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Aid not Replace? Produce Safety Rule Supplemental Training and Grower Learning in Latin America

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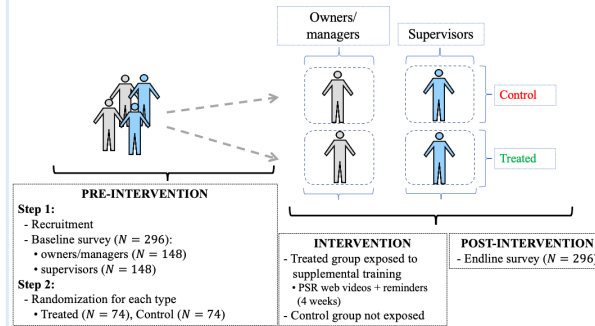
Joint Institute for Food Safety and Applied Nutrition, University of Maryland, College Park

Introduction

- The Produce Safety Rule (PSR) under the Food Safety Modernization Act (FSMA) requires growers (i.e., owners, managers, supervisors) supplying the U.S. market to complete training based on the Produce Safety Alliance’s (PSA) standardized PSR curriculum (FDA, 2016).
- Since 2017, U.S. Food and Drugs Administration (FDA) supported building compliance capacity of Latin American growers through PSA curriculum, originally developed for U.S. audience (Narrod et al, 2018).
- Concerns over the adequacy of the existing curriculum for Latin American growers led to the development of PSR-based supplemental training materials – to aid, but not replace.
- Very little evidence of training impacts - e.g., Perry et al. (2021) in the U.S. No study in Latin America, except Narrod et al (2021).
- This study evaluates impacts of supplemental training on food safety knowledge, and makes the following contributions:
 - Delineates impacts through randomized evaluation for owners/managers and supervisors in Mexico, Chile, and Costa Rica.
 - Examines the effectiveness of PSR training via a digital platform.
 - Provides feedback to support the justification for scaling up supplemental training.

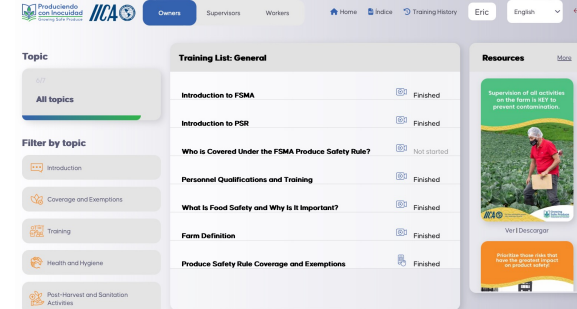
Design and Estimation

Study design:



Intervention:

- Supplemental training => Web videos + reminder memes/infographics



Estimation:

ANCOVA

$$Y_{1ig} = \alpha_g + \beta_g D_{ig} + \gamma_g Y_{0ig} + \delta_g X_{ig} + \varepsilon_{ig}$$

$g \in \{\text{owners/managers, supervisors}\}$

$D = 1$ for treated, 0 for control; $Y =$ knowledge test score ($1 = \text{post-}$, $0 = \text{pre-training}$); $X =$ covariates

Alternative specification

- Difference-in-difference (DiD)
- Effect on compliers

Results

Intent-to-treat effects of supplemental training by grower and specification:

Variables	Owners/managers		Supervisors	
	ANCOVA	DiD	ANCOVA	DiD
Constant	0.345*** (0.123)	0.483*** (0.077)	0.289** (0.113)	0.612*** (0.106)
Treated	0.077*** (0.019)	0.004 (0.022)	0.061*** (0.019)	0.006 (0.019)
Post-training		-0.01 (0.015)		0.014 (0.014)
Treated×Post-training		0.068*** (0.024)		0.048** (0.022)
Control group mean	0.589	0.589	0.706	0.706
Covariates	Yes	Yes	Yes	Yes
Standard error	Robust	Clustered	Robust	Clustered
N	149	298	149	298

Standard errors in parenthesis. *** $p < 0.01$, ** $p < 0.05$

Average effect on compliers by grower and estimator:

	Grower	OLS	Residual approach	One-step 2SLS	LIML	GMM
		Average effect on compliers	Owners/Managers	0.105*** (0.020)	0.110*** (0.027)	0.110*** (0.022)
	Supervisors	0.064*** (0.019)	0.070*** (0.023)	0.070*** (0.019)	0.070*** (0.019)	0.070*** (0.019)

Treated group compliance: **72%** for owners/managers, **84%** for supervisors. Control group compliance: **100%** for both grower types. Standard error in parenthesis. LIML=limited information maximum likelihood, GMM=generalized method of moments. *** $p < 0.01$

Conclusion

- Exposure to supplemental training has positive impacts on grower learning.
- Mainstreaming supplemental training as a compulsory or optional supplement to the PSR grower training can be beneficial.
- Use of a digital training platform can expand flexibility in accessing PSR material.

References

- FDA (2016). Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption: Final Rule. *Federal Register*, 80(228). Retrieved from <https://www.govinfo.gov/content/pkg/FR-2015-11-27/pdf/2015-28159.pdf>
- Narrod, C., Dou, X., Wychgram, C., & Miller, M. (2018). Economic Rationale for US Involvement in Public-Private Partnerships in International Food Safety Capacity Building. In T. Roberts, Roberts, & Safren (Eds.), *Food Safety Economics* (1st ed., pp. 267–291). [Place of publication not identified]: Springer International Publishing. https://doi.org/10.1007/978-3-319-92138-9_14.
- Narrod, C., Dou, X., Chfadi, T., & Miller, M. (2021). Participant characteristics and learning outcomes: Lessons from international food safety capacity building. *Food Policy*, 102, 102105. <https://doi.org/10.1016/j.foodpol.2021.102105>
- Perry, B. J., Shaw, A. M., Enderton, A. E., Coleman, S. S., & Johnsen, E. E. (2021). North Central Region Produce Grower Training: Pretest and Posttest Knowledge Change and Produce Safety Behavior Assessment. *Food Protection Trends*, 41(3), 266. <https://doi.org/10.4315/1541-9576-41.3.266>