

The Cost of Poor Experimental Design

If experiments are not designed efficiently there can be rarely quantified financial, personnel and wasted animal cost, these are illustrated here using simplified examples.

OVERESTIMATION



If optimum size is 200 animals and 220 (over by 10%) are used over 4 weeks...



COST

- Maintenance: £10 per week per animal = $£10 \times 4 \text{ wks} \times 20 \text{ animals} = \underline{£800}$
- Purchase: £20 per animal = $20 \times 20 = \underline{£400}$
- Post-docs time: £250 (Based on £25,000 per month)



TOTAL COST

£1,450

With Full Economic Cost (100%)

£2,900

If done over 1 year

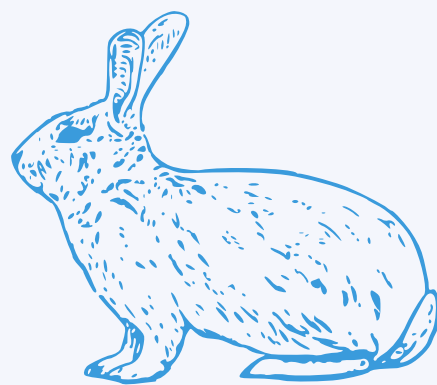
£17,400

With FEC

£34,800!!

(A post-docs salary)

UNDERESTIMATION

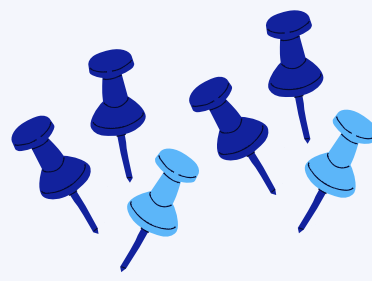


If optimum size is 200 animals and 150 (under by 25%) are used and this leads to non-significant results...



COST

- Maintenance = £1,200
- Purchase = £3,000
- Salary = £200
- TOTAL = £4,400 (with FEC = £18,400)
- Over 1 year = £220,800 (hopefully this would not occur)



Other Costs to Consider:

Radiotracers or new pharmaceuticals could be £1000s per gram.

If it results in delays in licensing or ethical approval could lead to significant cost of staff and animals that are 'waiting'.

CONSEQUENCES

Simple overestimation costs are moderate but significant. Simple underestimation costs are large. Even small improvements in design can result in significant savings that can amount to the cost of additional lab personnel. Consideration of factors such as compound costs and delays suggest that even these estimates are conservative.

Acknowledgement

The information on this infographic is adapted with permission from material originally delivered by Prof. Richard Preziosi, University of Plymouth