A Qualitative Impact Evaluation of the Ohio Animal Disease Diagnostic Laboratory

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Abstract

The Ohio Animal Disease Diagnostic Laboratory (ADDL) services various animal agriculture sectors in the state of Ohio that have identified committed goals to increase their production systems exponentially over the next 20 years. Will the ADDL be able to meet the demands of its clients over the next 20 years, as animal agricultural production systems expand? What impact does the ADDL's performance have on its clients, animal agriculture, and the nation? A qualitative evaluation was conducted to identify issues that might hinder the laboratory's ability to keep up with the predicted growth of its clientele, to assess what impact this might have on the animal agriculture industry, and its correlation to supporting public health measures in Ohio.

Since 2015, genetics and regulatory industries have significantly increased their spending on ADDL services, with genetics making up a majority of client spending. If these trends continue over the next 20 years, genetics will contribute approximately 56.8% of ADDL's revenue generated by testing services. Client spending of private practitioners, researchers, and swine industries has decreased which may be a result of some clients choosing to outsource samples to other veterinary diagnostic laboratories (VDLs) that may be more competitive in price and turnaround time. The following laboratory sections: avian serology, bacteriology, molecular, and pathology are expected to see increases in laboratory testing. The remaining sections are expected to see a decline in testing each year. Lastly, average turnaround time ratios for each laboratory section revealed that the virology and serology sections are experiencing difficulties in minimizing turnaround times which is a result of understaffing in those sections of the laboratory.

Furthermore, according to the opinions gathered during stakeholder interviews, the Ohio ADDL has made a significant impact in the lives of its clients and the animal agricultural industries in Ohio. The clients agreed that having the ADDL in Ohio was essential for the success of their businesses despite drawbacks in performance. Stakeholders also agreed that services provided by the ADDL allowed them to better monitor animal health and prevent the spread of disease, ultimately supporting public health initiatives and maximizing profitability for those clients.

Introduction

Ohio animal agriculture sectors have committed goals to increase production systems over the next 20 years.

Will the ADDL be able to meet the demands of its clients over the next 20 years, as animal agricultural production systems expand?

- Invoices collected from the laboratory's database (USALIMS) were then collected and analyzed to demonstrate how demand for routine and diagnostic services has changed over the last 6 years.
- Information collected from this database also served to analyze past and current caseload capacity and turnaround time for testing.

What impact does the ADDL's performance have on its clients, animal agriculture, and the nation?

- Stakeholder interviews determined the predicted growth in client operations over the next 20 years and current opinions of the laboratory's performance.

Findings will help the Ohio ADDL prepare for future caseloads and to ensure that its AAVLD, ISO/IEC accreditation, and NAHLN Level 1 status are maintained and that the ADDL is meeting all criteria in its mission statement.

Methods and Materials

The Office of Responsible Research Practices at The Ohio State University deemed this research as exempt, under protocol number 2020E1230.

Quantitative data analysis

- The amount spent per client per year, the total amount of tests performed per year, and test turn-around-time per year, since 2015 were extracted from USALIMS.
- All identifiable information was removed, and clients were assigned to an animal agriculture industry: Private Practitioners (236), Exotics (7), Research (10), Regulatory (9), Poultry (12), Genetics (7), and Swine (9).
- R, linear regression modeling was used to explore trends from 2015-2040.
  - Alpha=0.1 assigned to determine if trends were statistically significant.
  - Prediction intervals were also provided to demonstrate the limits of what client spending, total test count, and average turn-around-time should be over the next 20 years, with 95% confidence.

Qualitative data analysis

- Stakeholders were recruited via email to participate in a virtual interview.
- A questionnaire and consent materials were provided in advance to all participants.
- Transcripts of the virtual meeting were analyzed with NVIVO software
- Common themes among the stakeholders were identified and supported by quotes from the interviewees.

Results

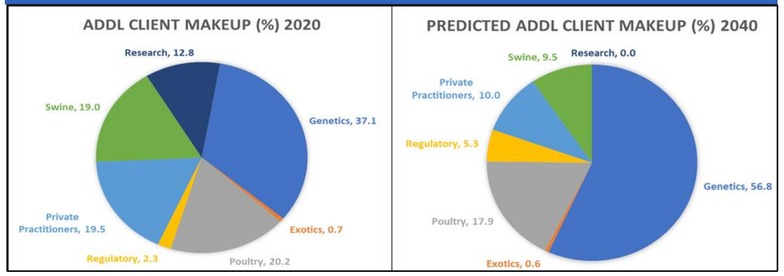

Figure 1. Change in ADDL Client Makeup from 2020 to 2040.

Statement	Average Rating	Explanation	Supporting Quotes
Importance of the ADDL maintaining NALHN Level 1 status	4.89 Extremely Important	Clients believe having a VDL in Ohio with NALHN Level 1 is extremely important	"Being in the state allows, in a matter of hours, to be able to provide resources that will trigger the alarm to establish the emergency plan across the state, if we do not have that is going to be a 48-to-72-hour delay that can potentially be devastating for the state." "Extremely important, just as this lab is a key lab for the Eastern US livestock industry."
Fulfillment of the ADDL mission statement	3.78 Most aspects of the mission statement are fulfilled.	Majority of clients believe that most aspects are fulfilled but there is room for improvement especially in the areas of test timeliness, accuracy, and meeting the needs of their clients.	"We believe that more adequate staffing will ensure more accurate and timely distribution of tests. Improving the facilities for a world-class organization is important."
Satisfaction of quality of services	4.33 Moderately Satisfied	Clients are moderately satisfied with the services they are receiving from the ADDL.	"Certainly, they're committed to following through successfully, but may be hindered by budget, staffing, facilities."

Table 1. Stakeholder opinion summary of responses.

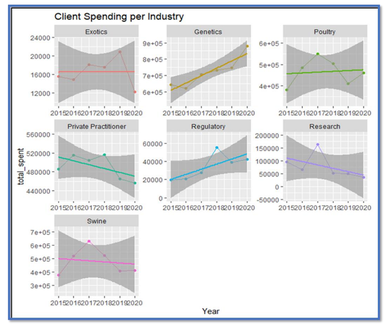

Figure 2. Client Spending; 2015-2020.

Figure 3. Client Spending by Industry; 2015-2040.

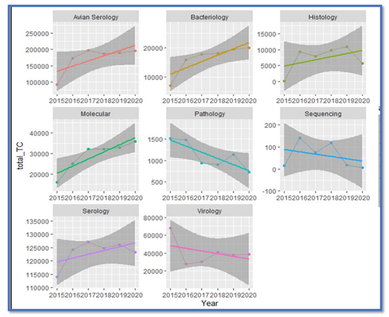

Figure 4. Total Test Count; 2015-2020.

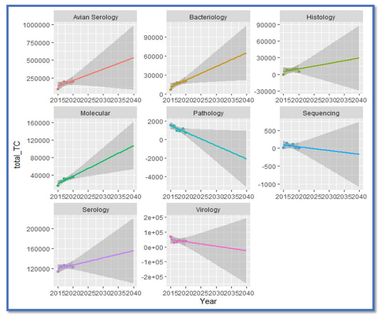

Figure 5. Total Test Count; 2015-2040.

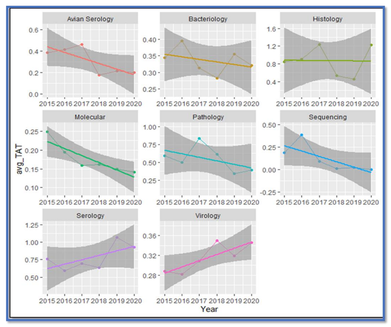

Figure 6. Average Turnaround Time; 2015-2020.

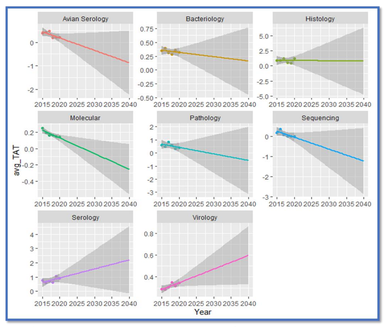

Figure 7. Average Turnaround Time; 2015-2040

Conclusions

- The Ohio ADDL is currently not capable of handling the potential surge in client demand that is expected.
- The success of the ADDL has proven to be a pivotal contributor to the continuity of business for its clients, the protection of Ohio's livestock and poultry populations from the threat of disease, and the integrity and safety of the food supply in the State of Ohio.
- Qualitative and quantitative results, should be reviewed and used to prepare the ADDL for changes in caseload.
- It is strongly encouraged that the laboratory seeks additional funding opportunities to ensure that they have the personnel, space, and resources needed to accommodate the growth of its clientele and meet accreditation standards set forth by AAVLD, ISO/IEC, and NAHLN.

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