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Objectives

- ✓ **Retrospective** cross-sectional study
- ✓ Assess the accuracy of the **3 equations** compared to LDL-C measured by **ultracentrifugation**
- ✓ Estimate the **clinical impact** on the **re-classification** of risk and lipid treatment goals

Materiels and Methods

FRIEDEWALD

$$\text{LDL-C} = \text{TC} - \text{HDL-C} - \frac{\text{TG}}{2.2}$$

SAMPSON

$$\text{LDL-C} = \frac{\text{CT}}{0.948} - \frac{\text{HDL-C}}{0.971} - \text{X} \cdot 0.244$$

$$\text{X} = \left(\frac{\text{TG}}{3.74} + \frac{\text{TG} \times \text{Non-HDL-C}}{24.16} - \frac{\text{TG}^2}{79.36} \right)$$

MARTIN-HOPKINS

$$\text{LDL-C} = \text{TC} - \text{HDL-C} - \frac{\text{TG}}{\text{AF}^*}$$

*AF dependent on non-HDL-C and TG

n=7006 LDL-C measured by ultracentrifugation



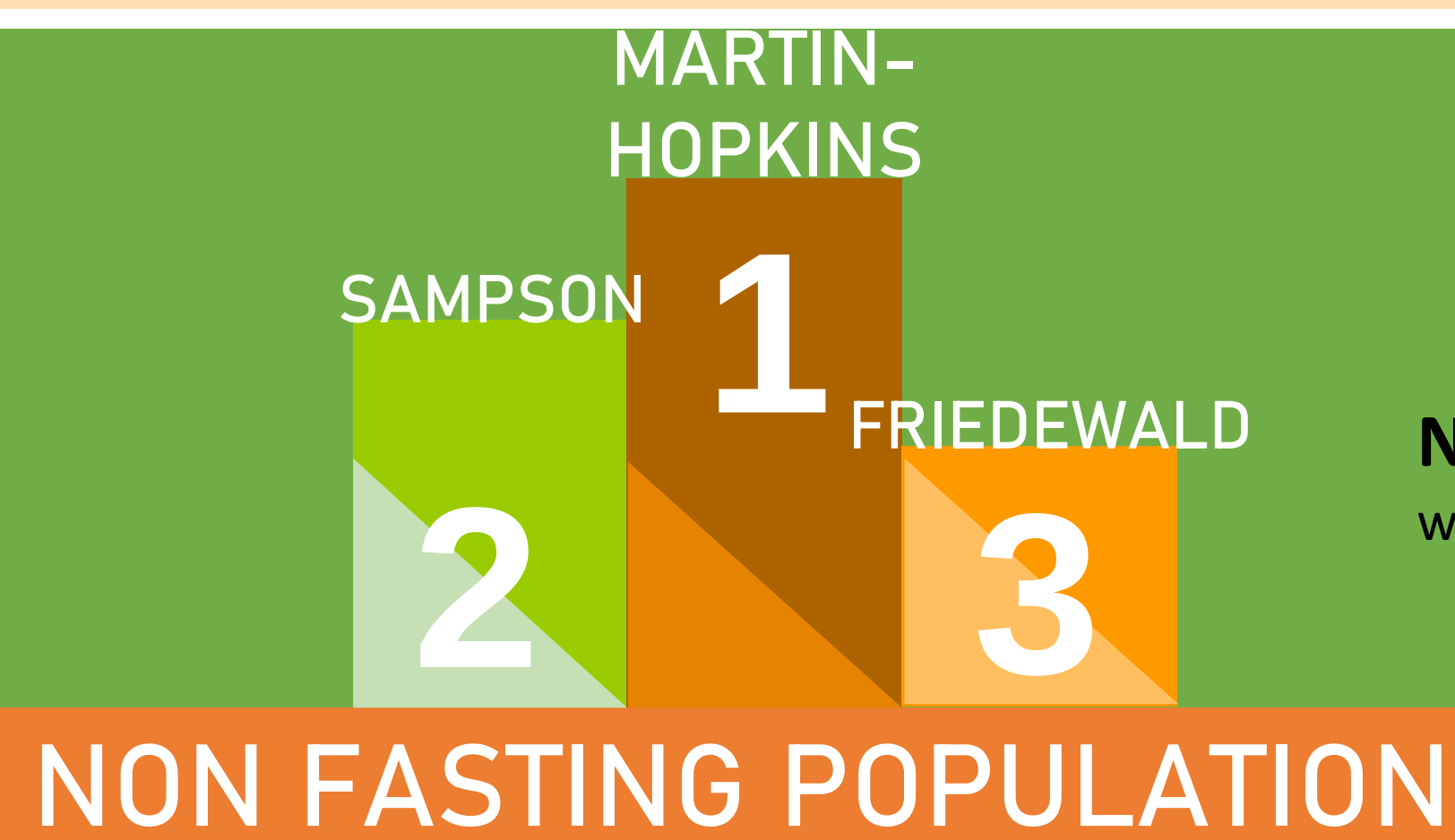
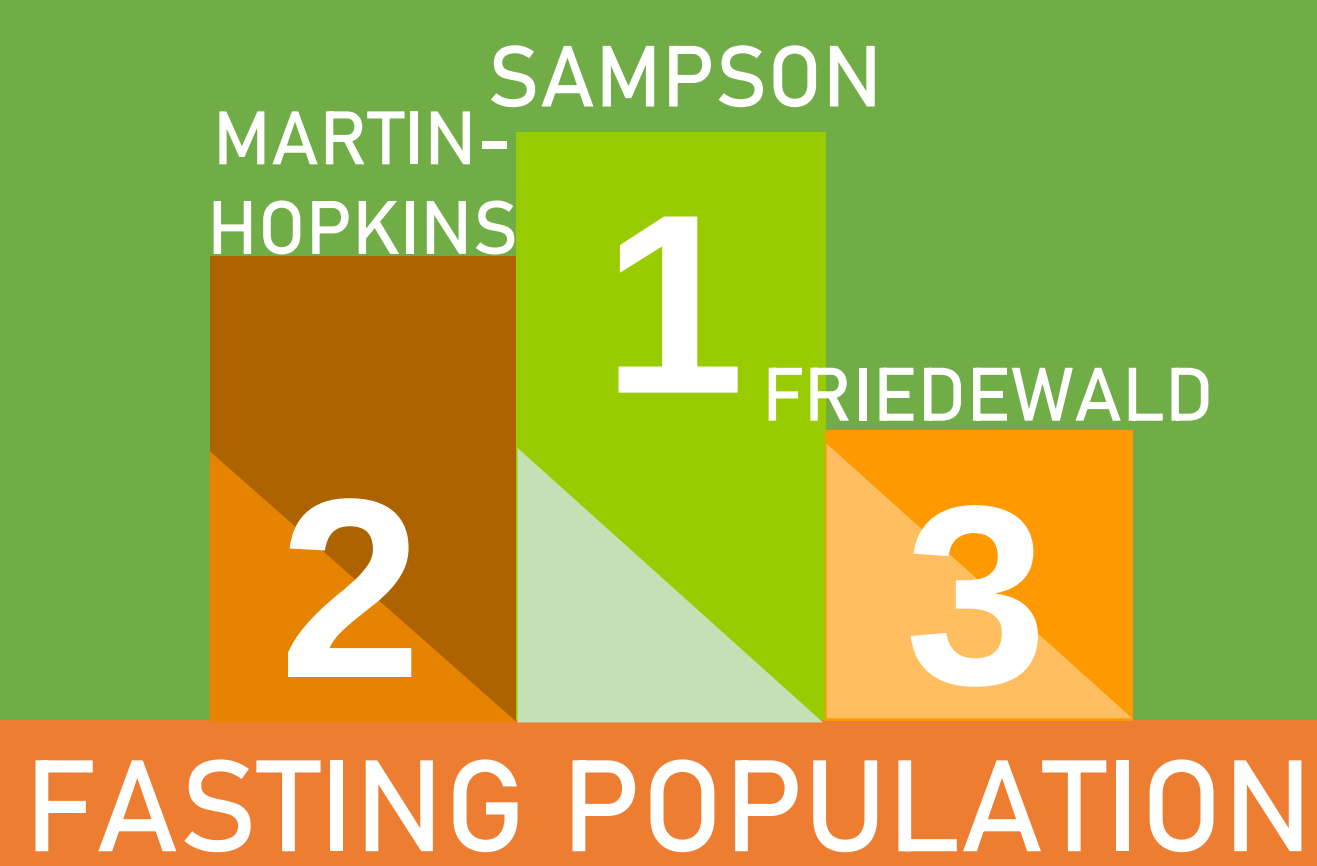
Criteria for comparison :

- Correlation
- Residual error plot
- Mean Absolute Difference
- Root Mean Square Error
- Cross Tabulation
- Cohen's Kappa

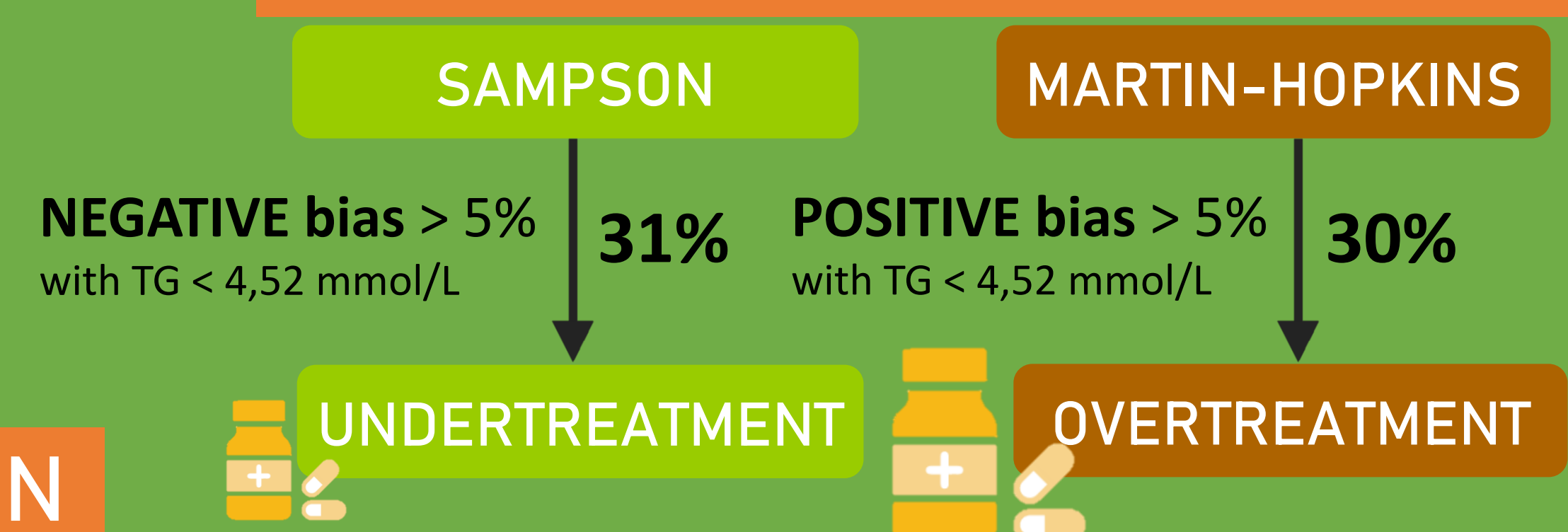
CONCLUSION

No equation is robust enough when TG > 4,52 mmol/L

For TG < 4,52 mmol/L M and S better than F

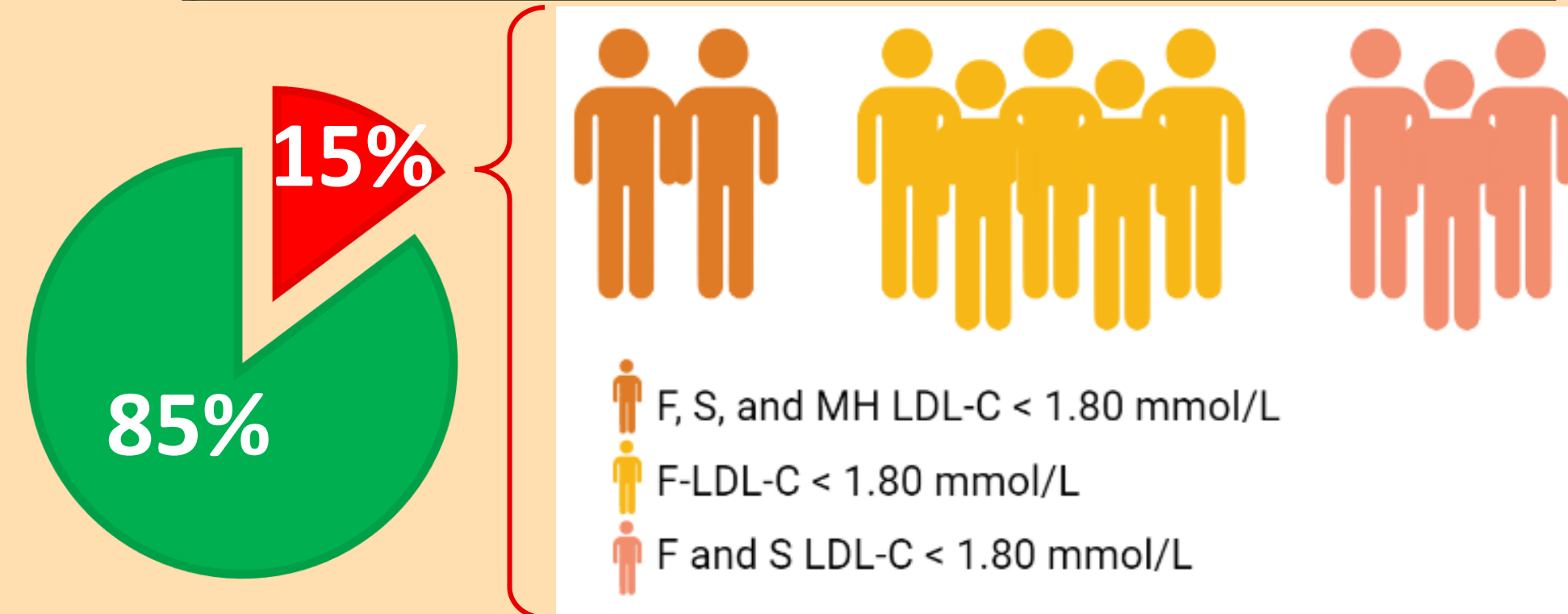


IMPACT ON CLINICAL PRATICE



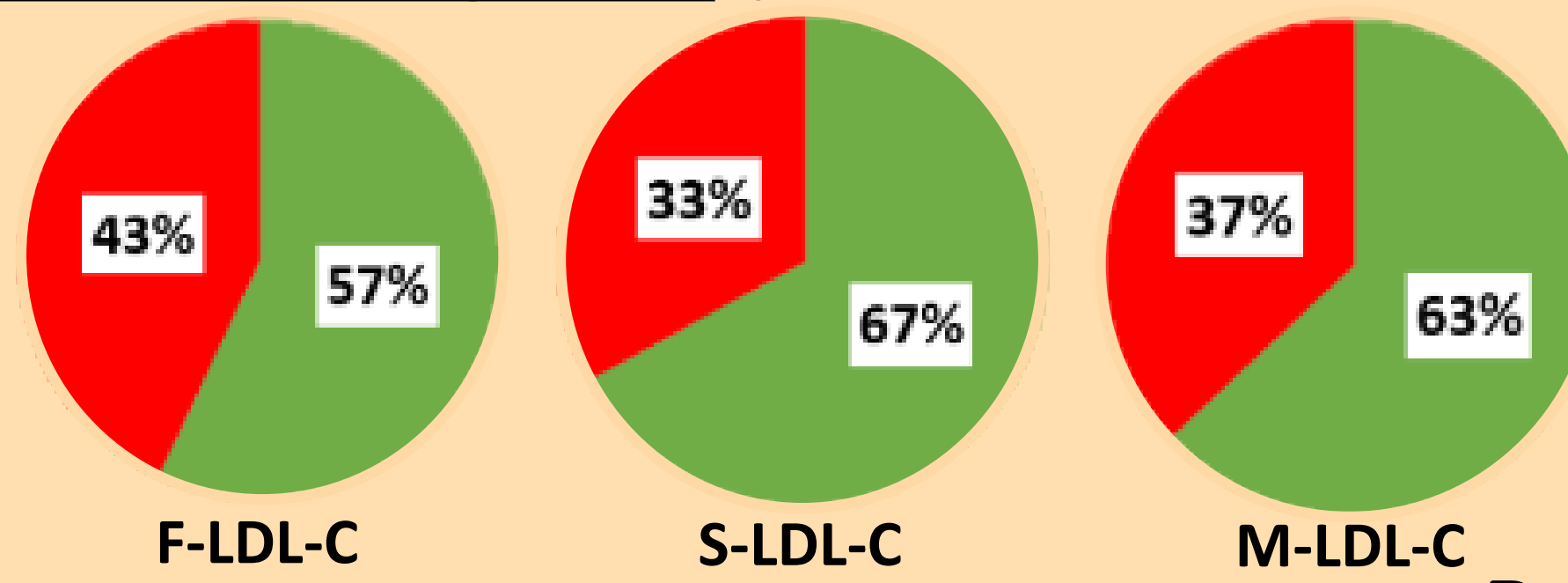
FASTING POPULATION

Missed opportunities of treatment in patients with uLDL-C ≥ 1.80 mmol/L

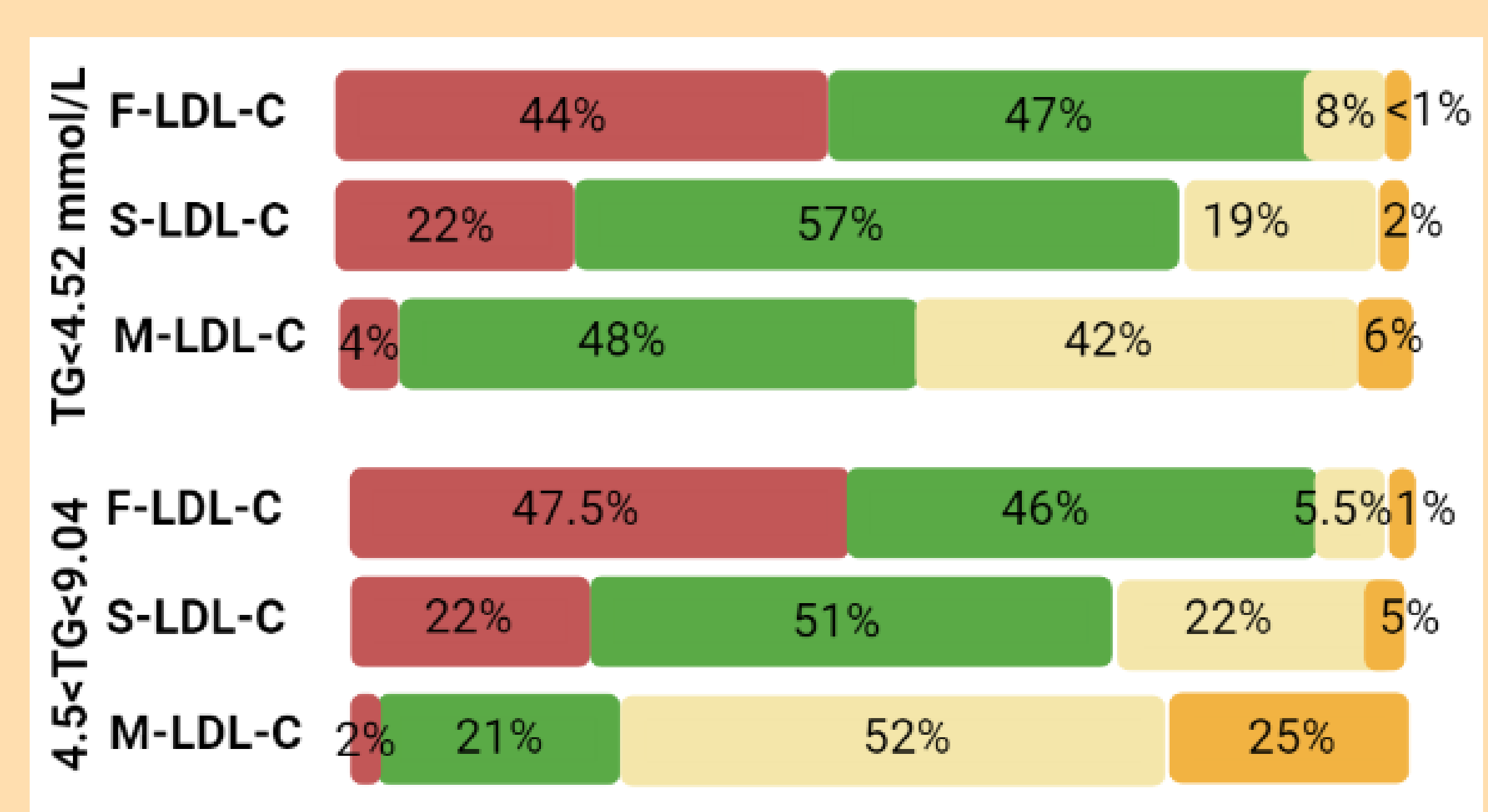


Missed opportunities of treatment

Concordance between equation and ultracentrifugation (cut-off = 0,13 mmol/L)

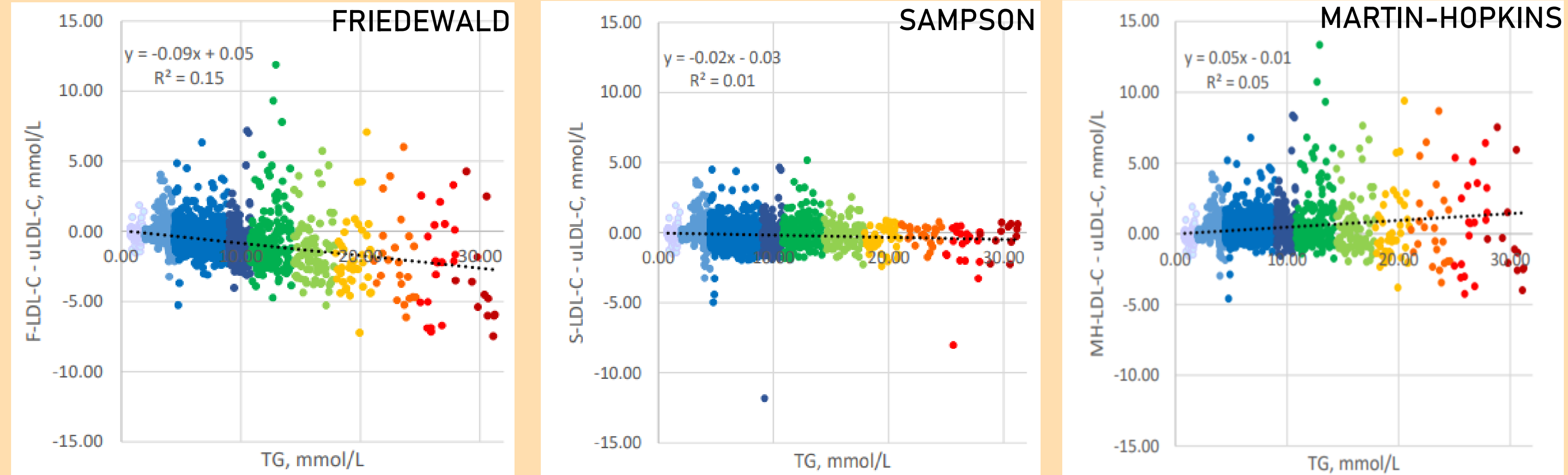


Misclassification in patients with uLDL-C < 1.80 mmol/L



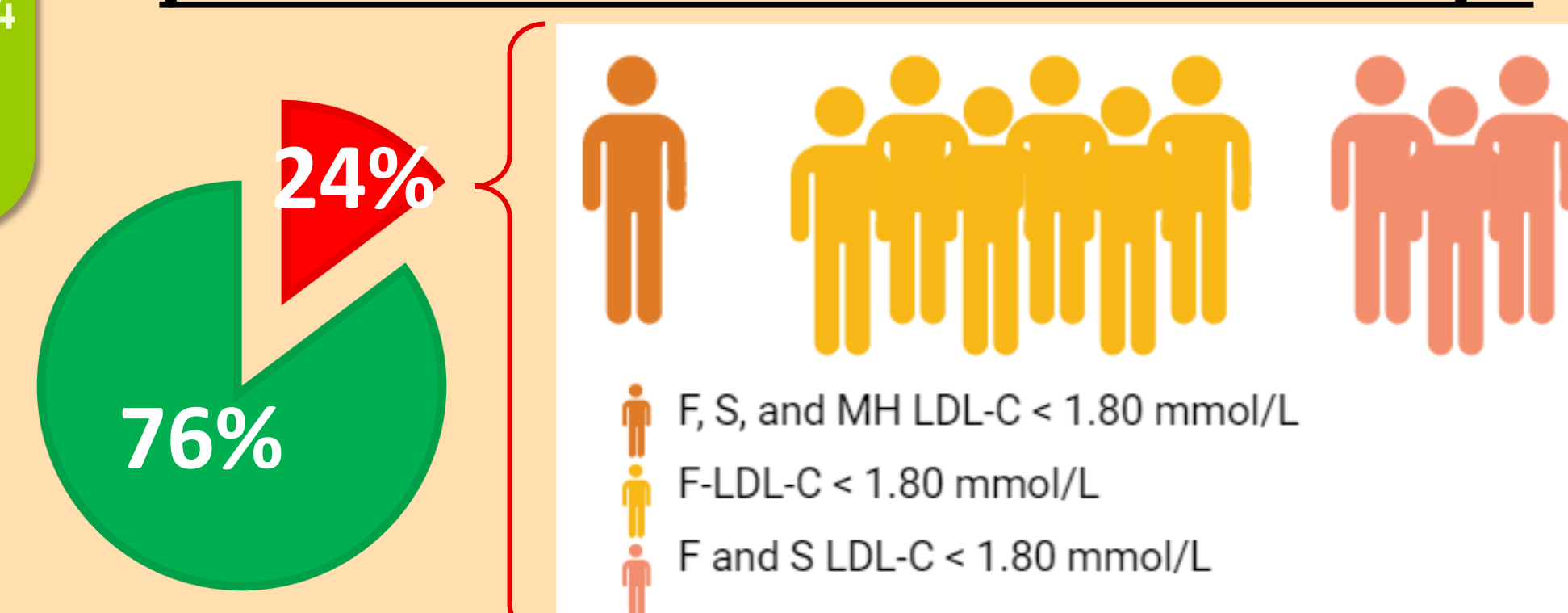
Category changes : Lower Same Upper 1 Upper ≥2

Residual Error Plot



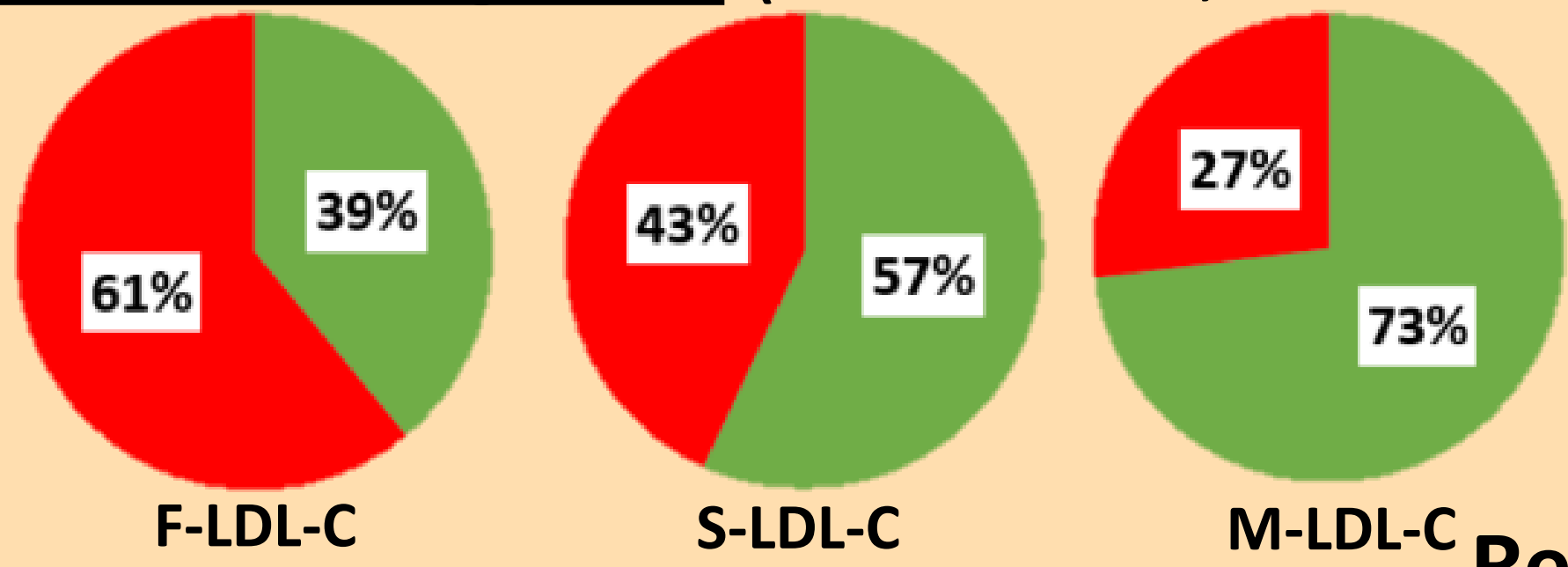
NON FASTING POPULATION

Missed opportunities of treatment in patients with uLDL-C ≥ 1.80 mmol/L

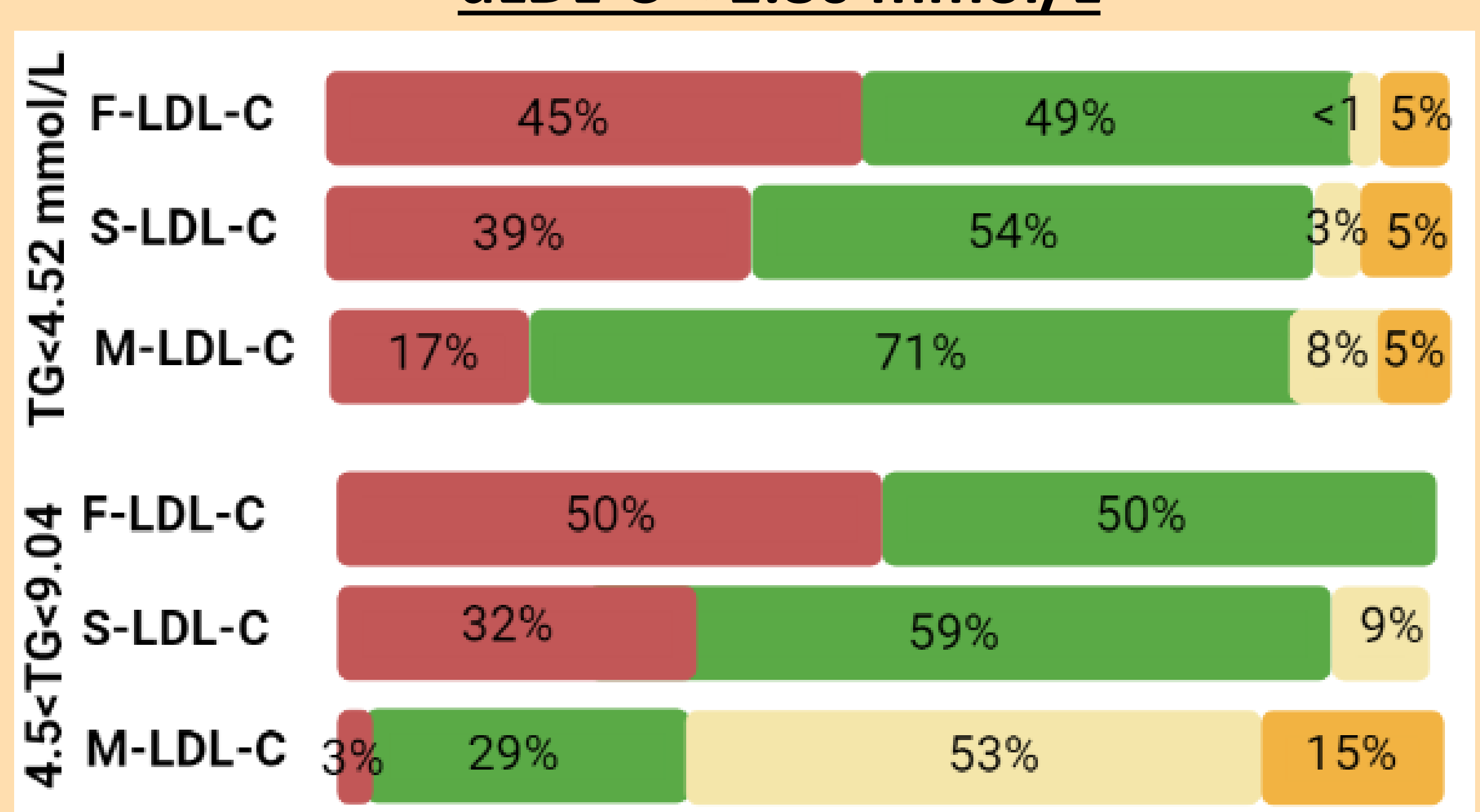


Missed opportunities of treatment

Concordance between equation and ultracentrifugation (cut-off = 0,13 mmol/L)



Misclassification in patients with uLDL-C < 1.80 mmol/L



Category changes : Lower Same Upper 1 Upper ≥2

Residual Error Plot

