Key to *Fruit Fly Feeding Behaviour*

Objective

By analyzing the data, we would like to study the feeding behaviour of the starved and fed flies, and their differences.

Definitions

Feeding period: the fly stays on the sensing pad, where it drinks the sugar water, for at least 5 seconds.
Resting period: the fly stays off the sensing pad for at least 10 seconds.
The time data is in seconds and at each point of time must be categorized as either feeding (1) or resting (0) period; the fly cannot be in a state neither feeding nor resting.

Assumptions

Since the sensitivity of the pad may not be accurate at times, we make the following assumptions for the cases:

- If there is a break of less than 10 seconds in between two feeding periods, then the three periods altogether are considered as one feeding period.
- If there is a break of 10 seconds or more in between two feeding periods, then we have a feeding, a resting and then a feeding period.

The same assumption applies to the time on the sensing pad in between resting periods:

- If the fly is on the pad for less than 5 seconds in between resting periods, then the three periods altogether are considered as one resting period.
- If the fly is on the pad for 5 seconds or more in between resting periods, then we have a resting, feeding and then a resting period.

Data Collection

For each collection of data, one fly is placed in a container with the sensing pad on which there is a small well of glucose water. Once the fly is released in the container, the data is collected for the next one hour. For this analysis, five female fruit flies were used; three starved and two fed.

Method of Analysis

Boxplots were created for each feeding and resting period for the five flies to compare their lengths of time. Then, a cumulative frequency graph was produced for each fed and starved flies to study the feeding behaviour.