Evaluation of Seguro Popular

Design Framework

Gary King Institute for Quantitative Social Science Harvard University

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A New Member of the Evaluation Team

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(Manett's) Arturo Vargas

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Evaluation Components

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• Impact Evaluation

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- Impact Evaluation
- National Level Analysis

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- Impact Evaluation
- National Level Analysis
- Process Evaluation

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- Impact Evaluation
- National Level Analysis
- Process Evaluation
- In-depth Focus Groups

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• Financial Protection

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 - Out-of-pocket expenditure

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Data Sources

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 - Places with better doctors and health administration: bigger effects

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- Roll out SP as fast as possible to as many as possible
 - Unless SP doesn't work!
 - Unless we can improve outcomes by learning from sequential affiliation
- Immediately give all Mexicans equal ability to affiliate
 - Impossible because some areas do not have appropriate health facilities
 - Infeasible because of political preferences of local officials to affiliate some areas first

How "Ideal Designs" Make Evaluation Hard

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How "Ideal Designs" Make Evaluation Hard

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- This is the problem of "selection bias"
- If politicians (in a democracy) decide which areas get MAOs
 - Privileged areas will get affiliation first
 - Political favorites will be affiliated early
 - Even if SP has no effect, areas with SP will be healthier

Ideal Design for Scientific Evaluation

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The Next Day's Newspaper Headlines

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- Octavio Charged with *Talking* to Eduardo, Hector, and Gary!

Is Randomization Always Unethical?

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- program implementation always includes arbitrary decisions, made by low level officials
- If decisions are arbitrary, they can be randomized
- Generalization: its ethical to randomize at one level below that which officials care

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First Define and Choose Health Clusters

Image: A matrix

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First Define and Choose Health Clusters

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- Drop clusters from states that did not participate

Remaining in study: 148 clusters in 7 states



States and Clusters not Selected Randomly

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Constraints

Evaluation of Seguro Popular

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- Randomly select half of the 148 clusters for encouragement
- Other clusters to get encouragement at a later date
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- No randomization at individual level
- Without an evaluation, choices would still be made, but would be arbitrary choices made by local government officials

Classical Randomization is Insufficient in the Real World

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 - Consequence: Bias in evaluation conclusions
- We need estimators robust not merely to statistical assumptions but to real world problems

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We Use: Matching, then Randomization

Design

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- Randomization controls for both.

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- Implementation of intensive affiliation in treatment clusters
- 74 matched treatment-control pairs in the evaluation: 55 rural and 19 urban in 7 states

State	Rural Pairs	Urban Pairs	Total
Guerrero	1	6	7
Jalisco	0	1	1
México	35	1	36
Morelos	12	9	21
Oaxaca	3	1	4
San Luis Potosí	2	0	2
Sonora	2	1	3
Total	55	19	74

Matched Pairs, Guerrero



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Matched Pairs, Jalisco



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Matched Pairs, Estado de México



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Matched Pairs, Morelos



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Matched Pairs, Oaxaca



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Matched Pairs, San Luis Potosí



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Matched Pairs, Sonora



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Design has three parts

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Matching pairs on observed covariates

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- 2 Randomization of treatment within pairs

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- **③** Parametric analysis adjusts for remaining covariate differences

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Triple Robustness

If matching or randomization or parametric analysis is right, but the other two are wrong, results are still unbiased

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If one of the three works, then "effect of SP" on time 0 outcomes (measured in baseline survey) must be zero

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- 2 If we lose pairs, we check for selection bias by rerunning this check



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Gary King (Harvard)

Evaluation of Seguro Popular

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Demographic Distances in the Rural Pairs



Image: A matrix

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Demographic Differences in the Urban Pairs



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Image: Image:

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Total Multivariate Distances Within All 55 Rural Pairs



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Total Multivariate Distances within All 19 Urban Pairs



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Rural Age Balance After Randomization

Smoothed Histogram of Proportion Aged 0-4, Rural Clusters,



Smoothed Histogram of Proportion Under 18 Years Old, Rural Clu Post-Assignment

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Urban Age Balance After Randomization



moothed Histogram of Proportion Under 18 Years Old, Urban Clu

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Urban Age Balance After Randomization, II

Smoothed Histogram of Proportion Over 60 Years Old, Urban Clus



Smoothed Histogram of Proportion Over 65 Years Old, Urban Clu: Post-Assignment

Image: A matrix and a matrix

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Rural Demographic Balance After Randomization



Gary King (Harvard)

Evaluation of Seguro Popular

Image: Image:

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Urban Demographic Balance After Randomization



Smoothed Histogram of Total Population, Urban Clusters,

Image: Image:

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Household Survey Design

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Household Survey Design

• Baseline in August 2005; followup mid-2006.

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 - Reduce non-compliance problems by including highest percentage of population in incomes in deciles I and II (automatically affiliated)

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- We have 74 matched pairs, but can only (feasibly) survey 50; Sample size: 38,000 households (380 per cluster)
- How to choose?
 - Minimize potential for omitted variable bias by choosing pairs with smallest Mahalanobis Distance
 - Reduce non-compliance problems by including highest percentage of population in incomes in deciles I and II (automatically affiliated)
- Result: 45 rural and 5 urban pairs

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- Baseline in August 2005; followup mid-2006.
- Questionnaire jointly written; implemented by National Institute of Public Health of Mexico (INSP)
- Contents
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- Remaining 24 pairs: also used with aggregate=outcomes + (=) = out

Gary King (Harvard)

Choosing Pairs for the Survey



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Health Facilities Survey

Gary King (Harvard)

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 - Information on admissions and discharges.

http://GKing.Harvard.edu

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