Measuring informal housing & its socio-economic outcomes: First Nation Reserves in Canada

2017 World Bank Conference on Land and Poverty

March 23, 2017

Ballantyne & Ballantyne

brian_ballantyne@hotmail.com

In theory: Ricardo, Coase, Demsetz

- Formal land tenure:
  - Increases incentives to invest
  - Increases bargaining efficiency
  - Lowers transaction costs
  - Lowers costs of defense
  - Internalizes externalities
  - Allows collateralization

Indigenous Land Titles Initiative
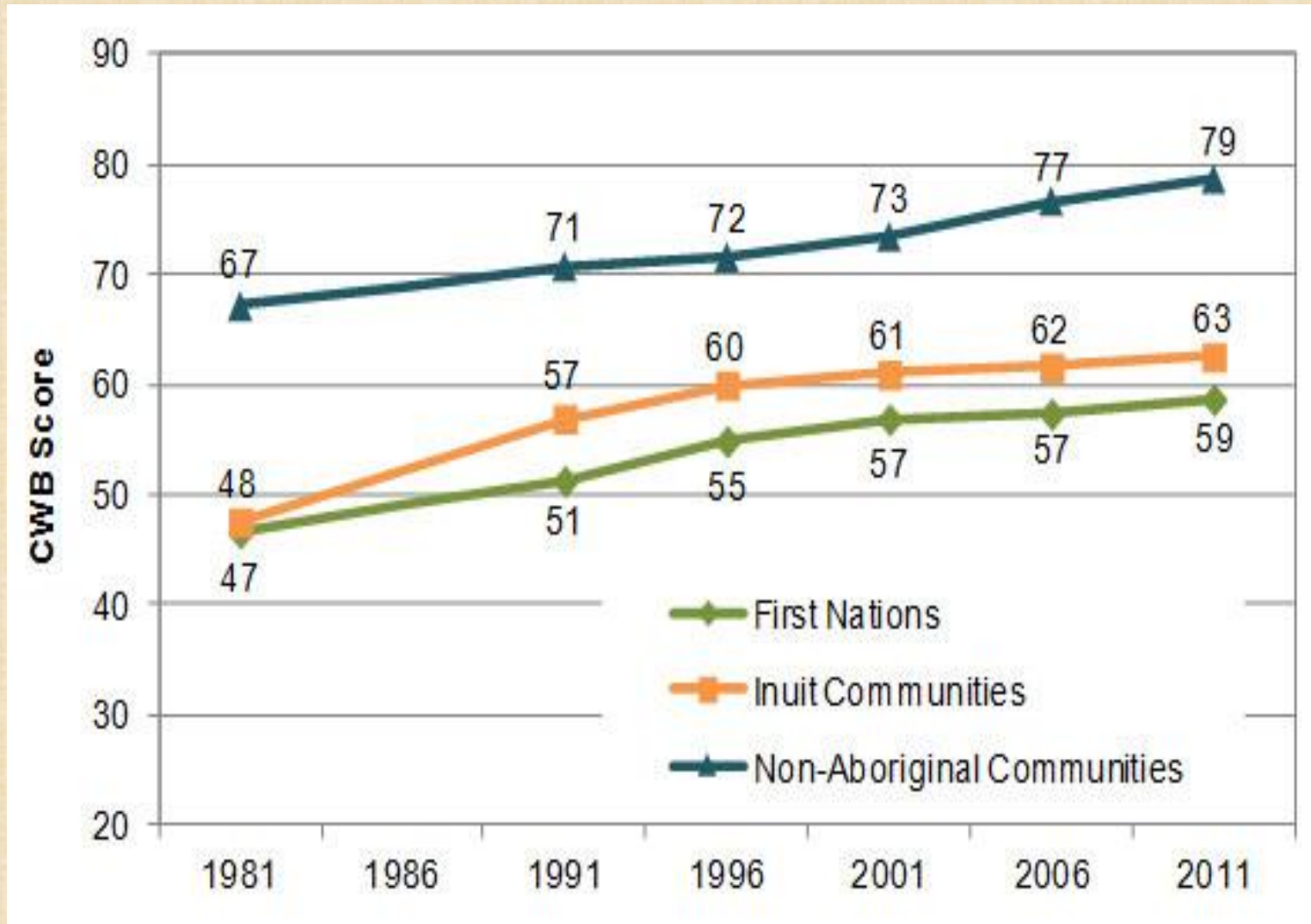
In practice: Results of titling

- Peru:
  - increased labour force participation

- Argentina:
  - more infrastructure investment
  - reduced fertility rate
  - smaller household size
  - higher educational outcomes

- Collateralization?

- Reversion to informality
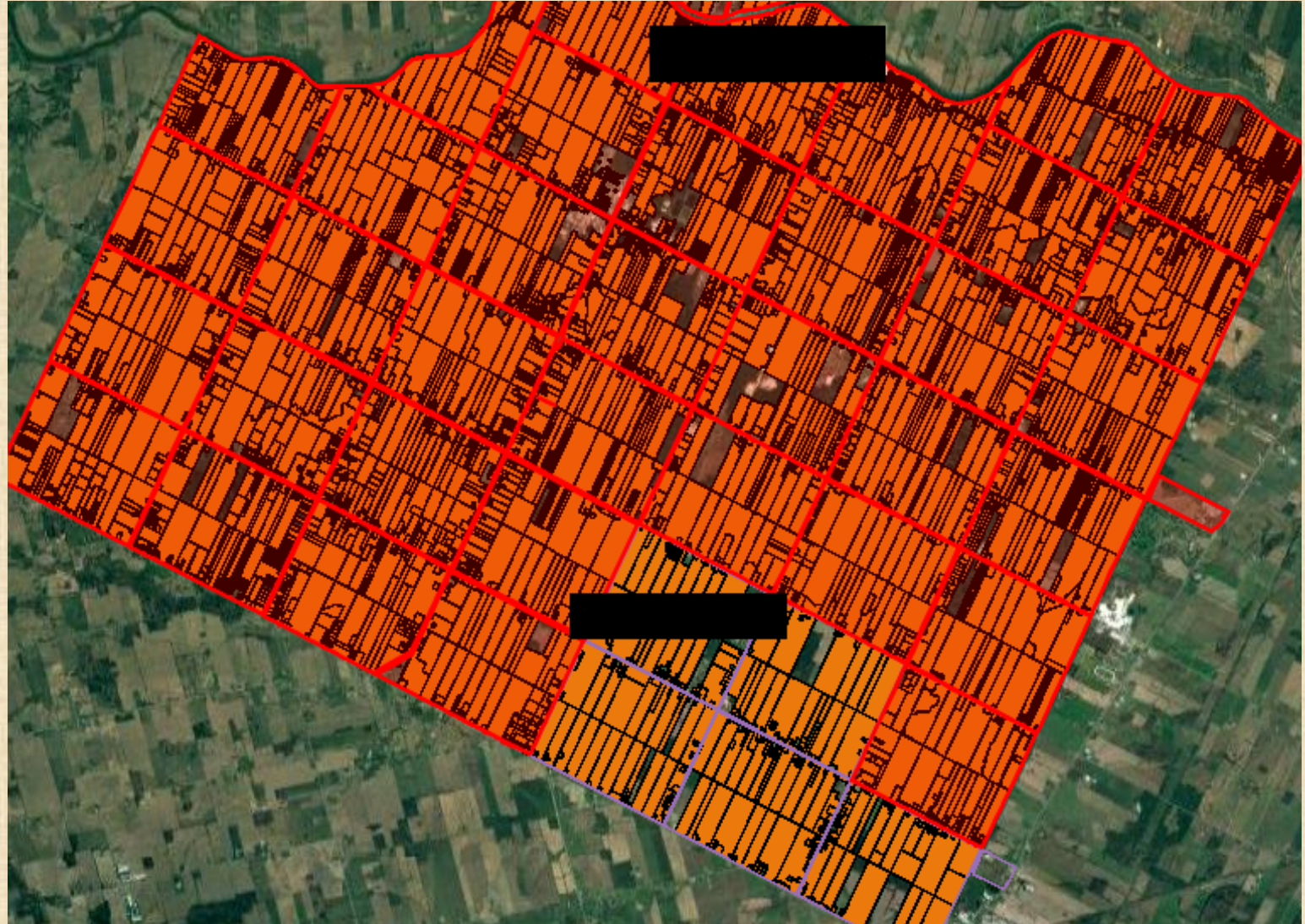
First Nation Reserves in Canada

Community Well-Being (CWB)

- Components:
  - Income
  - Education
  - Labour Force Activity
  - Education
- First Nations are heterogeneous

Land tenure on FN Reserves

- Formal (INAC):
  - Certificates of possession, leases

- Informal (not INAC):
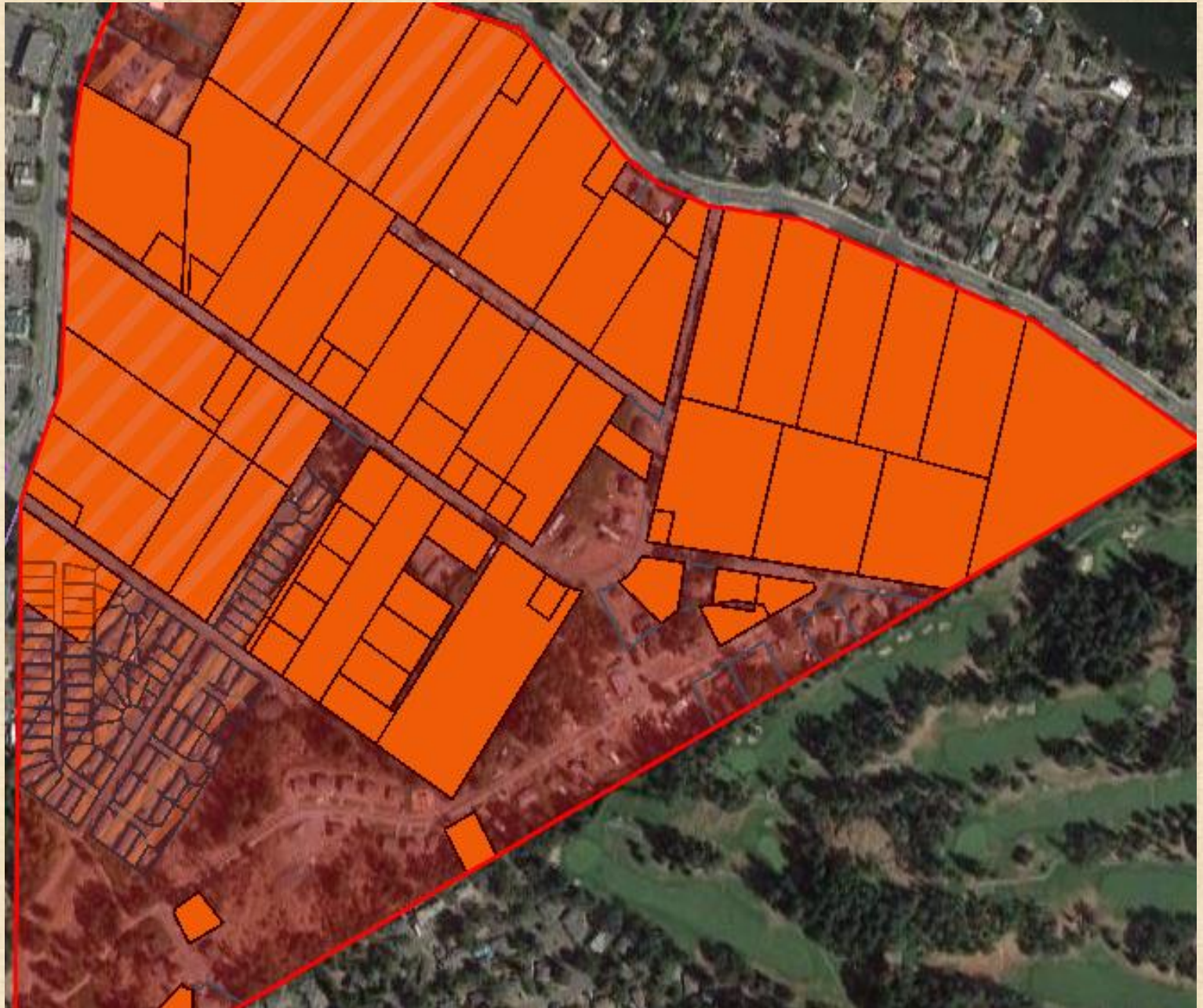 - Quantum unmeasured

Research question

- Does informality hinder socio-economic development (CWB) in British Columbia and Ontario?

  - 95 Reserves in BC and 74 in ON have CWB data
  - 34 Reserves in BC and 44 in ON have data for Income, LFA, Education, Housing

Measuring informality

- Census: total dwellings = (formal + informal)

- Indian Lands Registry: formal

- Imagery: informal

- Informality ratio = (informal/total)

Variables

Dependent

- Community Well-Being

Independent

- Informality
- Reserve population
- Reserve area
- Distance to service centre
- Distance to urban centre (pop. over 50,000)
- Global Non-Response rate (GNR)

The model

- OLS:

$$CWB_i = \alpha + \beta \, informality_i + X_i'\theta + u_i$$

- Seemingly Unrelated Regression:

$$Income_i = \alpha + \beta \, informality_i + X_i'\theta + u_i$$

$$Education_i = \alpha + \beta \, informality_i + X_i'\theta + u_i$$

$$Housing_i = \alpha + \beta \, informality_i + X_i'\theta + u_i$$

$$LFA_i = \alpha + \beta \, informality_i + X_i'\theta + u_i$$

Summary stats

- Overall: total housing count = 23,614

- Informal = 55.1%
  - 56% in Ontario (with 11,917 houses *in toto*)
  - 55% in BC (with 11,697 houses *in toto*)

Summary stats for 95 IR in BC and 74 in ON*

	Average	Max	Min
CWB	61, 63*	82, 75*	45, 38*
Population	337, 448*	2604, 2592*	70, 68*
GNR	0.20, 0.19*	0.50, 0.48*	0.02, 0.01*
Area (ha)	1246, 5222*	13283, 42614*	10, 13.4*
S. Centre (km)	149, 161*	691, 600*	1, 7.4*
City (km)	273, 262*	886, 600*	1, 7.4*
% housing inform.	75, 72*	100, 100*	2.55, 5*

Summary stats for 34 IR in BC and 44 in ON*

	Average	Max	Min
CWB	61, 62*	82, 75*	45, 45*
Income	62, 61*	94, 78*	45, 42*
Education	40, 38*	60, 55*	22, 12*
Housing	76, 75*	96, 94*	53, 47*
Labour Force Activity	67, 73*	81, 87*	47, 56*
Population	662, 662*	2604, 2592*	259, 260*
GNR	0.24, 0.20*	0.50, 0.48*	0.05, 0.07*
Area (ha)	1805, 6797*	13283, 42614*	13, 13
S. Centre (km)	163, 180*	691, 600*	1, 7.4*
City (km)	278, 258*	818, 600*	1, 7.4*
% housing inform.	66, 64*	100, 100*	2.55, 5*

Results (p1)

- Informal housing significantly reduces CWB!

- 10% increase of informality decreases CWB by:
  - 0.90 points in British Columbia
  - 0.83 points in Ontario

- Thought experiment for an IR in BC:
  - At time 1, 100% informal
  - At time 2, 100% formal
  - Change in CWB = 9 points!

Results (p2): Components of CWB

British Columbia

- Significant at 0.05 level:
  - Income
  - LFA
  - Housing

- Significant at 0.07 level:
  - Education

Ontario

- Significant at 0.05 level:
  - Income
  - Education
  - LFA

- Significant at 0.16 level:
  - Housing

Supplementary stuff

- Reverse-causality?

- Role of unobserved metrics:
  - Governance
  - Institutions

- Much more to empirically examine:
  - Assess all regions
  - Incorporate 2016 Census
  - Refine methodology (e.g. automated PFI generator)