Discussion session on:

The Impact of Raising the MLDA on Academic Achievement and Risky Behaviour: A Difference-in-Discontinuities Approach

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I really like and enjoyed reading the paper :)

- Summary:
  - Diff-in-Disc + MLDA reform at age 16 in 3 Spanish regions.
  - Data from PISA and ESTUDES
  - Finds ↑ in **math/science** scores, esp for **male** & **low-edu** students
  - Evidence of both **own-use** and **peer-use** behavior changes
- Strengths:
  - Smart empirical design addressing classic RD limitations
  - Promising results which are highly policy relevance
  - Multi-source data integration enhances external validity
  - Rich heterogeneity analysis
  - Peer behavior inclusion is economically meaningful.

Potential Causal Pathways

Small effects, post ever drunk > 80%
Male & low-ed: 6-10 pp. ↓ ever drink
Fem. & low-ed: 8-10 pp. ↓ intox.

Reform ↑ MLDA

Larger indirect effects
Male & low-ed: 9-15 pp. ↓ in ever smoke
Male & low-ed: 3-8 pp. ↓ in 1st weed
All: 11-24 pp. ↓ in perceived peer use

↓ Prob. of alcohol | ↓ Intoxication | ↓ Substance uses | ↓ Peer consumption

Direct effects

Indirect effects

↓ Truancy

All types of students:
15 - 30 pp. ↓ -- Huge!

↑ PISA scores

Male & low-edu students:
about 0.15 - 0.2 SDs. ↑

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Potential Causal Pathways: Validating A

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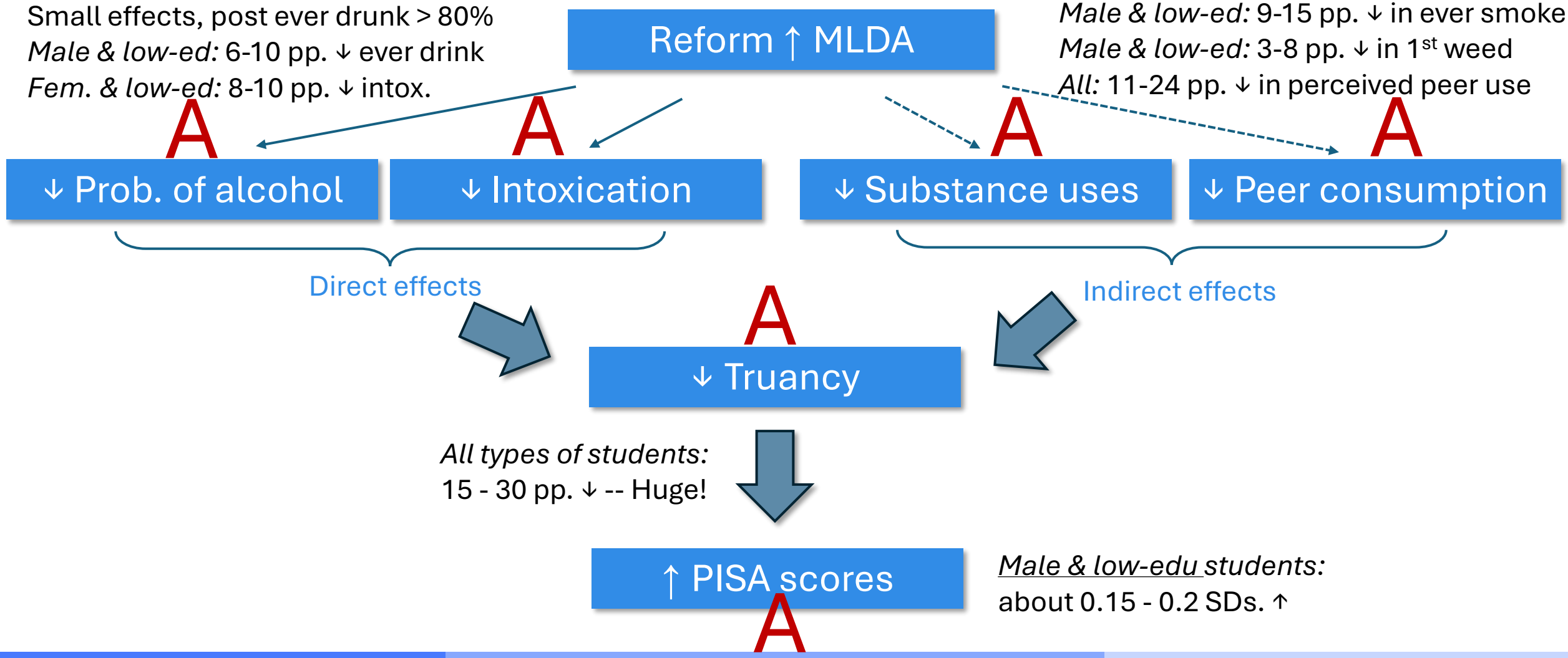

Validating A

- **Potential Issue:**
  - Diff-in-Disc helps eliminate age-16 RD confounds but doesn't control for **policy/structural changes that occur concurrently with MLDA reform**
- **Possible Checks**:
  - Policy timelines on **concurrent regional reforms** (e.g. schooling, employment)?
  - Include **region × year fixed effects** (or additional control regions)
  - Interact region (or construct reform strictness index) and treatment to test for **region-specific treatment effects**
  - Run **placebo** cutoffs (age 15.5/17) or false Diff-in-Disc on non-treated regions => insig effect or no jump would strengthen causal story
  - Use **unrelated academic outcomes** (e.g. non-cognitive scores, enjoyment)
    Use **unrelated behaviour outcomes** (e.g. digital habits in ESTUDES?)
    => expect no sig treatment effect in Diff-in-Disc

Potential Causal Pathways: Validating B

B

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Direct effects

Indirect effects

B

↓ Truancy

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↑ PISA scores

Male & low-edu students:
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Validating B & Possible Checks

- **Potential Issues:**
  - General **pre-reform increase in truancy** at 16, but **large post-reform decline in Truancy**:
    - Mean reversion or potential change in regional education policy/school regulations/trends?
    - Pre-reform truancy data only from one region in 1-2 years (Asturias only: overestimated effect?)
  - Alcohol use ↓ by 6-10 pp. for **boys & low-edu,** but still > 80% report ever drunk post-reform.
  - Intoxication falls significantly for **girls**, but they don't show test score gains.
  - Largest score improvements for **boys & low-edu**, whose alcohol use doesn't fall by much, but marijuana and peer behavior change more.
  - Is the *causal chain* from **MLDA → ↓ substance uses → ↓ truancy → ↑ scores** too weak or inconsistent in these subgroups?
- Could explore **alternative mediators**: time-use, classroom focus, sleep, parental monitoring, self-regulation improvements (if available in data)
- Consider if these behavioral shifts led to **better school attendance**, **more hours studying**, or **fewer distractions**, which may not be alcohol/substance-specific.
- **Causal mediation analysis** (e.g., Imai et al. 2010) using behavioral variables (alcohol, marijuana, peer use, truancy) as mediators for PISA scores.

Potential Causal Pathways: Validating C

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↓ Prob. of alcohol | ↓ Intoxication | ↓ Substance uses | ↓ Peer consumption

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Validating C

- **Potential Issue: <u>Peer Effect</u>**
  - Given small direct impact of MLDA on alcohol, indirect channels on substances and peer effects are plausibly needed to help explain improved PISA scores
  - But self-reported perceived peer behaviours could be subjective & reflection biased
  - Hard to separate individual from group effects
  - Pre-reform ↑ in peers' substance use prob (20-35pp.) & post-reform ↓ (15-25pp.) at 16 could result from mean reversion/general trend/media/other policies?
- **Possible Checks**
  - Run diff-in-disc using perceived peer in unaffected areas/periods
    => if sig effect on peer behaviours even **where MLDA didn't change**, this suggests confounding by general trends or media campaigns.
  - Could try variation in grouped peer exposure (e.g. same-school cluster, class-level drinking norms if group identifier available in data) as alternative measures
    - Reduces individual-level reflection bias by using average (excluding own self) peer use
    - Include school or group fixed effects: control for e.g. rules influencing students from same school