



# NU BSL2 Recognition Program Evaluation

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## INTRODUCTION

- The increase of re-emerging diseases, identifying new pathogens, and the spread of infections affecting public health call for prudent laboratory safety practices
- Biosafety accreditation or recognition programs aim to promote compliance and the safe conduct of biological research.
- This study evaluated the Northwestern University (NU) Biosafety Level 2 (BSL 2) Recognition Program implemented in 2017 for its effectiveness and importance.

## METHODS

Research Design Following CDC Guidelines:

- Engagement of the stakeholders
- Description of the program
- The design of the evaluation
- Gathering credible evidence
- Providing justifiable conclusions
- Lessons learned
- Creation of Logic Model to show interactions between activities leading to the outcomes and impact
- Survey evaluation questions were sent to the stakeholders and were based on:
  - Mission and goals of the program
  - Program requirements: excellent housekeeping, routine use of protective equipment, and established history of good safety practices evidenced in the past laboratory safety reviews including training
  - Needs of the stakeholders
  - Research Safety (RS) staff - program's implementation and suggestions for improvement
  - Participating labs - program's effectiveness, frequency of laboratory incidents, number of lab members employed by the lab, and safety compliance
- Stakeholders selection:
  - Internal Stakeholders: NU labs (15), and RS staff (4)
  - External Stakeholders: External institution (1)
- The responses were anonymous (IRB exempt), captured in REDCap (research design database) and a sequential method analysis was deployed. Qualitative (ATLAS Ti) and quantitative (STATA) approaches were utilized to produce thematic codes and descriptive statistics
- External and internal the e-mails responses that were sent to five RS staff and one external institution to determine necessary improvements and similarities between the programs, respectively

## RESULTS

Sequential Method Analysis

- Qualitative Analysis
  - Thematic analysis of eight responses, comprising equal number of labs and RS staff, generated 18 codes with awareness, training, space, and lab safety as most frequently referred to
- Quantitative Analysis Utilizing NU registry for equal number of participating and non participating in the BSL2 Program labs
  - Wider distribution of training deficiencies and last inspection finding for non participant labs.
  - No association between the number of lab members, the number of training deficiencies, and the number of the last inspection findings
  - Statistical significance (95% CI, with a p-value < 0.05 ) for difference between the means in the labs, participating and not participating in the BSL2 Recognition Program, and the number of training deficiencies (0.04) but not for the last inspection findings (0.334)
- Analysis of the external and internal e-mails
  - Additional incentives (better recognition or free lunch)
  - Better advertisement (flyers, emails, newsletters)
  - Training of new staff on how to recognize and enroll new labs
  - Effective use of the existing data, LUMEN, to initiate the invitations
  - Revising the requirements of the current program to allow other labs to join

## DISCUSSION

- Prudent practice, implementation of safety guidelines, and proper design of the laboratories are among many safeguards preventing LAI
- The NU Biosafety Level 2 Recognition Program was intended to recognize the highest laboratory safety standards, the culture of biosafety, biosecurity, and responsible conduct of science among NU laboratories.
- The program's initiation was executed well enough to draw some attention, but it was ineffective in enlisting more than 10% of the total BSL2 community
- The low frequency of the participants implied the program needed evaluation and warranted revisions.
- Responses provided by the participating labs, external contact, and RS staff were consistent with good intention of the program but not well executed
- Participation in the program revealed better safety compliance in training and last inspection findings.
- The analysis of the survey responses and emails revealed a desire for continuation, with warranted revisions.
- The engagement with the stakeholders, the proper research design, following CDC guidelines were the crucial element to this program evaluation

# CDC guided BSL2 Recognition

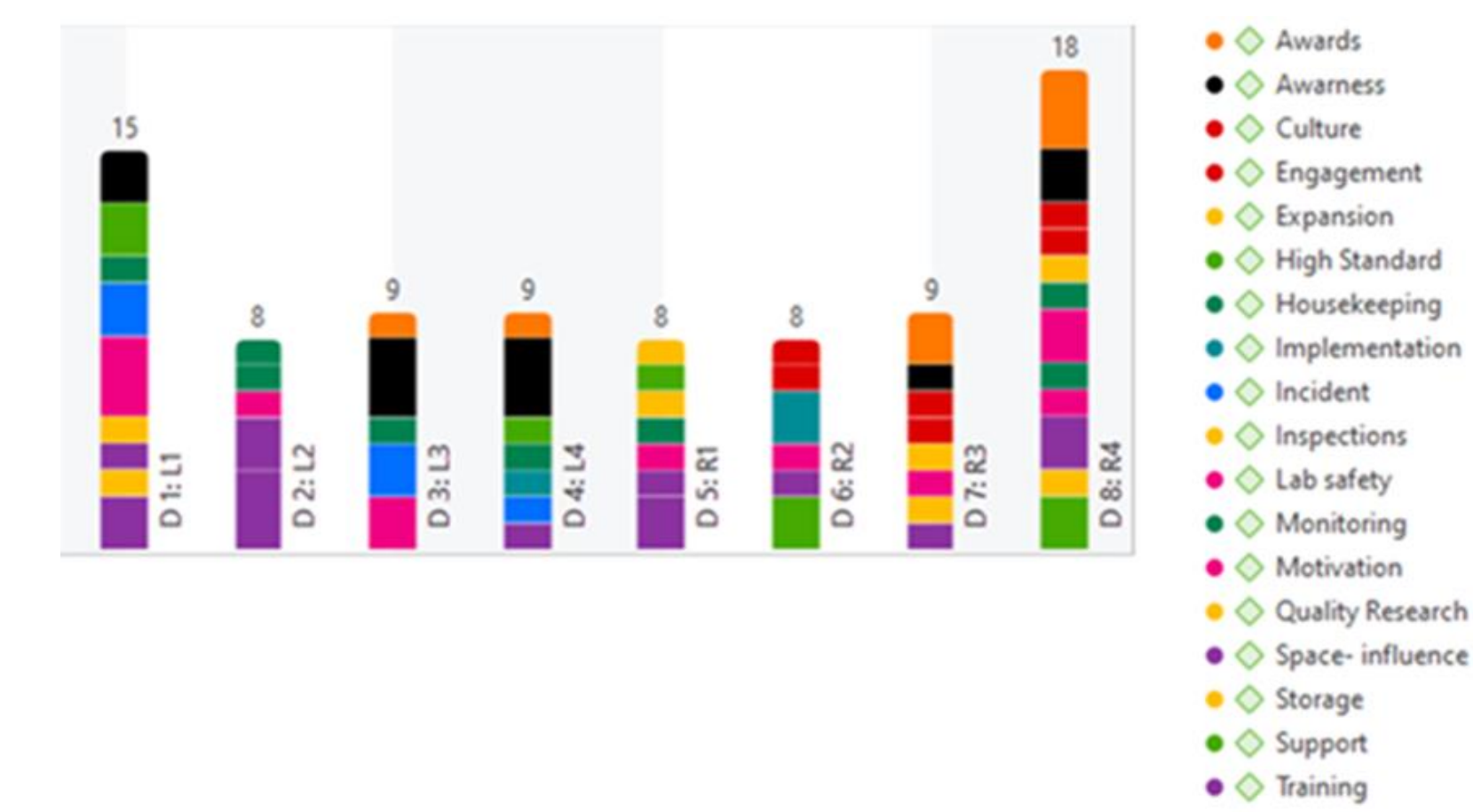
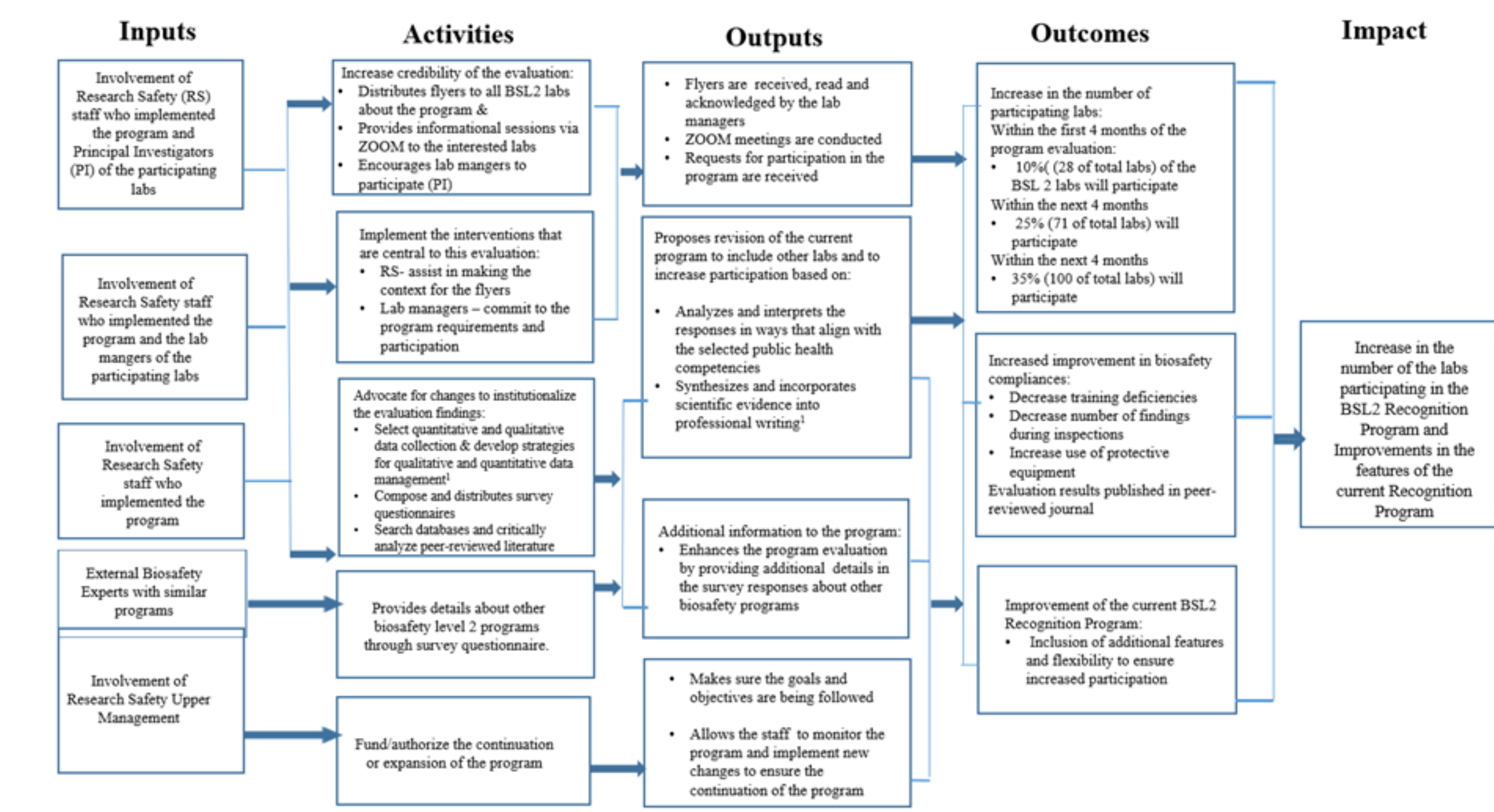
## Program evaluation revealed

## weakness and steps to

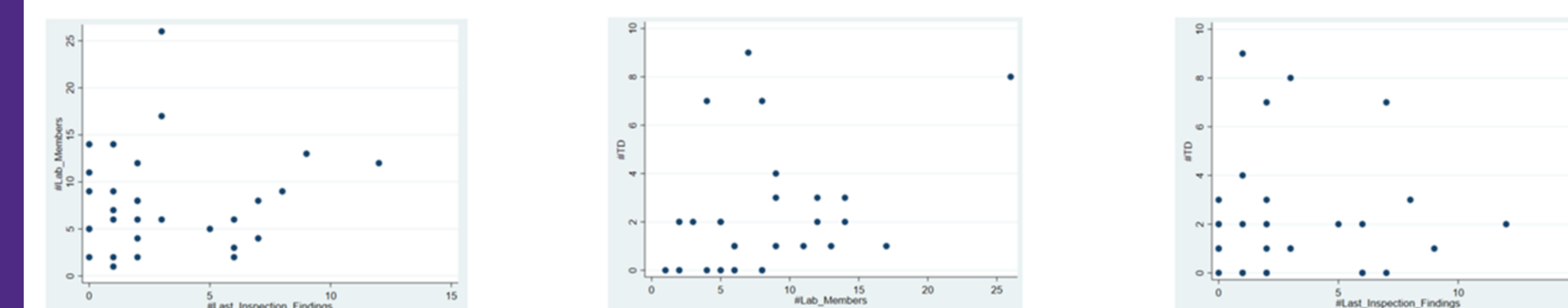
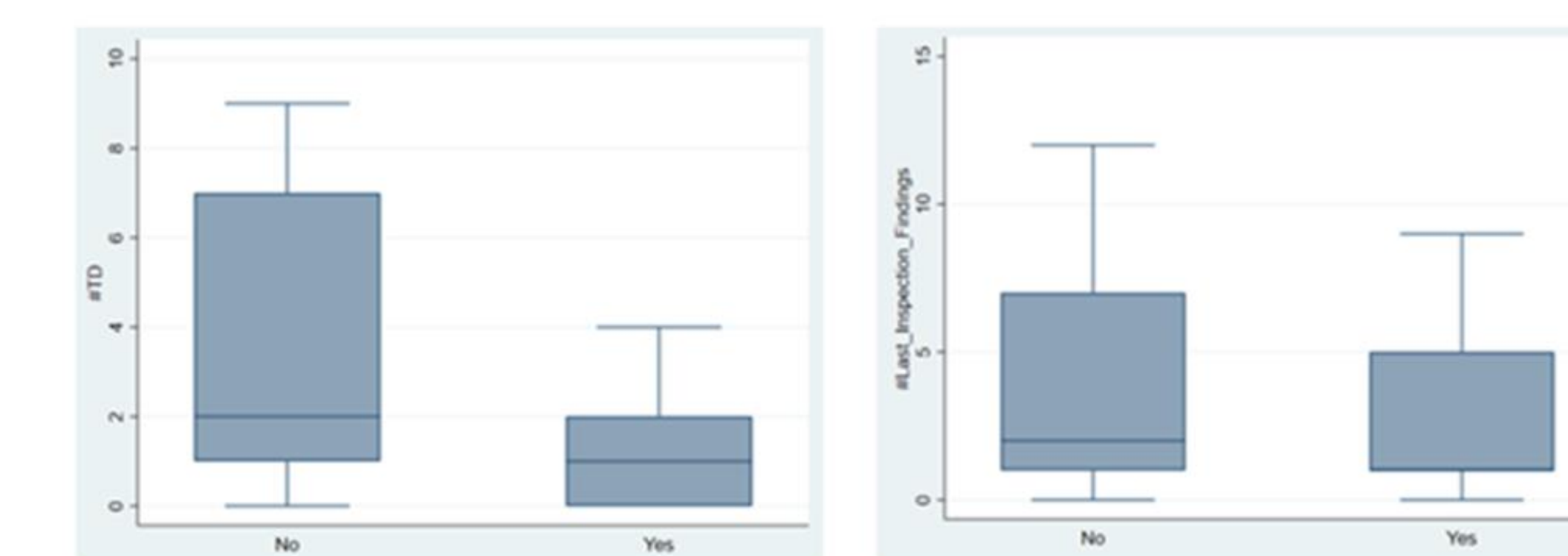
## improvements with the

## emphasis on stakeholders

## engagement.



Box plots of BSL2 participation and the numbers of training deficiencies (#TD), and the last inspection findings (#Last\_Inspection\_Findings).



Source	Details
External email	Mission, goals and regulations similar to NU Program
Internal email – BSL 2 Recognition Program participant RS staff	Additional incentives (better recognition or free lunch) Better advertisement (flyers, emails, newsletters) Training of new staff on how to recognize and enroll new labs Effective use of the existing data, LUMEN, to initiate the invitations Revising the requirements of the current program to allow other labs to join
Internal email – BSL 2 Recognition Program non-participant RS staff	Lack of clarity and communications on the program's mission Better incentives to recognize the participating labs Approaches with the Principal Investigators