

# CAFOs

*Community Impacts of Concentrated  
Animal Feeding Operations in Indiana*

## Community Impacts of Concentrated Animal Feeding Operations in Indiana

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June 18, 2009 – 2009 Land Use Update – Video Seminar Series



# CAFOs

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## Agenda

- 7:00 Welcome – Bob McCormick
- 7:05 Introduction to the Research – Janet Ayres
- 7:15 CAFO Operators & Operations – Roman Keeney
- 7:35 Fiscal Impacts – Larry DeBoer
- 8:00 Environmental Impacts – Tamilee Nennich
- 8:15 Land Use & Zoning Issues – Janet Ayres
- 8:30 Questions & Comments
- 9:00 Adjourn



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## Introduction

This research on the community impacts of Concentrated Animal Feeding Operations (CAFOs) is part of a larger research effort at Purdue University.

[www.ansc.purdue.edu/CAFO/](http://www.ansc.purdue.edu/CAFO/)



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## Research Sponsorship

This research on the community impacts of CAFOs was funded in its entirety by the Purdue College of Agriculture and Purdue Extension.



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## Research Purpose

The expansion of confined animal feeding operations (CAFOs) in Indiana has been controversial. The purpose of this research was to learn more about the issues and the impact of CAFOs on local communities.



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## Research Objectives

- Learn more about CAFO owners/operators
- Learn more about CAFO operations
- Examine fiscal impact of CAFOs on local county government
- Examine extent of environmental violations
- Examine impact of CAFOs on roads & bridges
- Examine perceived level of controversy; land use issues and changes to local zoning ordinances



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## Research Scope

- Focused on larger operations, CAFOs
- Focused on swine & dairy operations
- Chose 8 counties with highest number of CAFO permitted operations that included at least 2 dairies that were in operation
  - Benton, Cass, Huntington, Jay, Jasper, Randolph, Wabash & Wells



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## General Research Approach

- Case study approach to obtain detailed data that have not been gathered or examined in other studies



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## Data Collection

- Primary data were collected directly from various sources
  - Face-to-face interviews with CAFO owners/operators using a questionnaire
  - Tax documents from 3 different offices in each county for each CAFO operation
  - Face-to-face interviews with county highway engineer & plan director using a questionnaire
  - Land use plans & zoning ordinances
  - Environmental violations obtained from IDEM for each county



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## Timeline

- Research approved by IRB in August 2007
- Dean Jones, retired Extension educator, was hired to conduct interviews & gather data
- Research initiated in two pilot counties (Benton & Jasper) fall 2007
- Research expanded to six additional counties (Cass, Huntington, Jay, Randolph, Wabash, Wells) summer/fall 2008



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## CAFO Definition

The Indiana Department of Environmental Management (IDEM) regulates the permitting of CFOs and CAFOs

- 2,190 farms regulated by IDEM ( as of 1/1/09)

1,545 CFOs; 645 CAFOs

CAFOs – 700 mature dairy cows; 2,500 swine each weighing 55 pounds or more; 10,000 swine each weighing less than 55 pounds

The logo for CAFOs (Community Impacts of Concentrated Animal Feeding Operations) is displayed in a large, stylized purple font with a white outline. It is positioned over a background image of a long, white industrial building, likely a CAFO, situated behind a body of water with green vegetation in the foreground.

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## Research Methodology (cont.)

- 155 approved CAFO operations in 8 county study area as of April 2008
- 139 facilities operating for more than one year
  - 50 owner/operators interviewed – 39 swine, 8 dairy, 3 beef
  - Several owner/operators have more than one permitted facility



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## Findings – Owner/Operator

Roman Keeney

Purdue Extension Specialist

Department of Agricultural Economics

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## Demographics

- CAFO Operators from the survey (n=50)
  - 90 percent raised on a farm
  - 37 percent also worked off the CAFO-farm
  - 10 percent were not US citizens

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## Age and Experience

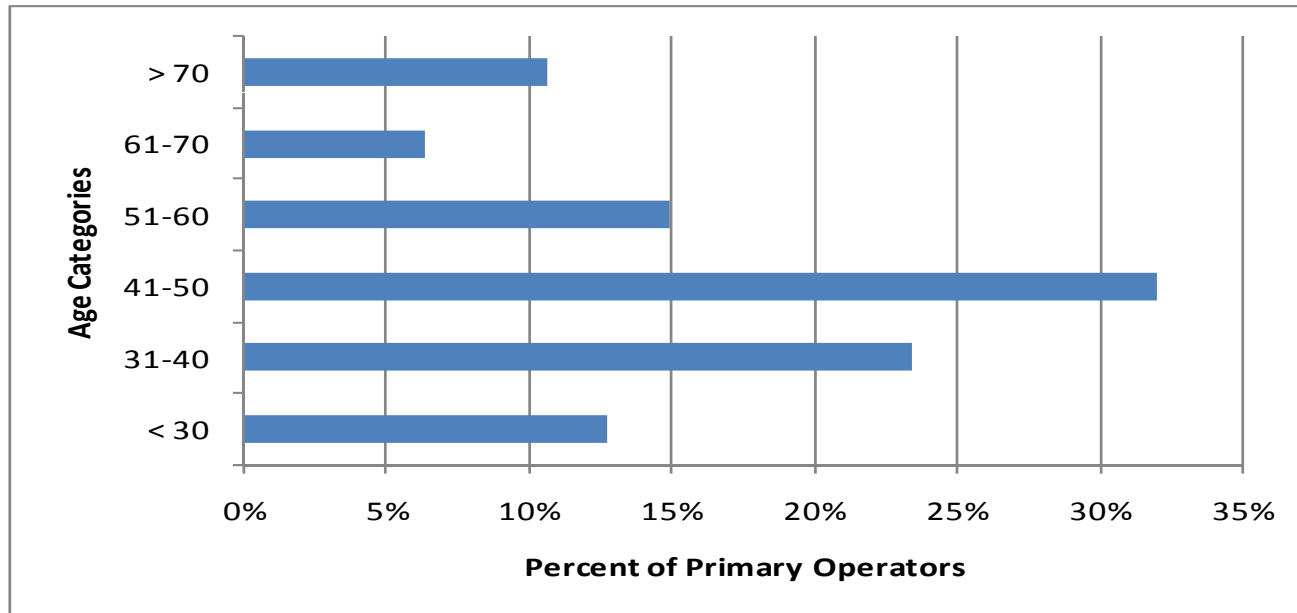
| Item            | Mean | Median |
|-----------------|------|--------|
| Operator Age    | 44.4 | 45.0   |
| Farm Experience | 24.7 | 22.0   |
| CAFO Experience | 11.6 | 6.0    |

- Average age (all farmers) = 54.8 Years
  - Calculated for the 8 study counties using 2007 US Ag Census data

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## Age Distribution



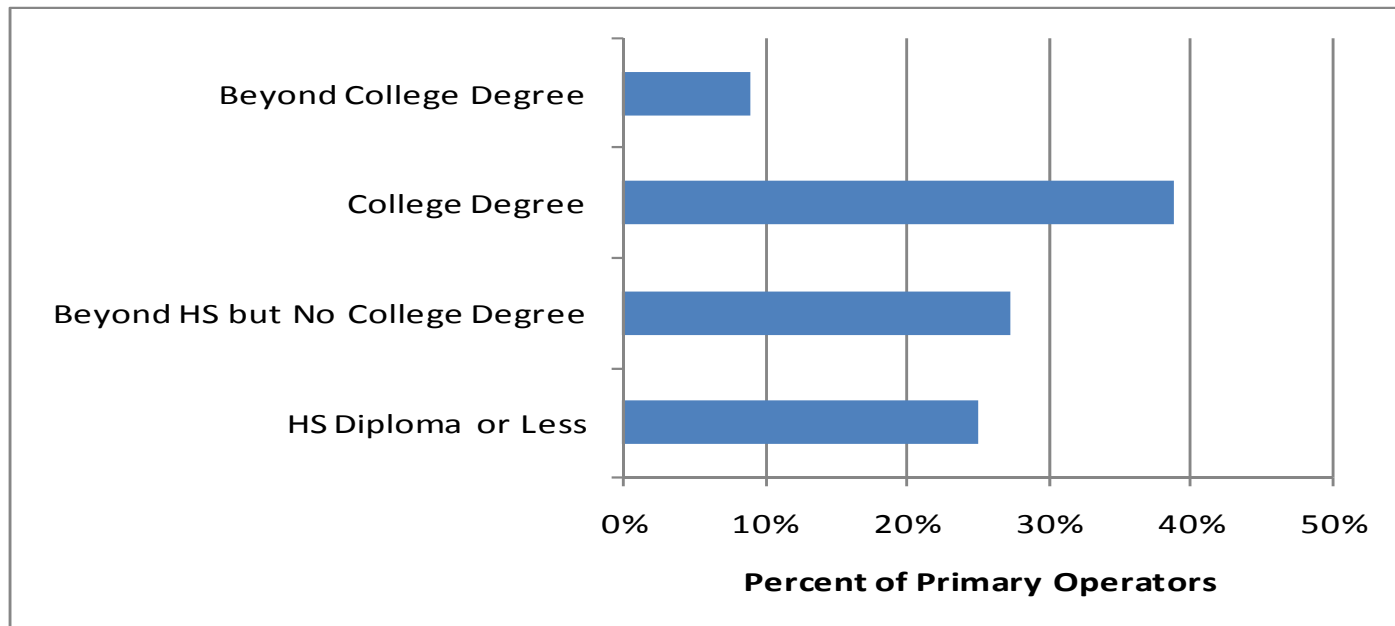
- More than two-thirds of CAFO operators in survey are 50 or younger
- More than three-fifths of farm operators are age 50 or higher
  - 8 County average calculated from US Ag Census 2007

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## Education

- 75 % of CAFO Operators surveyed had gone beyond secondary education.
- Nearly 50 % of CAFO Operators surveyed have a college degree.
  - 25 percent of all farm operators in the U.S. have a college degree or higher. (Census)



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## Operator Rating of Site Considerations

- Reduced proximity to residential areas
  - 77 percent of respondents rated this as “Very Important”
  - 20 percent of respondents rated this as “Important”
- Increased proximity to nearby cropland acreage
  - 69 percent of respondents rated this as “Very Important”
  - 9 percent of respondents rated this as “Important”

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## Operator Rating of Opposition & Reception

- Opposition
  - 54 percent of respondents reported no significant local opposition
  - 40 percent of respondents reported minor opposition (individuals)
  - 6 percent of respondents reported strong opposition (organized)
- Reception since operation began
  - 80 percent of respondents reported reception has been all or mostly positive
  - 20 percent of respondents reported reception has been mixed between positive and negative



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## CAFO Characteristics

- Surveyed CAFOs are large sales farms
  - Median sales for swine farms = 1.5 million dollars
  - Median sales for dairy farms = over 10 million dollars
- Surveyed CAFOs tend to be organized as family corporations
  - 50 percent family corporations
  - 30 percent proprietorship or partnership
  - 20 percent some other

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## Feed Purchase Patterns

- Surveyed dairies tend to purchase more feed in-county, while both types of farms purchase a large majority of feed in state
- In-county feed purchases:
  - Dairy = 50%
  - Swine = 13%
- In-state feed purchases:
  - Dairy = 80%
  - Swine = 96%



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## Labor

- Surveyed CAFOs use much more hired labor than typical family farms
  - Surveyed dairy CAFOs hire more labor than swine operations
    - Common to hire non-family labor full and part-time
    - Some hired labor work in managerial roles
- Surveyed CAFOs averaged hiring 7 new employees in the past two years
  - 39 percent hired as replacement labor
  - 58 percent hired due to expansion
  - 3 percent hired to deal with regulatory or environmental requirements



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## Labor Turnover

- Surveyed operators report the following reasons for lost employees
  - 43 % were terminated for effectiveness
  - 8 % left for a higher wage opportunity
  - 49 % left for other unspecified reasons



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## Wages and Benefits

- As a source of jobs the results indicate that surveyed CAFOs offer competitive wages
  - Labor wage = \$12.38 / hour
  - Managerial wage = \$25.74 / hour
  - Paid Family wage = \$18.59 / hour
- All farms average wage = \$8.50
  - Range from (Minimum wage to \$ 11.50)
  - 8 county average calculated from US Ag Census 2007
- All employment wage = \$14.95 (all skill levels)
  - 8 county wage calculated from Bureau of Economic Analysis 2007 data
- Non-wage benefits are more common on CAFOs than for other farm types, but less common than with similar non-farm jobs



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## CAFO Growth

- Survey results indicate that animal numbers on surveyed CAFOs will be near ninety percent of IDEM permitted capacity within the next two years (2009 & 2010)
- No respondents forecasted expansion beyond current permit levels

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## Conclusions (1)

- CAFOs in the survey are:
  - Operated by younger more well-educated managers than what we broadly see in agriculture
- Our results indicate that from the operators' perspective...
  - ...impact on surrounding area is an important consideration
  - ...reception from neighbors is mostly positive



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## Conclusions (2)

- Placement of a CAFO will provide (all else constant)...
  - Rural jobs -- including part-time, flexible hours work
  - Rural managerial opportunity for beginning farmers
  - Opportunity for local sale of feed grain products
- When all else is not constant it's more complicated...
  - What industry placement opportunities are foregone due to a CAFO?
  - What aligned industries might follow if an area establishes CAFOs?



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## Final Comment

- Impacts of a CAFO on the community economy will be unevenly dispersed
  - Only a few individuals & businesses will realize direct impacts
  - Indirect impacts will be realized...
    - Through the net change in economic activity
    - Through the impact on public costs and receipts



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## Fiscal Impacts

Larry DeBoer

Purdue Extension Specialist

Department of Agricultural Economics



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- Fiscal Impact: *The Effect of Development on Government Budgets*
  - Compare the added revenue and added costs to local governments of a new development
  - If added revenues exceed added costs, a “positive” fiscal impact
  - If added costs exceed added revenues, a “negative” fiscal impact

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- Revenues
  - Property Taxes
  - Local Income Taxes
  - Motor Vehicle Excise Taxes
  - Charges and Fees



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- Only part of a CAFO's tax bill adds revenue to the county's budget
- The rest reduces the tax bills of existing taxpayers
  - ***Total fiscal impact:*** includes all taxes paid by the CAFO, those that provide tax relief to others and those that add to county revenues
  - ***Budget fiscal impact:*** includes only taxes that add to county revenues

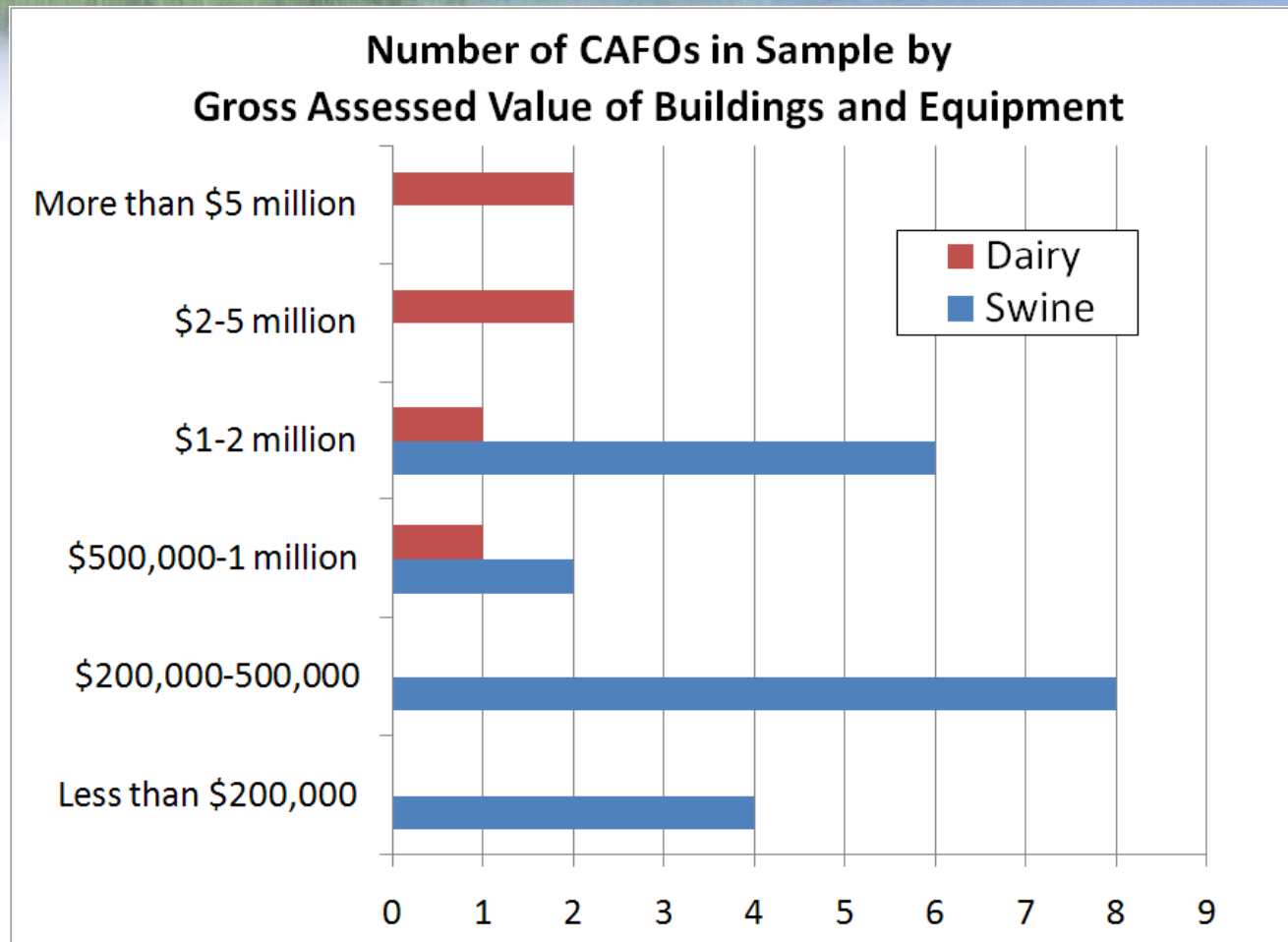
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- Property Tax
  - Assessed Value
    - CAFO buildings
    - CAFO equipment
    - Homestead
    - *Not Land*
    - *Not Animals*
  - Less Deductions
  - Equals taxable assessed value
  - Times local tax rates (county, school, etc.)

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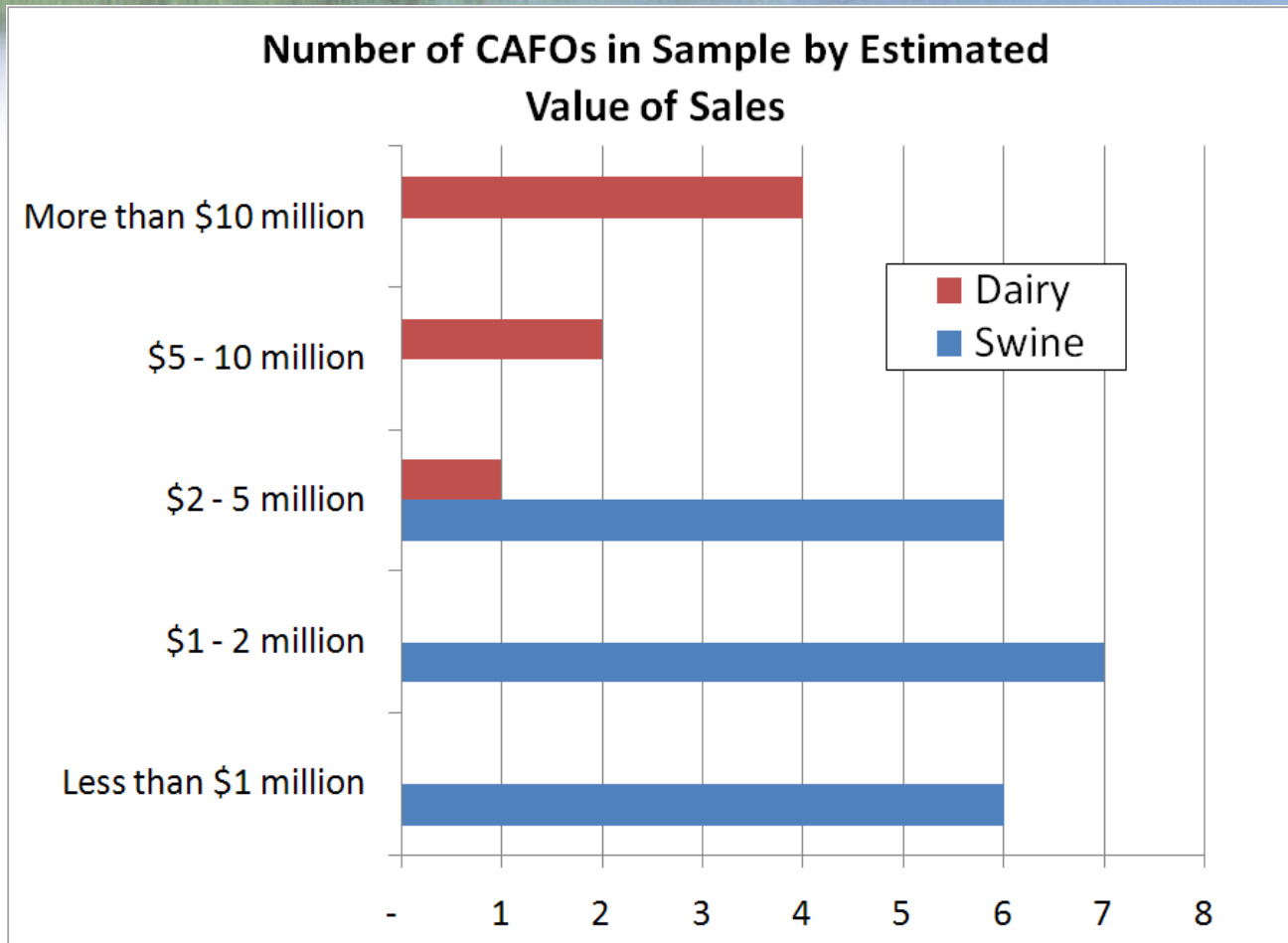
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## Property Tax Payments by Average Swine and Dairy CAFOs

|  | Swine   | Dairy     |
|--|---------|-----------|
| Taxable Assessed Value, CAFO buildings/equipment | 489,000 | 5,220,000 |
| Taxable Assessed Value, Family/employee homes    | 12,600  | 40,920    |
| Total Taxable Assessed Value                     | 501,600 | 5,260,920 |
| County Tax Rate, total                           | 0.4100  | 0.4100    |
| Total Tax Bill                                   | 2,069   | 21,570    |
| Amount that is added revenue                     | 303     | 3,157     |
| Amount used for tax reductions                   | 1,767   | 18,413    |

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## Taxable Income, Average Swine and Dairy CAFO

|                                     | Swine   | Dairy     |
|-------------------------------------|---------|-----------|
| Taxable income, CAFO                | 222,000 | 1,830,000 |
| Taxable income, Employee households | 20,265  | 402,497   |
| Total Taxable Income                | 242,265 | 2,232,497 |

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## Average Local Income Tax Rates in Six CAFO Counties

|                                 | Rate         | Adds to<br>Revenue | Share to<br>County |
|---------------------------------|--------------|--------------------|--------------------|
| CAGIT                           | 1.00%        | Yes                | 51%                |
| COIT                            |              | Yes                | 51%                |
| CEDIT                           | 0.25%        | Yes                | 59%                |
| CEDIT for inventory replacement | 0.12%        | No                 | 59%                |
| LOIT, levy freeze               | 0.25%        | No                 | 51%                |
| LOIT, property tax replacement  | 0.70%        | No                 | 17%                |
| LOIT, public safety             | 0.10%        | Yes                | 59%                |
| <b>TOTAL</b>                    | <b>2.42%</b> | <b>1.35%</b>       | <b>1.03%</b>       |

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## Local Income Tax Payments by Average Swine and Dairy CAFO

|                              | Swine   | Dairy     |
|------------------------------|---------|-----------|
| Total Taxable Income         | 242,265 | 2,232,497 |
| Local Income Tax Rate        | 2.42%   | 2.42%     |
| Total Income Tax Bill        | 7,789   | 54,026    |
| County Share, Total Tax Bill | 3,327   | 23,080    |
| County Share, Added Revenue  | 2,306   | 15,996    |

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## Estimated Total Tax and Fee Payments by Average Swine and Dairy CAFOs

|                          | Swine | Dairy  |
|--------------------------|-------|--------|
| Property Tax             | 2,069 | 21,570 |
| Local Income Tax         | 3,327 | 23,080 |
| Motor Vehicle Excise Tax | 100   | 418    |
| Charges and Fees         | 243   | 2,052  |
| Total Revenue            | 5,740 | 47,119 |

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## Estimated Added Revenues to County by Average Swine and Dairy CAFOs

|                          | Swine | Dairy  |
|--------------------------|-------|--------|
| Property Tax             | 303   | 3,157  |
| Local Income Tax         | 2,306 | 15,996 |
| Motor Vehicle Excise Tax | 100   | 418    |
| Charges and Fees         | 243   | 2,052  |
| Total Revenue            | 2,952 | 21,622 |

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## Cost “Yardstick”: County Appropriations per Person

|                                  | Swine | Dairy  |
|----------------------------------|-------|--------|
| County Appropriations per Person | 542   | 542    |
| Added Population in County       | 7     | 49     |
| Added Costs                      | 3,794 | 26,558 |

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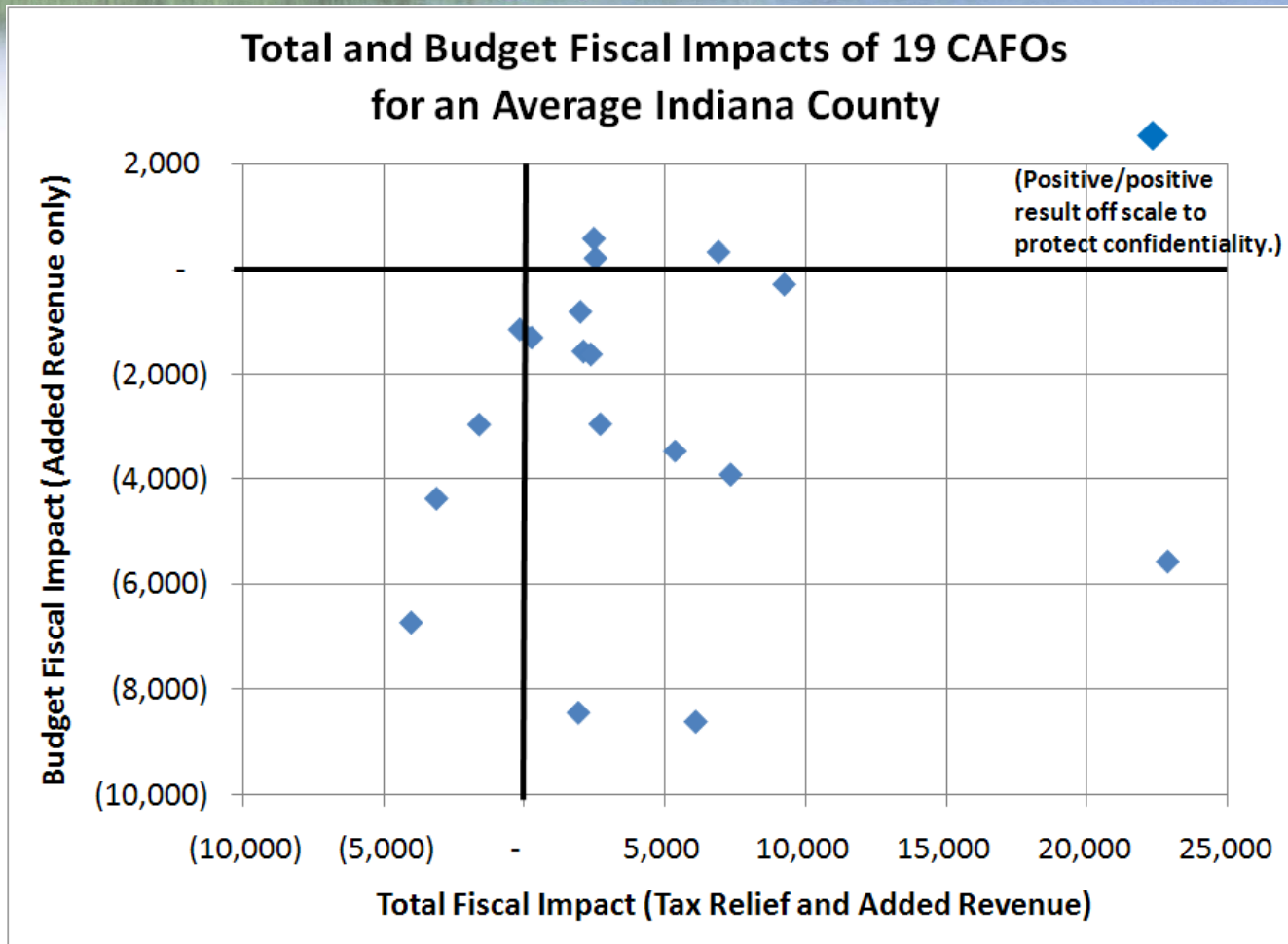
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## Estimated County Fiscal Impact by Average Swine and Dairy CAFOs

|                                     | Swine | Dairy   |
|-------------------------------------|-------|---------|
| <u>Added Costs</u>                  | 3,794 | 26,558  |
| Total Revenue, including tax relief | 5,740 | 47,119  |
| <u>Total Revenue, budget only</u>   | 2,952 | 21,622  |
| Total Fiscal Impact                 | 1,946 | 20,561  |
| Budget Fiscal Impact                | (842) | (4,936) |

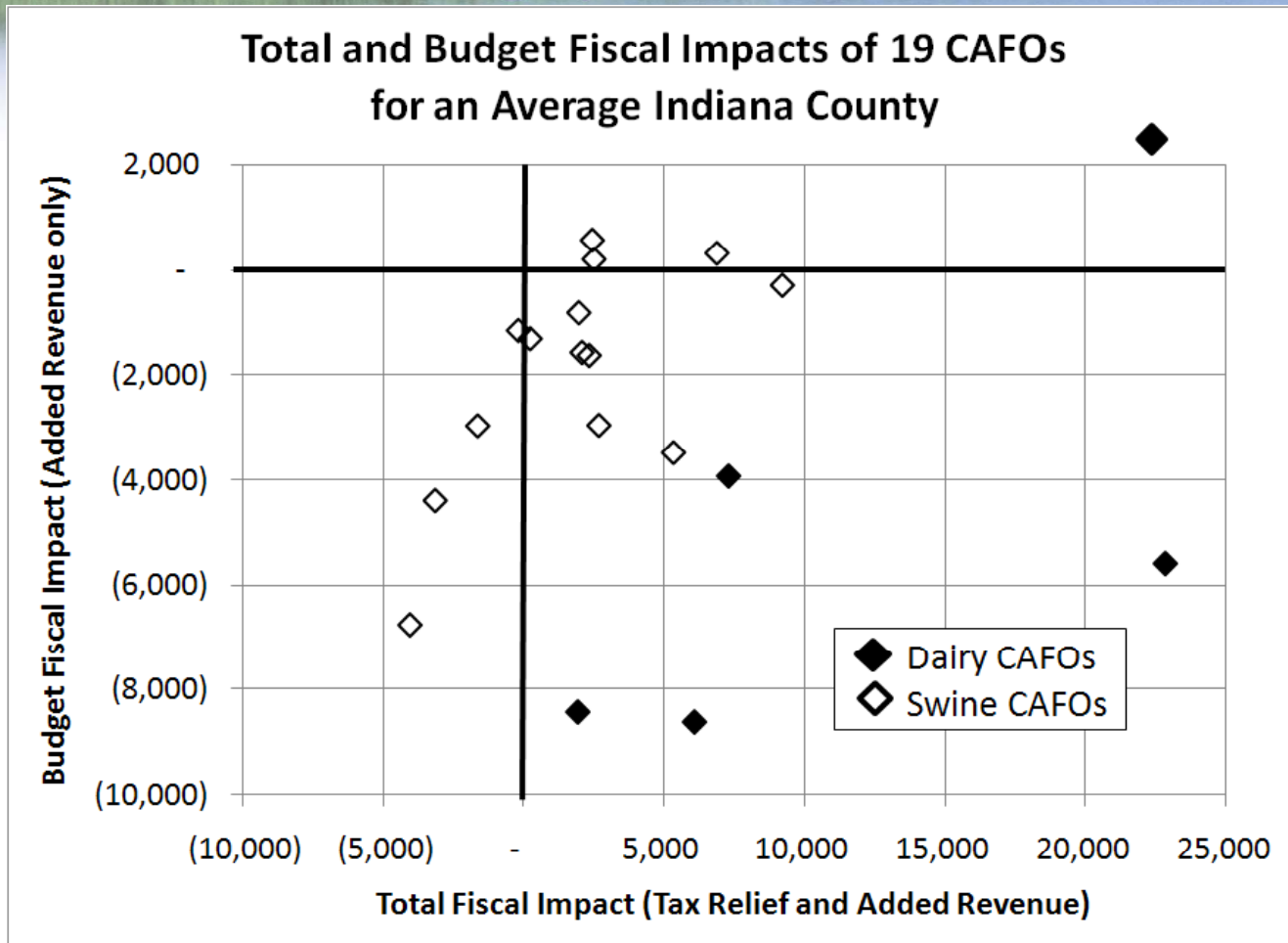
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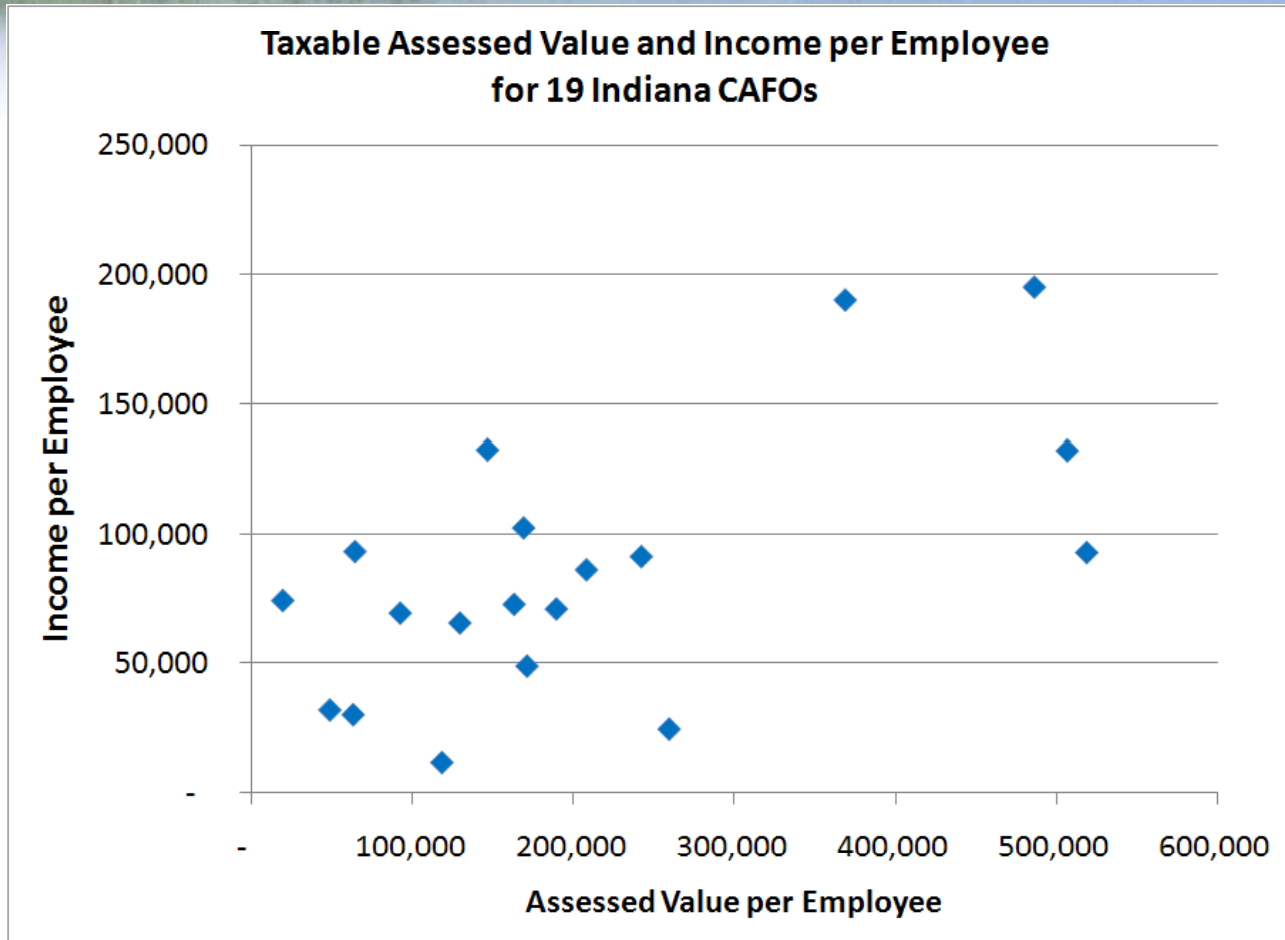
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## Indicators for Average Swine and Dairy CAFOs

|                                 | Swine   | Dairy   |
|---------------------------------|---------|---------|
| Taxable Assessed Value/Employee | 167,200 | 175,364 |
| Taxable Income/Employee         | 74,000  | 61,000  |

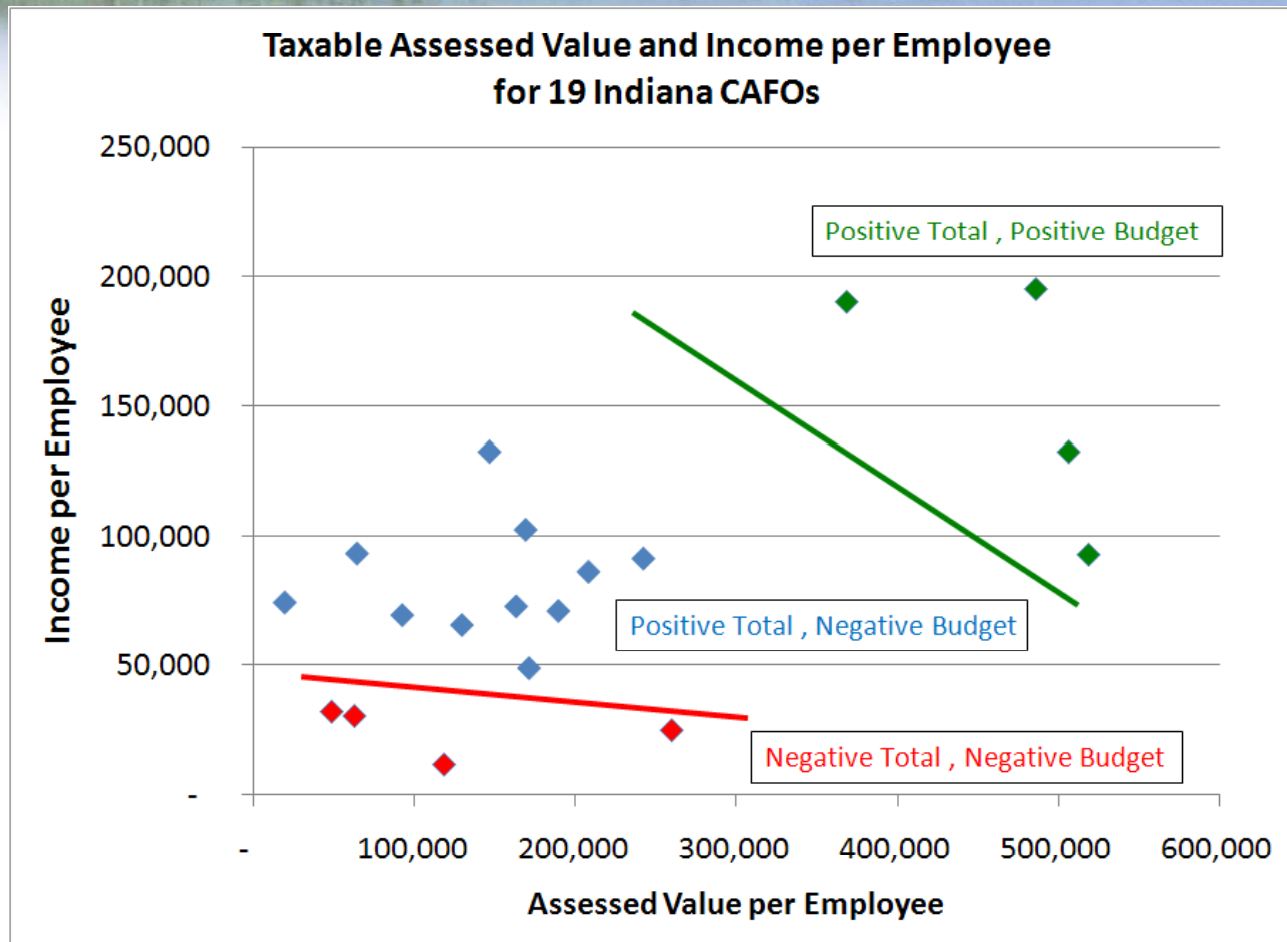
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- Conclusions
  - *Dairy CAFOs are much bigger operations than Swine CAFOs*
    - Dairies have more taxable assessed value
    - Dairies have more taxable income
    - Dairies have more employees



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- Conclusions
  - *Most of the CAFOs in this study pay more in total taxes than they add to county government costs*
  - *Most of the CAFOs in this study add less to county revenue than they add to county government costs*
  - *Part of CAFO tax bills provide tax relief for existing taxpayers, so there is no net addition to county revenues*

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- Conclusions
  - *Four of the 19 CAFOs in this study have positive total and budget fiscal impacts*
  - *Four of the 19 CAFOs in this study have negative total and budget fiscal impacts*
  - *11 of the 19 CAFOs in this study have positive total and negative budget fiscal impacts*



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- Conclusions
  - *CAFOs with higher assessed values per employee and higher taxable incomes per employee are more likely to have a positive fiscal impact*
  - *Swine and Dairy CAFOs can have positive or negative fiscal impacts, depending on these ratios*



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## Environmental Impacts

Tamilee Nennich

Purdue Extension Specialist

Department of Animal Sciences



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## CAFOs & Environmental Impacts

- Concern commonly expressed about larger livestock operations
- Indiana Department on Environmental Management (IDEM)
  - Regulates both CAFOs and CFOs
  - Responsible for permitting and enforcement of livestock operations



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## Enforcement Actions

- Data collected from the 8 counties in the study, 1996 to 2008, from IDEM
- Data collected for all livestock enforcement actions in the counties
  - Beef, dairy, poultry, swine, and veal operations



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## Permitted Livestock Operations

- 155 permitted CAFO operations in the 8 counties as of April 2008
- 247 permitted CFO operations



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## Enforcement Actions

- Livestock enforcement actions recorded – 39
  - Data for the 8 counties over a 13 year period
- Livestock enforcement actions by operation type
  - CAFOs – 15
  - CFOs – 22
  - Unpermitted operations – 2

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## Types of Enforcement Actions

- 39 total enforcement actions

| Enforcement Action Related To:      | CAFOs | CFOs |
|-------------------------------------|-------|------|
| Construction and/or building issues | 4     | 0    |
| Manure storage                      | 2     | 7    |
| Manure application                  | 9     | 17   |



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## Types of Enforcement Actions (cont.)

- Operators usually receive multiple “violations” for each enforcement action
  - On average, CAFOs received 8 to 9 rule violations per incident
- Fines ranged from \$4,250 to ~\$27,000
  - Fines were typically between \$5,000 to \$10,000

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## Other Enforcement Actions

- Enforcement actions were issued to a variety of sources in the counties
  - Cities, churches, business, county parks, etc.
- Over 325 total violations were cited by IDEM in the 8 counties from 1995 to 2008
  - Approximately 12% of violations were related to animal agriculture



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## Environmental Violations Summary

- On average, less than 1% of CAFO operations had an incident on a yearly basis
  - Over 70% of the incidences were related to runoff as a result of manure application
- Operation size did not appear to increase the rate of incidents written up by IDEM
  - Similar incident percentage for CAFOs and CFOs



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## Land Use & Zoning Issues

Janet Ayres

Purdue Extension Specialist

Department of Agricultural Economics

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## Data & Information Sources

- Face-to-face interviews with county plan director or zoning administrator & county highway engineer
- County comprehensive land use plans & zoning ordinances
- All 8 study counties have planning & zoning



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## Plan Directors' Perception of Issues

- Level of conflict in county – average level was 6.4 on a scale of 1 (low conflict) to 10 (high conflict); responses ranged from 4 to 10
- Difficult to give an average level of conflict due to specific site, size of operation & operator
- Primary causes of conflict in the county – most common responses were:
  - Odor
  - Runoff & pollution of wells
  - Loss of property values
  - Relationships/trust issues with CAFO owners

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## Plan Directors' Perception of Conflict

All plan directors/zoning administrators said that it was more difficult to site new operations than to permit expansion of existing operations. Existing operations generally:

- Do not have problems with neighbors
- Have established relationships with people
- Have “roots in the community”
- Have an understanding of “co-existence”



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## County Highway Engineers' Perceptions

- CAFOs do create road problems, but county highway department does not keep record of damages
- Concerns expressed:
  - Major impact during construction phase, esp. from heavy concrete trucks and during spring thaw
  - Road maintenance as roads were not designed/constructed for heavy loads
  - Increased traffic, esp. with dairies



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## Perception of County Highway Engineers (Cont.)

- When there is road damage, CAFO owner paid expenses
  - (2 examples given)
- Generally, CAFO owners are “very good” at cooperating with the county highway department
- One county is considering a bonding requirement when sites are approved to cover possible county costs
- Felt that highway department needed to be part of the review process
- None felt there was damage to bridges



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## Planning & Zoning in Indiana

- Land use in Indiana is a local issue
  - Indiana Code 36-7 Planning & Development
  - Local plan commissions have broad authority to plan for & to adopt zoning ordinances that regulate the use & development of land in rural areas
- State regulatory agencies permit & regulate CAFO operations (IDEM) & determine manure management practices (Office of the Indiana State Chemist) as related to water quality
- Many additional state statutes/regulations & judicial decisions

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## Planning & Zoning Basics

- Comprehensive land use plan – *policy* document ( a guide) for future development of community
- Zoning ordinance – A legal tool to *implement* the plan
  - Improvement Location Permit

The logo for CAFOs (Community Impacts of Concentrated Animal Feeding Operations) is displayed in a large, stylized purple font with a white outline. It is set against a background image of a long, white agricultural building with a blue roof, situated behind a body of water with green vegetation in the foreground.

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## ILRC Model Agricultural Ordinances

Indiana Land Resources Council (Indiana State Department of Agriculture) developed model agricultural ordinances, released March 2007

- Based on traditional zoning functions (at the local level) in coordination with existing state and federal regulations
- Model ordinances serve as a basis for revised county ordinances

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## ILRC Ag Zoning Models

- Multiple Agricultural Districts (zones regarding use of land)
  - *General Agriculture District* – Intent is to provide for/protect broad variety of ag. uses where little/no urbanization has occurred/planned to occur; large tracks of land needed; residential development is permitted by special exception.
  - *Intensive Agriculture District* – Intent is to provide for ag. related industries & confined feeding operations; residential development permitted by special exception, residence limited to farm operation & agricultural clause.
  - *Rural Estate District*– Intent is to provide opportunities for less intensive ag. Uses while accommodating low density single family dwellings & subdivisions



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## ILRC Ag Zoning Models (cont.)

- Limited Use with Development Standards – objective development standards (science-based) are set forth within the zoning ordinance as conditions to a permitted use rather than having a special exception process for new agricultural operations.
- Examples of standards from study counties' ordinances:
  - Setback standards
    - Reciprocal setbacks
  - Minimum lot size
  - Buffers, shelterbelts, landscaping
  - Use of anaerobic digester and/or other odor abatement technologies
  - Direct access onto Arterial/Major Collector roads
  - Driveway, parking, turn around & loading area standards
  - Handling & disposal of dead animals (beyond state guidelines)

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## ILRC Ag Zoning Models (cont.)

- Site Scoring System
  - Pre-determined score that is based on measurable, objective criteria; CAFO applicant must meet minimum score.
  - Provides greater flexibility to meet different farming needs



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## Use of Zoning in Study Counties

- Wells, Jasper and Jay Counties - revised & adopted ordinances as of 2009
  - Wells County – Two Districts – Agricultural Residential “A-R” and Agriculture Intensive “A-1”; future CAFOs permitted only in A-1; applicant must have 220 points min. to obtain local building permit; points based on setbacks & development standards
  - Jasper County – 3 Agriculture Districts and 3 levels of confined animal feeding operations; setbacks & development standards specified as to District & CAFO level
  - Jay County – Agriculture/Residential District “AR” & Rural Residential District “RR”; setbacks & development standards
- Cass Co. - in process of up-dating comprehensive plan & ordinances; current zoning ordinances have setbacks & design standards; CAFOs required to comply with setback standards from development within adjacent counties



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## Use of Zoning Tools in Study Counties (cont.)

- Wabash Co. - CAFO ordinance revised March 2007; one Agriculture District “A”; use of setbacks, development standards, & many other elements that address local issues
- Huntington Co. - ordinances revised as needed; does not have specific CAFO ordinance; one Agriculture District makes reference to minor & intensive livestock facilities
- Benton Co. - ordinance up-dated in March 2007; no specific section of ordinance regarding CAFOs; CAFOs go through the Board of Zoning Appeals as a “conditional use”; BZA final decision maker
- Randolph Co. - revisions to CAFO ordinance will be before commissioners for approval in July

The logo for CAFOs (Community Impacts of Concentrated Animal Feeding Operations) is displayed in a large, stylized purple font with a white outline. It is positioned over a background image of a long, white industrial building, likely a CAFO, situated behind a body of water with green vegetation in the foreground.

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## Summary of Key Zoning Elements

- A matrix with over 25 key zoning elements has been prepared to compare zoning ordinances across the 8 counties. It is being reviewed and will be available soon.



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## Conclusions

- CAFO operators & operations
  - Younger, educated farmers operating large sales farms that rely on hired labor
  - Established operators report mostly positive reception post-siting
- Impact on local government budgets & taxes
  - Most of the CAFOs in this study pay more in total taxes than they add to the county government costs
  - Most of the CAFOs in this study add less to county revenue than they add to county government costs
  - Part of CAFO tax bills provide tax relief for existing taxpayers, so there is no net addition to county revenues



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## Conclusions (cont.)

- Environmental impacts
  - Water quality violations by CAFOs were uncommon
  - Less than 1% of CAFOs were cited for water quality violations



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## Conclusions (cont.)

- Level of controversy during local permit process
  - From perception of plan directors, level of conflict ranged from a low of 4 in one county to 10 in others; average 6.4 (on scale of 1 = low; 10 = high)
  - Difficult to generalize due to size of operation, specific site & operator
  - Expansion of existing operations create less controversy – relationship in community is important
- Land use & zoning
  - All 8 study counties have comprehensive land use planning & zoning; ordinances have been up-dated to address local circumstances & issues



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## Tonight's Presentation

Archive of tonight's session & power point, go to

<http://www.agecon.purdue.edu/extension/programs/cafo.asp>



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For Further Information

Purdue's CAFO web site

[www.ansc.purdue.edu/CAFO/](http://www.ansc.purdue.edu/CAFO/)



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- IDEM staff
- County plan directors & highway engineers
- Employees in county Auditor's, Treasurer's & Assessor's offices
- 50 CAFO owners & operators who participated



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## Questions & Comments

Do you have any questions or comments?

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*Thank you for your participation!*