Whisper BRD Fatality Predictive Analysis

BRD Fatality Curve For Feedlot [E] 3,949 Whisper Lung Scores

- BRD Fatality Curve // Logistic Reg; Wald Chi-Square = 100.62 p-value is < .0001
- Odds of death increase by 44% with each increase in Whisper lung score
- Actual sample percentage

BRD Fatality Curve For Feedlot [D] 1,577 Whisper Lung Scores

- BRD Fatality Curve // Logistic Reg; Wald Chi-Square = 28.70 p-value is < .0001
- Odds of death increase by 53% with each increase in Whisper lung score
- Actual sample percentage

Relative Operational Risk Index Ratings for Included Feedlots*

Feedlot

<table>
<thead>
<tr>
<th>E (Nebraska)</th>
<th>D (Colorado)</th>
<th>C (Kansas)</th>
<th>B (Kansas)</th>
<th>F (Nebraska)</th>
<th>A (Washington St)</th>
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<tbody>
<tr>
<td>0.98</td>
<td>0.85</td>
<td>0.67</td>
<td>0.53</td>
<td>0.45</td>
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Feedlot E (Nebraska):
- Yard Capacity is 30,000
- Overall Mortality Rate is 3.66%

Relative Operational Risk Index Ratings for Included Feedlots*

Feedlot

<table>
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<tr>
<th>E (Nebraska)</th>
<th>D (Colorado)</th>
<th>C (Kansas)</th>
<th>B (Kansas)</th>
<th>F (Nebraska)</th>
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<tbody>
<tr>
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<td>0.67</td>
<td>0.53</td>
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<td>0.38</td>
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Feedlot D (Colorado):
- Yard Capacity is 17,000
- Overall Mortality Rate is 1.93%

* Based on Feedlot Morality Rate // Weighted by Yard Capacity.

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Whisper BRD Fatality Predictive Analysis

BRD Fatality Curve For Feedlot [C]
1,644 Whisper Lung Scores

- Predicted BRD Fatality Rate
- Deaths in Lung Score: 13 of 634, 16 of 716, 11 of 238, 8 of 36, 3 of 20

Whisper Lung Score
- BRD Fatality Curve // Logistic Reg; Wald Chi-Square = 26.23 p-value is <0.0001
- Odds of death increase by 99% with each increase in Whisper lung score
- Actual sample percentage

BRD Fatality Curve For Feedlot [B]
1,244 Whisper Lung Scores

- Predicted BRD Fatality Rate
- Deaths in Lung Score: 13 of 327, 19 of 520, 20 of 252, 3 of 53, 8 of 52

Whisper Lung Score
- BRD Fatality Curve // Logistic Reg; Wald Chi-Square = 10.50 p-value is 0.0012
- Odds of death increase by 45% with each increase in Whisper lung score
- Actual sample percentages

Relative Operational Risk Index Ratings for Included Feedlots*

- Feedlot
  - E (Nebraska)
  - D (Colorado)
  - C (Kansas)
  - B (Kansas)
  - F (Nebraska)
  - A (Washington St)

- Feedlot C (Kansas):
  - Yard Capacity is 40,000
  - Overall Mortality Rate is 1.41%

Relative Operational Risk Index Ratings for Included Feedlots*

- Feedlot
  - E (Nebraska)
  - D (Colorado)
  - C (Kansas)
  - B (Kansas)
  - F (Nebraska)
  - A (Washington St)

- Feedlot B (Kansas):
  - Yard Capacity is 45,000
  - Overall Mortality Rate is 1.22%

* Based on Feedlot Mortality Rate/ Weighted by Yard Capacity.
Whisper BRD Fatality Predictive Analysis

**BRD Fatality Curve For Feedlot [F]**
3,336 Whisper Lung Scores

**BRD Fatality Curve For Feedlot [A]**
506 Whisper Lung Scores

**Whisper Lung Score**
- BRD Fatality Curve // Logistic Reg; Wald Chi-Square = 20.95 p-value is <.0001
- Odds of death increase by 54% with each increase in Whisper lung score
- Actual sample percentage

**Relative Operational Risk Index Ratings for Included Feedlots**
- Feedlot F (Nebraska): Yard Capacity is 73,000
  Overall Mortality Rate is 0.88%
- Feedlot A (Washington St):
  Yard Capacity is 28,000
  Overall Mortality Rate is 0.80%

* Based on Feedlot Mortality Rate // Weighted by Yard Capacity.
Heterogeneity funnel plot showing lack of homogeneity between feedlots on baseline BRD fatality rates

Selectivity funnel plot showing feedlot baseline BRD fatality rates to be consistently in a specific range

### Synthesis details

<table>
<thead>
<tr>
<th>authors</th>
<th>N</th>
<th>or</th>
<th>cl-</th>
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### Heterogeneity statistics

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**Synthesis forest plot on feedlot baseline BRD fatality rates showing significant variability between each feedlot**
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Heterogeneity statistics

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Synthesis forest plot on Whisper curve estimates showing good agreement between feedlots.
Whisper BRD Fatality Prediction Curves Using 12,256 head from 6 Feedlots

- **Logistic Regression on All Feedlots Combined**
  - Wald Chi-Square = 268
  - p < .0001

- **Meta-Analysis**
  - Synthesis on Separate Feedlot Odds Ratios and Standard Errors
  - $Z = 13.40662$, $p < .0001$
  - I-squared = 33%

**48% to 57% increase in odds of dying for each increase in Whisper score level**
Prediction model of the number of days to death based on Whisper lung score at pull.**

For animals that died, each incremental increase in Whisper lung score at first pull is associated with a 0.58 day decrease in life expectancy.

**Days to Death = 13.6396 + (-0.58565 * Whisper Lung Score) // F(1,936) = 5.98  p = 0.0147**