SYST 699 Final Project

US Department of Agriculture (USDA)
Food Safety Inspection Service (FSIS)

Team Members
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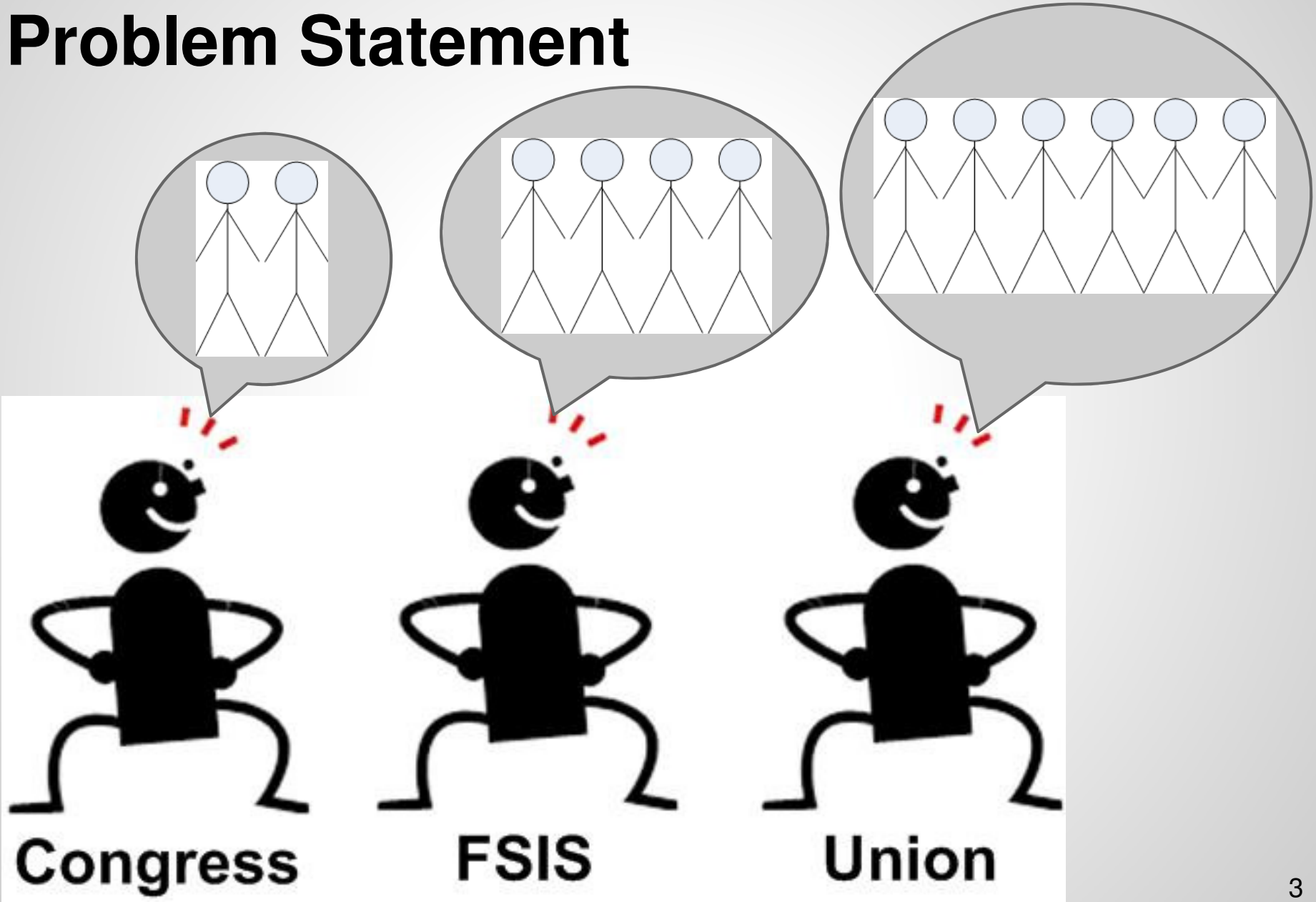
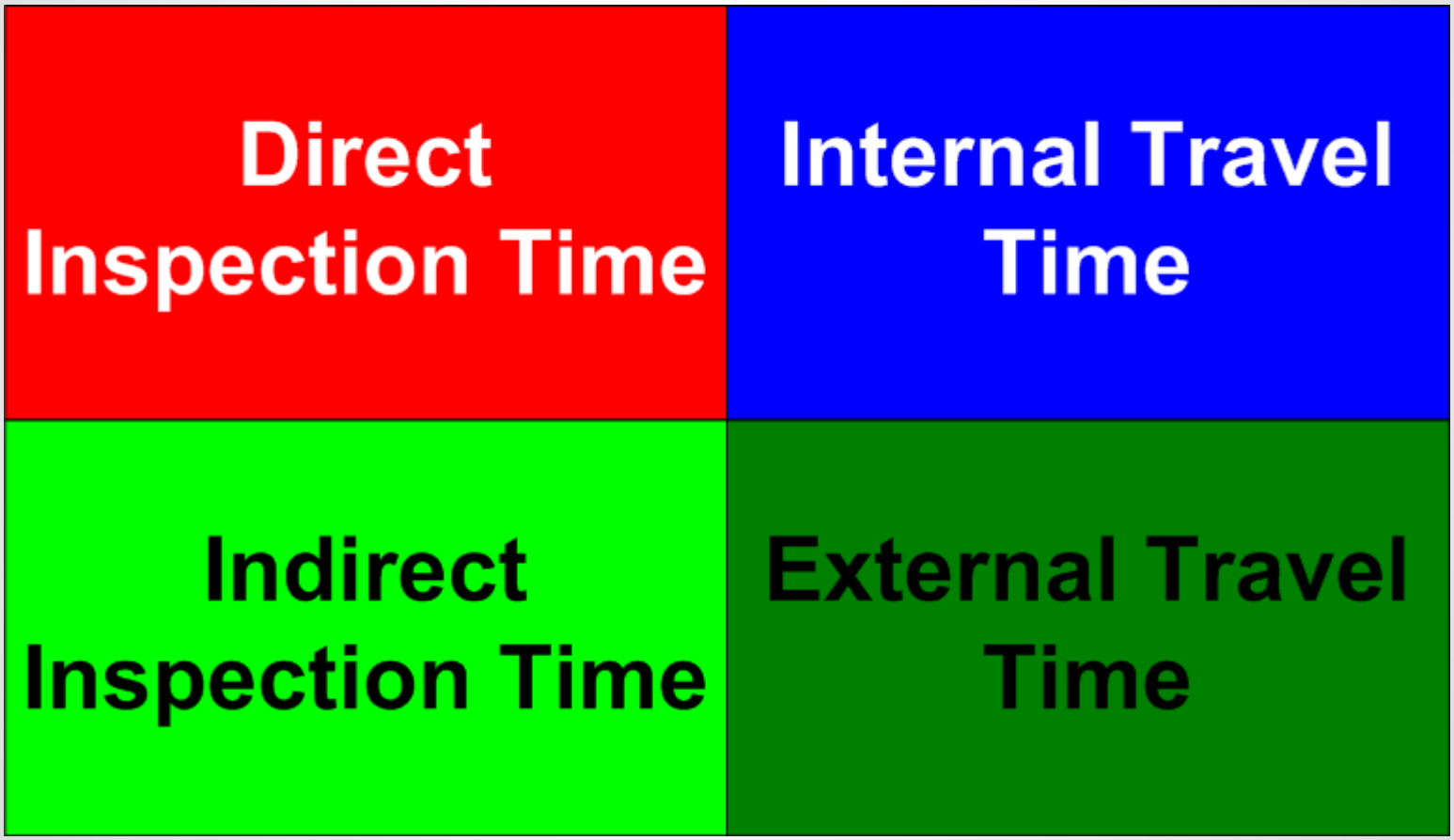
Food Safety Inspection Service (FSIS) Mission Statement

"The Food Safety and Inspection Service (FSIS) is the public health agency in the U.S. Department of Agriculture responsible for ensuring that the nation's commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged”

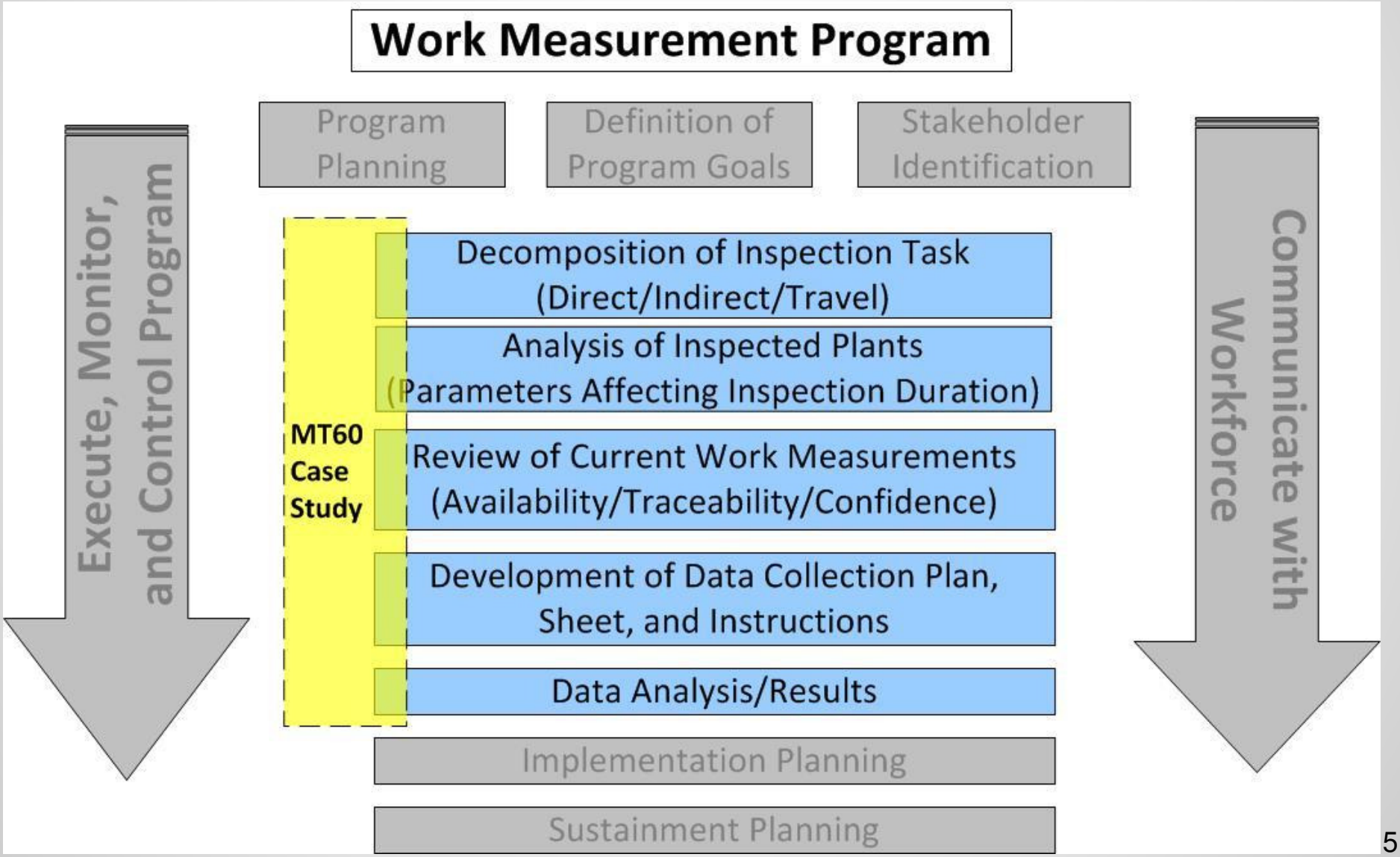
Problem Statement



Work Measurement



Problem Formulation and Scope



MT60 Sampling Program

N=60

2lb Grab

Courtesy of USDA FSIS N60 Sampling Update Video, March 2010

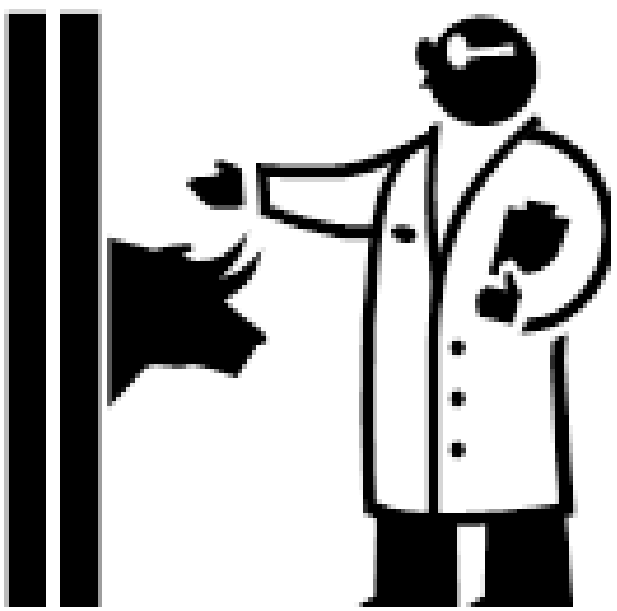

GOVERNMENT
SHUTDOWN!!!

The Work Continues!

- During and immediately after the shutdown the team developed the following work products:
  - MT60 Task Decomposition
  - Data Collection Plan
  - Data Collection Sheet
  - Data Collection Sheet Instructions
- The team also developed outlines and began developing the following work products:
  - Data Analysis Spreadsheet
  - Final Report

Data Collection

- Executed by SCSIs and PHVs
- Completed Data Collection Sheet (DCS)
- Returned Data to GMU Team



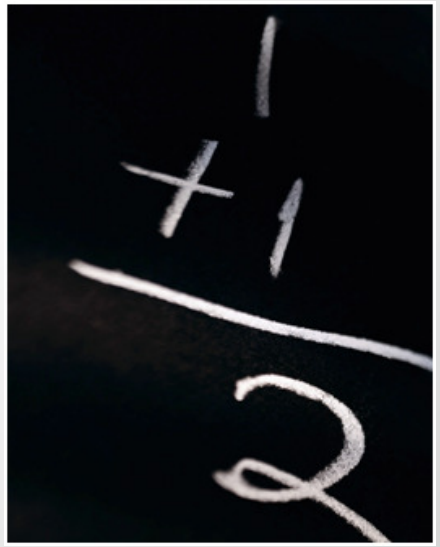
- 89 Establishments Participated
- 107 DCS received
  - 13 blanks
  - 6 unusable due to bad data
  - 88 Included in Analysis

Data Quality Issues

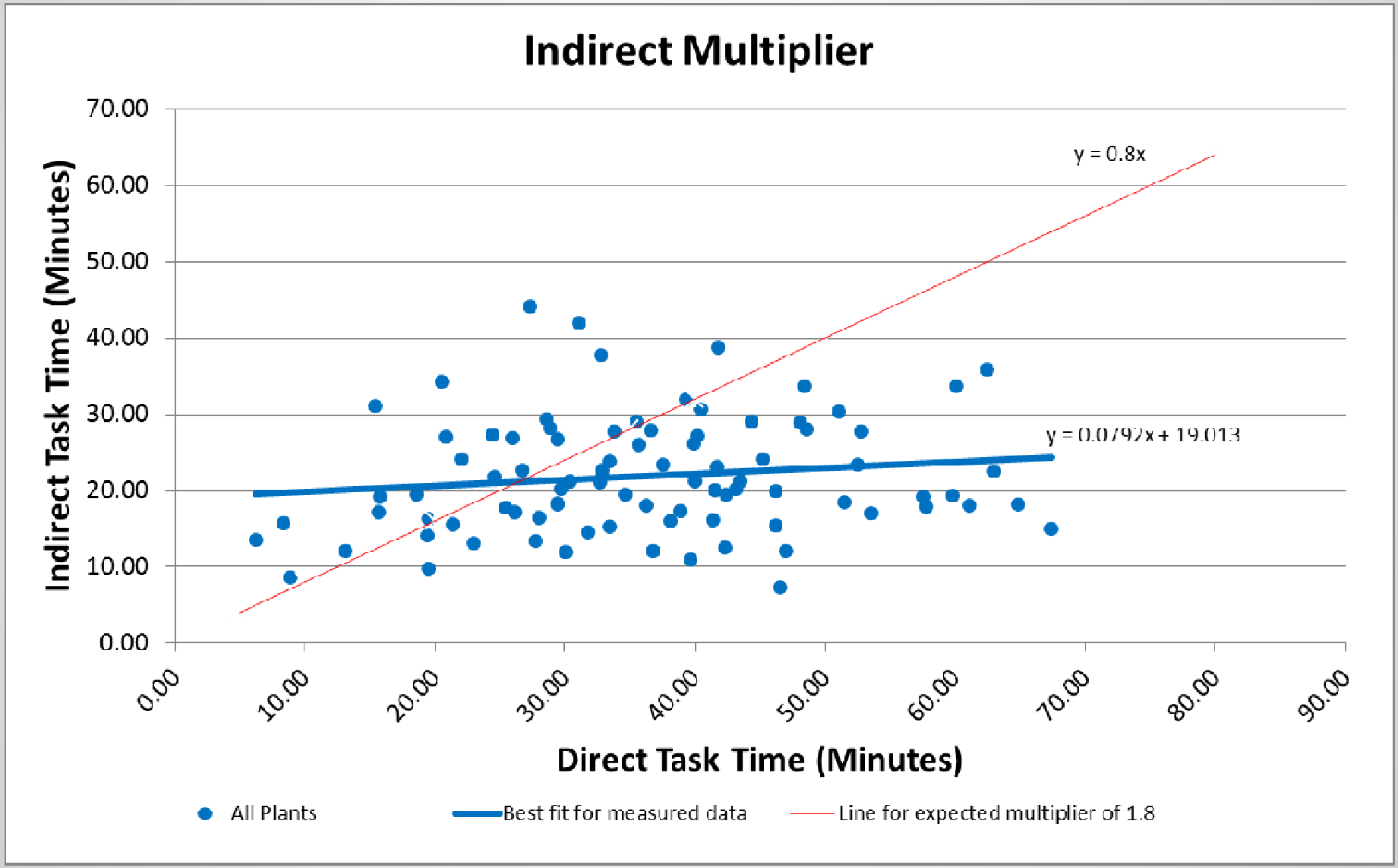
- Blank Forms
- Incomplete Forms
- Elapsed Time Format
- Elapsed Time versus Individual Time
- Step Sequencing
- Logic Errors
- Excluded Data

Data Analysis

- Indirect Multiplier
- Confidence Intervals on Mean
- Sensitivity Analysis
- Apply Analysis of Variance (ANOVA)
- Apply T-Test
- Verify Results



Indirect vs Direct Time (Multiplier)



Results – Confidence Intervals

Inspection Time Confidence Intervals				
Confidence Level (%)	95			
Z value	1.96			
Measure	***Mean***	***(+/-) Interval***	***Lower Limit (Minutes)***	***Upper Limit (Minutes)***
Direct Time	36.1	2.9	33.2	39.0
Indirect Time	21.9	1.6	20.3	23.5
Total Time	**58.0**	**4.5**	**53.5**	**62.5**

Indirect multiplier is ~1.6, which is lower than the 1.8 multiplier currently assumed by FSIS.

Sensitivity Analysis

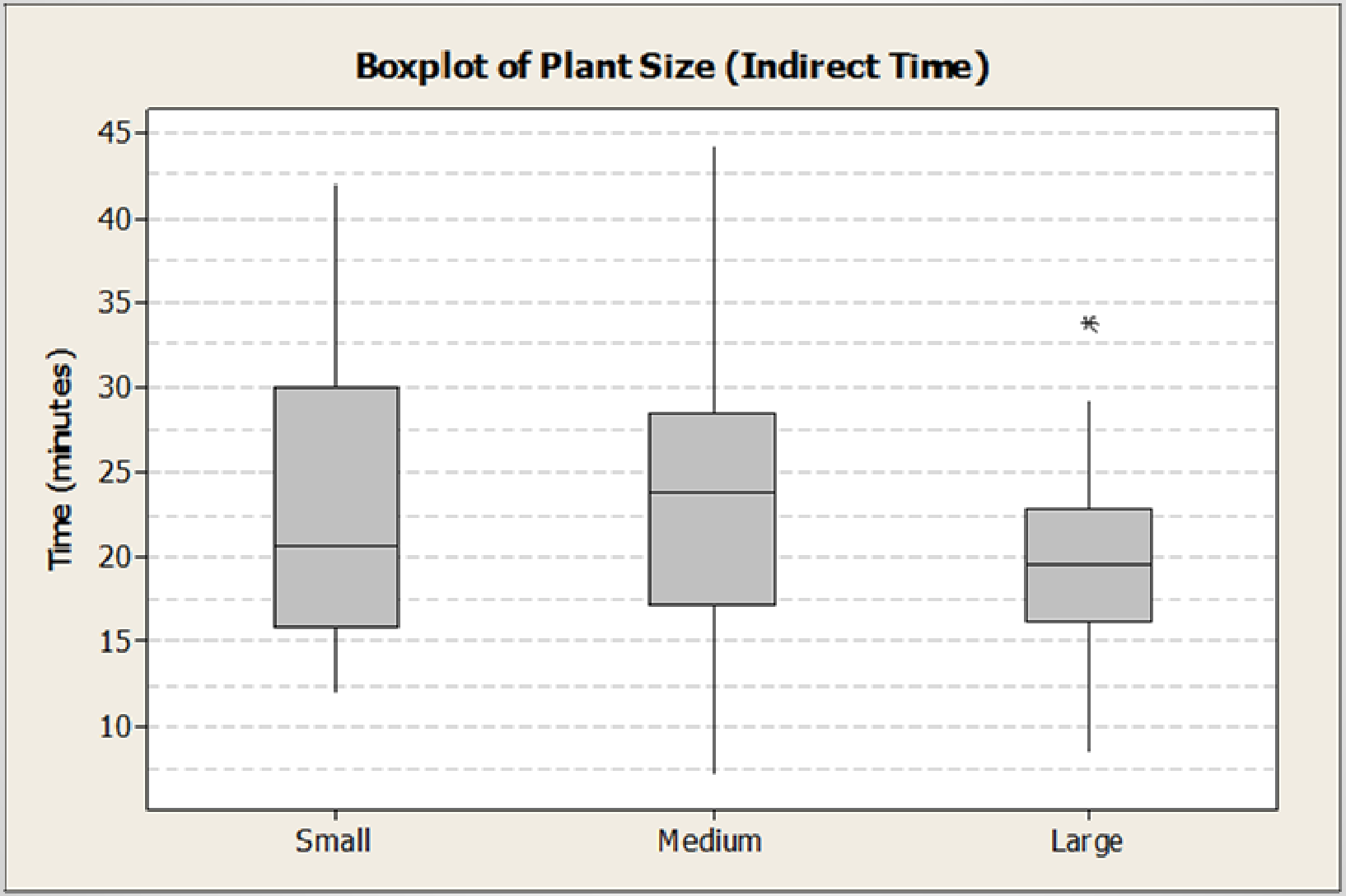
Inspection Time Confidence Intervals				
Confidence Level (%)	99			
Z value	2.54			
Measure	*Mean*	*(+/-) Interval*	*Lower Limit (minutes)*	*Upper Limit (minutes)*
Direct Time	36.1	3.7	32.4	39.8
Indirect Time	21.9	2.1	19.8	24.0
Total Time	**58.0**	**5.8**	**52.2**	**63.8**

99% CI Calculated, Compared to 95% CI

Inspection Time Confidence Intervals				
Measure	*Mean*	*95% CI(+/-)*	*99% CI (+/-)*	*Difference in CI*
Direct Time	36.1	2.9	3.7	**0.8**
Indirect Time	21.9	1.6	2.1	**0.5**
Total Time	**58.0**	**4.5**	**5.8**	**1.3**

Very small, less than 2.5%

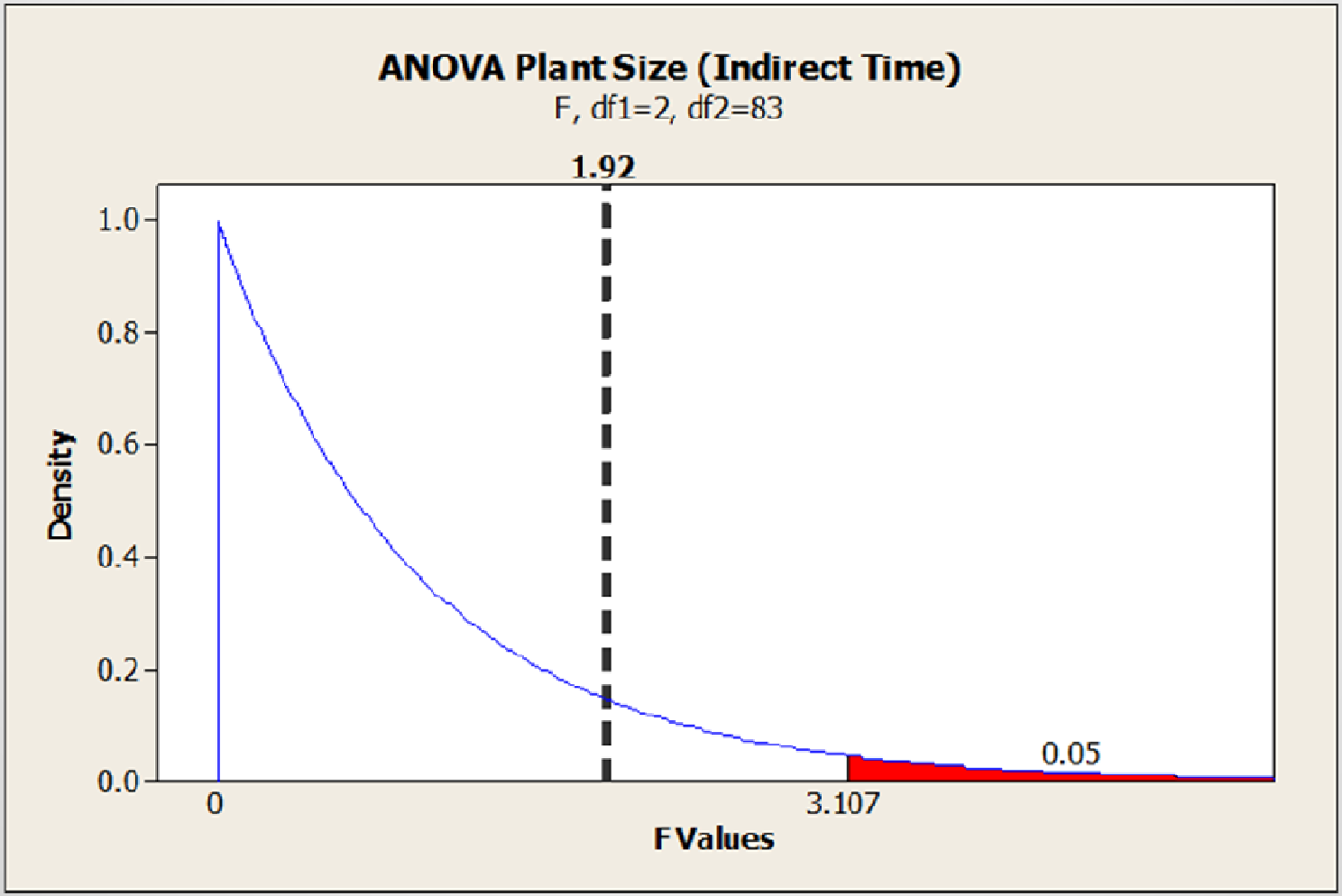
Boxplot - Plant Size (Indirect Time)



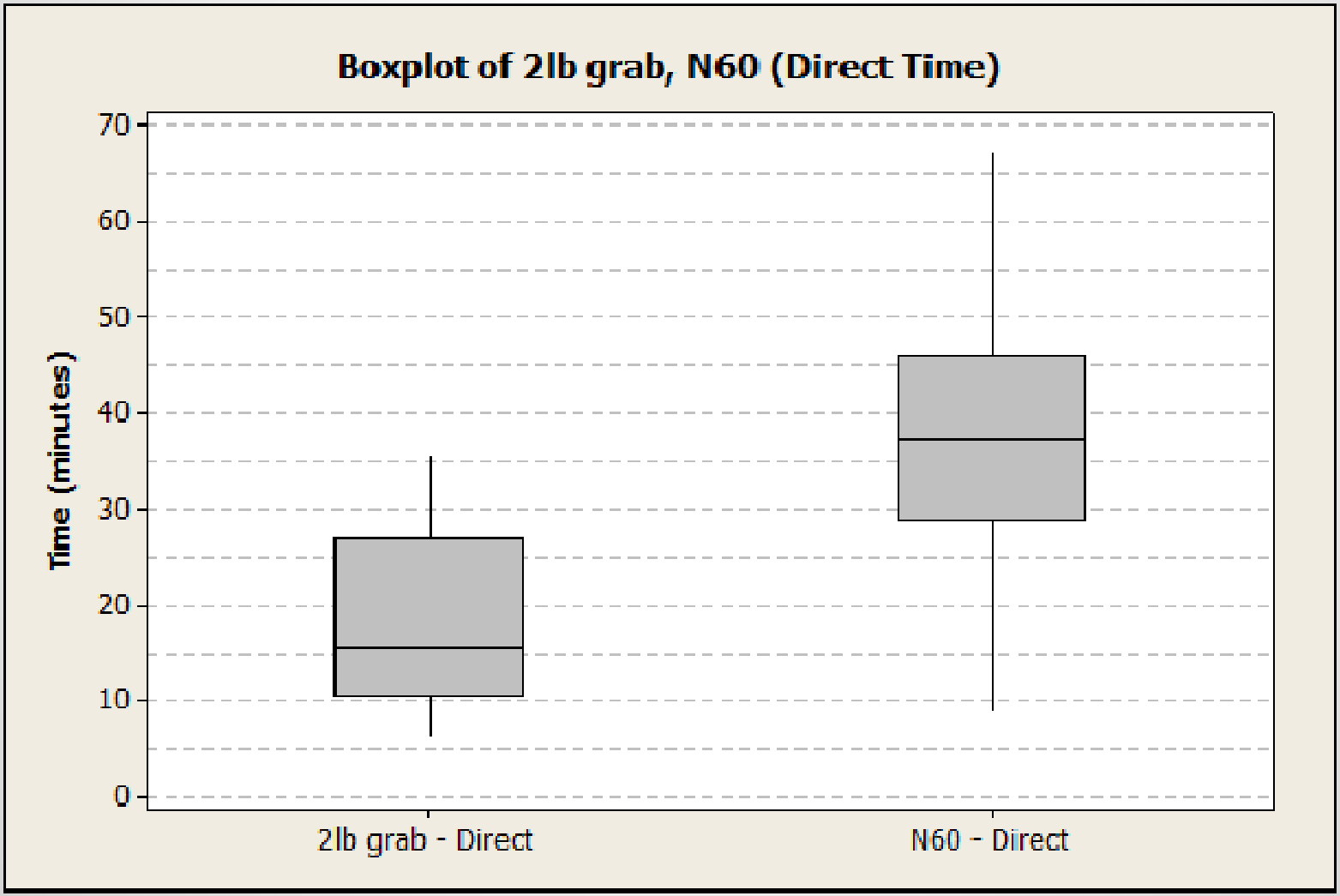
ANOVA - Plant Size (Indirect Time)

Null Hypothesis

Small Plant = Medium Plant = Large Plant (Mean Indirect Time)



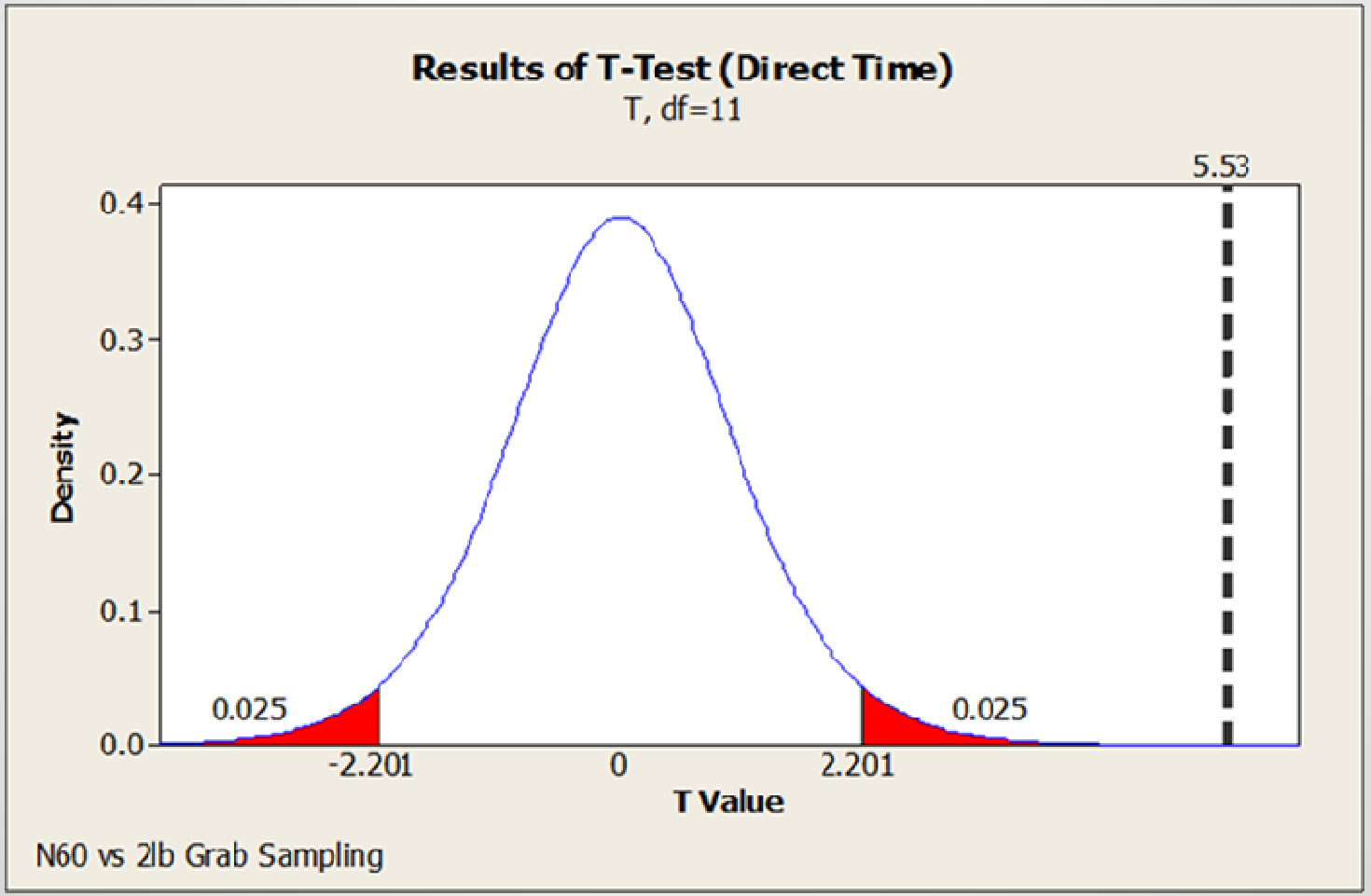
Boxplot - MT60 Sampling (Direct)



T-test MT60 Sampling (Direct)

Null Hypothesis

N60 = 2lb Grab (Mean Direct Time)



Analytical Results

Parameter	Affects Direct Inspection Time?	Affects Indirect Inspection Time?	Statistical Technique
Plant Size			ANOVA
N=60 vs. 2lb Grab			T-Test
Measurement Team Size			T-Test
District			ANOVA
Connection Type			ANOVA

Analysis Verification

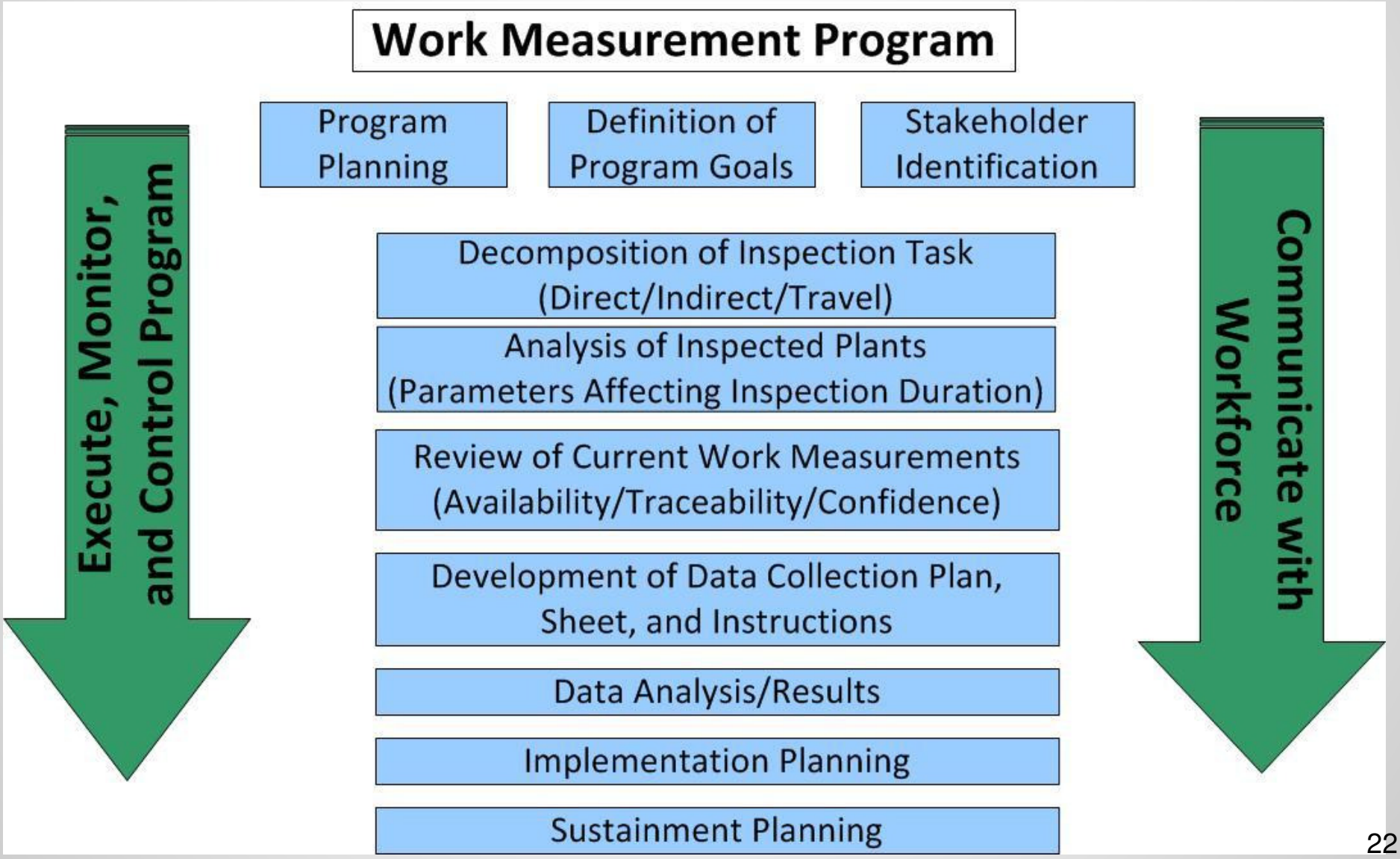
- Minitab Check
  - ANOVA
  - T-Test
  - Confidence Intervals
  - Descriptive Statistics
- Multiple Team Member Spreadsheet Review
  - Data Entry
  - Equation Entry
  - Data used in Calculations

Value to FSIS

- Tailorable Data Collection Plan
- Tailorable Analysis Spreadsheet

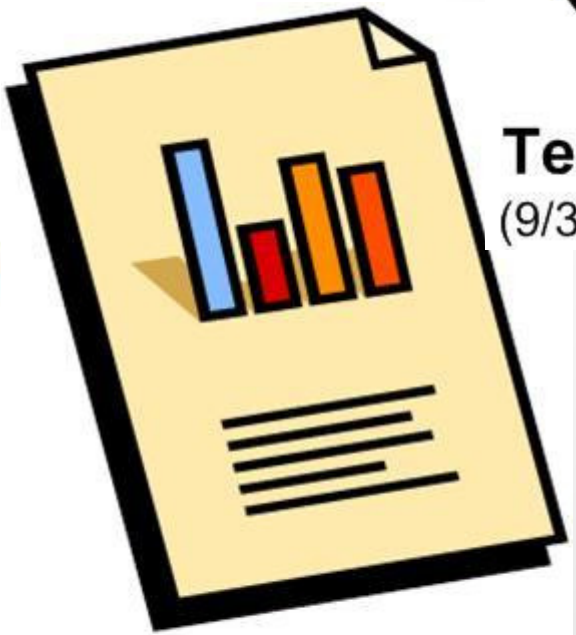
- Tailorable Data Collection Sheet and Supporting Documents
- Recommendations that can be applied to future work measurement tasks

Recommendations & Future Work



Client Interaction

Face-To-Face Meetings
(9/6 and 9/20)



Weekly Status Reports

Teleconferences
(9/3, 9/27, 10/24, 10/27)

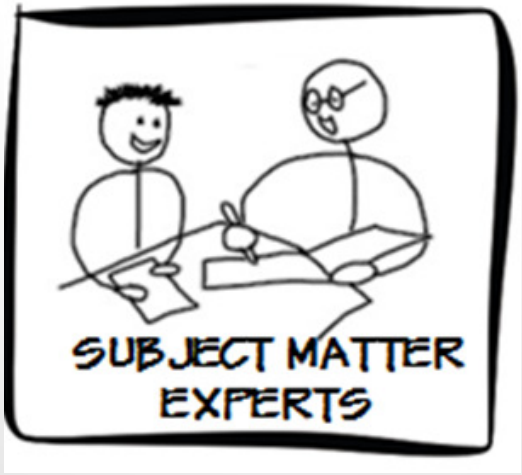
Email

Thank You for Your Support!

- Dr. Regina Tan, Project Champion
- FSIS Team, Subject Matter Experts
- Dr. Phil Barry, Advisor
- Dr. Robert Sims, Statistics Advisor
- Dr. Karla Hoffman, Project Advisor

Source: http://thevirtualleader.wordpress.com/2012/06/26/behold-the-telework-champion/

Source: http://www.physics.csbsju.edu/stats/display.html



Source: https://www.ibm

Source: http://birch.co/post/16921724343/startups-and-the-role-of-advisors