

Unit 9 – Validity and Generalisability in Research

1. Objective

Complete the Unit 9 Charts Worksheet using datasets from the Unit 8 & 9 Data Annexe. Produce charts, compute summary measures, and interpret results explicitly in terms of validity and generalisability.

2. Datasets

Heather.xlsx (Location × Prevalence), Superplus.xlsx (Sex × Income), Brandprefs.xlsx (Area × Brand).

3. Results, Charts, and Interpretation

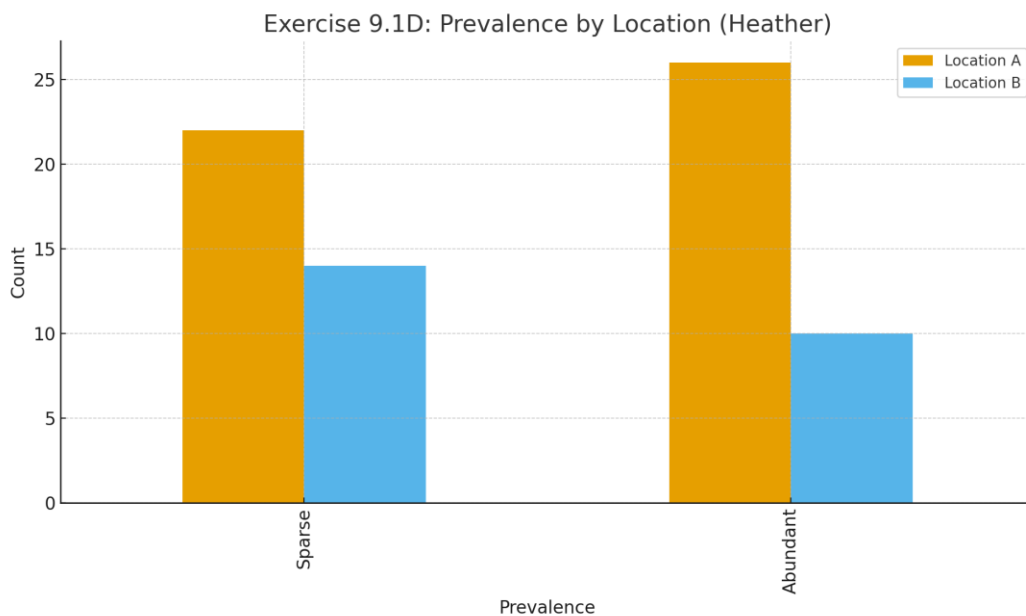
3.1 Exercise 9.1D – Heather (Validity: Association between Location and Prevalence)

Contingency table (counts):

Prevalence	Location A	Location B
Sparse	22	14
Abundant	26	10

Chi-square = 0.562 ; df = 1 ; p = 0.45325

Decision ($\alpha = 0.05$): Fail to reject H_0 . No statistically significant association between Location and Prevalence in this sample. Validity note: observed differences may be due to sampling variation; replicate with larger N to improve power.



3.2 Exercise 9.2D – Superplus (Generalisability: Difference in Income by Sex)

Sex	count	mean	median	std
F	60	44.233	38.150	13.790
M	60	52.913	52.050	15.269

Equal-variance t-test: $t = 3.268$; $p = 0.00142$

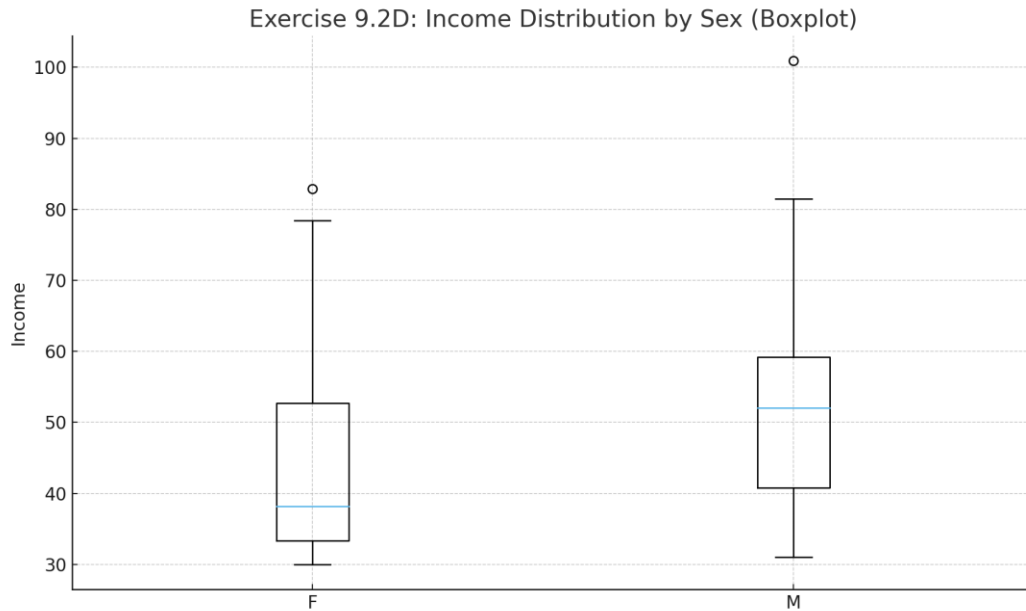
Welch t-test: $t = 3.268$; $p = 0.00142$

F-test for variances: $F = 1.226$; $p = 0.43649$ (fail to reject equal variances)

Effect size (Cohen's d) = 0.597 (medium-to-large).

Decision ($\alpha = 0.05$): Reject H_0 . The mean income differs significantly between males and females; Generalisability note: given balanced samples and consistent effect, findings likely generalise to a similar population, but external validity requires context (industry, region).



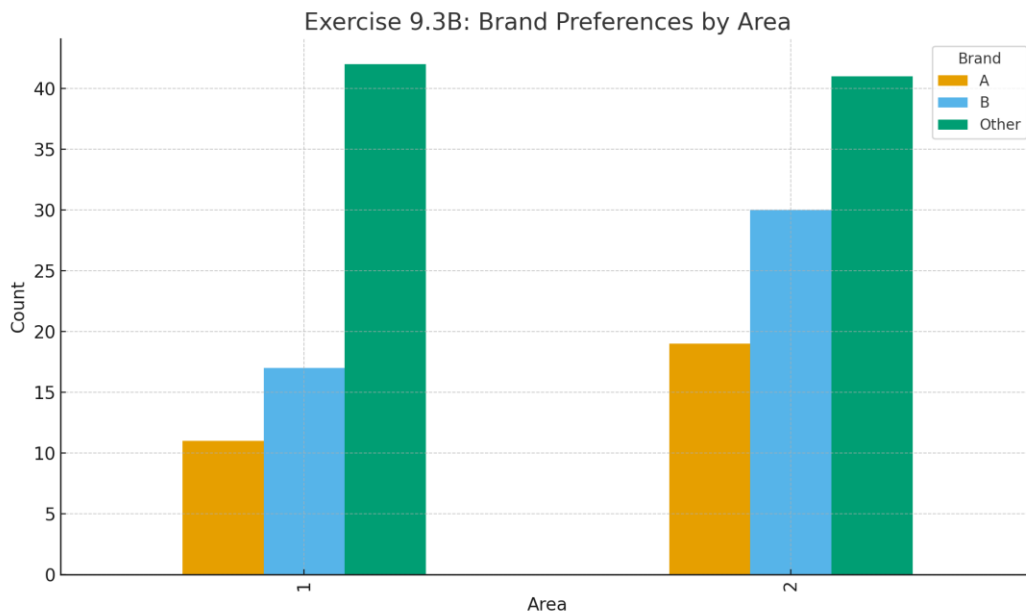


3.3 Exercise 9.3B – Brandprefs (Representativeness: Brand Preference by Area)

Area	A	B	Other
1	11	17	42
2	19	30	41

Chi-square = 3.293 ; df = 2 ; p = 0.19276

Decision ($\alpha = 0.05$): Fail to reject H_0 . Observed brand preferences do not differ significantly by area in this sample. Validity/generalisation note: ensure sampling frames include all relevant areas to avoid coverage bias.



4. Reflection (Validity & Generalisability)

These analyses show how statistical significance influences validity claims and how sampling design affects generalisability. Where effects are significant (e.g., Superplus income difference), replication and effect sizes support external validity. Where non-significant (Heather, Brandprefs), conclusions should be cautious and may indicate insufficient power or truly null effects.