# 5123 Analysis Plan

# Zhenyuan Yang, Lingxiao Chu, Mengfei Wang

Objective:

To examine the impact of hospital room design (Control, Golden Ratio, Feng Shui, Evidence-Based Design) and participant gender (Male, Female) on self-reported anxiety levels, and to test whether the effect of design on anxiety differs by gender.

Methods & Data:

This study uses a 4 (Design Condition: Control, GR, FS, EBD) × 2 (Gender: Male, Female) “between-subjects factorial design” from a randomized controlled online trial (N = 558). The outcome variable is “anxiety”, measured using the STAI-6 (range: 6–24). Data will be analyzed using two-way ANOVA in SPSS or R, with follow-up tests for significant effects. We can also use ANCOVA to look at the adjusted means and compare them with ANOVA. We can add some baseline covariates such as education level, baseline anxiety level, etc.

Research Questions:

Does the type of hospital room design significantly affect patient anxiety?

Is there an interaction between gender and design condition on anxiety?

Variables:

Independent Variables (IVs):

Design Condition (categorical, 4 levels)

Gender (binary: Male, Female)

Dependent Variable (DV):

Anxiety score (continuous, 6–24)

Some covariables: Edu level, baseline anxiety level, health level

Preparing Steps:

Clean the data (we remove "Other" gender because number is too small)

Check if any values missing or input mistakes

Check descriptive statistics and visualize distributions

Assumptions Check:

Normality: histogram and Q-Q plot

Equal variance: Levene’s Test

Independence: already OK because of random assignment

Analysis Method:

We will use two-way ANOVA to look at:

Main effect of design

Main effect of gender

Interaction (design × gender)

If main effect for design is significant, we will do post-hoc Tukey test.

We also report effect size (η² or partial η²) and 95% confidence interval.

Extra Analysis:

If interaction is not significant, we will try ANCOVA to control for mental health or education level, because these showed relation to anxiety in the original study.