Over-the-Counter Data's Impact on Educators' Data Analysis Accuracy

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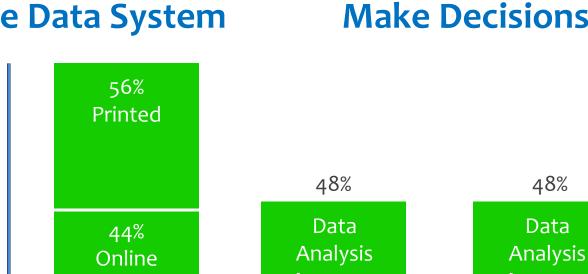
Problem







Use Data System



Most educators have access to data systems to generate for them (Underwood, Zapata-Rivera, &

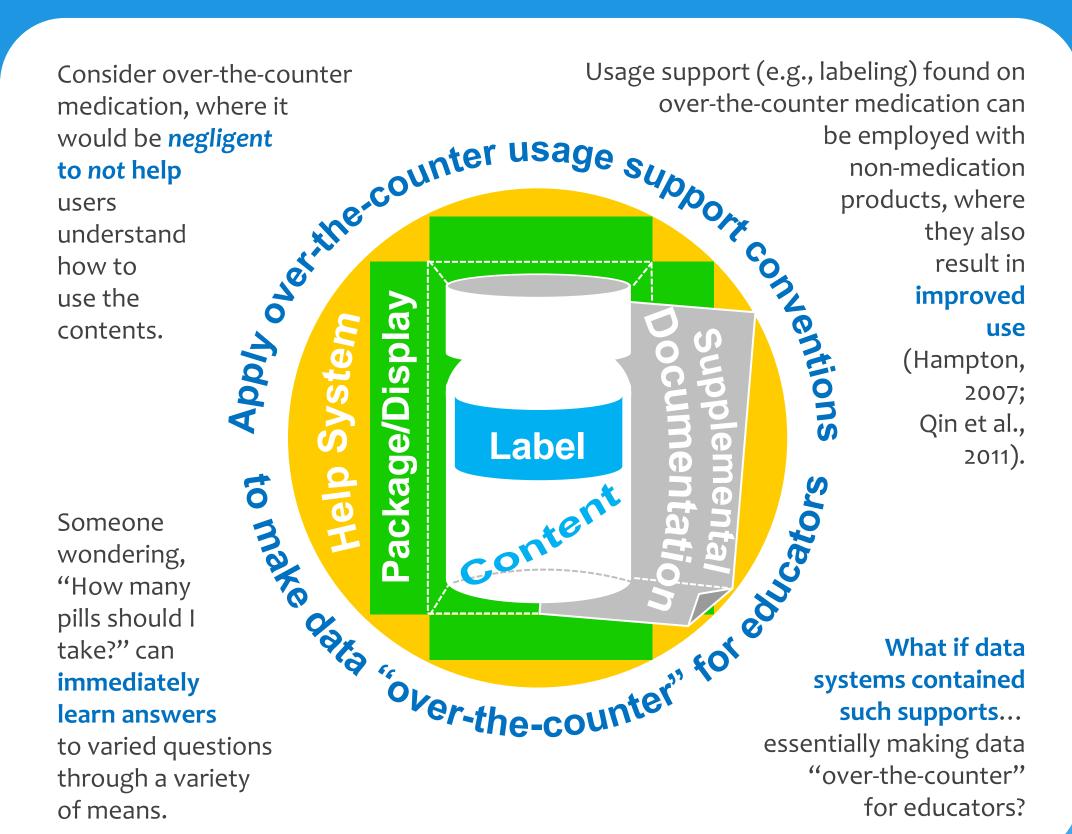
VanWinkle, 2008)

Analysis Accuracy Most educators are eager to analyze data to make

Data Analysis Accuracy

districts known nationally for strong data use, teachers achieved only 48% accuracy when making data inference involving basic statistical concepts (U.S. Department of Education Office of Planning, Evaluation and Policy Development, 2009, 2011).

Theoretical Framework



Literature Review

Educators' Data Analyses Are Often Flawed

- Data Quality Campaign, 2009
- Halpin & Cauthen, 2011
- National Association of States Boards of Education, 2012 National Forum on Education
- Statistics [NFES], 2011 Newman & Scholl, 2012
- Stansbury, 2013
- Underwood, Zapata-Rivera, & U.S. Department of Education Office of Planning, Evaluation and
- Policy Development [USDEOPEPD], 2009, 2011 Van der Meij, 2008
- VanWinkle, Vezzu, & Zapata-Rivera,
- Wayman & Cho, 2009
- Wayman, Snodgrass Rangel,
- Jimerson, & Cho, 2010 Zwick et al., 2008

& Zapata-Rivera, 2011).

Example: Stakeholders (administrators, misunderstand and misinterpret score reports even though they are increasingly asked to make datainformed decisions (VanWinkle, Vezzu,

PD and Staff

Professional Development (PD) and staffing supports (popular tactics for

improved data use) tend to be beneficial to data use, but neither approach is foolproof.

Value varies • Majority of educators do not find it helpful • Not comprehensive enough • Struggles continue after •

Example: In a study where teachers received PD in measurement, all teachers struggled afterwards with statistical terms and measurement concepts (Zapata-Rivera & VanWinkle,

Staff Supports:

Ouality varies • Knowledge is hard to share with others • Pacing can be off • Resources not always available •

research indicated knowledge is hard intention to share it is there, especially when power or status is involved (Cho & Wayman, 2009).

Educators = **Ideal Client Base**

Higher than average:

Education So, What About **Tool They Use?**

- Data Systems:
- Impact Analyses Can Support Analyses
- Typically Do Not Offer Support
- Aarons, 2009 • Cho & Wayman, 2009
- Hattie, 2010
- Hattie & Brown, 2008
- Minnici & Hill, 2007 National Forum on Education
- Statistics [NFES], 2010 Odendahl, 2011
- Stansbury, 2013 Underwood et al., 2008, 2010
- of Educational Technology
- [USDEOET], 2012
- USDEOPEPD, 2009 Wayman, 2007
- Jimerson, & Cho, 2010
- VanWinkle, Vezzu, & Zapata-Rivera,

Study Purpose

The purpose of this quantitative study was to:

- facilitate causal inferences...
- concerning the degree to which...
- including 3 different forms of data usage guidance...
- within a data system reporting environment...
- can improve educators' understanding of
- the data contents,...
- much like including different forms of usage
- guidance over-the-counter
- medication is needed to properly communicate

sheets **Reference Guides**

accuracy of educators data analysis?

Increase

Impact Students

Educators make data

impacting students,

yet data systems and

analysis help, and

it was undecided

whether adding

supports to data

errors.

number of analysis

reports do not include

systems can reduce the

analysis errors

Qs/Hypotheses/Variables

	Independent Variable	Question (Abbreviated)	Alternative Hypothesis
Secondary: Educator Dem. Secondary: Site Demographics Primary Research Questions	Support Presence	Q1. Support's impact on analysis accuracy	↑ Analysis Accuracy
	Footer Presence	Q2a. Footer's impact on analysis accuracy	↑ Analysis Accuracy
	Footer Format (Moderate)	Q2b. Footer framing's impact on analysis accuracy	↑ ✓ Analysis Accuracy
	Reference Sheet Presence	Q3a. Reference sheet's impact on analysis accuracy	↑ Analysis Accuracy
	Reference Sheet Format (Moderate)	Q3b. Reference sheet framing's impact on analysis accuracy	↑♥ Analysis Accuracy
	Reference Guide Presence	Q4a. Reference guide's impact on analysis accuracy	↑ Analysis Accuracy
	Reference Guide Format (Moderate)	Q3b. Reference guide framing's impact on analysis accuracy	↑ ✓ Analysis Accuracy
	Level Type (Elementary vs. Secondary)	Q6a. Level type impact on analysis accuracy	* Analysis Accuracy
	Level (Elem vs. Junior/Middle vs. High)	Q6b. Level impact on analysis accuracy	* Analysis Accuracy
	Academic Performance	Q6c. Academic performance impact on analysis accuracy	* Analysis Accuracy
	EL Population	Q6d. EL population impact on analysis accuracy	* Analysis Accuracy
	Socioeconomically Disadvantaged Pop.	Q6e. Socioeconomically Disadvantaged population impact on analysis accuracy	* Analysis Accuracy
	Students with Disabilities Population	Q6f. Students with Disabilities population impact on analysis accuracy	* Analysis Accuracy
	Veteran Status	Q6a. Veteran status impact on analysis accuracy	* Analysis Accuracy
	Role	Q6b. Current professional role impact on analysis accuracy	* Analysis Accuracy
	Perceived Data Analysis Proficiency	Q6c. Educator perception of own data analysis proficiency impact on analysis accuracy	* Analysis Accuracy
	Professional Development	Q6d. Professional development over the past year (devoted specifically to how to analyze student data) impact on analysis accuracy	* Analysis Accuracy
Sec	Graduate-Level Courses	Q6e. Graduate-level educational measurement courses (educator has taken) impact on analysis accuracy	* Analysis Accuracy

Research Method

Population

- (stratification)
- 3,307,600 U.S. educators
- United States (Demographically Diverse)
- All school site demographics All educator demographics

Sample

(cross-sectional)

- 211 educators > power analyses in a recommended sample size of at least 210 educators; priori F-test resulted in a
- educators) Open invitation to Southern CA
- All educator demographics
- All national statistic means were
- encompassed by the range of sites used in the study.

87% of Control

indicated they would

have used supports if

supports had been

Materials &

- Survey

- (priori two-tailed t-test resulted recommendation of at least 153
- (Demographically Diverse)
- All school site demographics

Instruments

• Anonymous & Computer-Based

• 10 Multiple Choice Questions (Required to Complete Survey) • 6 Qs = Demographics / 4 Qs =

correct answer (distractors

included all possible answers)

each analysis question's answer

appropriateness of answers)

each analysis question & answer

= based on straightforward CA

Dept. of Ed. (CDE) guidelines

Handouts (7 Scenarios)

reports as Control + varied-

(same 2 reports as Control +

2 Guide Groups (same 2 reports

as Control + varied-format

reference guides)

varied-format ref. sheets)

• Control Group (2 reports)

• 2 Footer Groups (same 2

• 2 Reference Sheet Groups

format footers)

= objective (no interpretation of

- Analyses of Data (Handouts) Validity & Reliability
- each analysis question = 1
 - Predictive Analytics Software (PASW) Version 18 with Statistical Package for the Social Sciences

Data Analysis

G*Power 3.1 Statistical Analysis

Tool for Priori Power Analyses

F-test linear multiple regression

Microsoft Excel with Microsoft 2010 Data Analysis Add-on Pack

Regression analysis, charting, and

Two-tailed t-test

- (SPSS) Data Access Pack • Independent Samples T-Tests
- Crosstabulations with Chi-square F-tests

Ethical

- **Assurances**
- Pilot test and risk assessment
- IRB approval and informed consent
- Privacy, confidentiality, and data
- Study design and reporting (protect integrity of results &
- application to real world practice) Steps to overcome threats to

construct, external, & internal

58% of the time

any 1 of the

supports was

present, it was

52% of the time

reference guides

were used.

were present, they

References

how to use its contents.

plus.google.com/u/0/b/117931157580458678473/117931157580458678473

www.linkedin.com/groups/OvertheCounter-Data-OTCD

Implications & Recommendations

Implications

- Report-specific footers, reference sheets, & reference guides each significantly increase
- educators' data analysis accuracy
- Educators want data system/report-embedded supports
- Educators struggle with data analyses Support benefits persist regardless of report or question type
- Data-informed decision-making and helping students • Contributions to existing literature in the field:
- whether data systems can help increase data analysis accuracy by providing analysis support within data systems and their reports, with the finding being that they can.

(www.overthecounterdata.com) anyone can download and use anytime at no cost

 3 specific supports that increase educators' data analysis accuracy. the specific degree to which these supports increase educators' data analysis accuracy

Recommendations

- **Data System and Report Providers**
- Follow format guidelines in dissertation
- **Educators**

examples showing what effective footers, reference sheets, and reference guides look like, with templates

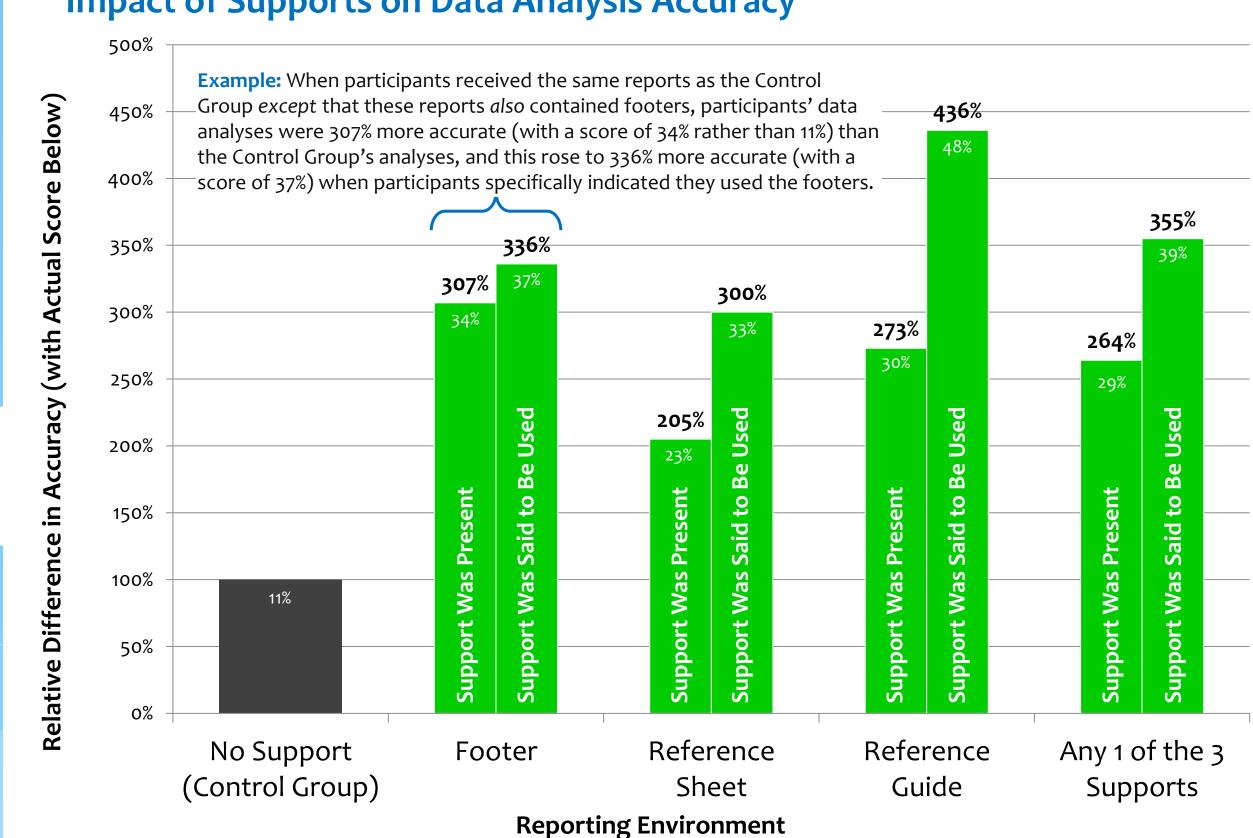
- Use support inclusion as criteria for keeping or selecting a data system or report provider
- Personally add supports to accompany the report if provider will not

Education Research Community

- All 3 supports simultaneously
- Reference Sheet & Reference Guide (Supplemental Documentation) All over-the-counter data supports simultaneously:
- Additional Formats/Framing

Findings

Impact of Supports on Data Analysis Accuracy



50% of the time

reference sheets

were present, they

available. All Supports Significantly Increased Educators' Data Analysis Accuracy • All findings concerning primary variables (footers, reference sheets, and reference guides) were significant.

Site and Educator Demographics Had Insignificant Impact on Supports' Success

73% of the time

present, they were

footers were

• All findings concerning secondary variables (school and educator demographics) were insignificant. Minor Framing Modifications Had Insignificant Impact on Supports' Success

• All findings concerning minor modifications in support format were insignificant.

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www.pinterest.com/otcdata

More Information

www.overthecounterdata.com

www.facebook.com/overthecounterdata

whether minor modifications in support format impacted educators' data analysis accuracy, with the findings being that both formats were equally effective.

how likely educators are to use each support

- Add footers, reference sheets, & reference guides to system
- Create direct., easy access to supports for each report in system
- Use reference sheet and reference guide templates available at www.overthecounterdata.com
- Encourage current data system and report providers to add supports investigated in this study
- Promote awareness and dialogue about such supports in educator communities.
- Footer (Label)
- Label (Footer & Also Effective Title) Supplemental Documentation (Footer & Reference Guide)
- Effective Package/Display Effective Contents