Supplementary Materials:

They are available on GitHub at https://github.com/ortil/Redesign-Challenge-2025 released under the CC BY 4.0 License.

They contain:

(1) The preprocessed dataset by Fear et al[1] is the .csv files available in the link: https://git.app.uib.no/biomedvis2025/31p-mrs-redesign/-/tree/main/data?ref_type=heads provided by the Bio+MedVis Challenge @ IEEE 2025 organizers through the page http://biovis.net/2025/biovisChallenges_vis/.

(2) The **figures and tables file** contain

i. The original plot (Figure 1) by Deelchand et al [2]

ii. The proposed visualization (Figure 2) and the associated navigational exploration and analytical interaction screenshots showing details of features (Figure 3 – 8).

iii. **The outputs: PEAK** comparison

    a. The bar chart, Figure 9: shows Metabolite peak comparison. It compares the average peak per metabolite, between control and MT conditions across all subjects.

    b. The bar Chart Figure 10: Shows the difference of the average peak between conditions (MT - control)

    c. Table 1: Summarizes Figures 9 & 10 using numeric data and includes percentage difference(change).

    d. Table 2: shows the paired t-test with p-vlaues and significant stars column.

iv. **The outputs: PEAK RATIO** comparison

    a. The bar chart, Figure 11: shows Metabolite ratio comparison, which compares the average peak ratio between control and MT conditions across all subjects.

    b. The bar chart Figure 12: shows difference in average peak ratio between conditions (mean_MT – mean_control)

    c. Table 3: Summarizes Figures 11 & 12 using numeric data and includes percentage difference(change).

    d. Table 4: Shows the paired t-test with p-vlaues and significant stars column.

For **the code**, it is an **intellectual property** and there is no feasible way to share it publicly.

Reference

[1] E. J. Fear *et al.*, "Use of 31P magnetisation transfer magnetic resonance spectroscopy to measure ATP changes after 670 nm transcranial photobiomodulation in older adults," *Aging Cell*, vol. 22, no. 11, 2023, doi: 10.1111/acel.14005.

[2] D. K. Deelchand, T. M. Nguyen, X. H. Zhu, F. Mochel, and P. G. Henry, "Quantification of in vivo 31P NMR brain spectra using LCModel," *Wiley Online LibraryDK Deelchand, TM Nguyen, XH Zhu, F Mochel, PG HenryNMR in Biomedicine, 2015•Wiley Online Library*, vol. 28, no. 6, pp. 633–641, Jun. 2015, doi: 10.1002/NBM.3291.