absolute)
Windows	Backslash \	C:\Users\name\data.csv
Mac / Linux	Forward slash /	/Users/name/data.csv

Fun fact: Both Python and R accept forward slashes / on ALL operating systems. Use forward slashes and your code will work everywhere!

2. How to Copy a File Path

Windows:

- Hold Shift + Right-click the file → “Copy as path”
- Or: Click the address bar in File Explorer and copy

Mac:

- Right-click the file → Hold Option → “Copy as Pathname”
- Or: Drag file into Terminal to see path

3. Python (with pandas)

Check your working directory

```
import os
print(os.getcwd())    # shows current folder
```

Import data

```
import pandas as pd

# option 1: forward slashes (recommended, works everywhere)
df = pd.read_csv("C:/Users/name/Documents/data.csv")

# option 2: raw string with backslashes (windows only)
df = pd.read_csv(r"C:\Users\name\Documents\data.csv")

# option 3: relative path (file in working directory)
df = pd.read_csv("data.csv")
```

View your data

```
df.head()           # first 5 rows
df.shape            # (rows, columns)
df.columns          # column names
```

4. R

Check your working directory

```
getwd()             # shows current folder
setwd("C:/path")    # change working directory
```

Import data

```
# option 1: forward slashes (recommended, works everywhere)
df <- read.csv("C:/Users/name/Documents/data.csv")

# option 2: relative path (file in working directory)
df <- read.csv("data.csv")
```

View your data

```
head(df)      # first 6 rows
dim(df)       # rows and columns
names(df)     # column names
View(df)      # open in spreadsheet viewer (RStudio)
```

5. Absolute vs. Relative Paths

Type	Example	When to Use
Absolute	C:/Users/name/project/data.csv	One-off scripts, quick tasks
Relative	./data.csv	Shared projects, reproducibility

Tip: Relative paths make your code portable. If you share your project folder, others can run it without changing paths.

Dot Notation

Symbol	Meaning	Example
.	Current directory (where your script is running)	./data.csv
..	Parent directory (one folder up)	../data.csv

You can chain .. to go up multiple levels: ../../file.csv goes up two folders.

Example: Navigating a Project Folder

Imagine your project has this structure:

```
my_project/
+-- code/
|   +-- analysis.py
|   +-- helpers/
|       +-- utils.py
+-- data/
|   +-- raw/
|       |   +-- survey.csv
|   +-- cleaned/
|       +-- survey_clean.csv
+-- output/
    +-- results.csv
```

If your **working directory** is my_project/code/, here's how to access different files:

Target File	Relative Path	Explanation
survey.csv	../data/raw/survey.csv	Go up to my_project/, then into data/raw/
survey_clean.csv	../data/cleaned/survey_clean.csv	Go up to my_project/, then into data/cleaned/
results.csv	../output/results.csv	Go up to my_project/, then into output/

If your **working directory** is `my_project/code/helpers/`, accessing `survey.csv`:

```
../data/raw/survey.csv
| |
| |-- First `..` goes from helpers/ up to code/
+----- Second `..` goes from code/ up to my_project/
```

Examples

python

```
# from code/ folder, read raw data
df = pd.read_csv("../data/raw/survey.csv")

# ___some data cleaning process___ #

# save cleaned data
df.to_csv("../data/cleaned/survey_clean.csv", index=False)
```

R

```
# from code/ folder, read raw data
df <- read.csv("../data/raw/survey.csv")

# ___some data cleaning process___ #

# save cleaned data
write.csv(df, "../data/cleaned/survey_clean.csv", row.names = FALSE)
```

6. Common Mistakes to Avoid

Mistake	Problem	Fix
Forgetting quotes	<code>read.csv(data.csv)</code>	Add quotes: <code>"data.csv"</code>
Backslashes in Python	<code>\U</code> and <code>\n</code> are escape codes	Use <code>/</code> or raw string <code>r"..."</code>
File not found	Wrong working directory	Check with <code>getwd()</code> or <code>os.getcwd()</code>
Typos in path	Misspelled folder name	Copy path directly from file explorer

Quick Reference

Task	Python	R
Check working directory	<code>os.getcwd()</code>	<code>getwd()</code>
Change working directory	<code>os.chdir("path")</code>	<code>setwd("path")</code>
Read CSV	<code>pd.read_csv("file.csv")</code>	<code>read.csv("file.csv")</code>
View first rows	<code>df.head()</code>	<code>head(df)</code>
View dimensions	<code>df.shape</code>	<code>dim(df)</code>