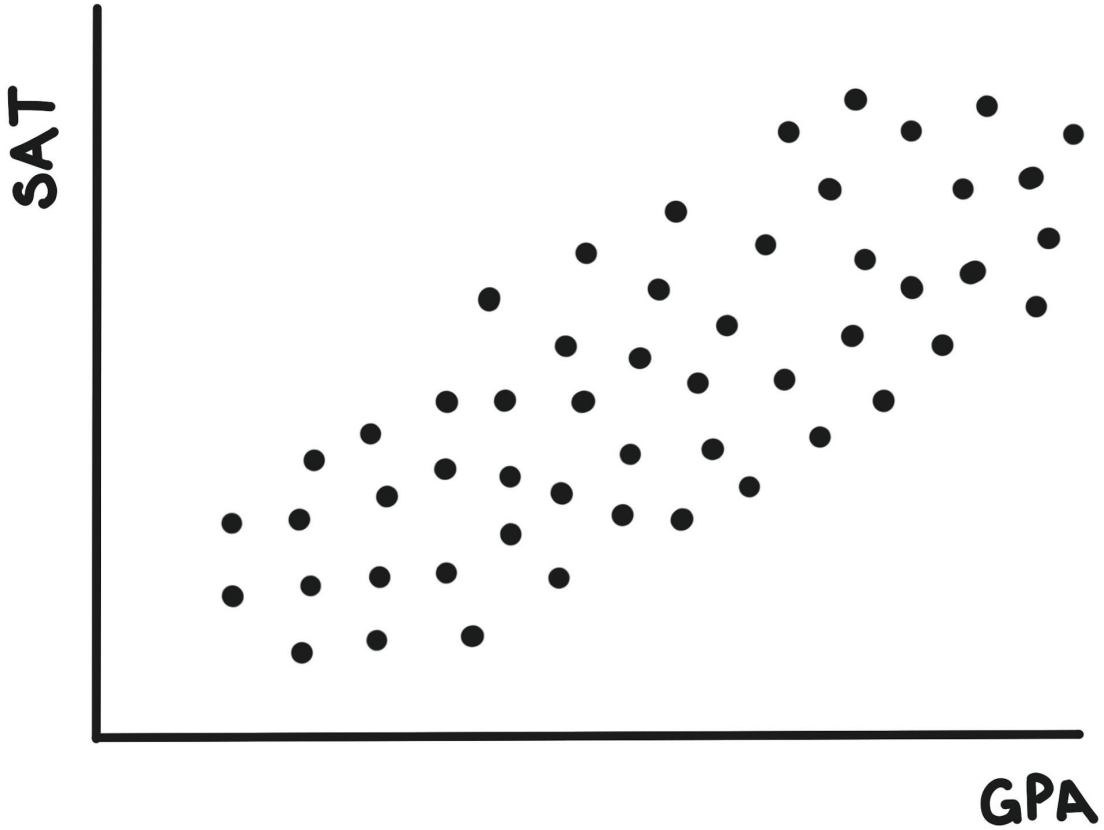
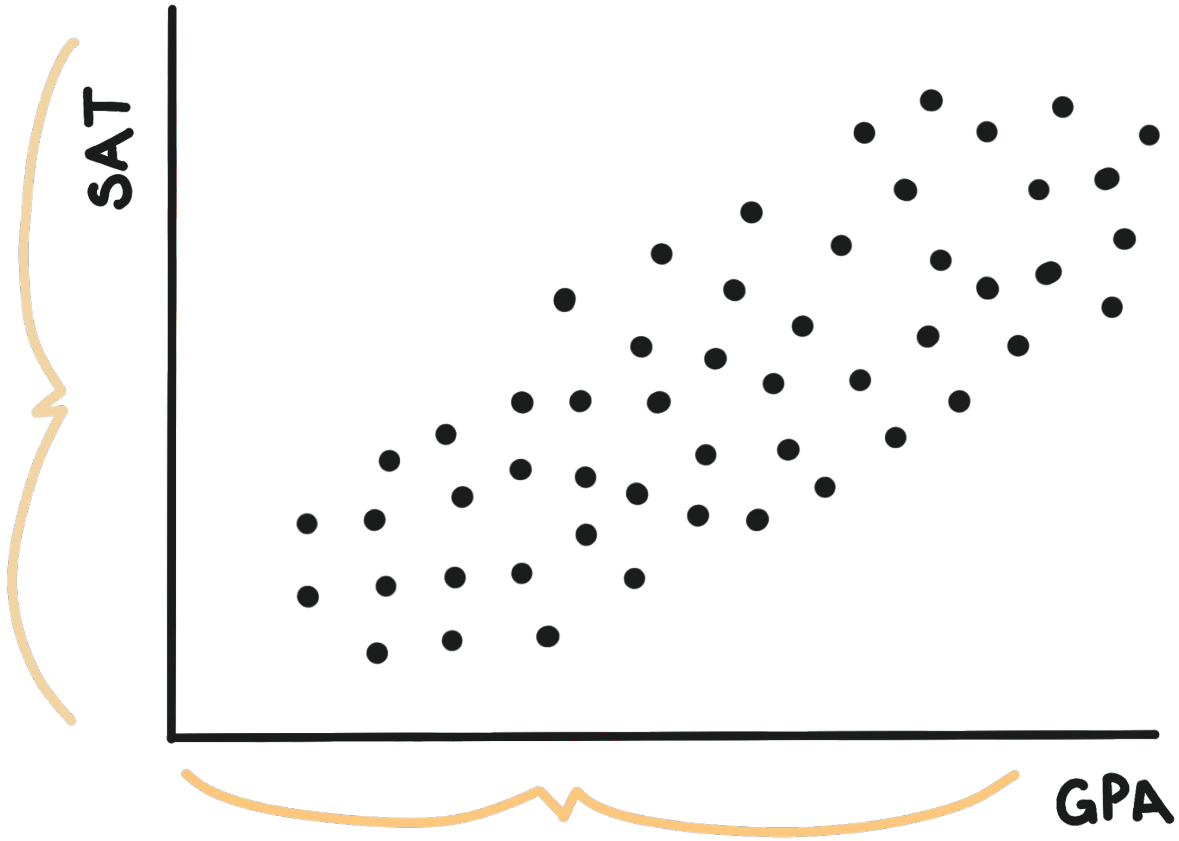
Principal Components Analysis (PCA)

Chelsea Parlett-Pelleriti

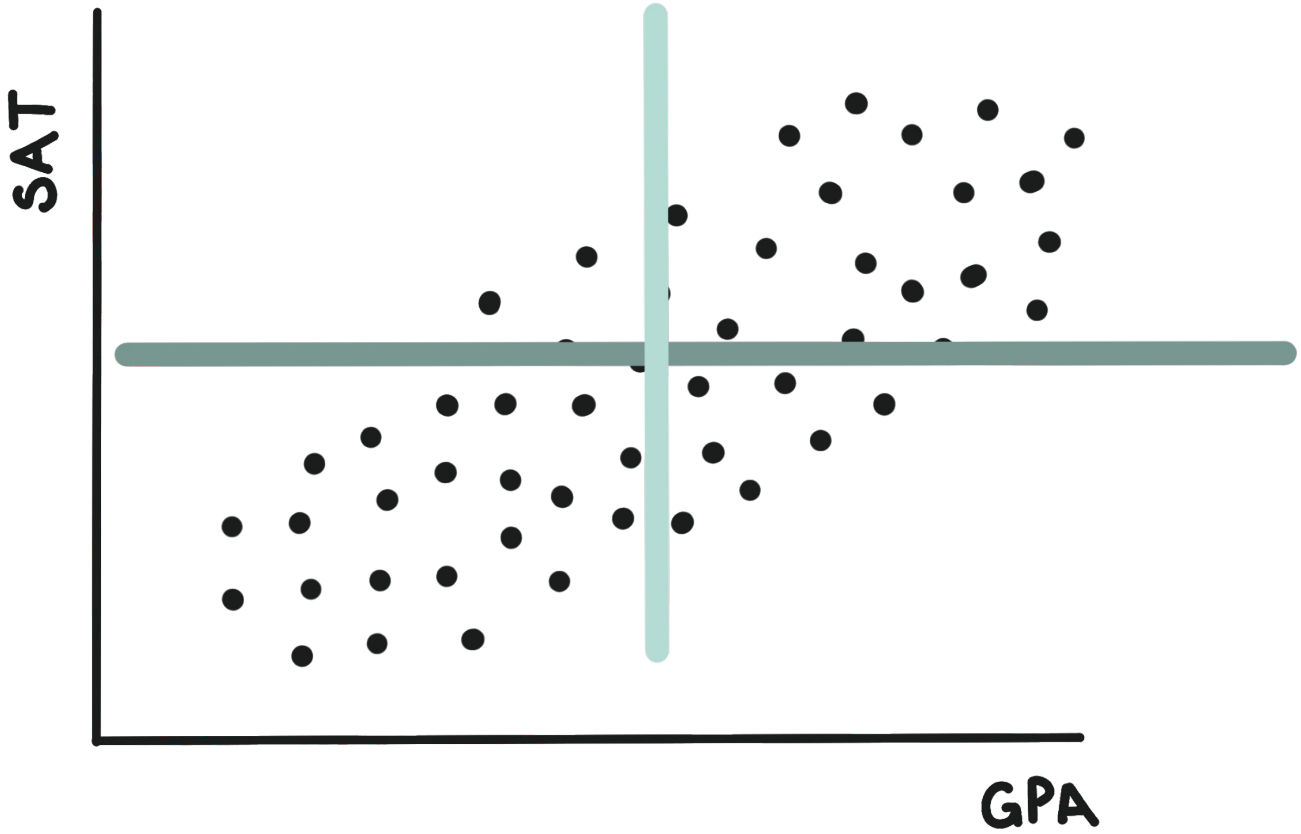
Variation



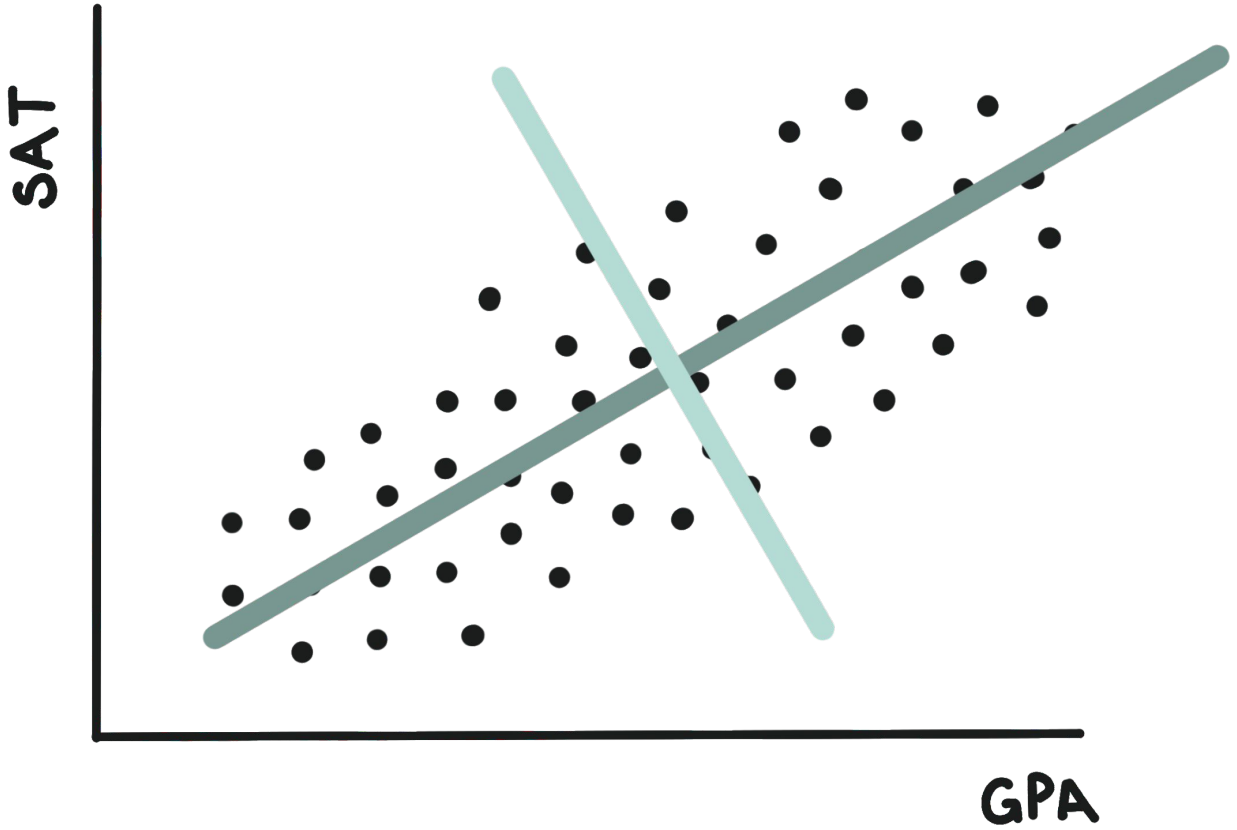
Variation



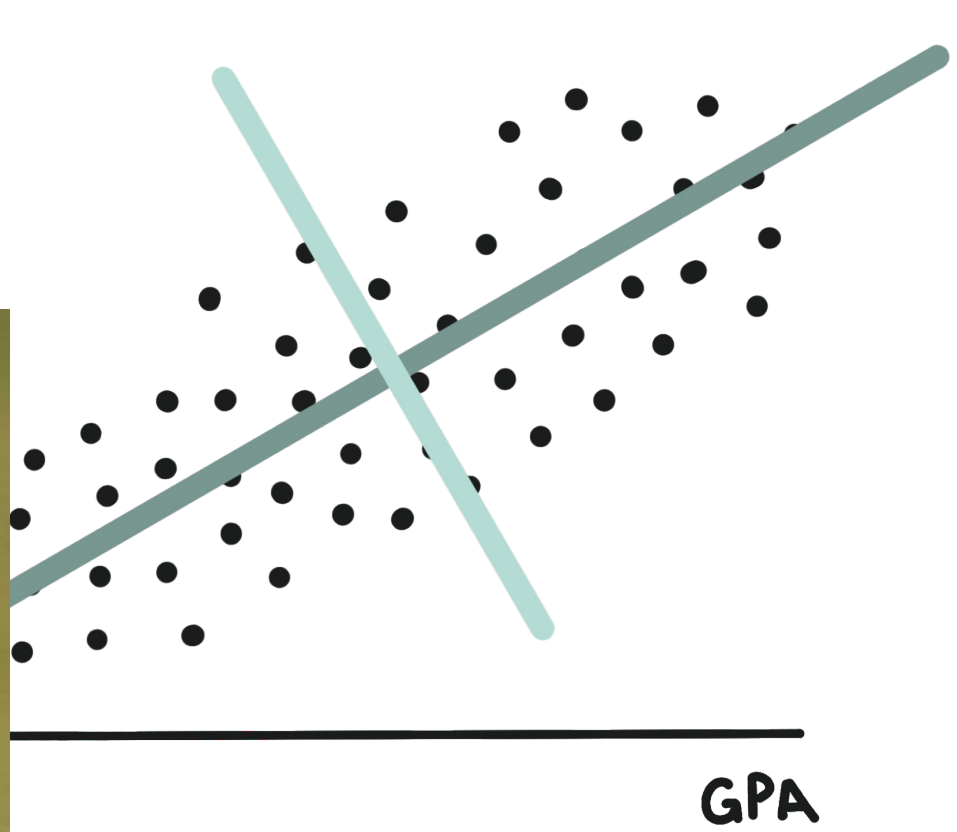
PCA



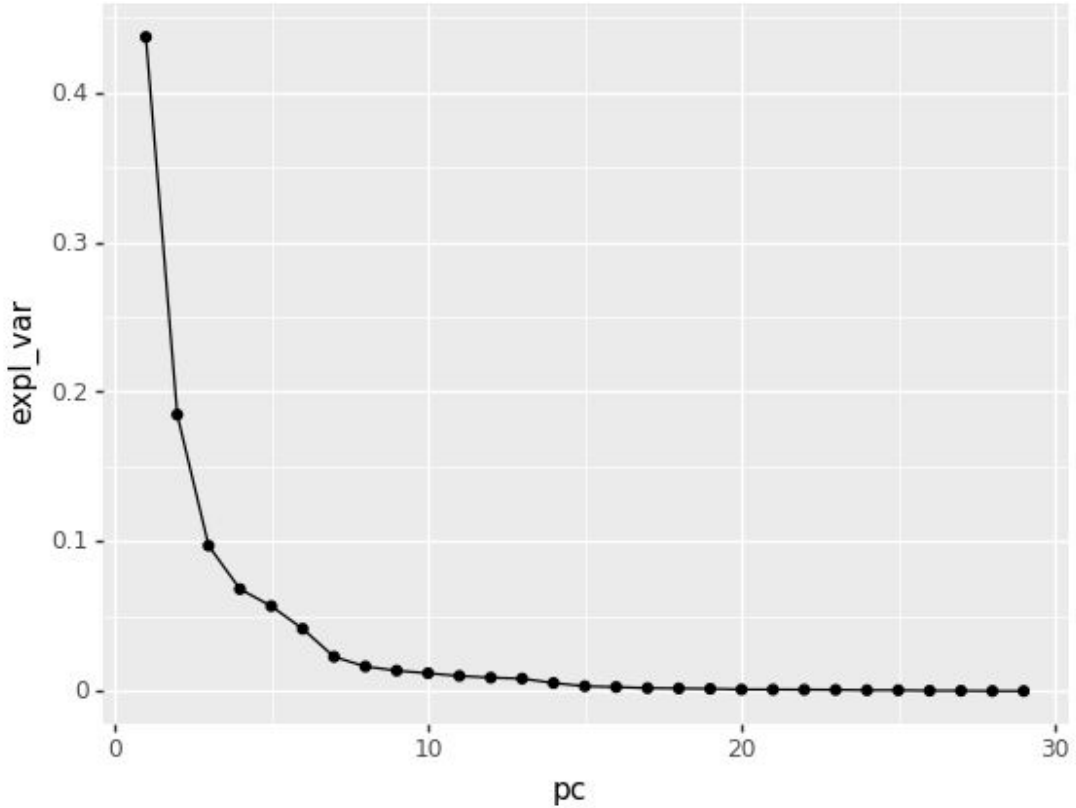
PCA



PCA



PCA



ABSTRACT

The quality of baguettes can be evaluated by defined sensory attributes and image analyses. The effect of flour quality, production process (traditional French and industrially modified), mixing and proofing time were studied. Process accounted for 40% of the variation in baguette quality whereas flour quality accounted for 16% of the variation when principal component analysis was applied on the sensory attributes. Baguettes produced using a soft dough and gentle treatment (traditional French process) had a higher sensory score for porosity, elasticity, crispness of crust, crackles on the crust, and porosity and volume as measured by image analysis, than baguettes produced using a stiff dough and rough treatment (modified industrial process). Mixing and proofing time also affected the porosity and area of the cut surface. Porosity, crackles on the crust, glossiness and volume were related to flour quality.

Why PCA?

- **Dimensionality Reduction**
- (Factor Analysis: Understanding which variables go together)