**Meat Calculator-Cost of production**

**Introduction**

*Add here*

**Data**

We use 2017 Census of Agriculture microdata to estimate the average cost of production for livestock operations selling through local food market channels (including direct-to-consumer and intermediated markets). In the Census of Agriculture, a farm is defined as a place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year. This very liberal definition of a farm captures a wide range of farms, including those that are not aspiring to be commercially viable operations. To capture only commercial operations, we drop all observations with less than $1,000 in sales.

Our sample consists only of non-diversified operations, i.e., operations that sell one species and no crops, so we can attribute all costs of production to only the species of interest. Farms are allowed to grow crops but have zero sales, implying that those costs accrue to feed requirements for the livestock enterprise. To capture cost of production differences across scale, we separate our sample, based on the number of head sold in a year, into small operations (<25th quantile), mid-size operations (25th to 75th quantile) and large operations (76th to 95th quantile). We drop observations above the 95th percentile as outliers. Species groupings include (1) non-dairy cattle, (2) hogs and pigs, and (3) sheep, lamb, and meat goats. For non-dairy cattle operations, we drop operations selling zero cattle weighing 500 pounds or more. We provide the expenses as a cost per head by species, scale, market channel, and region[[1]](#footnote-1).

**Methods**

Given the large differences in costs across scale, we separate our sample by scale, based on head sold. For each species, we have three categories: small operations (<25th quantile), mid-size operations (25th to 75th quantile) and the large operations (76th to 95th quantile). We drop observations above the 95th percentile due to outliers.

* Cattle: Cattle sold or moved from this operation in 2017, including calves weighing 500 pounds or more, local only
  + Small scale (<25th quantile): <2 head
  + Mid-scale (25th to 75th quantile): 2 to 8 head
  + Large scale (76th to 95th quantile): 9 to 30 head
* Hogs and pigs: Number of hogs and pigs sold or moved from this operation during 2017,  
  including feeder pigs, local only
  + Small scale (<25th quantile): <6 head
  + Mid-scale (25th to 75th quantile): 6 to 27 head
  + Large scale (76th to 95th quantile): 28 to 200 head
* Sheep, lamb and meat goats: Number of sheep, lamb, and meat goats sold or moved from this operation during 2017, local only
  + Small scale (<25th quantile): <10 head
  + Mid-scale (25th to 75th quantile): 10 to 23 head
  + Large scale (76th to 95th quantile): 24 to 62 head

Our sample consists of only those producers selling exclusively through local food market channels (i.e., they do not sell through both local and commodity market channels). Local food market channels include both direct-to-consumer market channels (i.e., farmers market, on-farm stores or farm stands, roadside stands or stores, u-pick, CSA, and online marketplaces) and intermediated market channels (i.e., supermarkets, supercenters, restaurants, caterers, independently owned grocery stores, food cooperatives, K-12 schools, colleges or universities, hospitals, workplace cafeterias, prisons, and food banks). Due to sample size issues, we do not disaggregate direct-to-consumer and intermediated within our local food market channel category.

All estimates are broken out by region[[2]](#footnote-2) as well as provided nationally. Regions are based the census regions but with the west disaggregated into census divisions. Regions include Pacific (WA, OR, CA), Mountain (ID, NV, MT, WY, UT, AZ, CO, NM), Midwest (ND, SD, NE, KS, MN, IA, MO, WI, IL, MI, IN, OH), South (OK, TX, AR, LA, KY, TN, MS, AL, WV, VA, NC, SC, GA, FL, MD, DE), Northeast (NY, PA, NJ, VT, NH, MA, CT, RI, ME). We also include data for cattle producers in Colorado as the sample size allows for a state-level estimate.

## *Production expenses*

Table 1 provides all production expense variables asked in the 2017 Census of Agriculture and the expense categories used in this analysis. Some expense categories were grouped together for those categories for which producers were less likely to have recorded their expenses disaggregated.

Each expense is provided on a per head basis. We report both the total production expense, total expense per head, and the expense in each category per head, including benchmark ranges.

Table 1. Description of production expenses

|  |  |
| --- | --- |
| **Variable** | **Production expense description** |
| k1501 + k1502 + k1503 | Fertilizer, chemicals, seeds, and plants |
| k1504 + k1505 | Breeding stock, other livestock purchased or leased |
| k1506 | Feed |
| k1507 | Gas, fuel, oil |
| k1508 | Utilities |
| k1509 | Repairs and maintenance |
| k1510 + k1511+ k1512 | Hired labor, contract labor, custom work, and machine hire |
| k1513 + k1514 + k1517[[3]](#footnote-3) | Cash rent for land and buildings, rent, lease expense for machinery, property taxes |
| k1513 | Cash rent for land and buildings – including grazing fees |
| k1514 + k1517 | Rent, lease expense for machinery, equipment and farm share of vehicles, and property taxes |
| k1515 + k1516 | Interest paid on real estate debt, interest paid on non-real estate debt |
| k1518 + k1935 | Other production expenses, medical expense (medical supplies, veterinary, and custom services for livestock) |
| Sum of all expenses above | Total production expense |

**Appendix**

Species – Detailed description of how variables are calculated

### Cattle

Cattle operations = if gross value of sales from cattle and calves (including sales under production contract) is equal to total value of production, then 1 otherwise 0

### Hogs and pigs

Hog and pig operations = if gross value of sales from hogs and pigs (including sales under production contract) is equal to total value of production, then 1 otherwise 0

### Sheep, lamb and meat goats

Sheep, lamb and goat operations = if gross value of sales from sheep, lamb, and meat goats (**not** including sales under production contract) is equal to total value of production, then 1 otherwise 0

1. We also provide state-based estimates for cattle producers in Colorado, due to a larger sample size. [↑](#footnote-ref-1)
2. In some cases, data were suppressed due to disclosure issues. These are noted and data has been replaced by the national average for that expense category. [↑](#footnote-ref-2)
3. We present data with these categories both aggregated and disaggregated to see if there are enough differences to keep them apart. In the end, we will just go with one option to present the data. [↑](#footnote-ref-3)