RCT Evaluation from Start to Finish: Raskin project

Lina Marliani
Executive Director
J-PAL Southeast Asia
Course Overview

1. What is Evaluation?
2. Outcomes, Impact, and Indicators
3. Why Randomize?
4. How to Randomize
5. Sampling and Sample Size
6. Threats and Analysis
7. Evaluation from Start to Finish
8. Evidence from Community-Driven Development, Health, and Education Programs
9. Using Evidence from Randomized Evaluations
Evaluation flow in general

**Evaluation Design**
- Context
- Research or policy questions
- Treatment to test
- Randomization methods

**Baseline**
- Survey: Indicator collection
- Random assignment
- Quality Control

**Treatment**
- Treatment implementation
- Quality Control
- Coordination
- Field visit

**Midline and/or Endline**
- Survey: Indicator collection
- Quality Control

**Analysis**
- Policy findings
- Policy outreach
Evaluation from Start to Finish

1. Background and Evaluation Design
2. Implementation: Treatment
3. Implementation: Data Collection
4. Analysis and Scaling up
Evaluation Background
Design and Background

**Context**
- Raskin program
- Partner: TNP2K

**Research / Policy Question**
- Research / Policy Question
- Theory of change
- Log frame

**Treatment to test**

**Randomization method**
- Unit of randomization
- Sample frame
- Stratification
Design and Background

- **Context**
  - Raskin program
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- **Research / Policy Question**
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  - Theory of change
  - Log frame

- **Treatment to test**

- **Randomization method**
  - Unit of randomization
  - Sample frame
  - Stratification
Raskin program

• One of the largest social protection program in Indonesia
  – US $1.5 billion annually
  – 53% of government spending for social aid (World Bank 2012)

• Providing subsidized rice to poor households
  – 15 kg of rice at Rp. 1,600 per kg
  – Target: 30% poorest RT (PPLS’11)

• Distribution run by the village officials, who pick up rice from sub-district, distribute it, and collect the co-payment
Problems

- **Targeting**: 84 percent of eligible bought some rice; 67 percent of ineligible did as well.

- **Leakages**: comparing surveys to administrative data suggests about 23% of rice disappears.

- **Rice-markups**: mean co-payment in our data is Rp. 2,276 per kg, instead of Rp. 1,600.

- **Eligible households buy 5.3 kg/month at Rp. 2,276**: 32 percent of value of intended subsidy.
Partner: TNP2K

- Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K; National team for the Acceleration of Poverty Reduction)

- Established by and reporting to then-Vice President Boediono

- TNP2K responsibilities:
  - To formulate evidence-based policy for increasing the effectiveness of social aid program
  - Mengordinasikan aktor-aktor pemerintahan untuk tujuan ini

- One of TNP2K priorities is to increase the quality of targeting and service delivery. Raskin belongs to Cluster 1 TNP2K.
Design and Background

Context
• Raskin program
• Partner: TNP2K

Research / Policy Question
• Research / Policy Question
• Theory of change
• Log frame

Treatment to test

Randomization method
• Unit of randomization
• Sample frame
• Stratification
Evaluation Objective

- To collect evidence in order to learn whether the distribution of Raskin card as proposed by TNP2K will improve the transparency and effectiveness of Raskin program.

The pilot explore four key questions:

- What is the impact of providing information on both eligible and ineligible households?
- Does the information “undo” local fix of the targeting rules?
- Does the form and level of information matter?
- Is effect driven by transparency or central government accountability?
Theory of Change

**Assumption:** The distribution of Raskin card to household is successful, there’s no distribution challenge/constraint.

**Assumption:** HH understand the information provided in the card, use the card, and it is less likely they use it interchangeably with previous version of Raskin card/version.

**Assumption:** Eligible households ask for lower price of Raskin, village officer is following up and able to create any difference.

**Assumption:** The effectiveness of social aid program is due to lack of transparency and the change is sustainable moving forward.
In constructing the Log Frame, which of the following is the correct “Outcome”?

A. Beneficiaries may receive subsidized Raskin
B. Distributing cards to eligible household
C. Eligible household receives the Raskin card
D. Increased transparency and effectiveness of social distribution program
E. Don’t know
<table>
<thead>
<tr>
<th>Log Frame</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives Hierarchy</strong></td>
<td><strong>Indicators</strong></td>
</tr>
<tr>
<td><strong>Impact</strong> (Goal/Overall Objective)</td>
<td>Increased transparency and effectiveness of social distribution program</td>
</tr>
<tr>
<td><strong>Outcome</strong> (Project Objective)</td>
<td>Beneficiaries may receive more subsidized Raskin</td>
</tr>
<tr>
<td><strong>Outputs</strong></td>
<td>Eligible households receive Raskin card</td>
</tr>
<tr>
<td><strong>Inputs</strong> (Activities)</td>
<td>Distributing card to eligible households</td>
</tr>
</tbody>
</table>
Policy Question

The pilot explores four key questions:

• What is the impact of providing information on both eligible and ineligible households?

• Does the information “undo” local fix of the targeting rules?

• Does the form and level of information matter?

• Is effect driven by transparency or central government accountability?
Design and Background

Context
- Raskin program
- Partner: TNP2K

Research / Policy Question
- Research / Policy Question
- Theory of change
- Log frame

Treatment to test

Randomization method
- Unit of randomization
- Sample frame
- Stratification
Intervention Variation

• Does the form and level of information matter?
  – What happens if you make information about who receives a card public?
  – What happens if you change the information that is printed on the card?
  – What happens if cards are only given to the very poor?

• Is effect driven by transparency or central government accountability?
  – What happens if the government requires leaders to submit back coupons for inspection?
Intervention Summary

Raskin Card

Variation 1: Design
- With coupon
- Without coupon

Variation 2: Content
- Price at distribution point
- Without price

Variation 3: Distribution
- All eligible households
- Only the 10% poorest of eligible HH

Variation 4: Socialization
- Standard
- Additional
Public Versus Private Information

• **Common knowledge** facilitate collective action?
  – **Standard**: village head gets list and one copy posted
  – **Public**: posted many copies of list + posters
Raskin Card

Raskin card without coupon, with price

Raskin card with both coupon and price
Additional Socialization Poster

MAU BELI RASKIN?
GUNAKAN KARTU RASKIN ANDA!

PENGUMUMAN:
1. Rumah Tangga yang berhak membeli Raskin tercatat di Daftar Penerima Manfaat (DPM)
2. Rumah tangga tersebut akan memperoleh Kartu Raskin
3. Kartu Raskin harus dibawa saat membeli Raskin

1. Rumah Tangga yang berhak membeli Raskin tercatat di Daftar Penerima Manfaat (DPM)
2. Kelompok rumah tangga paling miskin memperoleh Kartu Raskin
3. Penerima kartu harus membawa Kartu Raskin saat membeli Raskin
How many different interventions that we can do?

A. 4
B. 8
C. 12
D. 16
E. Don’t know
## Treatment Variation

<table>
<thead>
<tr>
<th>Card variation</th>
<th>Standard socialization</th>
<th>Additional Socialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>All eligible households</td>
<td>With price</td>
<td>With coupon</td>
</tr>
<tr>
<td></td>
<td>With price</td>
<td>Without coupon</td>
</tr>
<tr>
<td></td>
<td>Without price</td>
<td>Coupon</td>
</tr>
<tr>
<td></td>
<td>Without price</td>
<td>Without coupon</td>
</tr>
<tr>
<td>Only the 10% poorest of eligible households</td>
<td>With price</td>
<td>Coupon</td>
</tr>
<tr>
<td></td>
<td>With price</td>
<td>Without coupon</td>
</tr>
<tr>
<td></td>
<td>Without price</td>
<td>Coupon</td>
</tr>
<tr>
<td></td>
<td>Without price</td>
<td>Without coupon</td>
</tr>
</tbody>
</table>

**Control** *(Without card and socialization at all)*
Evaluation and Its Impact

**Project Implementation**
- **Baseline Survey**
  - Jan - Feb '12

**Data Collection**
- **Midline Survey**
  - Oct - Dec '12
- **Endline Survey**
  - Mar - May '13

**Evaluation Design**
- **Presentation**
  - December 2012
  - June 2013
Design and Background

- **Context**
  - Raskin program
  - Partner: TNP2K

- **Research / Policy Question**
  - Research / Policy Question
  - Theory of change
  - Log frame

- **Treatment to test**
  - Unit of randomization
  - Sample frame
  - Stratification

- **Randomization method**
Identifying Unit of Randomization

1. Province
2. District/City
   - Governor
   - Mayor/Bupati
   - Perum Bulog (Divre/Subdivre/Kansilog)
5. Under district/city
   - Warehouse (Satgas Raskin)
6. Under district/city
   - Distribution Point (Distribution implementor)
7. Village
   - Pokja
   - Warung Desa
   - Pokmas

Targeted HH as Raskin beneficiaries (Paid cash at Rp 1.600/kg at Distribution Point)
At which level should this Raskin project be randomized?

A. Province level
B. District level
C. Sub District level
D. Village level
E. Household level
Sample Frame

- Raskin sample is identical to previous project (Targeting II)

- 600 villages (including control village)
  - 28 is excluded from sample due to its high risk and remoteness

- 572 villages in 6 districts/cities
  - Pemalang and Wonogiri (Central Java),
  - Palembang and Ogan Komering Ilir (South Sumatera),
  - Bandar Lampung and Central Lampung (Lampung)
Stratification

- The treatment is stratified based on:
  - District
  - Treatment group in Targeting II project
  - Sub-district
  - Urban to rural ratio must be at 2:3
Illustration of Randomization

- **Treatment 1:** Raskin card
- **Treatment 2:** Raskin card + Additional socialization
- **Control:** No treatment
Statistically, villages who receive treatment and the control group are identical prior to pilot.
Implementation: Treatment
Implementation: Treatment

- Treatment operational
- Set quality control checks
- Treatment preparation and launching
- Coordination with government
- Field visit
Implementation Plan

• Identifying how to implement treatment in the field
  – Developing detailed implementation plan with facilitation specialist and government
  – Use vendor chosen by government

• Set strong internal quality management
  – Random checks during the printing of cards
  – Standards for facilitator recruitment
  – Documenting treatment implementation with standardized forms
  – Clear reporting procedure
Implementation Plan

• Coordination with government
  – Workshop in Jakarta for representatives from province, district/city.
  – Pre-field work coordination with head of district/city, sub-district, and village

• Treatment preparation and launching
  – Scheduling, training, and logistic coordination

• Field visit: to observe response from treatment given
## Treatment variation

<table>
<thead>
<tr>
<th>Card variation</th>
<th>Standard socialization</th>
<th>Additional Socialization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All eligible households</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With price</td>
<td>With coupon</td>
<td>Group 1</td>
</tr>
<tr>
<td></td>
<td>Without coupon</td>
<td>Group 2</td>
</tr>
<tr>
<td>Without price</td>
<td>Coupon</td>
<td>Group 3</td>
</tr>
<tr>
<td></td>
<td>Without coupon</td>
<td>Group 4</td>
</tr>
<tr>
<td><strong>Without price</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Only the 10% poorest of eligible households</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With price</td>
<td>Coupon</td>
<td>Group 5</td>
</tr>
<tr>
<td></td>
<td>Without coupon</td>
<td>Group 6</td>
</tr>
<tr>
<td>Without price</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without price</td>
<td>Coupon</td>
<td>Group 9</td>
</tr>
<tr>
<td></td>
<td>Without coupon</td>
<td>Group 10</td>
</tr>
<tr>
<td><strong>Without price</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Without price</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>(Without card and socialization at all)</td>
<td></td>
</tr>
</tbody>
</table>
Recap: Raskin card variation

- Randomly, card is customized based on:
  - Design: with or without coupon
  - Content: with or without price
  - Distribution: to all eligible households or only 10% poorest

- Distribution of Raskin card to eligible households
  
  Sept. to mid of Oct. ‘12
  
  - 378 villages received card;
  - 194 control villages (did not receive card)
Recap: Raskin card variation

Randomly, village with Raskin card receive:

- **Standard socialization: Letter, DPM**; or
- **Additional Socialization:**
  - +3 DPM per sub-village
  - +3 information poster per sub-village
  - Socialization to tokoh masyarakat
  - Announcement through mosque
Recap: Raskin card variation

- End of Sept. to mid-Nov. ’12
- 378 villages who receive card and socialization
  - 186 villages: Standard socialization
  - 192 villages: Additional socialization
- 194 control villages did not receive socialization

Seorang fasilitator menjelaskan mengenai kartu Raskin kepada pemimpin kampung di Lampung Tengah
Challenges in Implementing Treatment

- Some treatment villages are not safe and easily accessible
- There’s a lot of card who are not distributed to beneficiaries
Challenges in Implementing Treatment

• The availability of poster explaining the beneficiaries list was not sufficient for facilitators

• During the meeting, participants were complaining on other aspect of the Raskin/government
Implementation:
Data Collection
Implementation: Data Collection

Questionnaire Design

Internal Pilot

Coordination with Government

Preparation, Team Launching, Data Collection

Quality Control and Field Visit
Data Collection Plan

• Survey instrument: HH survey and people

• Baseline survey—use end line survey from previous project
  – Ensure that both treatment and control group are statistically indifferent

• Respondent identification
  – Respondent:
    • Eligible households (poor)
    • Eligible households (extremely poor/10% poorest)
    • Ineligible households
  – Listing, to identify ineligible households
  – Use PPLS’10 data, to identify eligible households
Challenges in Data Collection

• To match administrative data and field data
  – Human error, change of poverty status/address
• To accommodate change in administrative area i.e. new province/district
• Time constraint
• To collect enough human resource to collect data
• Other challenges: how can respondent recall the memory? How to explain “Distribution Point”?
## Data Collection

<table>
<thead>
<tr>
<th>Survey</th>
<th>Sumber</th>
<th>Responden</th>
<th>Data yang dikumpulkan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td>Endline from Targeting II, previous project</td>
<td>PKH recipient, non-poor</td>
<td>Main objective: to ensure control and treatment group are statistically indifferent</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Midline</strong></td>
<td>5,148 HHs, through HH survey and community survey (target: Head of village)</td>
<td>Non-poor, eligible HHs (poor and non-poor)</td>
<td>Quantity and price of Raskin purchased, knowledge about Raskin program, satisfaction rate, HH consumption, relative wealth level, etc.</td>
</tr>
<tr>
<td>Oct-Dec’12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Endline</strong></td>
<td>6,292 HHs, through HH and community survey</td>
<td>Ibid</td>
<td>Ibid</td>
</tr>
<tr>
<td>Mar-May’13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Challenges in Program Evaluation

- **Attrition**: when evaluator failed to collect data from selected individuals as part of original sample
  - Midline: 9% was replaced (418/4,572), Endline: 9.8% (561/5,706)
  - Respondent change was integrated within data collection process
  - Excluded 28 villages from evaluation
<table>
<thead>
<tr>
<th>No</th>
<th>Sample A</th>
<th>Sample B</th>
<th>Sample C</th>
</tr>
</thead>
<tbody>
<tr>
<td>4245</td>
<td>Sample A</td>
<td>4245</td>
<td>4245</td>
</tr>
<tr>
<td>4245</td>
<td>Sample B</td>
<td>4245</td>
<td>4245</td>
</tr>
<tr>
<td>4245</td>
<td>Sample C</td>
<td>4245</td>
<td>4245</td>
</tr>
</tbody>
</table>
Analysis
Analysis

1. Formulate the analysis plan
2. Write the STATA do.file
3. Process the data using program
4. Produce the charts
5. Analysis: Relate the qualitative field observation
6. Disseminate the findings
Preliminary Result
Empirical Analysis

\[ \text{Outcome} = \beta_0 + \beta_1 \text{Treatment} + \varepsilon \]

- Pre-analysis plan for government
- All analysis is intent to treat
- Conduct analysis separately by eligibility status
- Cluster by village
- Randomization check confirms balance
Effects on Card Distribution
Increase in receipt of Raskin card by eligible by 27 percentage points
Increase in usage of Raskin card by eligible by 14 percentage points

<table>
<thead>
<tr>
<th>Used raskin card</th>
<th>By Treatment Status and Sample (CS1 sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible</td>
<td>Ineligible</td>
</tr>
<tr>
<td>Control</td>
<td>Cards</td>
</tr>
<tr>
<td>N = 1984</td>
<td>N = 2088</td>
</tr>
</tbody>
</table>

J-PAL | START TO FINISH. RASKIN
Cards decrease purchase of Raskin by ineligible, no longer increase purchase by eligible

- December 2012
- April 2013
Eligible households in treatment villages purchase more rice

**Amount of raskin purchased per month since January (kg)**

*By Treatment Status and Sample (CS1 sample)*

- Eligible households in treatment villages purchase 0.9 kg (19%) more rice than those in control group.

![Bar chart showing the amount of raskin purchased per month by eligible and ineligible households in treatment and control groups.](chart.png)

- Eligible households in treatment villages purchase more rice.
Eligible households pay a smaller markup price

- Eligible households pay Rp. 77/kg (13%) smaller markup price for Raskin than eligible households in control
- In December 2012, cards did not have an effect on price.
Eligible households in treatment villages receive approx. Rp. 6000/HH/month (21%) more in subsidy.
No difference in household satisfaction between treatment and control

Overall satisfaction according to household, scaled 0-1
By Treatment Status and Sample (CS1 sample)

<table>
<thead>
<tr>
<th></th>
<th>Eligible</th>
<th>Ineligible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Cards</td>
<td>Control</td>
</tr>
<tr>
<td>N = 1988</td>
<td>N = 2010</td>
<td>N = 2010</td>
</tr>
</tbody>
</table>
Effects on Enhanced Socialization
More eligible households use Raskin cards under enhanced socialization

- However, result is not statistically significant
Increases the amount of Raskin purchased by eligible households by an additional 0.7 kg compared to standard socialization.

Amount of raskin purchased per month since January (kg)

By Soc Treatment and Sample (CS1 sample)

<table>
<thead>
<tr>
<th></th>
<th>Ctl</th>
<th>Std.</th>
<th>Enh.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 1984</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>4.8</td>
<td>4.8</td>
<td>8.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Ctl</th>
<th>Std.</th>
<th>Enh.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ineligible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 2088</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>4.8</td>
<td>4.8</td>
<td>8.4</td>
</tr>
</tbody>
</table>
Households still report higher satisfaction

Overall satisfaction according to household, scaled 0-1
By Soc Treatment and Sample (CS1 sample)

- Eligible
  - Ctl: N = 1868
  - Std.: N = 1868
  - Enhan.: N = 1868

- Ineligible
  - Ctl: N = 2010
  - Std.: N = 2010
  - Enhan.: N = 2010
And there is no difference in satisfaction reported by the village leader over the long-run.

- **DECEMBER 2012**

- **APRIL 2013**
Findings from Other Treatments

1. Price vs. No Price
   - Printing price on cards will only reduce the price if combined with enhanced socializations.
   - Printing price can also increase the Raskin rice purchase for eligible HH.

2. Coupon vs. No Coupon
   - Combined with enhanced socialization, coupon can increase the subsidy.

3. How the Card is Distributed: All Eligible HH vs. 10% Poorest
   - Poorest 10% is more likely to receive the card in treatment group, although it’s not significantly so.
## Result Development

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Midline</th>
<th>Endline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Card</strong></td>
<td>(⁺)</td>
<td>(⁺)</td>
</tr>
<tr>
<td>&gt;&gt; take-up, purchase, and subsidy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Card</strong></td>
<td>(⁺) eligible</td>
<td>No effect</td>
</tr>
<tr>
<td>&gt;&gt; HH satisfaction rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Additional Socialization</strong></td>
<td>(⁺) eligible</td>
<td>(⁺) eligible</td>
</tr>
<tr>
<td>&gt;&gt; purchase, subsidy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Additional Socialization</strong></td>
<td>(⁺) households</td>
<td>(⁺) households</td>
</tr>
<tr>
<td>&gt;&gt; satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Card with Raskin Price</strong></td>
<td>(⁻)</td>
<td>(⁻), only with additional socialization</td>
</tr>
<tr>
<td>&gt;&gt; price mark-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coupon</strong></td>
<td>(⁻) ineligible</td>
<td>(⁺) eligible</td>
</tr>
<tr>
<td>&gt;&gt; subsidy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Distribution to 10% poorest</strong></td>
<td>No effect</td>
<td>(⁺), due to additional socialization</td>
</tr>
<tr>
<td>&gt;&gt; Rice purchase</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Input for Policy

• The distribution of Raskin card improved the program implementation
  • Eligible HHs who purchase and the amount of purchase increased
  • Decreased number of incident where there is a price mark-up
  • Net, it is a Rp 6,000 subsidy adjustment for eligible HH, and no change for those who are ineligible

• Additional socialization increased subsidy and the satisfaction level of beneficiary
  • Achieved with only 2-3 person-days of external facilitation and 3 posters per dusun.
Input for Policy (cont.)

- **Adding Raskin price in card increase the effectiveness of the program**
  - When combined with additional socialization, the short term effect remains until medium-term

- **The distribution of card to only 10% poorest HH may become the effective way to improve targeting**
  - In the beginning, 10% poorest HH reported lower level of satisfaction and no significant difference is observed for take-up level
  - However, in the last survey, they reported higher amount of subsidy and higher level of satisfaction rate in the village with additional socialization
Input for Policy (cont.)

• Using coupon is potentially effective if also combined with additional socialization.

• In the medium-term, the card variation effect depends on the additional socialization of the program.
  
  – This applies to card with coupon price and targeting to 10% poorest HHs.
Policy Scale-up
Kartu Perlindungan Sosial (KPS; Social Protection Card)

- TNP2K upgraded Raskin card to be Kartu Perlindungan Sosial (KPS).
- As per June 2013, the KPS has been distributed nationally to 15.5 million households (65.6 million people).
- The card can be used as kartu Bantuan Langsung Sementara Masyarakat (BLSM); kartu Bantuan Siswa Miskin (BSM); and Raskin.
End