

Location, Location, Location: Mapping the Risks for Arkansas Broiler Production

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The poultry industry is a model of integrated efficiency and has cemented its place in the global diet and economy. According to the National Chicken Council, the broiler industry provided more than 1.5 million jobs, nearly \$95 million in wages, and \$25.4 billion in government revenue in 2022. In Arkansas, this translates to \$5.1 billion dollars in cash receipts, or 49.1% of total agricultural receipts in the state¹. The backbone of this vast industry are the numerous contract growers raising flocks of birds. The demand for poultry producers is ever-growing as U.S chicken consumption and population rise.

A cost-effective advantage that the poultry industry has over other proteins is vertical integration. Vertical integration is when one company, called an integrator, owns two or more stages of production — such as hatcheries, feed mills, transportation and processing plants — that contribute to the production of ready-to-eat chicken. However, the rearing of birds is outsourced to independent contractors. The contracts pay based on pounds of “good weight” of their finished flock. The contract grower provides most of the physical capital (except for birds and feed), such as facilities, equipment, utilities and labor. In addition, contracted growers bear some of the uncertainties associated with production in the long run based on the nature of contracted production.

Despite growing demand for chicken and the need for contract growers, there are risks associated with any enterprise. If an integrator closes a processing plant, a grower may be bought out of their contract. In the unfortunate circumstances there isn’t another plant or integrator within a drivable distance, and assuming no alternative use of poultry growing complexes, the growers have no incoming revenues to pay debt obligations. Farming as an alternative income source is likely not feasible since poultry complexes often reside on small farms unable to generate comparable revenue. Given these financial risks, how can new and current broiler farmers be aware of all risks in growing broilers? This fact sheet seeks to help producers evaluate their risk and better understand the most and least cost-effective investment regions for poultry farms statewide. While we cannot control all the risks associated with agriculture, we can be conscious of the risks facing particular broiler farm locations.

Using geospatial mapping and a calculated risk index, a map of Arkansas was created to consider the risks that broiler farmers bear. A contract risk index is calculated as a basis to measure the risk of losing or securing a new contract if necessary. This index is used to determine “risk zones” for broiler production.

¹See the following for more information: <https://economic-impact-of-ag.uada.edu/arkansas/>.

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Geospatial mapping is used to show these risk zones in Arkansas (Figure 1). The risk zones are evaluated using utility costs, transportation, infrastructure, feed mill locations, and, crucially, the quantity and proximity of commercial slaughter facilities. The values were collected from the USDA Food Safety and Inspection Service Meat, Poultry and Egg Product Inspection (MPI) Directory, the FDA Medicated Feed Mill Licensing database, and other publicly available production cost data.

Figure 1 depicts the risk zones, each having a level of either low, average, medium, or high risk. The risk zones are defined by where they index compared to the other locations. For example, low risk areas typically have more than 4 processing plants in their radius and in the lowest 50% for electric rates, whereas high risk zones typically have only one processing plant and typically are in the top 50% in electric rates. The main driver of the risk zones is proximity to processing facilities. A 30-mile radius of integrator accessibility per processing plant location is defined and accounts for options if one processing plant closed. Overlaps in the service region lead to a reduction of producer risks, which can be seen in the lighter blues and transparent zones in Figure 1. The lowest risk zone for broiler production is in Northwest Arkansas, specifically in Washington County, Benton County, and parts of McDonald County in Missouri. This is due to the high concentration of integrators that service the region, including Tyson Foods, Inc., George's Inc., and Simmons Foods. The highest risk regions are located where there is only one integrator present, such as Jefferson County, with a single operating Tyson processing plant. These risk zones also consider utility costs and tax liabilities.

This map may reinforce the idea of increased processing plant concentration in the poultry industry, where financial risks are lower. However, poultry is a living industry susceptible to biological hazards such as Avian Influenza, Newcastle, or Marek's disease. These diseases spread rapidly when houses are in close proximity. Therefore, a higher concentration of production facilities poses a risk of increased susceptibility to a disease. In short, the concentration of poultry production offers advantages in terms of risk mitigation for producers, though the industry should be aware of the potential production vulnerabilities as well. A strategic approach that considers both economic efficiency and biosecurity measures is essential for the stability of the poultry industry.

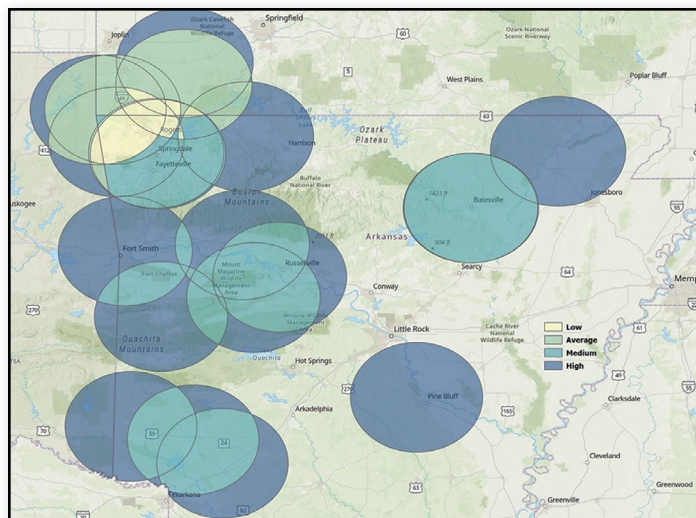


Figure 1. Risk Map of Arkansas Broiler Production.

In conclusion, new contractors or lenders should consider these risks when evaluating the riskiness of broiler production under contract, building new facilities, or purchasing current operations. Having high risk doesn't mean that a location isn't a worthy investment, just that there are obstacles a grower could face. Overall, this risk map aims to provide information so that informed decisions can be made.

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