

Animal Feeding Operations And Residential Value

Summary Of Literature

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A literature review was conducted to evaluate and summarize the impacts of animal feeding operations (AFOs) on surrounding residential and non-residential land prices. We located and reviewed fourteen studies on the impact of animal feeding operations on rural residence and property values.

SUMMARY

- * All studies indicated that the impact of AFOs on property value was localized or limited to properties near the AFO.
- * Seven of the fourteen studies indicated that AFOs reduced nearby residential property values^{1,11,5,13,10,9,8} while five studies indicated the AFOs have the potential to both increase or decrease housing values depending AFO size, concentration, or species^{3,6,12,14,7}.
- * One study indicated AFOs can potentially increase or decrease county farmland prices, without any residences, depending on density and scale of the operation⁶.
- * One study indicated no impact of AFOs on agricultural land⁴.
- * The single study that compared the local effect of the AFO on land prices with the impact of the AFO on the local economy and found local economic benefits exceeded negative impact on residential real estate values¹.

The paragraphs below summarize four factors (distance, size and concentration, management factors and economic benefits, species, housing value) found to affect the magnitude of impact AFOs had on rural property values.

DISTANCE

Distance is a common explanatory variable used to explain the impact of AFOs on property value. The studies included residential sales up to 10 miles from AFOs. The conclusions indicate that the negative impact of AFOs on residential value diminishes quickly as the distance between the AFO and the residence increases.

- * An Iowa study found that homes downwind of a livestock facility during the summer season were negatively impacted. As the distance between the livestock facility and home increased, the impact decreased⁵.

- * A second Iowa study found that houses located within 2, 2.5, and 3 miles from a CAFO resulted in losses of 17%, 15%, and 6% respectively⁸.
- * A Pennsylvania study indicated that an AFO located within 0.3, 0.5, and 0.75 miles of a residence decreased the residential value by 6.4%, 4.1%, and 1.6% respectively¹³.
- * A Colorado study was less clear on the impact of distance on residential values. They generally concluded an additional beef cattle or dairy operation in proximity to a residence correlates positively with sale prices, while an additional hog or sheep operation is negatively related to proximal residential sale prices¹².
- * A study conducted by the Indiana Business Research Center found that proximity to livestock operations yielded different results depending on the classification of the residence. General results indicated that AFOs decreased town and non-town residential properties and increased farm properties. Results also indicated all property values are decreased if the residence is located downwind from an AFO⁷.
- * The results of a Minnesota analysis indicated that nearby feedlots are associated with higher property values. This is contrary to what was initially expected. The explanatory variable “nearby” indicates that the location of a new feedlot within three miles of a home that has no feedlot would increase median home values by \$1,750 or 6.6%. The authors conclude that this affect could be due to an employment effect, where feedlot owners buy nearby residences to provide housing for their workers or to avoid complaints from homeowners¹⁴.

Because of poor sales data in Missouri, a traditional economic analysis of AFOs on residential values (as in all other studies mentioned) could not be performed. The Missouri study attributed all economic impact *to the land* containing a residence rather than to the actual residence. This data problem yielded confusing results. The study found that if no house was on the land, the value of the land did not decrease due to proximity to an AFO. However, if land contained a residence within 3 miles of an AFO, the land decreased in value an average of \$112/acre. Recognizing that the land without a home did not decrease in value due to the AFO, any observed land value decrease when a house was present is due to an unmea-

sured decrease in residential value. Because the size of the land associated with individual homes is not a factor in the study, no quantitative impact on residential values could be determined⁴.

SIZE AND CONCENTRATION

Several studies have sought to evaluate the effects of facility size and animal concentration on residential property values. Two studies indicated that the higher concentration of animals increased the negative impact on residential values^{1,10}. A study conducted in Michigan estimated that residential property values decreased 1.71% for every additional 1,000 hogs nearby¹. They warn that their study may have some bias because they only studied housing sales near AFOs that had received odor complaints. A North Carolina study also showed that increased density of livestock increased the negative impact of the AFO on residential values¹⁰.

- * The Iowa study that found that proximity to an AFO decreased residential values, also found that increasing size diminished the negative impact of the AFO. This counterintuitive outcome was conjectured to result from the awareness that larger AFOs were newer and have better manure management facilities⁵.
- * The Iowa study stated above, also mentioned the impact of a new hog facility where none other existed within three miles of a home. They hypothesized that a *new* small facility locating within ¼ mile downwind would be expected to diminish home values 14-16%. This hypothesis fails to account for the previous conjecture that small facilities are old and not as well managed⁵.
- * Another Iowa study indicated that larger concentrations negatively impacted houses greater than 3 miles from the livestock facility⁸.
- * A North Carolina study used a manure index (as a proxy for concentration of livestock) rather than individual AFOs to estimate the effect on property values. The manure index was calculated by converting animal head capacities into tons of manure produced annually to determine the cumulative effect from all farms in each distance ring on housing values. The results indicated that if a new 2,400 head facility was built within ½ mi, 1 mi, and 2 mi of a house with an initial manure index of 33.107, housing values will decline 4.75%, 0.57%, and 0.56% respectively¹¹.

- * An Illinois study indicated that a 1% increase in swine farm density would result in a reduction of county farmland prices by 0.129%, meaning more hogs equals lower farmland prices. However, results indicated that a 1% increase in average swine operation scale would increase county farmland prices by 0.069%, meaning larger operations increase county farmland prices. The study also examined the effect of the transformation of the Illinois swine industry from 1980-1999 and found that in most years the transformation had a positive effect on farmland values⁶.
- * An Indiana study summarizes the concentration effect, the number of AFOs within ½ mile-10 miles. Their hypothesis was that the closer AFO may not be as influential on housing price as the concentration of AFOs in a particular area. The results indicate positive effects on property values where there are AFOs between ½ - 3 miles away from a property⁷.
- * Lastly, an Ohio study's results indicated that a new 1,000 animal unit (au) livestock facility within 500 feet would slightly increase property value if previously surrounded by other facilities. On the other hand, if the house is not surrounded by other facilities within three miles the property would slightly depreciate when adding a new animal facility. The results of this analysis indicate that the appreciation or depreciation of property value is tied to the density of the animal production inventories surrounding the property³.
- * The Colorado study again had confusing results¹². Increasing the size of beef and dairy operations decreased the value of residences (though their presence generally increased the value of residences). In contrast, increasing the size of swine operations increased the value of residences (though their presence generally decreased the value of residences). The peculiar results of the Colorado study may be due in part to the specific location of the study. The study was for the northern front range of the Colorado Rockies and included the commuter towns northwest of Denver and the entire greater metropolitan area of Greeley.

Animal Species

- * The Colorado study indicated that an additional beef or dairy operation in close proximity to a residence will have a positive effect on housing sales prices, while an additional hog or sheep operation would have a negative effect on housing values. Interestingly, poultry operations were found to positively affect housing values within two miles and negatively affect values within two to three miles¹².

- * Research conducted by the Indiana Business Research Center found that the type of animal confinement also has an effect on property values. General results indicate that swine and beef operations were found to be positively related to town, non-town, and farm residences, while dairy operations were found to be negatively related to all three. However, depending on the pricing categories of these homes (low, medium, high), results could exhibit an opposite effect⁷.

Housing Value

- * The Colorado study indicated that the less expensive housing market (<\$150,000) has an overall less negative impact than the expensive housing market (>\$200,000). Results showed that hog operations have a more negative impact on less expensive houses than beef and dairy. In reference to the more expensive housing market, sheep operations had the largest negative effect of 0.45% (\$1,215.38) while poultry operations located had the lowest negative effect of 0.008% (\$21.42)¹².
- * A Minnesota study concluded that older, lower priced homes were more affected by feedlot proximity, while newer, higher priced homes were not affected at all¹⁴.
- * The Indiana study shows that mid-priced (\$100K-\$150K) and higher-priced (>\$150k) non-town residential properties are positively affected by the number of AFOs within one mile. However, mid-priced properties are negatively affected by the number of pig animal units within one mile. Mid-priced town residential properties (\$100K-\$150K) were most likely to have their sale price influenced by surrounding AFOs, particularly by the type of operation⁷.

MANAGEMENT PRACTICES

Only two studies considered the impact of management practices on residential real estate values. A Pennsylvania study found that AFOs without conservation plans negatively impacted residential values more than AFOs with conservation plans¹³. An Iowa study hypothesized that the lesser effect of large AFOs on land prices compared to smaller AFOs may have been due to better management of manure storages, land application of manure and site selection for the operation⁵.

ECONOMIC BENEFITS

The Michigan study concludes that the economic benefits from local hog operation exceeded the economic costs on property value¹. Similarly, the authors of the Indiana study concluded that housing markets benefit from having large scale feeding operations in close proximity based on the results that AFOs positively affect housing values 1/2 - 3 miles away⁷.

In an interesting lawsuit in Nebraska, a man successfully argued that the presence of *his* AFO negatively impacted the *assessed* value of his expensive home. Reducing his assessed value allowed him to pay less property tax on the home².

CONCLUSION

The studies summarized in this guide are inconclusive. The impact of animal feeding operations on residential values is not simply answered. Distance between AFO and home, concentration of AFOs and livestock, animal species, value of home and management will affect the impact of AFOs on nearby residences. Livestock production generally increases economic activity in rural areas and may reduce residential values, particularly on residences located close downwind.

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