

USE OF EMPTY BODY-WEIGHT IN DEVELOPMENTAL GROWTH STUDIES

D. M. MURRAY*

Empty body-weight (Ebw) is often used as the independent variate to compare carcass and non-carcass parts between treatments by regression. Means of parts are compared at a common (adjusted mean) Ebw either by using a pooled slope or individual slopes. The purpose of this paper is to illustrate for sheep the way in which measured parts may be altered when comparisons are made at a common Ebw, carcass weight (Cw) or non-carcass weight (Ncw).

Theoretical data for a comparison between two groups (A and B) are presented in Table 1 to illustrate the predicted effects on actual mean weights of carcass and non-carcass parts when comparisons are made by adjusting carcass parts to common Ebw or Cw and non-carcass parts to common Ebw or Ncw. Five different combinations (Comb) of Ebw, Cw and Ncw in groups A and B are tabulated. For simplicity, the assumption is made that pooled regressions are appropriate in the adjustment of part means.

Table 1. Predicted effects on carcass and non-carcass parts for different combinations of Ebw, Cw and Ncw in two groups A and B with the same number

Comb	Trait (kg)	Group means		Adjusted means (\bar{x})		Effects on parts (\bar{y})	
		A	B	Cw	Ncw	Carcass	Non-carcass
1	Ebw	30	30	30	30	Nil	Nil
	Cw	18	16	17	-	A+B \uparrow	-
	Ncw	12	14	-	13	-	A+B \downarrow
2	Ebw	30	28	29	29	A+B \uparrow	A+B \uparrow
	Cw	18	18	18	-	Nil	-
	Ncw	12	10	-	11	-	A+B \uparrow
3	Ebw	30	28	29	29	A+B \uparrow	A+B \uparrow
	Cw	18	16	17	-	A+B \uparrow	-
	Ncw	12	12	-	12	-	Nil
4	Ebw	28	30	29	29	A+B \downarrow	A+B \downarrow
	Cw	18	16	17	-	A+B \uparrow	-
	Ncw	10	14	-	12	-	A+B \downarrow
5	Ebw	28	30	29	29	A+B \downarrow	A+B \downarrow
	Cw	16	20	18	-	A+B \downarrow	-
	Ncw	12	10	-	11	-	A+B \uparrow

Carcass weight provides an appropriate covariate for carcass parts if comparisons are to be made at the same Cw. This suggests the use of Cw in Comb 1, 2 and 3. It may be argued that if Cw is appropriate for carcass parts then Ncw may be considered the logical covariate for non-carcass parts in Comb 1, 2 and 3 since this will facilitate comparisons on a similar basis i.e. at the same Ncw. In Comb 4, means of carcass parts in A and B were adjusted in opposite directions depending on whether Ebw or Cw were used as the covariate as was the case for non-carcass parts in Comb 5 using Ebw or Ncw. Comb 4 type data have been reported by Murray (1978) which gave different statistical results for carcass parts when related to Ebw or Cw. In conclusion, covariates should be selected carefully as their choice may lead to different findings.

REFERENCES

MURRAY, D. M. (1978). *J. Aust. Inst. Agric. Sci.* 44: 59.

*Department of Wool Sciences, University of N.S.W., Sydney, N.S.W., 2033.