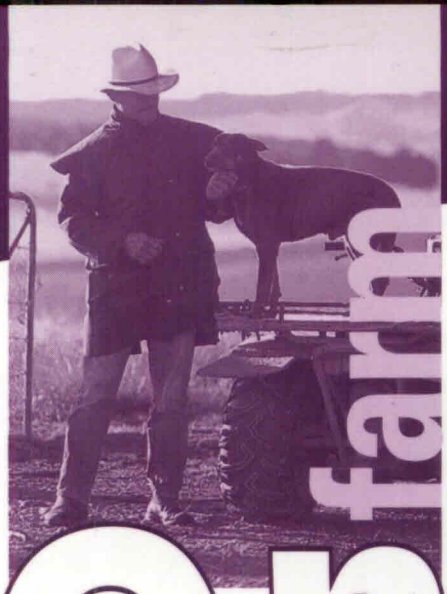

On farm

MEAT & LIVESTOCK
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Feedlots

MEAT & LIVESTOCK AUSTRALIA

Survey of Feedlot diseases in Australia.

Analysis of Results for Meat & Livestock Australia

Final Report prepared for MLA by:
AUSVET Animal Health Services

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Feedlot

Executive Summary

A total of 72 feedlots responded to the questionnaire, with a reported total capacity of 275,170 head, and an annual turnoff of 575,502 head. This compares to only 27 respondents to the 1991 survey with a total capacity of 224,520 head and turnoff of 430,715 head. Sixteen respondents were from New South Wales, 47 from Queensland, 3 each from South Australia and Victoria, 2 from Western Australia and 1 from Tasmania. A comparison of the key results for the two surveys is shown in the table below.

Fifty-eight respondents (81%) had a capacity of less than 5,000 head, 3 (4%) were between 5,000 and 10,000 and 8 (11%) were more than 10,000 head, while 3 respondents (4%) did not report their capacity. In the 1991 survey there were 8 large, 5 medium and 10 small feedlots. Thus, the current survey has a far greater representation of small feedlots, providing a significant source of potential bias in these results, particularly when comparisons are made with the previous survey.

Individual feedlot capacity ranged from 40 to 35,000 head, with an average of 3,988, compared to 9,300 in 1991. Reported turnoff during the preceding 12 months ranged from 0 (4 feedlots) to 68,737, and averaged 8,854, compared to 19,300 in 1991. Average capacity and turnoff per feedlot were substantially lower than in 1991, mainly due to the increased number of smaller feedlots in the current survey.

About 64% (weighted average) of all cattle delivered to respondent feedlots were delivered direct, compared to 41% in 1991, and 33% received 30% or less of their cattle by direct consignment, compared to 44% in 1991. Thus there appears to have been an increase in the proportion of cattle delivered direct to the feedlot, and also an increase in the proportion of feedlots where the majority of cattle are delivered direct.

The average distance travelled by cattle entering feedlots has dropped by about 100km since 1991, from 397 km to 296 km, largely due to the increased number of smaller feedlots responding, with associated shorter distances for these feedlots. No association was found between the distance travelled or the percentage of cattle delivered direct to the feedlot and the morbidity or mortality rates on the feedlot.

Bovine respiratory disease was rated as the most important disease condition affecting feedlot cattle, particularly in medium and large feedlots. The rating for BRD on a scale of 0 – 5 has increased since 1991, with 10 of 11 medium and large feedlots rating it as 5, with a mean rating in these feedlots of 4.9, compared to 7 of 14 in 1991 with a mean of 3.6. The rating of BRD also increased for small feedlots, but less dramatically from a mean of 1.8 to 2.5. Because of the large number of small feedlots in the current survey, the average rating for all respondents has only risen from 2.8 to 2.9. It was impossible to determine from the data whether the increased importance of BRD was due to a real increase in the level of BRD, or due to increased awareness and understanding of BRD as a specific disease by feedlot managers.

Ratings of feet problems, bulling and feed problems have changed little since 1991, and generally averaged between 1.5 and 2.5 on a scale of 0 – 5.

It was not possible to calculate any estimates of the cost of disease from the data provided.

The average annual morbidity and mortality rates were 71 and 6.5 per 1,000 head turnoff respectively, compared to 58 and 6.9 per thousand head in 1991. Rates ranged from 0 to 361 and 0 to 22 per 1,000 head respectively. There was no significant difference in overall mortality rate between feedlots of different sizes. However, there was a statistically significant difference in the overall morbidity rate, with small feedlots averaging 39 cases per 1,000 head compared to 134 and 143 for medium and large feedlots respectively.

Annual mortality rates for BRD appear to have increased since 1991, while mortality rates due to other causes have decreased, leaving the overall mortality rate almost unchanged. This could be due to improved recognition of BRD as a cause of death, rather than an increase in the level of disease *per se*. In contrast, the morbidity rate for both BRD and due to other causes has increased since 1991, with an increase in the overall morbidity rate from 58 head per 1,000 head turnoff in 1991 to 71 per 1,000 in the current survey.

In contrast, monthly morbidity and mortality rates appear to have increased substantially since 1991, with mortality rates jumping from 1-2 per 1,000 on feed to 3-6 per 1,000 and morbidity from 5-25 per 1,000 to 30-60 per 1,000. The reason for this is unclear, particularly as the increase in the corresponding annual rates is far less dramatic. However, this difference may be associated with differences between the surveys in the way the data was recorded and analysed. A lack of consistency in responses to the question may also have contributed to this difference.

Overall, the results confirm that BRD is the major cause of morbidity and mortality in these feedlots, accounting for about 64% of all cases and deaths. The proportion of losses attributed to BRD has increased since 1991, but it is unclear whether this is due to an increase in the rate of disease or improved recognition of BRD by feedlot staff. Similarly, the overall morbidity rate has increased since 1991, but again it is unclear whether this is a genuine increase in the level of disease, or due to increased awareness and improved recording.

There was no apparent relationship between the rates of either respiratory cases or deaths and the corresponding rates due to other causes. Thus, the level of respiratory disease in a feedlot appears to be independent of other disease problems being experienced.

There was some evidence to suggest a seasonal variation in incidence of BRD, with increased numbers of cases and deaths reported in late autumn and early winter in some feedlots. This was not a consistent finding across feedlots and must be regarded as suggestive only. There was also evidence of a decrease in weight gain in worst affected lots compared to least affected lots, with worst affected lots gaining 0.3 kg/head/day less than least affected lots. However, this finding was not consistent across all lots, and should be treated with caution given the nature of the data.

Comparison of results from 1991 and current surveys

	1991	Current
Number of responses	27	72
Small	10	58
Medium	5	3
Large	8	8
Not stated	4	3
Total Capacity	224,520	275,170
Average Capacity	9,300	3,988
Total Turnoff	430,715	575,502
Average Turnoff	19,000	8,854
% of cattle delivered direct to feedlot	41%	64%
Average distance travelled (km)	397	296
Average maximum pen size	273	227
Average minimum pen size	112	120
Average number of pens	43	25
% Identifying animals	100%	93%
% Trace farm of origin	74%	92%
% Can identify pen on feed	74%	88%
% Can identify lot where animals placed	100%	93%
Average rating for BRD (0 – 5)	2.8	2.9
Average rating for feet problems (0 – 5)	2.3	2.2
Average rating for bulling (0 – 5)	1.4	1.6
Average rating for feed problems (0 – 5)	2.0	2.4
Average annual mortality rate due to BRD (per 1,000 turnoff)	2.7	4.3
Average annual mortality rate due to all causes (per 1,000 turnoff)	6.9	6.5
Average annual morbidity rate due to BRD (per 1,000 turnoff)	26.2	46.5
Average annual morbidity rate due to all causes (per 1,000 turnoff)	57.8	70.9
% All mortalities due to BRD	40%	64%
% All morbidities due to BRD	44%	64%
Average monthly mortality rate due to all causes (per 1,000 on feed)	1.7	4.4
Average monthly morbidity rate due to BRD (per 1,000 on feed)	11.2	38.6

Results

Respondent feedlots

A total of 72 feedlots responded to the questionnaire, although not all respondents answered all questions. Total capacity of feedlots responding to the survey was 275,170 head, with an annual turnoff of 575,502 head. This compares to only 27 respondents to the 1991 survey with a total capacity of 224,520 head and turnoff of 430,715 head. Sixteen respondents were from New South Wales, 47 from Queensland, 3 each from South Australia and Victoria, 2 from Western Australia and 1 from Tasmania (see Table 1).

Table 1: Responses by State

State	Large	Medium	Small	n/a	Total
NSW	4	1	11		16
Qld	3	1	41	2	47
SA	0	0	2	1	3
Tas	0	1	0		1
Vic	1	0	2		3
WA	0	0	2		2
Total	8	3	58	3	72

For further analysis of the data feedlots were categorised as small (<5,000 head), medium (5,000 – 10,000) or large (>10,000 head) according to their capacity. Fifty-eight respondents (81%) had a capacity less than 5,000 head, 3 (4%) were between 5,000 and 10,000 and 8 (11%) were more than 10,000 head. Three respondents (4%) did not give a capacity and for analytical purposes were classified as small (Table 1). In the 1991 survey there were 8 large, 5 medium and 10 small feedlots. Thus, the current survey has a far greater representation of small feedlots, providing a significant source of potential bias in these results, particularly when comparisons are made with the previous survey.

Individual feedlot capacity for 69 feedlots answering this question ranged from 40 to 35,000 head, with an average of 3,988. Figures for turnoff during the preceding 12 months were provided by 65 respondents, ranging from 0 (4 feedlots) to 68,737, and averaged 8,854. Average capacity and turnoff per feedlot were down from 9,300 and 19,000 respectively in 1991, due to the increased number of smaller feedlots in the current survey.

Capacity and turnoff by State and size of feedlot are summarised in Tables 2 and 3. Large feedlots, representing 11% of responses accounted for 58% of capacity and 69% of turnoff, while small feedlots accounted for 33% of capacity and 22% of turnoff. New South Wales and Queensland accounted for 87.5% of respondents, with 82% of the total reported capacity and 88% of the reported turnoff.

Table 2: Capacity and turnoff by State

State	Capacity	Percent	Turnoff	Percent
NSW	97,150	35%	204,537	36%
Qld	128,004	47%	298,551	52%
SA	966	0%	2,855	0%
Tas	6,300	2%	9,800	2%
Vic	42,500	15%	59,579	10%
WA	250	0%	180	0%
Total	275,170	100%	575,502	100%

Table 3: Capacity and turnoff by Size

Size	Capacity	Percent	Turnoff	Percent
Large	159,000	58%	394,633	69%
Medium	26,300	10%	55,800	10%
Small	89,870	33%	125,069	22%
Total	275,170	100%	575,502	100%

In 1991, small feedlots made up only about 10% of total capacity and turnoff, compared to 20% and 70% for medium and large feedlots respectively. The increase in the percentages attributable to small feedlots is associated with the much greater numbers of small feedlots included in this survey. The average size of medium and large feedlots remained virtually unchanged at about 8,800 and 20,000 respectively. The average capacity of small feedlots in the current survey was considerably lower than for the 1991 survey, at about 1,500 head compared to about 2,240 head, presumably because of the greater number of smaller feedlots responding. The minimum capacity reported in this survey was 40 head, compared to 500 in 1991. Twenty-nine of the 58 small feedlots (50%) reported a capacity of less than 500 head.

Delivery to feedlot

The distance travelled by cattle to enter the feedlot was estimated for 53 feedlots, with up to 5 responses recorded for some feedlots, for a total of 144 responses. For all responses, the average distance travelled was 378 km, ranging from 0 to 2,300 km.

The weighted average distance travelled was estimated for each feedlot using the proportion of cattle entering from each listed source, with an average of 296 km and range of 0 – 1,495 km. There were no significant differences in distance travelled when analysed by size of the feedlot. For small, medium and large feedlots the distances travelled were 270 (0 – 1,495), 388 (113 – 525) and 420 (0 - 950) respectively. Similarly, there were no significant differences between States in the distance travelled, although the number of feedlots in States other than NSW and Queensland was too small to give meaningful averages.

The distance travelled for medium and large feedlots has changed little since 1991, whereas the distance for small feedlots and overall have dropped by about 100km. The reduction in the average distance travelled appears to be again largely due to the increased number of smaller feedlots responding, with associated shorter distances for these feedlots.

Delivery direct to feedlot

Managers were asked to provide an estimate of the proportion of animals delivered directly to the feedlot, compared to those delivered by other routes. A total of 61 respondents provided this data, with a mean of 59% and range of 0 – 100%. Twenty of the 61 respondents (33%) received 30% or less of their cattle by direct consignment, compared to 44% in 1991. There was no significant difference between different size feedlots in the proportion of cattle received by direct consignment, although medium and larger feedlots did tend to have a higher proportion of direct deliveries (Table 4).

Table 4: % Direct delivery by size

Size	Responses	Mean	Range	
Large	8	68	5	100
Medium	3	77	70	80
Small	50	56	0	100
Total	61	59	0	100

Overall, about 64% (weighted average) of all cattle delivered to respondent feedlots were delivered direct, compared to 41% in 1991. About 68%, 78% and 44% of cattle were delivered direct for large, medium and small feedlots respectively.

There were also no significant correlations between feedlot capacity or turnoff and the percentage of cattle delivered direct to the feedlot. Similarly, there was no significant association between case and death rates and the percentage of direct deliveries.

It appears that the proportion of cattle delivered direct to feedlots has increased since 1991, as has the proportion of feedlots favouring direct delivery for most of their cattle.

Pen sizes

Maximum pen sizes ranged from 3 to 1,800, with an average of 227 head, and minimum pen size ranged from 1 to 1,300 with an average of 120 head, however, it would appear that there was some confusion caused by the wording of this question, which has resulted in the pen sizes being much larger than is actually the case. With the records in question removed, the maximum pen sizes ranged from 10 to 500 head and the minimum pen sizes ranged from 6 to 300 head. Small feedlots had a lower average maximum pen size, and both maximum and minimum pen sizes were much more variable for small feedlots (Table 5). The average number of pens per feedlot was 25, with a range from 1 to 160. Pen sizes have changed little since the 1991 survey, although the number of pens per feedlot has decreased from an average of 43 to 25, presumably due to the increased number of small feedlots.

Table 5: Maximum and minimum pen sizes

	Maximum pen sizes				Minimum pen sizes			
Size	Responses	Mean	Range		Responses	Mean	Range	
Large	8	299	90	420	8	122	25	220
Medium	3	230	180	255	3	50	40	70
Small	57	216	3	1,800	45	122	0	1,300
Total	68	227	3	1,800	56	118	3	1,300

Identification of animals

Sixty-seven of the 72 feedlots (93%) reported some form of identification of animals in their feedlot, mostly by various forms of eartags, compared to 100% in 1991. The 5 feedlots not responding to this question were all small feedlots. Sixty-six respondents (92%) could identify the farm of origin of animals, while 67 (93%) could identify the lot where the animal was placed and 63 (88%) could identify the pen where it was 'on feed'. These results represent some improvement since 1991, when 75% could identify the farm of origin, 100% could identify the pen in which an animal was on feed and 75% could identify the lot into which the animals were placed.

Perceptions of disease

Managers were asked to rate on a scale of 0 – 5 (least to most), the importance of bovine respiratory disease (BRD), feet problems, bulling and feed problems. They were also given the opportunity to list and rate any other problems experienced in their feedlot.

Sixty-one feedlots responded to these questions, with the results summarised in Tables 6 to 9 and Figure 1.

Seven out of 8 managers of large feedlots and 3 of 3 for medium size feedlots rated BRD as 5, compared to only 16 of 48 for small feedlots. The mean BRD score for small feedlots was 2.5, compared to 4.75 and 5 for medium and large feedlots respectively (Table 6). There was a significant difference in mean score between the groups.

Ratings for feet problems, bulling and feed induced problems generally ranged from 0 to 5 for individual feedlots, and averaged between about 1.5 and 2.5. There was no significant difference in average ratings between feedlots of different sizes for any of these conditions (Tables 7 – 9).

A wide variety of other conditions were reported as being of concern, although most of these only had low ratings. Five feedlots rated other conditions as a 5, including temperament, prolapse, preputial prolapse, sudden death and non-eaters. Prolapse and preputial prolapse were also noted by other operators with a lower rating, as were a number of other conditions, including pink-eye, other eye problems, bloat and enterotoxaemia. Other conditions generally only rated one or two mentions, usually with a low rating. For example, urolithiasis (water-belly), was listed twice, once as a zero and once as a one, despite being regarded as a significant disease of feedlot cattle. Similarly, salmonellosis was listed twice as a three and 3-day sickness was listed once as a one.

There has been an apparent increase in either the severity of BRD or the perception of BRD as a problem by feedlot operators since 1991, particularly for medium and large feedlots. In 1991, 7 of 14 medium and large feedlots rated BRD as a 5, with an average score of 3.5 and 3.75 respectively, compared to 10/11 in the current survey, with an average score of 5 and 4.75 for medium and large feedlots respectively. For small feedlots the rating of BRD has also risen from an average of 1.8 in 1991 to 2.5 in the current survey.

The impact and perceptions of other diseases listed appear to have changed relatively little since the 1991 survey.

Table 6: Bovine Respiratory Disease ratings

	Rating							
Size	0	1	2	3	4	5	Total	Mean
Large	0	0	0	1	0	7	8	4.75
Medium	0	0	0	0	0	3	3	5.0
Small	15	7	4	1	5	16	48	2.5
Total	15	7	4	2	5	26	59	2.9

Table 7: Feet problems Ratings

	Rating							
Size	0	1	2	3	4	5	Total	Mean
Large	0	2	3	1	1	1	8	2.5
Medium	0	0	1	0	2	0	3	3.3
Small	14	7	11	6	4	8	50	2.1
Total	14	9	15	7	7	9	61	2.2

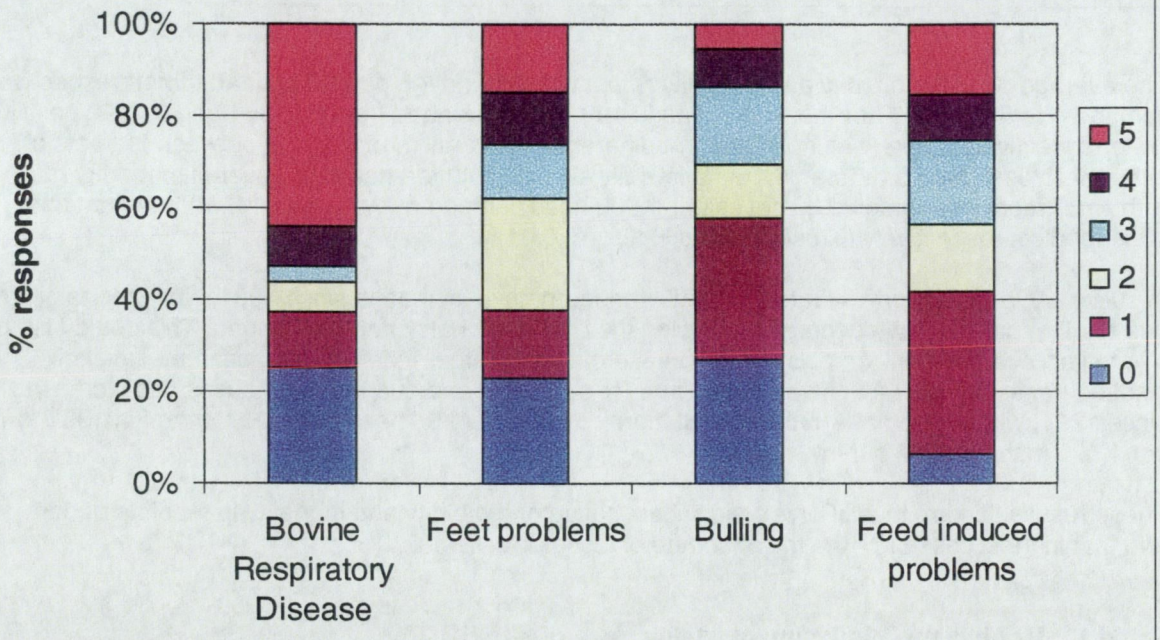
Table 8: Bulling problems Ratings

	Rating							
Size	0	1	2	3	4	5	Total	Mean
Large	1	1	2	3	1	0	8	2.25
Medium	0	1	0	2	0	0	3	2.3
Small	15	16	5	5	4	3	48	1.5
Total	16	18	7	10	5	3	59	1.6

Table 9: Feed induced problems Ratings

	Rating							
Size	0	1	2	3	4	5	Total	Mean
Large	0	1	4	3	0	0	8	2.25
Medium	0	0	1	2	0	0	3	2.7
Small	4	20	4	6	6	9	49	2.4
Total	4	21	9	11	6	9	60	2.4

Figure 1: Relative rating of feedlot diseases



Costs of disease

Given the nature of the data it was not possible to do any meaningful analysis on the costs of disease in the surveyed feedlots.

Morbidity and Mortality data

Respondents were asked to provide data on the numbers of cases and deaths due to BRD and other conditions each month for a 12-month period. Thirty-eight respondents provided some data in answer to this question, but the completeness of the responses and quality of the data was highly variable. Some feedlots reported only BRD cases/deaths, and some reported no BRD cases/deaths, and in some cases the number of cattle on feed was different for BRD cases/deaths and other cases/deaths, complicating the analysis.

Two analyses have been carried out on this data. The first analysis used total morbidity/mortality data for the 12 months to estimate the number of cases or deaths for the year per 1,000 cattle turned off for each feedlot. The second analysis estimated monthly morbidity/mortality rates across all feedlots per 1,000 cattle on feed for the month.

Results for monthly and annual morbidity and mortality rates are summarised in Tables 10 to 12.

The average annual morbidity and mortality rates due to BRD were 46.5 and 4.3 per 1,000 head turnoff respectively. Rates ranged from 0 to 231 and 0 to 14.6 per 1,000 head respectively. There was no significant difference in rates between feedlots of different sizes.

Table 10: Annual morbidity and mortality rates

	Mortality			Morbidity		
	Mean	Minimum	Maximum	Mean	Minimum	Maximum
BRD	4.3	0	14.6	46.5	0	231
Other	3.8	0	12.2	37.6	0	171
Overall	6.5	0	22	70.9	0	361

The average overall morbidity and mortality rates were 71 and 6.5 per 1,000 head turnoff respectively, compared to 58 and 6.9 per thousand head in 1991. Rates ranged from 0 to 361 and 0 to 22 per 1,000 head respectively. There was no significant difference in overall mortality rate between feedlots of different sizes. However, there was a statistically significant difference in the overall morbidity rate, with small feedlots averaging 39 cases per 1,000 head compared to 134 and 143 for medium and large feedlots respectively (Kruskal-Wallis H test, $p<0.01$).

In summary, annual mortality rates for BRD appear to have increased since 1991, while mortality rates due to other causes have decreased, leaving the overall mortality rate unchanged. This could also be due to improved recognition of BRD as a cause of death, rather than an increase in the level of disease *per se*. In contrast, the morbidity rate for both BRD and due to other causes has increased since 1991, with an increase in the overall morbidity rate from 58 head per 1,000 turnoff in 1991 to 71 per 1,000 in the current survey.

These results confirm that BRD is a significant cause of morbidity and mortality in feedlots generally, and that in most cases it is the major source of disease losses.

Table 11: Monthly morbidity and mortality rates due to BRD

	Mortality				**Morbidity**			
Month	Responses	Mean	Minimum	Maximum	Responses	Mean	Minimum	Maximum
1	14	1.9	0	4	17	13.8	0	50
2	14	2.1	0	8	16	18.8	0	66
3	13	2.6	0	12	14	22.1	0	83
4	15	2.2	0	6	19	25.1	0	128
5	12	4.1	0.2	22	15	29.8	1.5	122
6	15	3.6	0.1	12	16	34.9	3.1	115
7	16	2.5	0.2	8	17	24.6	2	71
8	15	1.6	0	4	19	21.2	0	84
9	19	1.6	0	6	16	22.2	0	65
10	18	2.6	0	15	19	23.4	0	103
11	15	2.0	0	8	14	19.0	2	62
12	15	1.8	0	12	15	17.8	0.7	49

Table 12: Monthly morbidity and mortality rates due to all causes

	Mortality				Morbidity			
Month	Responses	Mean	Minimum	Maximum	Responses	Mean	Minimum	Maximum
1	31	3.7	0	9	34	29.1	0	126
2	28	3.9	0	10	33	29.4	0	66
3	29	4.9	0	25	30	33.8	0	83
4	29	3.5	0	12	37	33.7	0	128
5	25	6.1	0.2	22	33	40.2	1.1	122
6	31	6.3	0	14	35	60.4	1.5	272
7	34	6.4	0	21	35	42.0	0	138
8	31	4.0	0	16	38	37.0	0	153
9	34	2.9	0	10	37	38.5	0	163
10	32	3.9	0	15	39	31.6	0	103
11	29	4.2	0	12	30	44.8	0	153
12	32	3.5	0	12	30	42.4	0.7	192

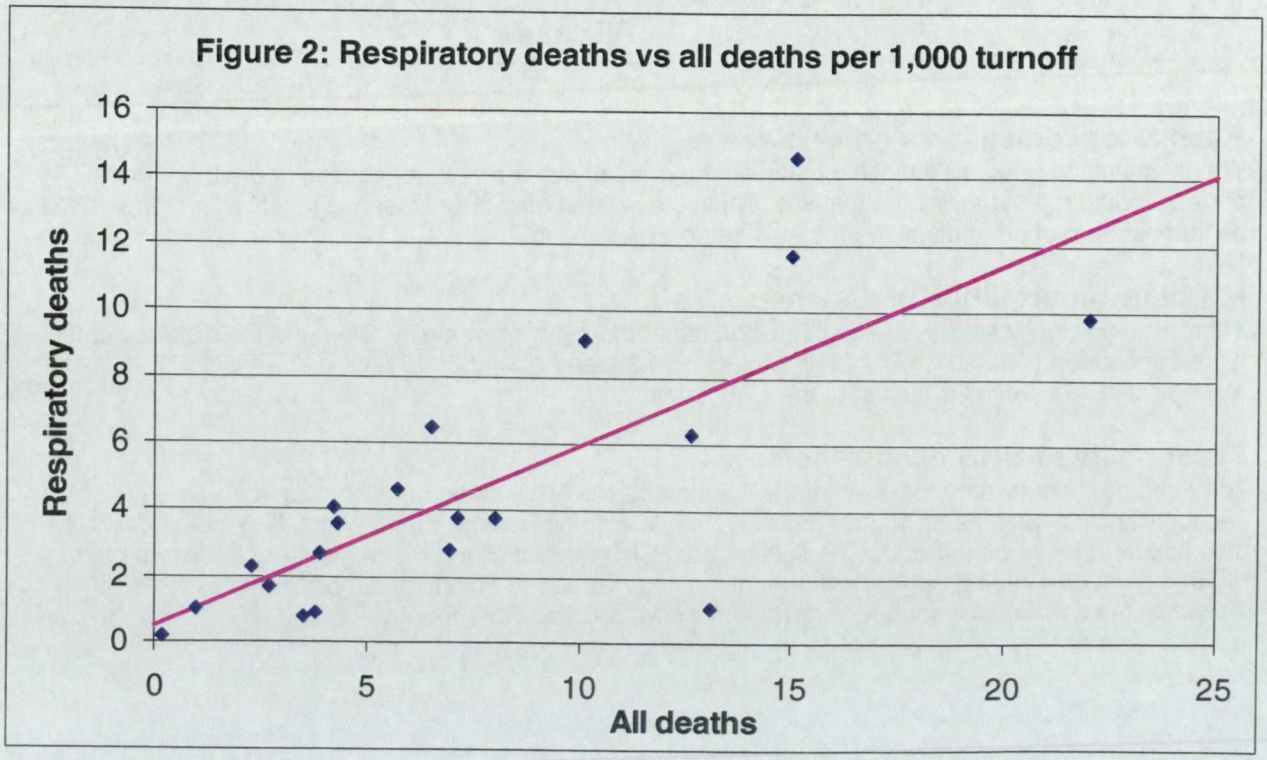
In contrast, overall monthly morbidity and mortality rates appear to have increased substantially since 1991, with mortality rates jumping from an average of 1.65 per 1,000 on feed to 4.4 per 1,000 and morbidity from 11.2 per 1,000 to 38.6 per 1,000. The reason for this is unclear, particularly as the increase in the corresponding annual rates is far less dramatic. However, this difference may be associated with differences between the surveys in the way the data was recorded and analysed. A lack of consistency in responses to the question may also have contributed to this difference.

Respiratory deaths vs all deaths

There was a strong association between the rate of respiratory deaths and the overall mortality rate as shown in Figure 2, with a correlation coefficient of 0.78 ($r^2 = 0.61$, 95% CI = $0.26 < r^2 < 0.82$).

The percentage of total deaths that were attributed to BRD ranged from 0 to 100%, and averaged 64%, an increase from about 40% in 1991.

Figure 2: Respiratory deaths vs all deaths per 1,000 turnoff



Respiratory cases vs all cases

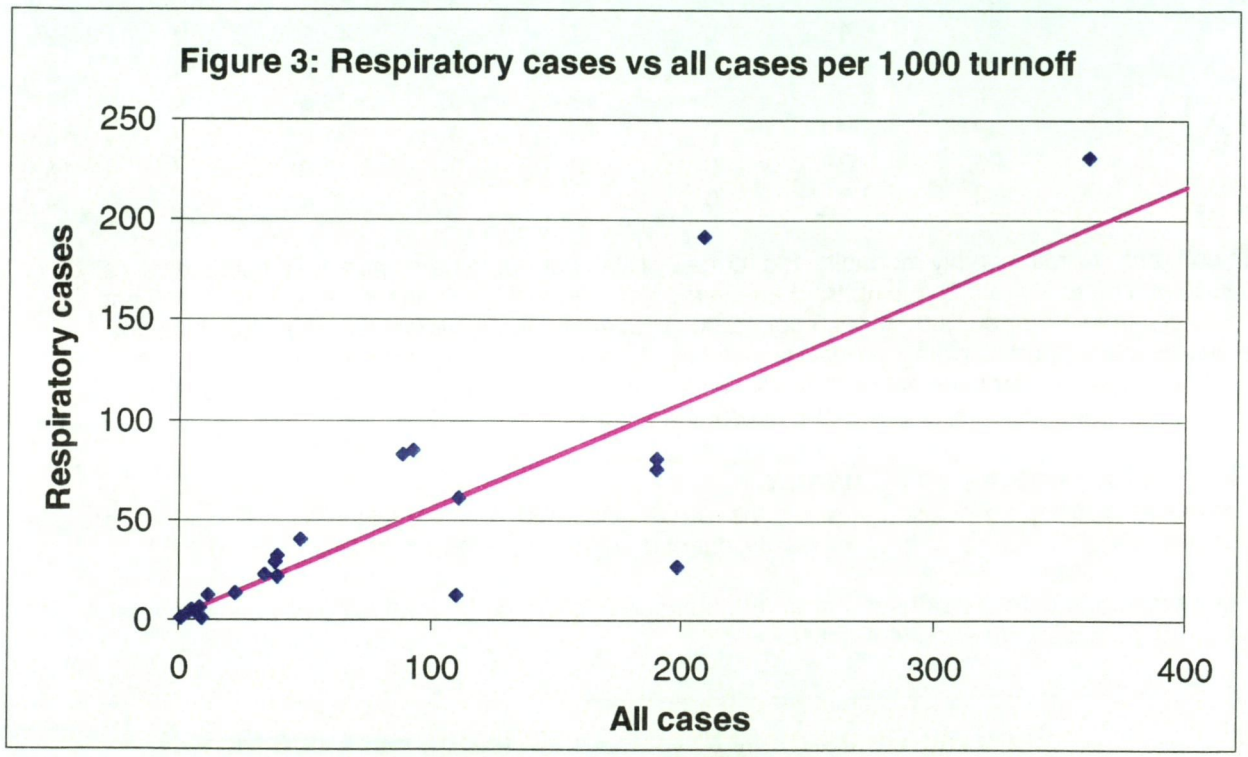
There was also a strong association between the rate of respiratory cases and the overall morbidity rate as shown in Figure 3, with a correlation coefficient of 0.86 ($r^2 = 0.74$, 95% CI = $0.48 < r^2 < 0.88$).

The percentage of total cases that were attributed to BRD ranged from 0 to 100%, and averaged 64%, as was the case with respiratory/total deaths. This was increased from about 44% in 1991.

Respiratory cases vs respiratory deaths

There was a weaker association between the rate of respiratory cases and respiratory deaths as shown in Figure 4, with a correlation coefficient of 0.67 ($r^2 = 0.45$, 95% CI = $0.0 < r^2 < 0.74$).

Figure 3: Respiratory cases vs all cases per 1,000 turnoff



Respiratory disease vs other disease

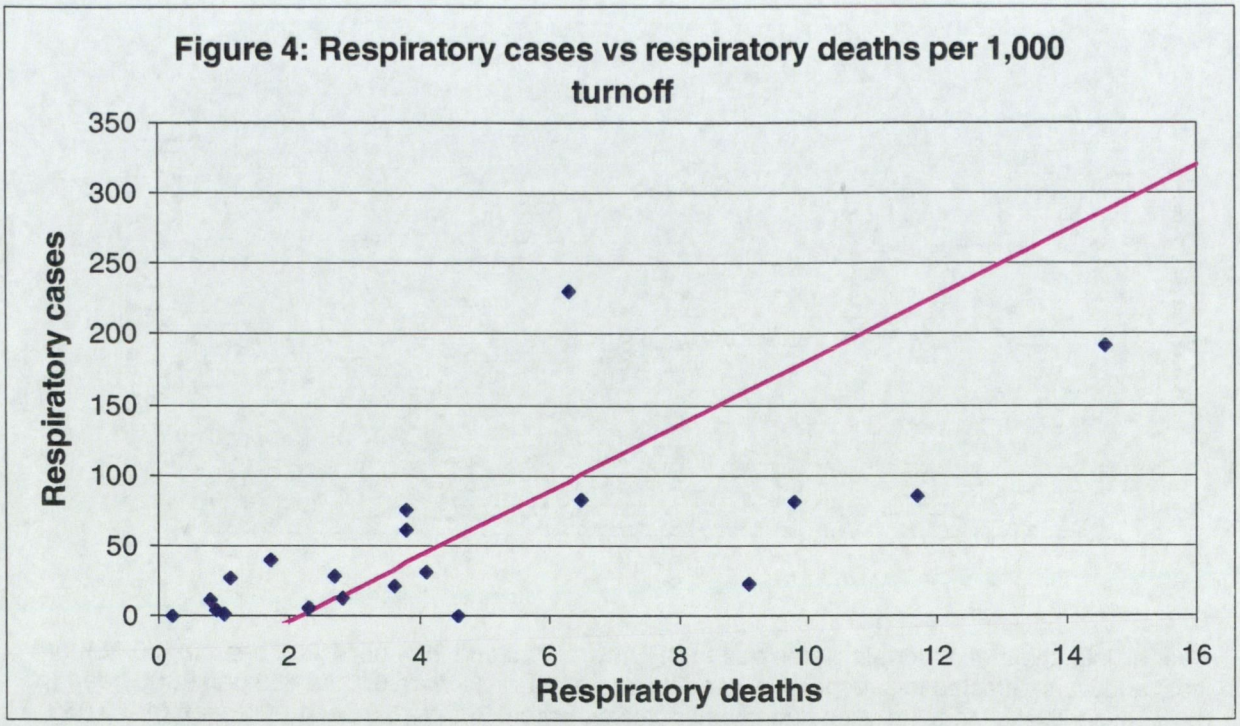
There was no apparent relationship between the rates of either respiratory cases or deaths and the corresponding rates due to other causes. Thus, the level of respiratory disease in a feedlot appears to be independent of other disease problems being experienced.

Morbidity, mortality and distance

There was no significant association between either morbidity or mortality rates and the distance cattle were transported ($r^2 = 0.01$, 95% CI = $-0.36 < r^2 < 0.38$; and $r^2 = 0.05$, 95% CI = $-0.37 < r^2 < 0.46$ respectively). This result is similar to the 1991 survey.

Seasonality of BRD occurrence

The average monthly morbidity and mortality rates due to BRD, and overall show some degree of seasonality, with rates being slightly higher during late autumn and winter months. This seasonality is also apparent for some individual feedlots for both BRD morbidity and mortality rates, as shown by in Figures 5 and 6. These graphs show 3-month rolling average morbidity and mortality rates for BRD for individual feedlots where monthly data was provided for 11 or more months.



Individual lot data

Feedlot managers were asked to provide case, mortality and weight gain data for their five worst and five least affected lots. Although 10 feedlots provided some information, only one provided all the requested details, making analysis of this data difficult. The quality of the responses was highly variable, and these results should therefore be interpreted with caution.

Figure 5: Rolling average BRD monthly mortalities for individual feedlots

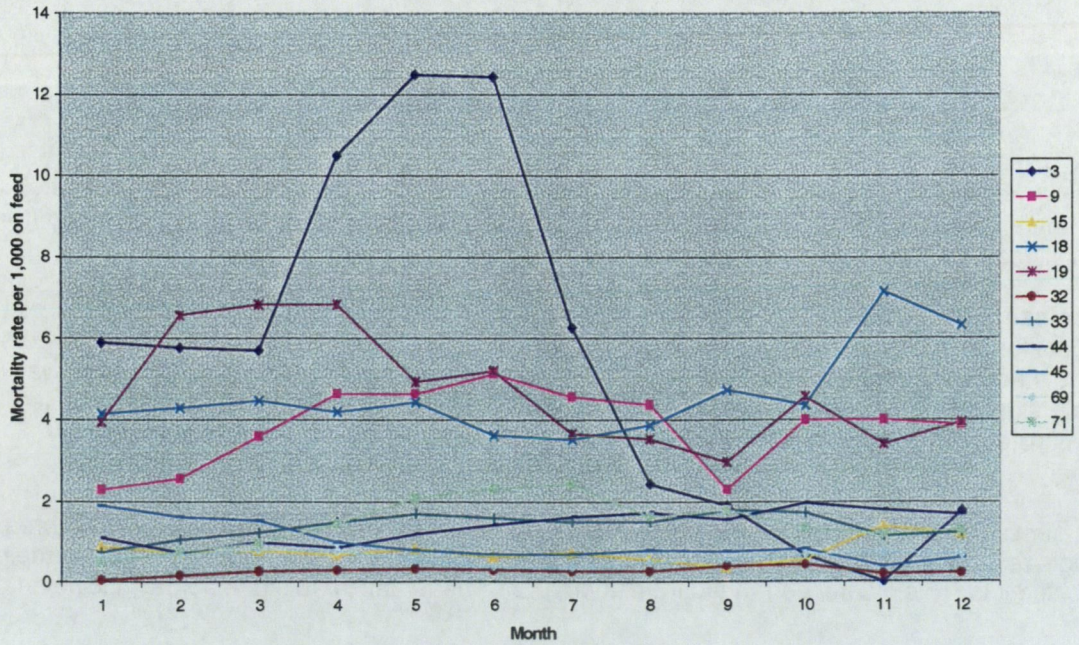
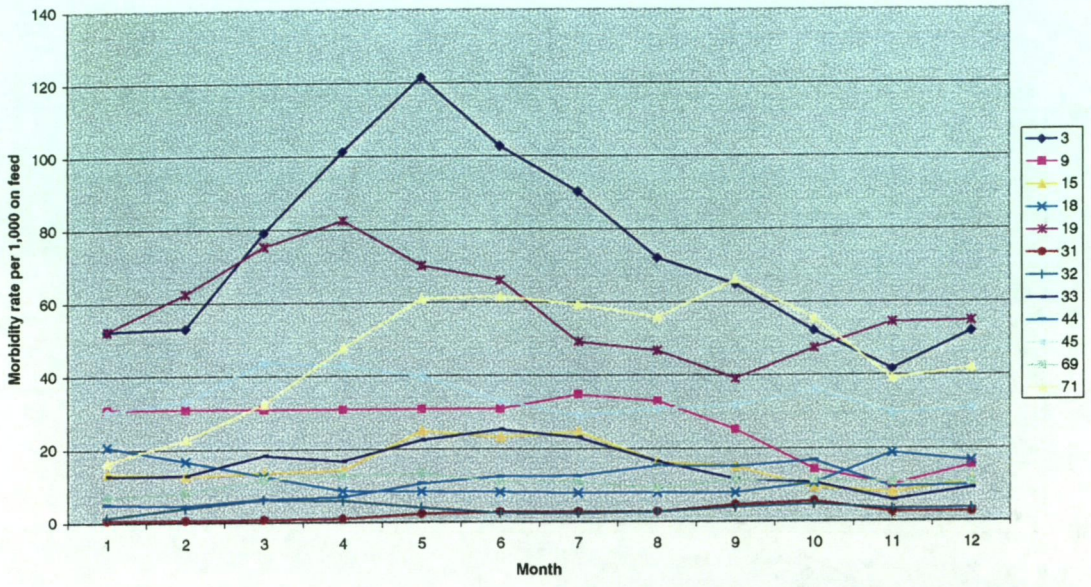


Figure 6: Rolling average BRD monthly morbidity rates for individual feedlots



Over all lots, the mean mortality rates due to BRD were 11.3 and 25.4 per 1,000 head ($p < 0.05$) for least and worst affected lots respectively and the morbidity rates were 61 and 233 per 1,000 head ($p < 0.01$) respectively. Mortality rates due to other causes were 5.7 and 15.9 per 1,000 head ($p < 0.050$ respectively and morbidity rates were 21 and 87 per 1,000 head ($p < 0.01$) respectively. The results for individual lots are summarised in Table 13.

Table 13: BRD morbidity and mortality rates for individual lots

	Least affected lots			Worst affected lots			
Feedlot ID	Mean	Min	Max	Mean	Min	Max	P
BRD Mortality							
9	16.4	9.1	18.2	21.8	9.1	36.4	ns
BRD Morbidity							
9	173	45	273	182	182	182	ns
15	18	6.3	32.6	549	187	1000	< 0.05
45	35	4	75	249	10	505	ns
66	79	47	92	201	106	307	< 0.01
71	17	2.7	66	256	2.6	402	ns

Weight gain

Twenty-five respondents reported average weight gain on a monthly basis. The average gain per feedlot varied from 0.9 kd/day to 2.2 kg/day, while the monthly average across all feedlots varied from 1.5 to 1.7 kg/day, with an overall average of 1.6 kg/day.

When comparing least and worst affected lots, 8 feedlots provided data, of which 6 provided data on 3 or more lots for each group for analysis individually. The average weight gains for the least and worst affected lots across all respondents were 1.7 and 1.4 kg/head/day respectively. This difference was statistically significant ($p < 0.01$). The average reported weight gain of both least and worst affected lots was considerably better than the corresponding figures in 1991, of 1.4 and 1.15 kg/head/day respectively.

Table 14 summarises the results for the six individual lots were analysis could be undertaken. Three of the feedlots reported significantly reduced weight gains in their worst affected lots, compared to their least affected lots. This difference ranged from about 0.2 kg/head/day to 0.7 kg/head/day. However,

there was no significant difference in weight gains between worst and least affected lots for the other 3 feedlots

Table 14: Comparison of weight gains for individual feedlots

	Least affected			Worst affected			
Feedlot ID	mean	no. lots	range	mean	no. lots	range	P
9	1.64	5	1.5 - 1.8	1.26	5	1.1 - 1.4	< 0.01
15	1.82	5	1.3 - 2.4	1.48	5	1.1 - 1.9	ns
17	1.60	3	1.5 - 1.7	1.37	3	1.3 - 1.4	< 0.05
66	1.32	5	1.2 - 1.5	1.22	5	1.1 - 1.4	ns
70	2.14	5	1.8 - 2.3	1.45	4	1.0 - 1.7	< 0.01
71	1.52	5	1.4 - 1.8	1.48	5	1.4 - 1.7	ns