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# Title: Propensity Score Matching with Pre/Post SMD Output

# Author: <Your Name>

# Date: <Auto-filled>

# Note: Generates SMD before and after matching for reviewer

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## ---- 0) Install and load required packages ----

install.packages(c("MatchIt", "tableone", "dplyr"))

library(MatchIt) # matchit()

library(tableone) # CreateTableOne()

library(dplyr) # mutate(), case\_when(), %>%

set.seed(20250814) # Reproducibility

## ---- 1) Prepare variables ----

# 确保 treatment 存在且为因子 (0=Control, 1=Treatment)

# 如果你的数据中 treatment 变量名称不同，请修改

df <- df %>%

mutate(

treatment = case\_when(

treatment %in% c(1, "1", "treated", "Treatment") ~ 1,

TRUE ~ 0

),

treatment = factor(treatment, levels = c(0, 1),

labels = c("Control", "Treatment"))

)

# 定义匹配变量

catVars <- c("Age", "Sex", "Smoking", "Alcohol",

"Hypertension", "Diabetes\_mellitus", "BMI",

"Tumor\_length\_cm", "Tumor\_location", "TNM")

# 将分类变量转换为因子

validCatVars <- catVars[sapply(df[catVars], function(x) length(unique(x[!is.na(x)]))) > 1]

df[validCatVars] <- lapply(df[validCatVars], as.factor)

## ---- 2) Pre-matching sample size & SMD ----

cat("\n===== Pre-matching sample sizes =====\n")

print(table(df$treatment))

tab1\_pre <- CreateTableOne(

vars = catVars,

strata = "treatment",

data = df,

factorVars = intersect(catVars, validCatVars),

test = FALSE

)

cat("\n===== Table 1 (Pre-matching) with SMD =====\n")

print(tab1\_pre, showAllLevels = TRUE, quote = TRUE, noSpaces = TRUE, smd = TRUE)

# 保存匹配前表格

tab1\_pre\_df <- print(ta