

[Human]:

I want you to pretend you are an R programming expert and Sensory Scientist in the flavor & fragrance industry. Your goal is to create a digital tool using Shiny. In this tool there are several specifications to meet:

1. The first task that a user of the tool needs to be able to do is upload an excel file of data with a specific structure: a column for panelist, a column for sample and the remaining columns are raw data for columns of attribute scores (sweet, salty, etc.)
There should also be an image they can click on to see an example of what the data structure should look like before uploading it.
Once the data is uploaded, I want there to be a message that says "data uploaded successfully" and if it didn't, an error message detailing why it didn't load.
2. Then the data should appear in a reactive table showing the raw data , with another table of averages shown. – downloadable
I want these tables to be filterable by sample, panelist and attributes.
3. Based on these filters, I want a reactive radial bar chart or classic radar chart to appear. For these radar charts, I would like for them to be downloadable to powerpoint, easily change the colors of the samples represented,
4. Based on filters, it should then compare filtered samples statistically and create reactive tables of statistical output. If there are more than two samples, perform an ANOVA for each attribute and report in the table each attribute's p-value in ascending order. Add options for post hoc testing to be added to the table (include Tukey's LSD and Duncan's),
Add options for corrected p-values (have user select their p-value threshold).
If there are only two samples, please perform a t-test on samples for each attribute, still with the designated p-value threshold, 0.05 being the default.

When filtering samples, if selected attributes are zero for both samples, remove those attributes from the tables, charts and analysis.

Please include a CSS file and ensure the background is this color: #64a7ae, the banner at the top is the image loaded (sustainability.png) and include the logo loaded in the top lefthand corner. (mane logo.png)

Make it accessible to nonmath people and highly interactive and engaging.

[Chatgpt 4o]:

You're asking for a polished, user-friendly Shiny app that walks users through uploading sensory panel data, exploring it interactively, and conducting statistical analysis—all with visualizations and stylistic polish tailored for the flavor and fragrance world. Here's how I suggest structuring it, and I'll provide the full Shiny code + CSS setup:

(continued — layout of app explained)

[Human]:

Can you create an example data file?

[Chatgpt 4o]:

Here is your example data file:

 [Download example_sensory_data.xlsx]

It includes:

- 3 panelists evaluating 2 samples
 - 5 sensory attributes: Sweet, Salty, Bitter, Sour, Umami
-

[Human]:

On the radar chart tab, I got this error with the example data you gave me:
'ggfun("scales_transform_df")' is not a function, character or symbol

[Chatgpt 4o]:

Thanks for pointing that out! That error happens when ggplotly() tries to convert a polar coordinate plot into Plotly, and the internal translation breaks. Let's fix this by using Plotly's native radar chart rendering instead of ggplotly().

[Human]:

New error in radar tab:

'2:nrow(df)' is not a function, character or symbol

[Chatgpt 4o]:

Ah, thank you! That's a classic mistake...

(fix provided using a for loop instead of lapply)

[Human]:

Great Job! Can you close the polar coordinates so the last ones meet the beginning?

[Chatgpt 4o]:

Yes! To close the shape on a Plotly radar chart, you just need to **repeat the first point at the end** of both the r and theta vectors...

[Human]:

For the download of the chart, the radar plot isn't closed like the one in the tool is. Also can you make the fill be toggleable and have the lines in the downloaded chart be the same colors to prevent confusion?

[Chatgpt 4o]:

Thanks for checking that—and you're totally right.
Here's how we'll fix everything for the **PowerPoint download of the radar chart...**

[Human]:

Both of these additions didn't change output. The downloaded chart is still different colors and disconnected radially. It's not closed. Also, the fill toggle doesn't change the fill.

[Chatgpt 4o]:

Let's fix this cleanly, step by step.
(Fixes offered with confirmed closing of polygon using group_modify + bind_rows)

[Human]:

Both are still not working.

[Human]:

Let's start fresh. Let's do some other changes and come back to this.
Let's make sure the averages are rounded in the tables, all numbers in table should be rounded to 2 decimal places.

[Chatgpt 4o]:

Sounds like a plan — let's fix the **average table rounding** first.

[Human]:

Let's include all p-values in the statistics output table, but arrange smallest to largest.

[Chatgpt 4o]:


Perfect — let's update the **statistics output table...**
(Full script provided with all p-values, ascending order)

[Human]:

Can you create another sample data file that has 3 or 4 samples so we can test out your ANOVA capabilities...

[Chatgpt 4o]:

Here's your new sample data file with **4 samples...**

 [Download sample_data_4samples.xlsx]

[Human]:

This is what your radar chart output looks like for the 4 sample example data. We need to close the radial graph, so that the ends meet the beginning.

[Chatgpt 4o]:

Thanks for uploading the radar chart screenshot — I see what you mean clearly now...

[Human]:

The downloaded radar chart still isn't a closed circle...

[Chatgpt 4o]:

Let's take a deep breath and **solve this cleanly...**

(Updated with confirmed working group_modify and coord_polar fix)

[Human]:

Let's move onto the table and forget about the downloaded radar chart for now.

[Chatgpt 4o]:

Perfect — let's shift gears and build the **new statistical summary table...**

[Human]:

There is something wrong with step 2, there are code snippets stuck in green as if they are quotes

[Chatgpt 4o]:

Ah yes — that happens when quotation marks and line breaks sneak into the wrong places...
(Fully cleaned output\$posthoc_table provided)

[Human]:

Yes to excel download and yes to p=values alongside the groupings.

[Chatgpt 4o]:

Excellent! Let's upgrade the post hoc table with:

1. Excel Download
 2. p-values shown next to each attribute
(Full revised output\$posthoc_table and download handler added)
-

[Human]:

Also where do I add:
tags\$head(tags\$style(HTML("sup { font-size: 0.75em; }")))

[Chatgpt 4o]:

Great question! You should add this line inside your fluidPage() in the UI — specifically inside tags\$head()...

[Human]:

The post hoc table doesn't show up
Error message: Navigation containers expect a collection of bslib::nav()/shiny::tabPanel()s...

[Chatgpt 4o]:

Ah, thank you! That warning means you're likely placing the downloadButton directly inside a tabsetPanel() — which only accepts tabPanel()s.
(Fix provided to wrap button + table inside a single tabPanel())

[Human]:

I would like that, but first I would like the post hoc table to show up with results. Can you explain why there are no results showing at all?

[Chatgpt 4o]:

Absolutely — let's get this sorted. If the **post hoc table isn't showing any results**, even after fixing the layout, here are the likely causes...

(List of reasons + fixes + diagnostic tips provided)