

A glance at Drake data on peanut preferences
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Sensory measurement

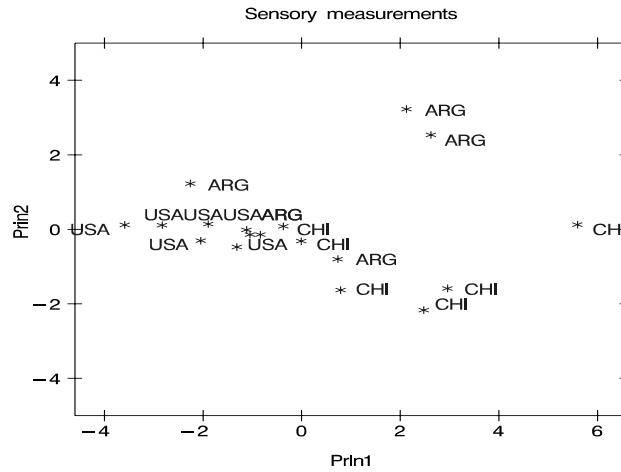
Principal components analysis of sensory measurements on 18 peanut samples (varieties). Six of these samples come from each of three countries: Argentina, Chile, USA. The samples from Chile score high on the PC1 and a little low on PC2, the samples from USA score low on PC1, the samples from Argentina score high on PC2. This can be seen from inspection of the means and figure below:

The SAS System

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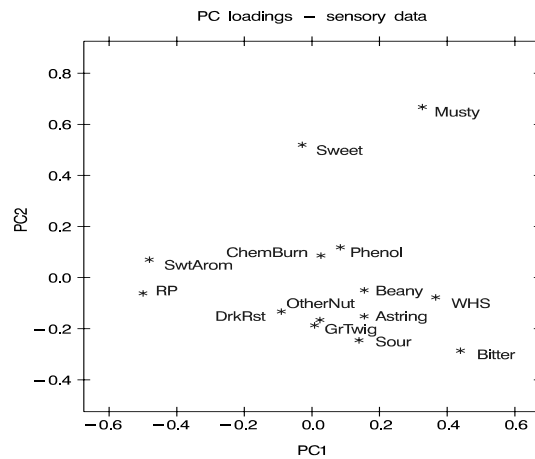
The MEANS Procedure

Country	N Obs	Variable	Mean	N	Std Dev
ARG	6	Prin1	0.2117440	6	1.9353419
		Prin2	1.0060721	6	1.6093834
CHI	6	Prin1	1.9074326	6	2.2421465
		Prin2	-0.9152467	6	0.9963916
USA	6	Prin1	-2.1191766	6	0.9506008
		Prin2	-0.0908254	6	0.2587561

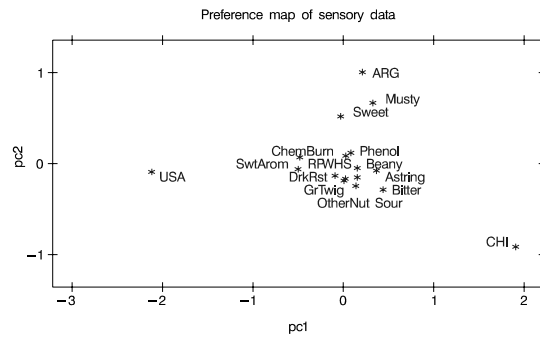


PC1 accounted for 54% of the total sample variance in the 14 descriptive attributes, PC2 accounted for 16% for a cumulative total of 70%.

The graph below depicts the contributions or "loadings" of the 14 attributes to the first two principal components:



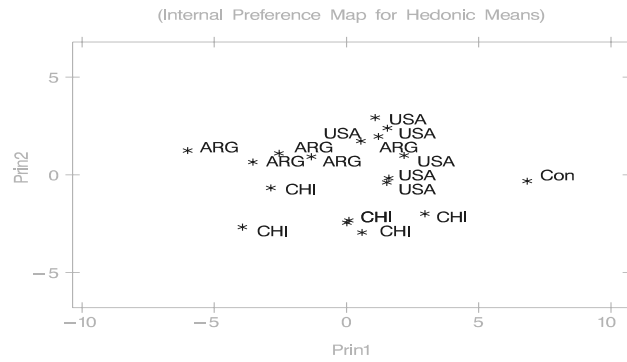
The graph below overlays the means by country on the attribute loadings map. It seems to indicate some associations between the attributes and the countries such as "musty" and "sweet" loading high on PC2, where Argentina peanuts scored high.



For the consumer data, responses were of dimension 14:

1. overall liking
2. overall flavor
3. intensity of color
4. intensity of roasted peanut flavor
5. intensity of swtaste
6. intensity of bitter
7. intensity of fresh peanut flavor
8. intensity of texture
9. liking of color
10. liking of roasted peanut flavor
11. liking of swtaste
12. liking of bitter
13. liking of fresh peanut flavor
14. liking of texture

An *internal preference map* or *biplot* plots both the coefficients, or loadings, of these attributes on the first two principal components along with the individuals' first two PCs. Since there were a large number of individuals measured here, a plot with point for each individual is too busy to be interpreted. A plot of the first two principal components, which account for 64% and 24%, respectively, of the total sample variance (for a cumulative sum of 88%) seems to yield good separation between the countries and the control:



The internal preference map would overlay the directions on these dimension along which the attributes lie. A plot is given below with points instead of arrows. It doesn't lend itself to easy interpretation:

Predicting hedonic measurements from sensory data
(considering both sets of multivariate responses at once)