

Continuous Program Improvement (CPI)

CPI Support Call Analyzing CPI Quantitative Data

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ETR Associates

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Before we get started...

- Press *6 to mute and *7 to un-mute. Please mute your phone now.
- If you have a question, please tell us your name and agency before asking your question.
- This PowerPoint presentation and a brief feedback survey can be accessed from the ETR website at www.etr.org/ofp.
 - Click on Left side-bar "CPI and Statewide Evaluation" then under "CPI Support Calls" select "Analyzing Quantitative Data."

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Training Objectives

- As a result of participating in this training call, participants will:
 - Increase their understanding of approaches to analyzing CPI quantitative data.
 - Improve their ability to interpret findings of CPI quantitative data.
 - Identify strategies to facilitate how to summarize CPI quantitative data.
 - Increase their confidence to complete the CPI data summary report.

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Analyzing Your CPI Data

- Your CPI data can be categorized into two general types of data.
 - *Quantitative* – numerical in form (e.g., data from surveys—how much, how many, etc.).
 - *Qualitative* – rich in nature, non-numerical (e.g., usually in written form, observations, interviews, open-ended questions, etc.).

● *Disclaimer: Information provided is for CPI purposes only and is not intended to cover all levels or areas of data analysis.*

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Think About Your Data

- You have collected your CPI data, now what?
- Ask yourself...
 - What do I really have in front of me?
 - Why did I collect these data?
 - How will I use the results to guide decisions?
 - What information do I want to report on?
 - How do I make sense of what I collected?

Quantitative Data	Qualitative Data
<ul style="list-style-type: none"> ● Number of respondents who answered each question ● How many answered 'a' 'b' or 'c' ● Percentage that answered 'a' 'b' or 'c' ● Mean scores ● Change in score from pretest to posttest 	<ul style="list-style-type: none"> ● Open-ended questions and written comments ● Focus group interviews/individual interviews ● Implementation logs ● Observations

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Today's Focus: CPI Quantitative Data Analyses & Interpretation

- What is quantitative data?
 - Numbers; not words and observations.
- What is data preparation?
 - Several steps are needed to code, clean and check data.
- What is data analysis?
 - A numerical/statistical tabulation of the data.
- What is data interpretation?
 - A process to examine and reflect upon the messages emerging from the data.
- What do I do with my results?
 - Display and report results to tell a story and highlight findings.

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Quantitative Data Sources

- For CPI purposes, most quantitative data come from:
 - Surveys of participants, youth, clients served.
 - Internal ratings from program staff/health educators/peer educators about different aspects of your program.

Satisfaction Survey		
Because of this presentation, do you have a better idea of what changes will happen to your body?		
Yes	No	Not Sure
1	2	3

Pretest/Posttest Survey		
Can you tell if someone has a sexually transmitted infection just by looking at them?		
Yes	No	Not Sure
1	2	3

Implementation Tool				
How interested, in general, were the participants during the session?				
Not at all		Somewhat		Very
1	2	3	4	5

Training & Support Tool				
How comfortable do you feel providing referrals to clinical services?				
Not at all		Somewhat		Very
1	2	3	4	5

Preparing for Quantitative Data Analyses

- Decide how you will analyze your data?
 - By hand.
 - Create a tally sheet.
 - By computer.
 - Spreadsheets (Excel).
 - Statistical Software.

Handy Tally			
1. Because of this program, do you have a better idea of what changes will happen to your body?			
Yes	No	Not Sure	Missing
✓✓✓	✓✓	✓	✓
Value = 1 3 responses	Value = 2 2 responses	Value = 3 1 response	No Value 1 response

Columns=questions		
ID	Q1	Q2
01	3	
02	3	
03	3	
04	2	
05	2	
06	1	
07		

Rows=respondents

Sample Excel Spreadsheet

Missing data do not enter

Preparing for Quantitative Data Analyses

- Preparing for data analyses.
 - Create a code book.
 - Check and clean data.
 - Check for completeness of data.
 - Clean your data (decisions based on code book).
 - Assign identification numbers (ID) to each survey (if needed).
 - Hand number (write) 1....xx on top right corner.
 - Storing data.
 - Keep all of the survey/CPI data you collect in a safe secure place.

Preparing for Quantitative Data Analyses

- Create a Scoring Sheet or Code Book.
 - Prepare your data for analyses by making a scoring sheet or code book that shows the correct or desired response for each item.
 - Assign a number or value to each response.
 - Make a copy of your survey.
 - Title it 'CODE BOOK.'
 - Keep notes on this about decisions you make for entering/coding data.

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Example: Survey & Code Book

Example of a survey:

1. What gender are you?
 Female Male
2. How did you hear about this clinic? (Check all that apply.)
 - Flyer or brochure
 - From a presentation
 - At a program for teens
 - Friends
 - Boyfriend/girlfriend
 - Other: _____
3. Did you get the services you came in for today?
 Yes No
4. Overall, I think the clinic staff was:
 - Not at all helpful
 - Not very helpful
 - A little helpful
 - Very Helpful
5. What did you like best about the program?

Example of code book for survey:

- | Question | Code |
|---|--------------------------|
| Gender: | 1=Female 2=Male |
| 2. Hear about this clinic? (Check <u>all</u> that apply.) | |
| <input type="checkbox"/> Flyer or brochure | 1=checked; 0=not checked |
| <input type="checkbox"/> From a presentation | 1=checked; 0=not checked |
| <input type="checkbox"/> At a program for teens | 1=checked; 0=not checked |
| <input type="checkbox"/> Friends | 1=checked; 0=not checked |
| <input type="checkbox"/> Boyfriend/girlfriend | 1=checked; 0=not checked |
| <input type="checkbox"/> Other: _____ | 1=checked; 0=not checked |
| 3. Receive services? | 1=Yes 2=No |
| 4. Overall: | |
| <input type="checkbox"/> Not at all helpful | = 1 |
| <input type="checkbox"/> Not very helpful | = 2 |
| <input type="checkbox"/> A little helpful | = 3 |
| <input type="checkbox"/> Very Helpful | = 4 |
| 5. Like most about the program?
- Review comments, identify lists/common themes.
Missing = '9', '99' or blank | |

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Example: Checking & Cleaning Data

- Review surveys/data collection tool for problems or unusual marks.
- Code responses based on your scoring/code sheet.

Issue	Resolution
<ul style="list-style-type: none"> ● <u>Incomplete survey or questionable data.</u> <ul style="list-style-type: none"> ○ Survey has only 1 or 2 items marked. ○ Survey has a nice design or clear response pattern suggesting that respondent may have just randomly responded to each item. 	<ul style="list-style-type: none"> - Make the determination which surveys will be used for tally/data entry based on level of completeness. For CPI, include if some demographic data and xx items have been completed. - If you decide to exclude a survey, write a note on it (i.e., do not enter) to document your decision. - Be sure to subtract this survey from your denominator.
<ul style="list-style-type: none"> ● <u>Missing data.</u> 	<ul style="list-style-type: none"> - Common practice for hand tally, count the number of missing responses for each item and label them 'missing' or 'no response' - For data entry, code as '9' or '99' or leave blank. - Exclude these from data analysis.

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Example: Missing Data

- Missing data can result from a number of reasons:
 - Respondents may not answer the questions because they do not want to/feel uncomfortable.
 - They miss the question (do not see it).
 - They do not understand the question.
 - Respondents do not understand the directions or how to respond to an item.
 - The reading level is too high or the amount of reading is too much.
- Missing data impacts data analyses:
 - Important to use the correct denominator to calculate %.
 - Pull out missing data from denominator.

Example: 100 surveys (N=100)

Item # 4:	n	%
Yes	70/90	78%
No	20/90	22%
Missing	10	100%

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Example: Checking & Cleaning Data

Issue	Resolution
<ul style="list-style-type: none"> Marked in between response options. <p>Not at all Somewhat Very</p> <p>1 2 3 X 4 5</p>	<ul style="list-style-type: none"> A simple way to address this is to flip a coin: heads=higher score; tails= lower score. Mark on the survey which response you included in your data entry. Do this every time you have more than one response marked so that you are consistent.
<ul style="list-style-type: none"> More than one response marked. <p>Not at all Somewhat Very</p> <p>1 2 (3) (4) 5</p>	<ul style="list-style-type: none"> Same as marked in between response options. Another option is to count these as missing data.

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Quantitative Data Analyses Approaches

- For CPI, most of your quantitative data analyses will focus on:
 - Numerical counts or frequencies
 - Percentages
 - Means
 - Change from pretest to posttest

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Frequencies/Percentages

- Frequencies (counts) tell us how often something occurred or how many responses fit into a category.
 - For example:
 - 54 of the youth were female.
 - 38 of the 50 youth rated the program as excellent.
- Percentages are a way to express counts in a standardized way. It is a proportion multiplied by 100.
 - For example:
 - 25 out of 48 were 9th graders.
 - $25/48 \times 100 = 52\%$ of the participants were 9th graders.

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Example: Frequency Distribution

Survey Results
Sample Frequency Distribution Table (N=60)

	Frequency (N)	Percentage (%)
Males	23	38%
Females	37	62%
Totals	60	100%
Question #1. Should this program be offered to other students your age?		
Yes	38	63%
No	22	37%
Totals	60	100%

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Tips: Reporting Percentages

- Common practice: Report the number of cases on which the percentage is calculated:
 - 'N' (total group) or 'n' (subsample).
- Common errors:
 - Using incorrect denominator.
 - Missing data.
 - Totals should add up to 100%, or within rounding error.

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Tips: Reporting Percentages

- Common errors.
 - Rounding:
 - Five (e.g., 20.5) or greater is rounded up.
 - Under five (e.g., 20.4) is rounded down.
- Handling 'Mark all that apply.'
 - Report each response percentage separately rather than adding all percentages.

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Practice: Reporting Percentages With Missing Data

18. In the last month, have you talked with your parents or other adults about any of the following things? Mark all that apply. (N=110)	Yes	No	Missing
A. Your questions about sex (n=110)	27% (30)	73% (80)	0
B. What the adult thinks about teenagers having sex. (n=108)	37% (40)	— (68)	2
C. Sexually Transmitted Diseases or HIV (n=110) LESS ACCURATE way to report percentages with missing data	13% (14)	65% (71)	23% (25)
C. Sexually Transmitted Diseases or HIV (n=85) MORE ACCURATE way to report percentages with missing data	16% (14)	84% (71)	25

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Tips: Reporting Percentages

- You can score knowledge items individually:
 - Score each knowledge item as correct or incorrect on each survey. Blank or incorrect answers should be marked as incorrect.
 - For each survey item, count the number of correct responses.
 - Compare pretest to posttest changes.

Contraceptive Knowledge Questions (N=110)	# (%) of respondents who answered correctly Pretest	# (%) of respondents who answered correctly Posttest
-Is it safe to share birth control pills with a friend?	24 (22%)	86 (78%)
-Is withdrawal an effective way to prevent pregnancy?	39 (35%)	61 (55%)

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Tips: Reporting Percentages

- You can collapse data and report similar items together:
 - Create a **knowledge score** - by counting up the responses to the knowledge items covering a similar topic.

Contraceptive Knowledge Questions (N=110)	# of contraceptive knowledge questions answered correctly	# of Respondents answering correctly	Score
-Is it safe to share birth control pills with a friend?	0	2	0 x 2 =
-Is withdrawal an effective way to prevent pregnancy?	1	12	
-Should a condom be unrolled before it is placed on the penis?	2	32	
-Does using a water-based lubricant help make condoms more effective?	3	47	
	4	17	
Total knowledge score			Score sum /110

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Examples of Percentages from Sample CPI Summaries

Percentages

- Approximately 75% of the lessons were modified "a little."
- A total of 25% of the participants reported that they did not learn something new from the curriculum.
- Approximately 9 out of ten (89%) students agreed that this class should be taught to other students of the same age.

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Mean Scores

- Mean scores are commonly reported for questions that have answer choices on a scale.
 - Assign a number value to each response option.
 - The mean rating is calculated by multiplying the number of responses in a given category by the rating value (1, 2, 3, 4) and dividing it by the total number of responses.

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Example: Calculating Mean Scores

I will be able to use the information I learned in the presentation. (N=50)

Strongly Disagree	Disagree	Agree	Strongly Agree
1	2	3	4
(5 responses)	(3 responses)	(22 responses)	(20 responses)

To calculate the mean follow these steps:

- Multiply responses by value:
 Strongly Disagree = $1 \times 5 = 5$
 Disagree = $2 \times 3 = 6$
 Agree = $3 \times 22 = 66$
 Strongly Agree = $4 \times 20 = 80$
- Add the point values:
 $5 + 6 + 66 + 80 = 157$
- Divide by total number of responses N=50:
 $157/50 = 3.14$ (mean)

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Practice: Calculating Mean Scores

Do you agree or disagree with the statements below? (N=110)	Agree		I'm not Sure		Disagree	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
For people my age, not having sex is a better choice than having sex.	58	53%	38	34%	14	13%
Mean score ¹	1.6					
Having sex makes my friends look up to me more.	31	—	57	—	22	—
Mean score ¹	—					
Having sex with different partners is a sign of being grown up.	13	—	32	—	65	—
Mean score ¹	—					

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Examples of Mean Scores from CPI Summaries

- Mean Scores
 - Educators routinely reported average to high scores for participant interest, with the lowest score for a lesson being 3.5 on a 5-point scale.
 - The mean age of participants was 15.13 years old.
 - On a scale of 1 to 5, with one being "Very Poor" and 5 being "Excellent," the average score for the overall reaction to the TSO Informational presentation was 4.21.

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Pretest to Posttest Change

- Compare pretest and posttest responses.
 - Are the changes in the desired direction?
- For CPI purposes, we recommend that you look at:
 - Percentage point change**- the difference between pretest and posttest percentages (e.g., 50 vs. 80 = a 30 percentage point change).
 - Calculated by: subtracting pretest score from posttest score.
 - '+' indicates a change in the desired direction; '-' indicates a change in the undesired direction.

Sample Percentage Point Change Knowledge of Puberty and Sexuality			
Item	Pre % Correct	Post % Correct	% point Change score
Do you know the proper medical terms for your private parts?	32	71	+39
In a girl's body, do urine and menstrual blood leave from the same opening or hole?	13	39	_____

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Pretest to Posttest Change

- Mean score change** – the difference between pretest and posttest mean scores (e.g., 3.5 vs. 4.5, a 1-point change).

- Calculate: subtract the pretest mean score from the posttest mean score.
- Compare scores—did they move in the desired direction (up or down depending on the scale)?

- Tests for statistical significance.

- There are additional tests for statistical significance that can be performed. If you use an outside evaluator, they will be able to assist you with this.

Sample Mean Score Change: Attitudes about Puberty and Sexuality			
Item	Pre Mean Score	Post Mean Score	Change in Mean Score
To make a good decision, it is important to think about what could happen (consequences).	4.56	4.77	Change +.21
I think most teens my age are having sexual intercourse.	3.62	3.36	Change _____

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Example of Pretest to Posttest Change from CPI Summaries

- Percentage Point Change**
 - Percentage Point Increase:** At pretest they scored an average of 50% of the items correct; this increased to 87.5% at the posttest, representing a 37.5 percentage point increase.

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Quantitative Data Interpretation

- Across all sources of CPI data, review your data for the following:
 - Look for patterns.
 - Are there any surprises?
 - Are the responses what you expected?
 - Do these results make sense?
 - What are some possible explanations for the findings?
 - Data supporting current program practices.
 - Data suggesting areas for improvement.
- How will the data help you to decide what actions will improve your program/services?

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Quantitative Data Results

- For CPI, displaying results on the original survey instrument or CPI tool is a good way to see the questions and results in one spot.
 - Transfer data (from hand tally or data entry program) to a copy of your original survey instrument or CPI tool.
 - Summarize the item-by-item results.
 - Show number of responses and calculate percentages for each response option next to each item.
 - Provides you an opportunity to view the raw data without interpretation.
 - Scan data for accuracy.
 - Check frequencies and percentages. Do they add up?

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Presenting and Interpreting Survey Results

Middle School Survey Results N=110						
Grade:	7 th 52%	8 th 48%	Gender:	Male 55%	Female 45%	
About you...		Strongly Disagree	Disagree	Agree	Strongly Agree	
3. I think it is OK for people my age to have sex.		17%	24%	29%	30%	
4. I think it is OK for people my age NOT to have sex.		9%	19%	33%	39%	
About the program...		None or Almost None	Less than half	About half	More than half	All or almost all
5. About how many people your age have had sex?		5%	19%	29%	23%	24%
6. Think about the people your age who have had sex. How many of them use a condom every time or almost every time with a steady partner?		7%	32%	27%	20%	14%

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Example: Interpreting Mean Scores

I will be able to use the information I learned in the presentation. (N=50)

Strongly Disagree	Disagree	Agree	Strongly Agree	Mean Score
10% (5)	6% (3)	44% (22)	40% (20)	3.14

Scale: Strongly Disagree=1; Disagree=2; Agree=3; Strongly Agree=4.

- What does the mean score tell us?
- How would you write this in your results?

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Quantitative Data Summary

- Important to take time to reflect on CPI data with program staff and plan next steps.
- Look at other sources of data, including CPI data previously collected, that may help you understand your CPI data.

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Quantitative Data Summary

- Organize your data to tell a story.
 - Use the data to express 'how much,' 'how many,' 'how often.'
 - Use tables, charts, graphs to display your data and use narrative prose to highlight the findings communicate your story.
- Complete your summaries using the samples and reporting guidelines provided in the CPI Tool Kit.

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Quantitative Data Summary

- Provide information so that a reader can get all of the details:
 - *What* - CPI evaluation question.
 - *Why* - Purpose for choosing this tool.
 - *Who* - Sources of information, include description of sample and response rate.
 - *How* - Describe your data collection methods. Instrument used and project staff involved.
 - *Where* - Include a description of where you collected the data.
 - *When* - Include the timeframe that you collected the data
 - Key lessons learned and next steps.

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Plan Your Next Steps

- Now that you have summarized and reported your quantitative CPI data, it is important to think about and plan your next steps.
- The next CPI Support Call:
 - Analyzing Qualitative Data.
 - Wednesday February 11 & Thursday February 12.
 - Email notification and registration links will be sent two weeks prior to the calls.

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CPI Resources

- TPP CPI Tool Kits
 - Word versions of each tool are available from your Evaluation Liaison to adapt for your needs.
- ETR Website – www.etr.org/ofp
 - Complete Tool Kits including all appendices are available under the “CPI and Statewide Evaluation” left side-bar heading.
- Activity Checklists for all CPI tools
 - These checklists are available for TPP agencies from Evaluation Liaisons.
- CPI Support Calls in February and March 2009.
- Evaluation Liaison

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CPI Date Reminders for All Tools

- **By April 15th** submit the following to your Evaluation Liaison and OFP Program Consultant:
 - *DRAFT* summary of your CPI results.
 - Evaluation Liaisons will provide feedback in approximately 3 weeks.
- **By June 1st** submit the following to your Evaluation Liaison and OFP Program Consultant:
 - Revised CPI Summary (as needed).
 - Completed CPI Feedback Form (online form; Evaluation Liaison will send link with instructions).

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Thank You for Your Participation!

- Open Question and Answer.
- We invite you to complete a brief feedback form about this call.
 - This survey can be accessed from the ETR website at www.etr.org/ofp.
 - Click on Left sidebar – “CPI and Statewide Evaluation” then under “CPI Support Calls.

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