

Relation of colour versus conformation and fatness score as a result of veal classification in the Netherlands

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SUMMARY

Classification of veal carcasses in the Netherlands is conducted 30 - 45 min. p.m. at the slaughterhouses by an independent organisation, the "Centraal Bureau voor Slachtveediensten" (CBS). The classification is performed visually under standardized conditions. The veal carcasses are classified into five colour classes, five main fatness classes and five main conformation classes. Fatness and conformation main classes are divided into three subclasses. The results of the classification are recorded centrally by the Commodity Board for Livestock and Meat. This system for classification of fatness and conformation was implemented in 1988; in 1990 colour classification was added. This study is an investigation into a possible relationship between colour score and main class score for conformation and fatness.

Data from 1990, a total of 992,279 carcasses, were available by courtesy of the Commodity Board for Livestock and Meat. Correlation coefficients of colour vs conformation score and colour vs fatness score were very low (0.07 and 0.08 respectively) but, as a consequence of the vast number of data, significantly different from 0. Numbers of observed and expected (assuming independence) carcasses within a combination of colour-conformation score and of colour-fatness score were in more than 4 out of 5 times significantly different.

The results indicate that colour score is not independent of conformation and fatness score. This dependency, however, seems to be of no practical significance.

INTRODUCTION

Veal carcasses are classified according to a system similar to the classification of beef (EUROP-system). Veal classification, however, is not performed according to regulations of the EC but of the Commodity Board for Livestock and Meat (Anonymus, 1990). Slaughterhouses participate in this system on a voluntary basis.

Classification of veal is executed visually under standardized conditions (STERRENBURG, 1990) by personnel of an independent agency: the "Centraal Bureau voor Slachtveediensten" (CBS). Veal carcasses are classified 30 - 45 min post mortem into five colour classes (1 = pale to 5 = dark), five main fatness classes (1 = lean to 5 = fat) and five main conformation (EUROP) classes. Fatness and conformation main classes are divided into three subclasses. This system for classification of fatness and conformation was implemented in 1988; in 1990 colour classification was added.

This study is an investigation into a possible relationship between colour score and main class score for conformation and fatness.

MATERIALS and METHODS

Classification results are recorded centrally by the Commodity Board for Livestock and Meat. Data from 1990 were available by the courtesy of the Commodity Board. This comprised the classification results of 992,279 carcasses.

Correlation coefficients were calculated between colour score vs main conformation and fatness score. In addition a Chi-square test was performed to investigate possible differences between the observed and expected numbers of carcasses within combinations (cells) of colour and conformation and of colour and fatness score.

RESULTS and DISCUSSION

In Table 1 results for conformation and colour score are presented. In each cell the percentages of observed (O) and expected (E) carcasses are stated. A Chi-square test shows that conformation and colour score are not independent ($p < 0.0000$), i.e. some O and E are significantly different. Additionally the confidence interval ($p > 95\%$) for the population percentage in the cell is presented (Lower and Upper limit, L and U). This interval comprises all values for the cell fraction in the population which are not rejected in a Binomial test procedure on the observed number (O). O, E, L and U are presented as percentage of the total number of carcasses.

In 4 of the 25 cells of Table 1 the expected number of carcasses are within the confidence interval. For 10 cells the number of expected carcasses is significantly lower than observed. These cells are, with exception of conformation P and colour 1, situated along the diagonal from the lower right to the upper left corner. The cells in which the number of expected carcasses are significantly higher than the number observed are clustered in the lower left and the upper right corner. Though in 21 of the 25 cells the difference between the expected and observed number of animals is statistically significant, the difference is never more than 0.5 %. The fact that the cells in which the number of observed carcasses is higher than expected are situated along the diagonal is reflected in a correlationcoefficient of 0.07 between colour and conformation score. This correlation coefficient is statistically different from zero, but like the differences between the number of expected and observed animals of no practical significance.

In Table 2, similar to Table 1, the distribution of fatness and colour score is presented. In Table 2 the same picture emerges as in Table 1. Again the Chi-square test is significant ($p < 0.00000$). The differences between observed and expected numbers may be somewhat higher (up to 1.1 %) than in Table 1. The cells (9) where the observed number of carcasses are higher than expected are, as in Table 1, situated along the diagonal from lower right to upper left. The cells (11) in which the observed number of carcasses are significantly lower than expected are clustered in the lower left and the upper right corner. Like the correlationcoefficient between conformation and colour score, the correlationcoefficient between fatness and colour score is low (0.08) but, again due to the vast number of data, significantly different from zero.

CONCLUSIONS

The results indicate that, when the Dutch classification system is used, colour score of veal is not independent of conformation and fatness score. This dependency, however, seems to be of no practical significance.

REFERENCES

- Anonymous. 1990. Agreement on slaughtering, weighing and classification of veal. Coomodity Board for Livestock and veal. Rijswijk
- Sterrenburg, P., 1990. Selection of conditions for uniform visual colour classification of veal. IVO-Rapport B-341. Zeist. (Dutch, Eng. summary) 30 p.

Table 1 Distribution of Observed (O), with Lower (L) and Upper (U) limits of the confidence interval, and Expected (E) carcasses in colour vs conformation score.

Colour			1	2	3	4	5	Conformation Total	
Conformation			z	z	z	z	z	z	n
E	O	E	0.10 0.03	0.23 0.15	0.25 0.28	0.07 0.15	0.01 0.05	0.66	6585
	L	U	0.09 0.11	0.22 0.24	0.24 0.26	0.07 0.08	0.01 0.01		
U	O	E	0.49 0.31	1.77 1.39	2.68 2.68	1.10 1.38	0.24 0.52	6.27	62216
	L	U	0.47 0.50	1.74 1.79	2.64 2.71	1.08 1.12	0.23 0.25		
R	O	E	1.77 1.81	8.12 8.06	15.89 15.55	7.99 8.01	2.69 3.02	36.45	361706
	L	U	1.74 1.79	8.06 8.17	15.81 15.96	7.94 8.04	2.66 2.72		
O	O	E	2.28 2.53	10.77 11.26	21.72 21.72	11.45 11.19	4.70 4.21	50.92	505223
	L	U	2.25 2.31	10.71 10.83	21.64 21.80	11.38 11.51	4.66 4.75		
P	O	E	0.34 0.28	1.22 1.26	2.14 2.43	1.36 1.25	0.64 0.47	5.70	56549
	L	U	0.33 0.35	1.20 1.25	2.11 2.17	1.34 1.39	0.62 0.65		
Colour z			4.97 z	22.11 z	42.67 z	21.97 z	8.28 z	100	992279
Total n			49331	219389	423395	218018	82146		

Table 2 Distribution of Observed (O), with Lower (L) and Upper (U) limits of the confidence interval, and Expected (E) carcasses in colour vs fatness score.

Colour			1	2	3	4	5	Fatness Total	
Fatness			z	z	z	z	z	z	n
1	O	E	0.71 0.42	2.04 1.89	3.13 3.65	1.88 1.88	0.80 0.71	8.55	84877
	L	U	0.69 0.73	2.01 2.07	3.13 3.16	1.85 1.88	0.78 0.82		
2	O	E	2.39 1.95	9.76 8.68	16.52 16.74	7.61 8.62	2.96 3.25	39.24	389387
	L	U	2.36 2.42	9.70 9.76	16.52 16.59	7.55 7.61	2.93 3.00		
3	O	E	1.77 2.40	9.73 10.66	21.45 20.58	11.30 10.59	3.96 3.99	48.22	478434
	L	U	1.74 1.79	9.67 9.79	21.37 21.54	11.24 11.37	3.92 4.00		
4	O	E	0.10 0.19	0.57 0.86	1.54 1.67	1.16 0.86	0.54 0.32	3.92	38890
	L	U	0.10 0.11	0.56 0.59	1.52 1.57	1.14 1.18	0.52 0.55		
5	O	E	0.00 0.02	0.01 0.02	0.02 0.03	0.02 0.02	0.02 0.01	0.07	691
	L	U	0.00 0.00	0.00 0.01	0.02 0.03	0.02 0.03	0.01 0.02		
Colour z			4.97 z	22.11 z	42.67 z	21.97 z	8.28 z	100	992279
Total n			49331	219389	423395	218018	82146		