

# Sheep and Goat Processing Access in Kansas

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## Overview

Sheep and goat production is a small but important and growing segment of Kansas agriculture, supporting diversified livestock operations, direct-to-consumer sales, and increasing demand for alternative protein products. As this sector expands, access to markets and processing options has become an important consideration for producers. For many sheep and goat producers, the distance they must travel to reach a market influences production planning, transportation time, labor use, and marketing decisions.

Processing facilities are a critical component of the sheep and goat supply chain, connecting on farm production with retail, foodservice, and direct market outlets. When access to processing is limited or distant, producers may need to travel longer distances to reach a market outlet that can accommodate their animals or products. These longer travel distances can increase transportation and labor requirements and may affect the feasibility of certain marketing channels, particularly for smaller or geographically isolated operations.

This paper evaluates sheep and goat processing access across Kansas using producer reported travel times to markets combined with spatial analysis. Producers reported the amount of time they currently spend driving to deliver animals or products to a market, as well as the maximum amount of time they would be willing to drive. By mapping these reported travel distances, the analysis identifies regions where producer travel patterns overlap and areas where long travel distances remain common. Heat maps are used to visualize these patterns and to provide insight into how processing facility locations align with producer reported access to markets.



The results provide information for producers, Extension professionals, and industry stakeholders interested in strengthening the sheep and goat supply chain in Kansas. By highlighting where reported travel distances to market are greatest and where producer access patterns overlap, this paper supports informed discussions around processing infrastructure, transportation considerations, and Extension programming aimed at improving market access and operational efficiency.

## Methods

A specialty livestock producer survey was administered in spring 2023 and concluded in summer 2023 to collect information on producer demographics, operations, marketing practices, and resource access. Of the 84 complete and valid responses, 57 were from sheep and goat producers. To evaluate processing access for sheep and goat producers in Kansas, survey responses related to producer travel behavior were combined with geographic analysis. Producers reported the amount of time, in minutes, they currently spend driving to deliver animals or products to a customer or market, as well as the maximum amount of time they would be willing to drive.

Reported travel times were converted into miles using an assumed average travel speed of 55 miles per hour. This conversion provided consistent measures of current travel distance and maximum travel distance reported by producers. These distance measures reflect producer-reported access to markets that may include processing facilities rather than confirmed travel to specific processors.

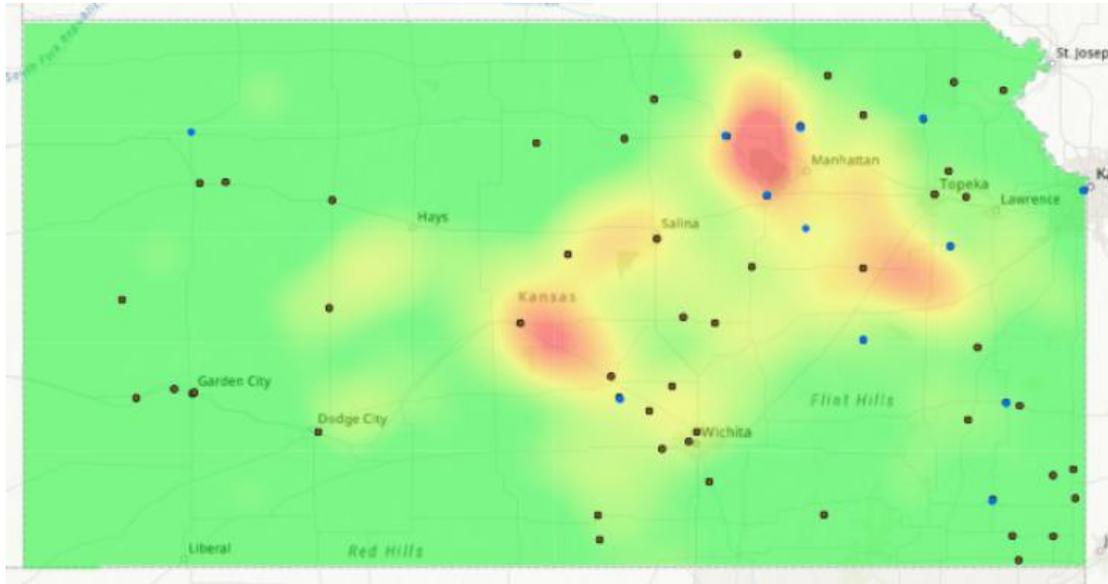
The converted distance values were incorporated into ArcGIS using the Network Analyst drive time tool to model service areas under two scenarios: current drive time – reflecting the distances producers reported currently traveling, and maximum drive time – representing the farthest distances they reported being willing to travel. These modeled service areas were overlaid across the state and with county boundaries to assess regional patterns in producer access.

Heat maps were used to visualize overlap in producer travel areas. A gradient color scheme was applied, where red areas indicate greater overlap of producer drive-time polygons and green areas indicate minimal overlap. Meat processing facility locations were mapped for context, with sheep and goat processors, represented by blue dots, distinguished from other facilities, brown dots, to illustrate how facility locations align with producer-reported travel patterns.

## Results

The heat maps illustrate spatial patterns in access to sheep and goat processing across Kansas under both

current and maximum drive-time scenarios based on producer-reported travel behavior. A gradient color scale is used where red areas indicate greater overlap of producer drive-time polygons and green areas indicate minimal or no overlap. Greater overlap reflects regions where producers report similar travel distances while minimal overlap reflects more dispersed travel patterns. Processor locations are displayed for context, with brown dots representing general meat processing facilities and blue dots identifying processors that reported handling sheep and goats.



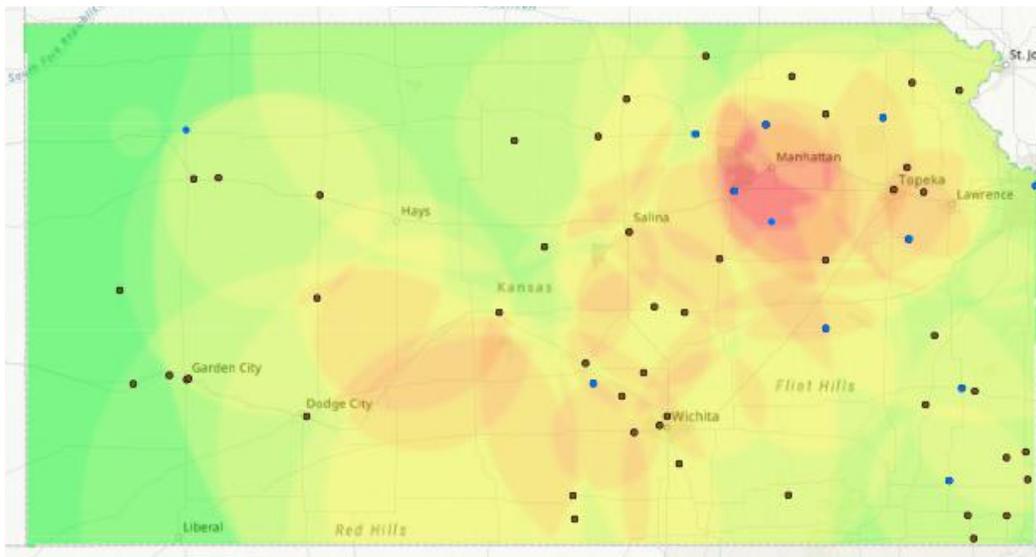
**Figure 1.** Current Drive-Time Accessibility for Kansas Sheep and Goat Producers

Under the current drive-time scenario (**Figure 1**), the most pronounced area of overlap is centered around Clay Center. This region shows the highest concentration of overlapping producer drive-time polygons, indicating that many producers currently report similar travel distances to reach markets that may include processing facilities. This pattern reflects a convergence in reported travel behavior within this area.

A second area of elevated overlap appears between Great Bend and Hutchinson. This red to orange corridor indicates another region where producers report comparable current travel distances. Spatially, this suggests a localized area where reported access patterns are more concentrated than in surrounding regions.

A third area of overlap extends from near Wamego south through Council Grove and toward Melvern. This stretch highlights an east-central Kansas region where producer-reported drive times converge across multiple counties, indicating similar travel patterns to markets within this corridor.

Much of western Kansas appears green under the current drive-time scenario. This should not be interpreted as strong processing access. Instead, minimal overlap reflects lower producer density and more dispersed travel patterns, with producers reporting longer travel distances to reach sheep and goat markets. Outside of the specialized processor located in Colby, processing access in western Kansas remains geographically limited.



**Figure 2.** Maximum Drive-Time Accessibility for Kansas Sheep and Goat Producers.

The maximum drive-time scenario (**Figure 2**) reflects the longest distances producers reported they would be willing to travel to reach markets that may include processing services. Under this scenario, producer drive-time polygons expand substantially, increasing the geographic reach of existing facilities. As a result, red and orange areas become more widespread across the state, indicating broader overlap in reported travel distances at extended ranges.

Elevated overlap appears around Manhattan and across much of northeast and central Kansas, indicating that when producers consider their maximum willingness to travel, many report similar extended travel distances to reach markets in these regions. This pattern suggests continued convergence in reported travel behavior even as distance thresholds increase.

A band of overlap extends across central and western Kansas, including areas near Ness City, Great Bend, Dodge City, and Pratt. This pattern reflects long-distance travel behavior, where producers from a wide geographic area report willingness to travel comparable distances to access markets associated with sheep and goat processing.

An adjacent extension of overlap is visible from Great Bend south toward Kiowa. This corridor indicates that producers in south-central Kansas report similar maximum travel distances, suggesting that nearby market access remains limited and that longer-distance travel is commonly reported in this region.

Overall, expanded willingness to travel increases the geographic reach producers are willing to consider but does not eliminate spatial concentration in reported travel patterns. Areas of greater overlap reflect regions where producers report similar extended travel distances, while areas of minimal overlap continue to indicate more dispersed travel patterns and greater geographic separation from sheep and goat processing services.

### **Conclusions**

This analysis provides a spatial perspective on sheep and goat processing access in Kansas based on producer reported travel behavior. By examining both current travel distances to markets and the maximum distances producers are willing to travel, the results highlight where producer access patterns overlap and where long travel distances remain common. These patterns vary substantially across the state, with higher overlap observed in parts of northeast, central, and eastern Kansas and more dispersed travel patterns in western and southern regions.

The heat maps do not measure processing capacity, scheduling availability, or facility utilization directly. Instead, they illustrate how producers experience access through travel distance and willingness to travel. Areas with greater overlap indicate regions where many producers report similar travel distances to markets while areas with minimal overlap reflect either lower producer density or greater geographic separation from markets that may include processing facilities. Even under maximum travel distances, some regions remain characterized by long hauling distances, suggesting persistent geographic challenges in accessing sheep and goat markets.

For producers, these results help clarify how travel distance shapes access to markets across Kansas and where long or overlapping travel patterns are most common. Understanding these spatial

patterns can support planning related to transportation time, fuel costs, labor allocation, and marketing strategies. For Extension professionals, policymakers, and industry stakeholders, the findings identify geographic areas where further evaluation of processing infrastructure, alternative market arrangements, or transportation coordination may be warranted.

Overall, this paper demonstrates the value of using producer reported travel behavior to assess access to sheep and goat markets and processing services. While additional data would be needed to evaluate processing capacity or scheduling constraints directly, the spatial patterns identified here provide a useful foundation for future discussions around infrastructure investment, supply chain coordination, and support strategies aimed at improving market access for Kansas sheep and goat producers.

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