

Variation among pregnant women receiving prenatal screening in Ontario

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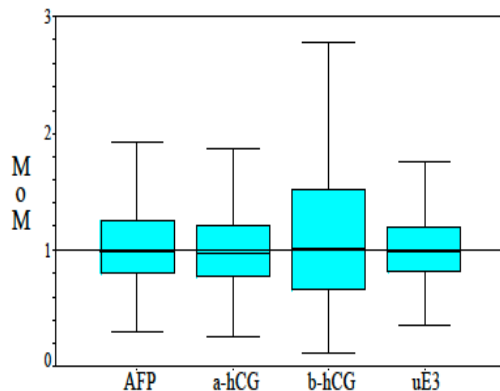
Annual CAHSPR Conference

Vancouver, BC

May 30, 2013

Background

- Standard of care to offer pregnant women early screening for
 - ▶ chromosome abn (e.g. Down syndrome)
 - ▶ open neural tube defects (e.g. spina bifida)
- The goal of screening
 - ▶ to inform and enable choice about diagnostic testing, course of pregnancy, site and provider of delivery
- The test has 2 parts
 - ▶ maternal blood test that measures biochemical markers
 - ▶ fetal ultrasound that measures nuchal translucency

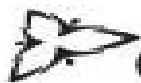


Evidence

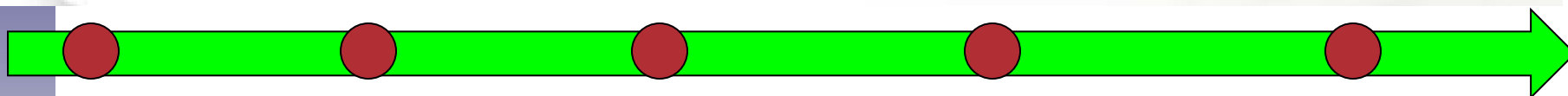


PRENATAL SCREENING ONTARIO

dépistage prénatal de l'Ontario



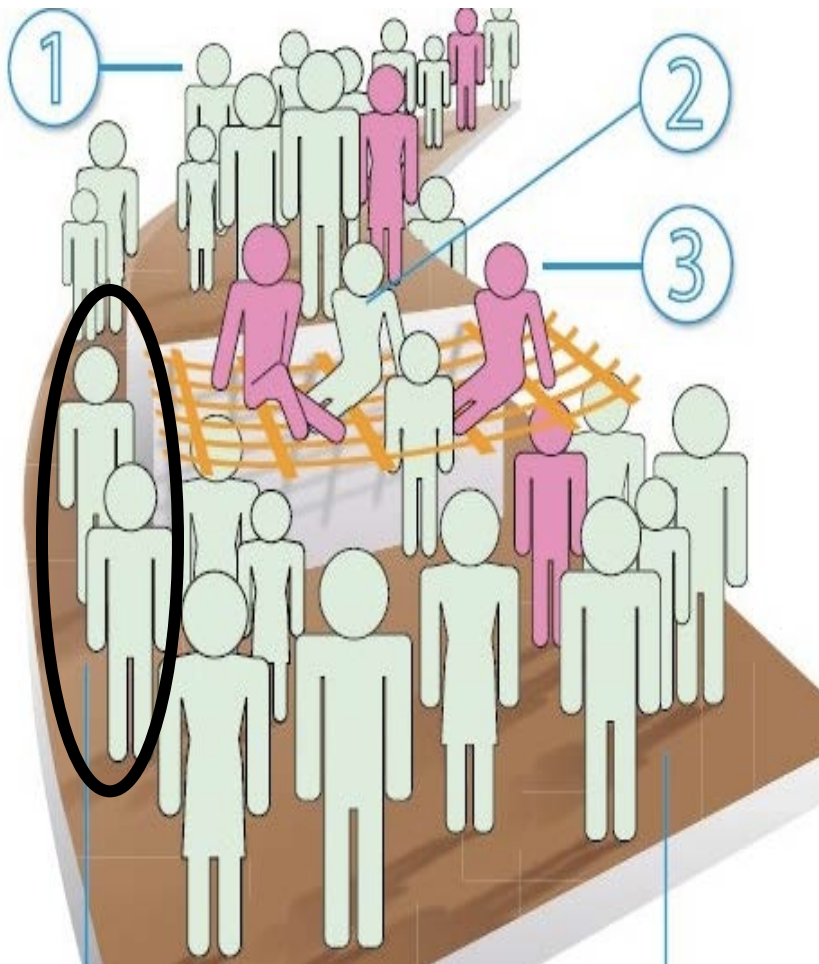
Ontario



1993	1998	1999	2000	2012
2 nd trimester markers in maternal blood “triple screen”	1 st trimester ultrasound strategies	2 step test (IPS) better perf DR: 88.4% FPR: 3.3%	1 step test (FTS) earlier info DR: 83.9% FPR: 4.0%	NIPT for private pay More attention on FTS

- 5 regional labs offer tests
- Multiple tests available
- Decentralized program can pose challenges

Equitable access is a requirement of population-based screening



- Despite standard to offer screening universally, uptake varies
 - By maternal preferences
 - By provider practice patterns
 - By maternal characteristics
- Limitations of existing evidence
 - Self report
 - Non-Canadian

Preliminary findings in ON

- ~90,000 women screened/yr of ~140,000 births/yr
- Identified variation in receipt of screening across ON LHINs (27.5% to 77.6%)
- OMMMS = Limited data set
- MOHLTC requested more detailed analysis @ ICES

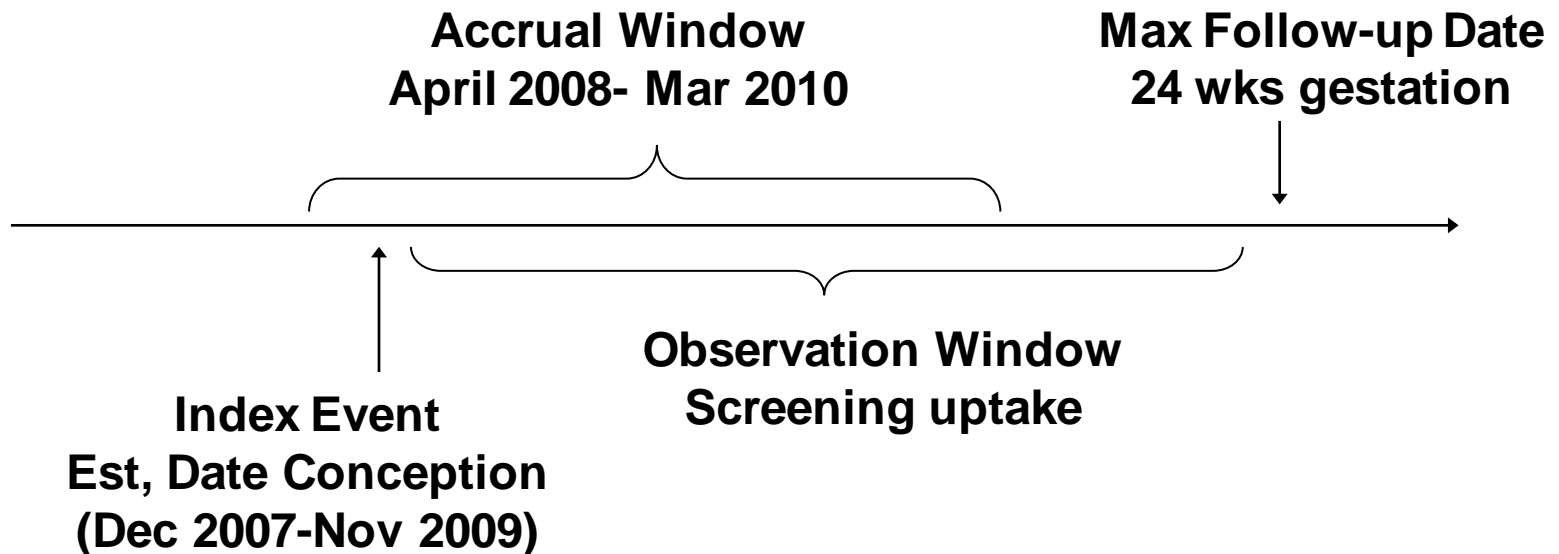
Objectives

- To describe screening rates, by type of test, across Ontario regions
- To determine whether there are important regional, maternal, or provider characteristics associated with screening uptake

*Key limitation – cannot reflect on “offer”

Methods: The Cohort

- population-based retrospective cohort study on
 - ▶ all pregnancies > 16 weeks gestation
 - ▶ conceived between Dec 2007 and Nov 2009
- selected 16 wks b/c most receive screening offer by this point



Methods: Data Sources

- ICES data sources to identify the cohort
 - ▶ A linked mom-baby dataset to ID live/stillbirths
 - ▶ OHIP & CIHI databases to ID abortions (and exclude those ≤ 16 wks)
 - Discharge Abstract Database (DAD)
 - Same Day Surgery (SDS) File
 - National Ambulatory Care Reporting System (NACRS)
 - ▶ RPDB for demographics
 - ▶ Cit Imm Canada database for immigrant status
 - ▶ IPDB for provider characteristics

Methods: The Outcome

Better Outcomes Registry & Network (BORN Ontario) to determine receipt of screening and type of screening

Screening Modality	Analytes Screened	Trimester
First trimester screen (FTS)	Serum (PAPP-A, <i>fbhCG</i>) NT ultrasound	1 st
Integrated prenatal screen (IPS)	Serum (PAPP-A)	1 st
	NT ultrasound	
	Serum (AFP, hCG, uE3)	2 nd
Serum IPS (SIPS)	Serum (PAPP-A)	1 st
	Serum (AFP, hCG, uE3, DIA)	2 nd
4 marker screen (QUAD)	Serum (AFP, hCG, uE3, DIA)	2 nd
OTHER	AFP only, NT only, NT+ QUAD	2 nd

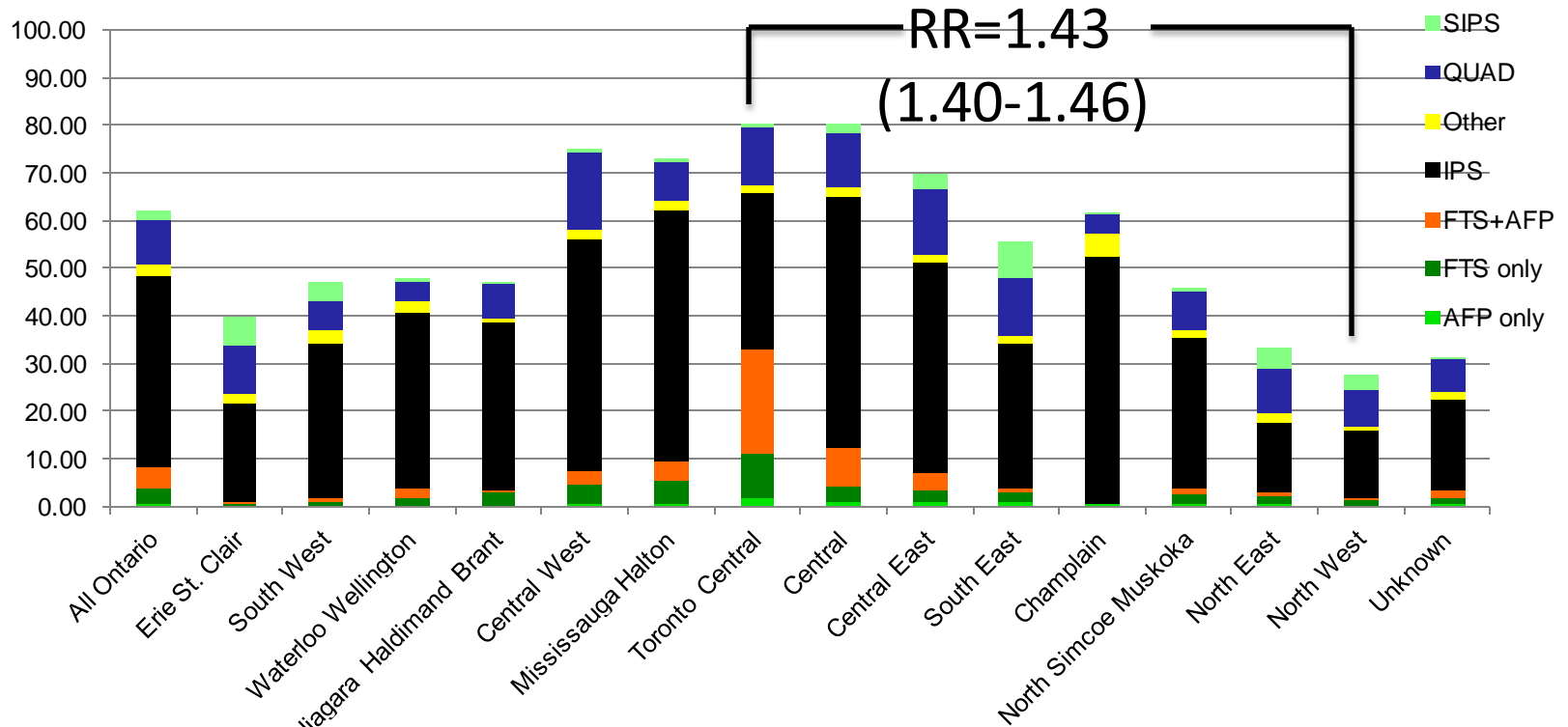
Methods: Linkage & Analysis

- BORN data linked to ICES data
 - ▶ to assess receipt of screening for women in cohort
- Analysis
 - ▶ Uptake of screening modalities quantified by
 - Regional, maternal, provider factors
 - ▶ Estimate relative rates (RR) of screening
 - Log-linear binomial regression models

Key Findings

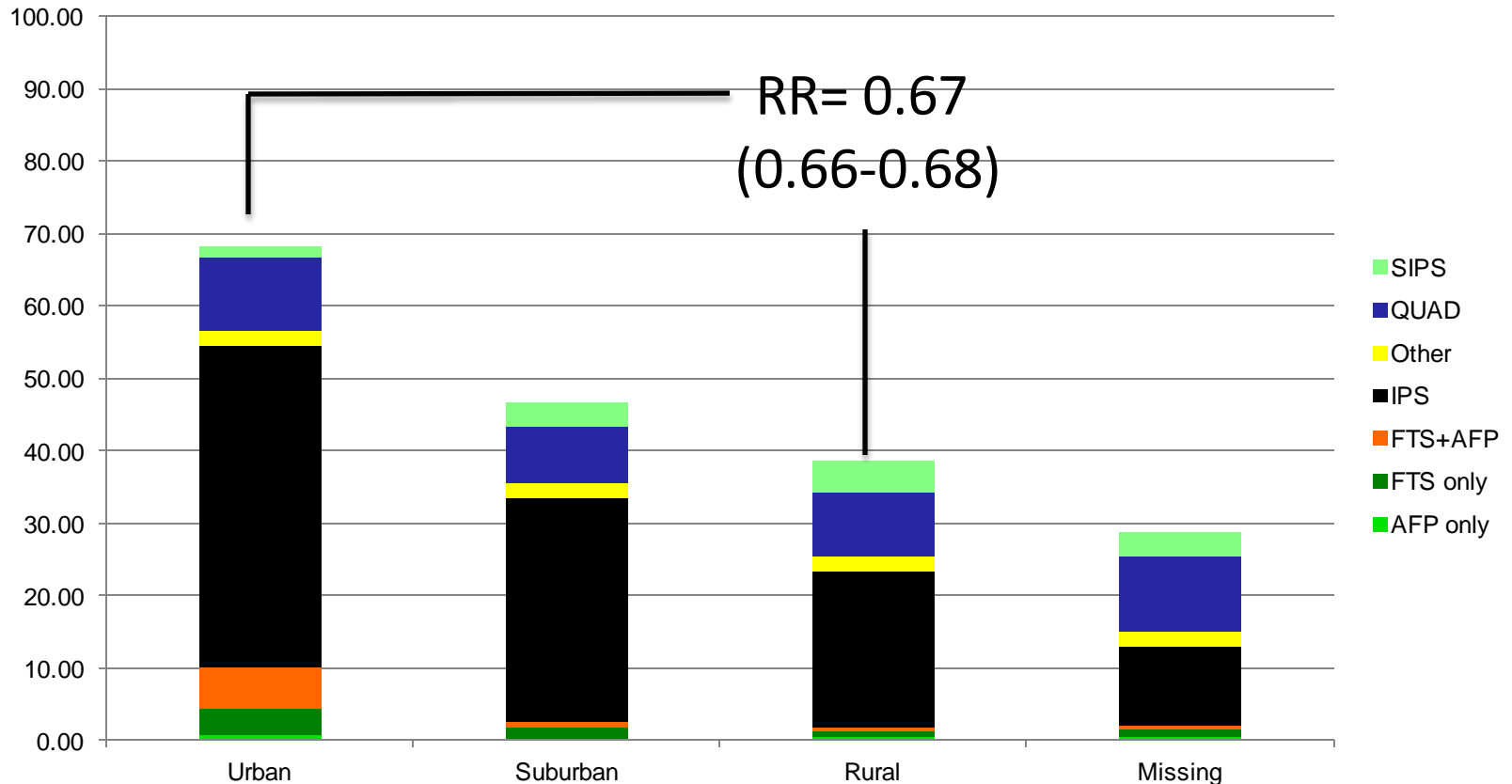
- Cohort = 264,737 pregnant women
- Of these, 62% received some type of screening
- IPS vs FTS
 - ▶ IPS most common (~ 65% of all screens)
 - ▶ Those receiving FTS more likely to be:
 - >35 yrs (28.9%)
 - Urban located (98.6%)
 - Canadian resident (73.0%)
 - Receiving prenatal care via OB (57.6%)

Uptake by LHIN



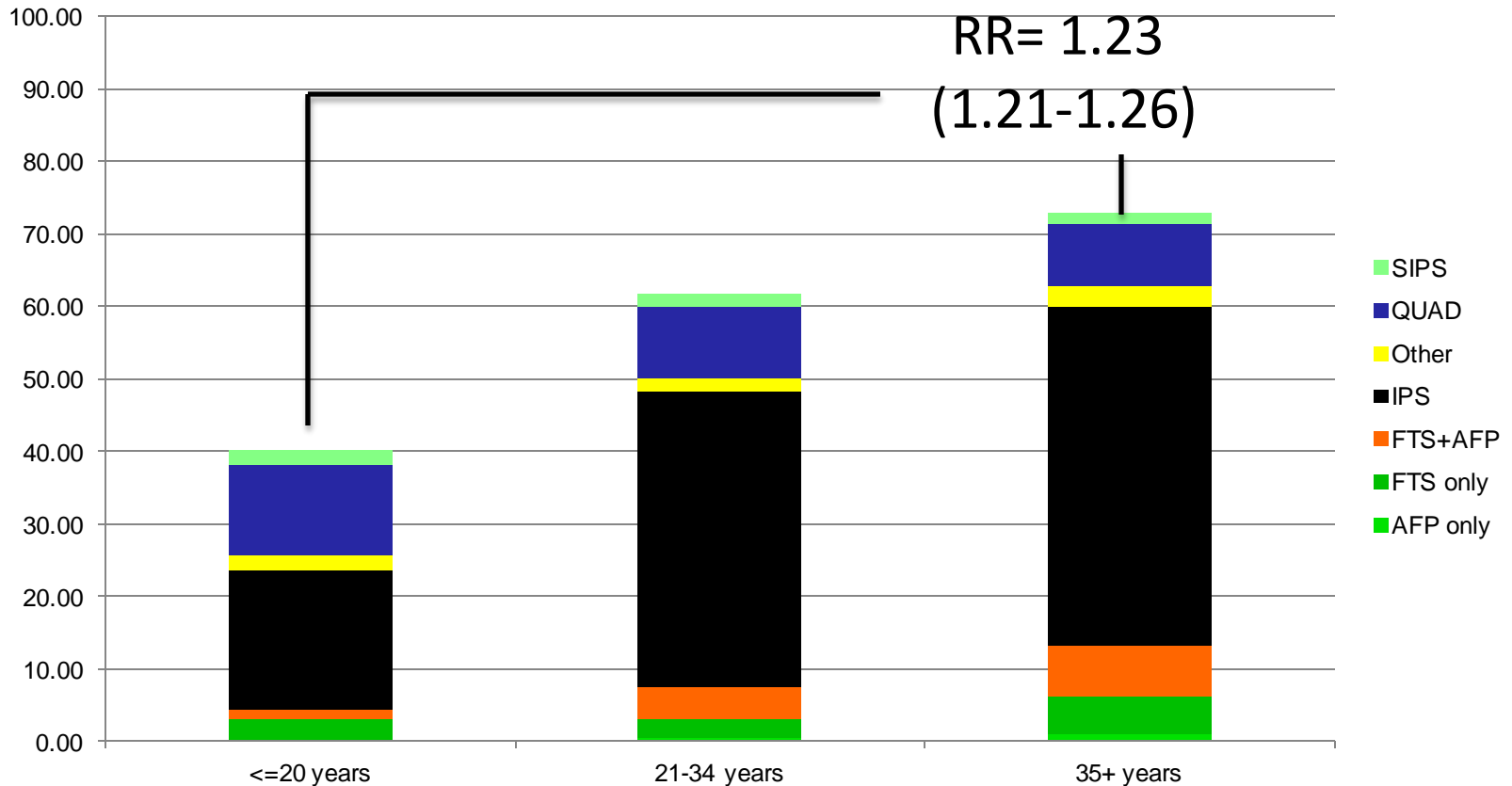
Substantial variation in uptake across LHINs.
 80% of women had screening in Central LHINs.
 <40% had screening in SW, NE, and NW LHINs.

Uptake by RURALITY SCORE



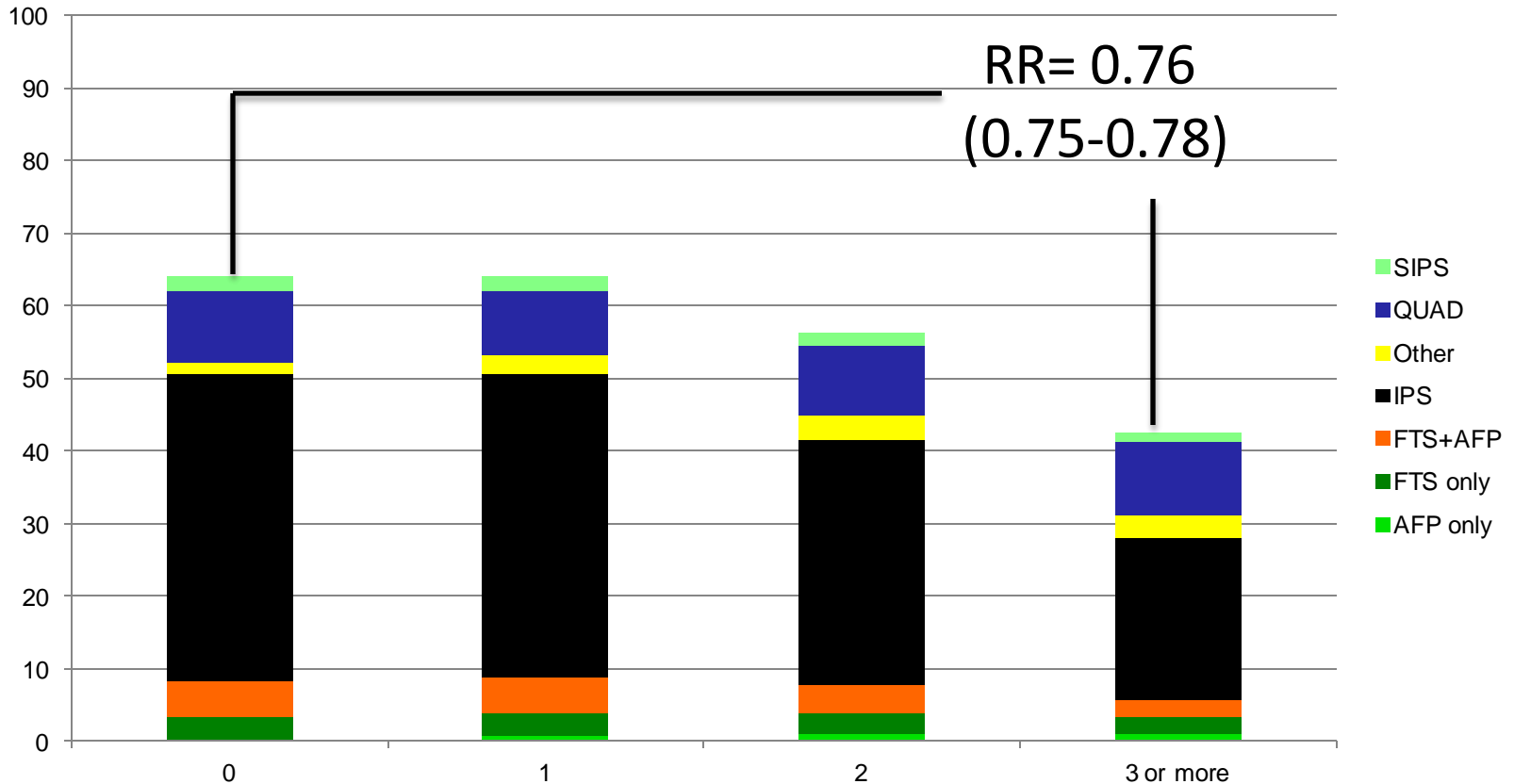
Uptake was lower among rural (39%) compared to urban women (68%)

Uptake by AGE



Among women >35 yrs at delivery/abortion, 73% had screening.
Among women <=/= 20 yrs at delivery/abortion, 40% had screening.

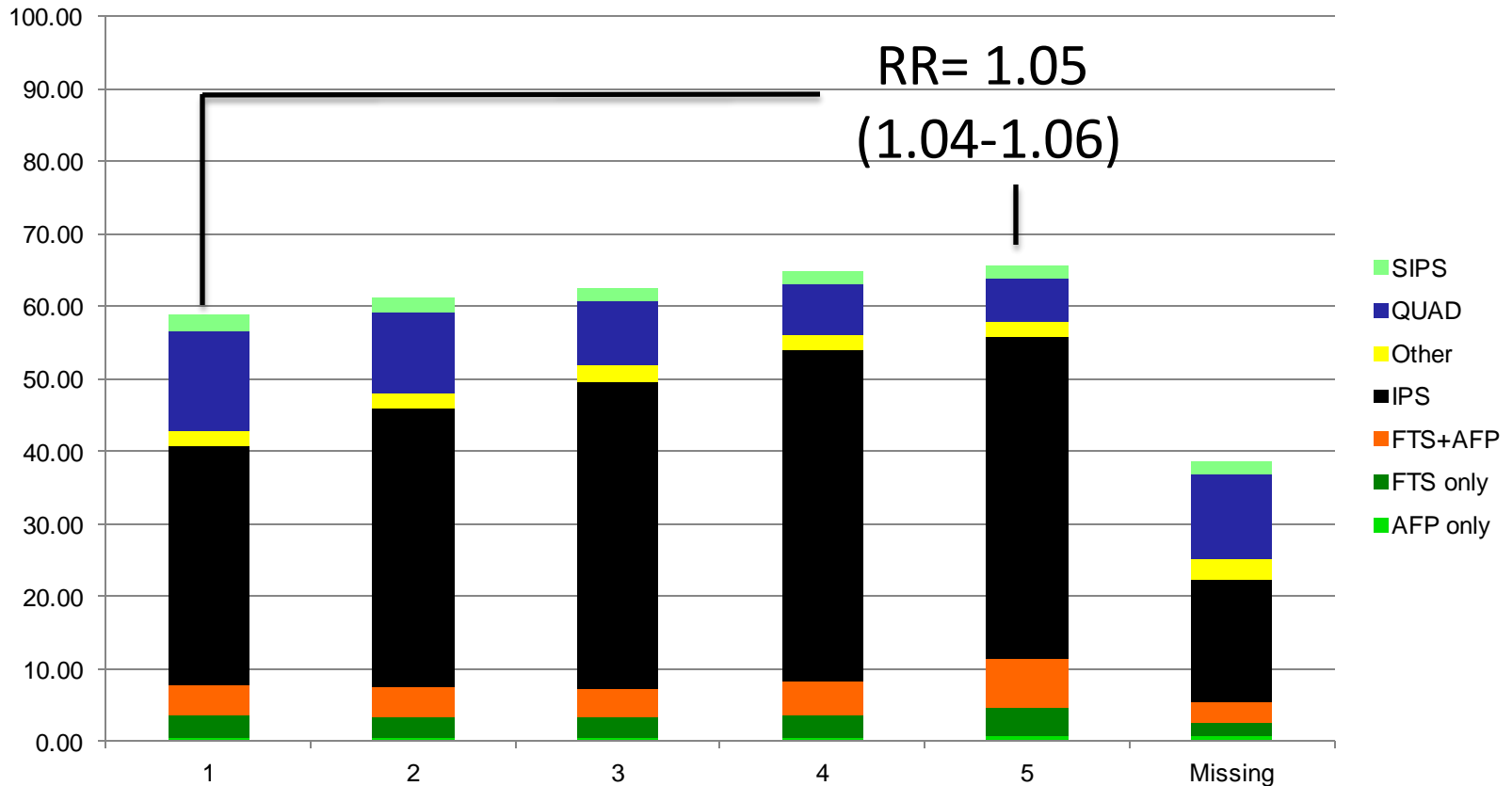
Uptake by PARITY



Among nulliparous women 64% had screening

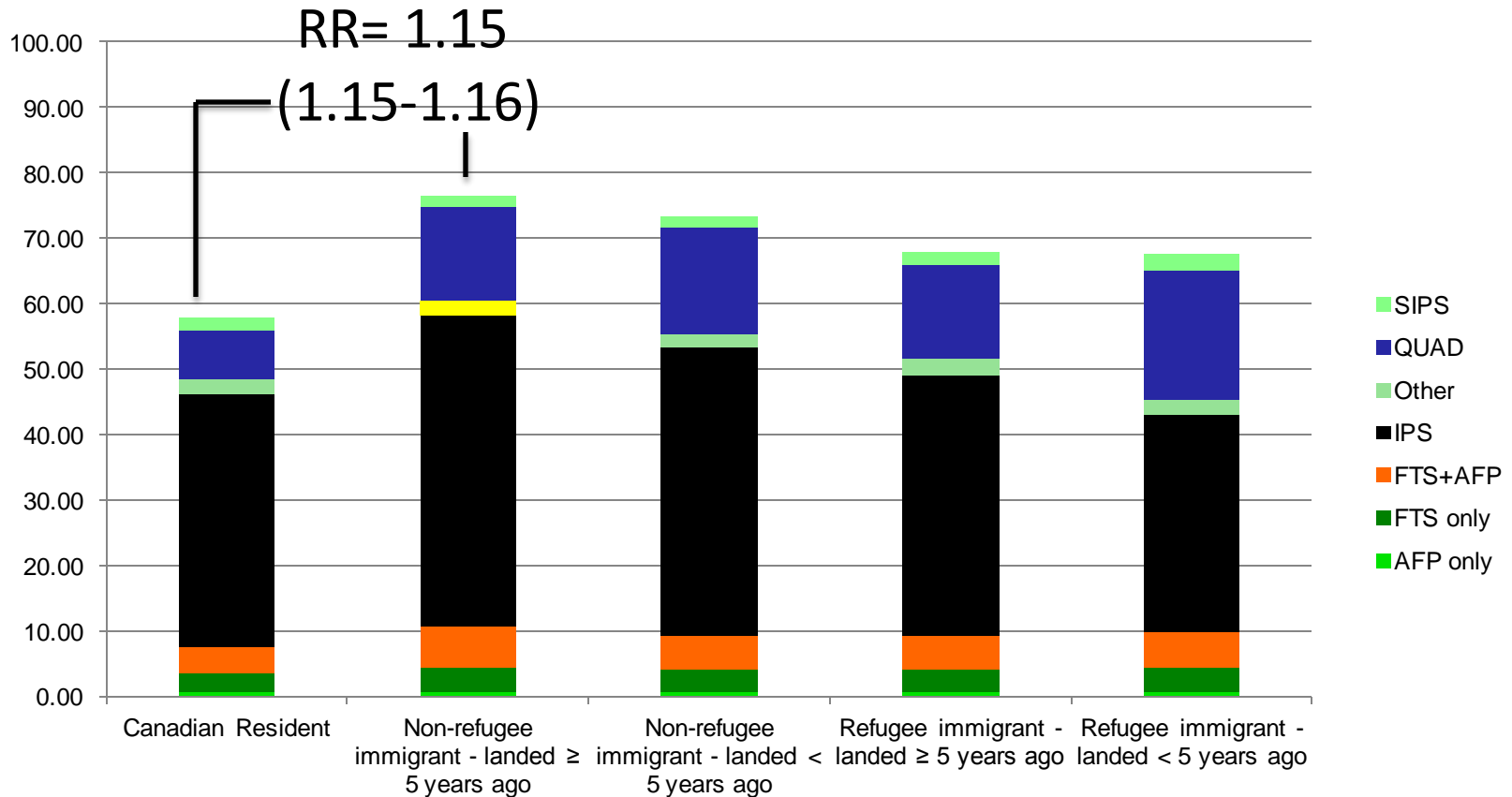
Among multiparous women (≥ 3), 43% had screening.

Uptake by INCOME QUINTILE



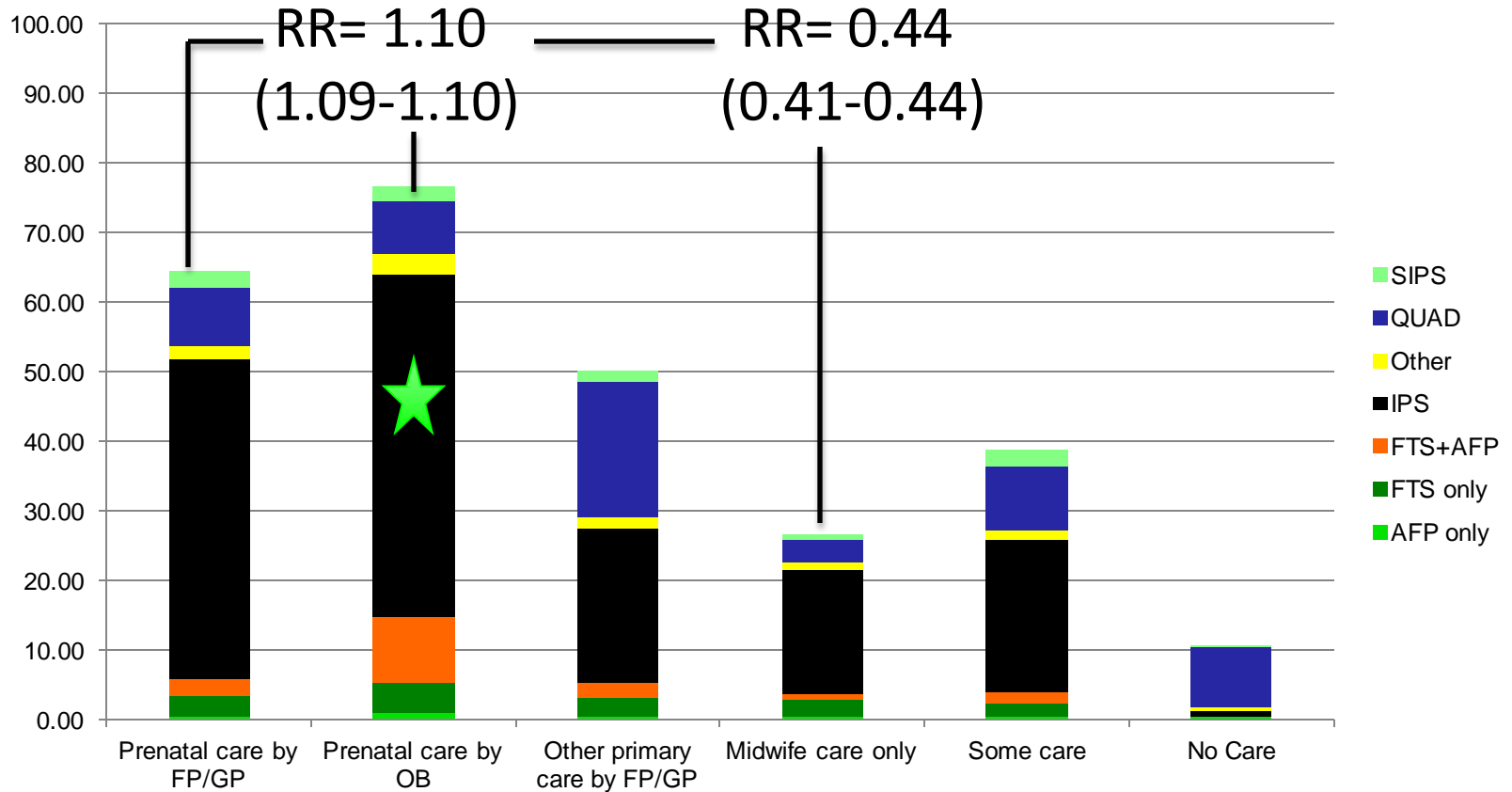
There was a slight gradient in screening rates by income quintile (66% for quintile 5 compared to 59% for quintile 1)

Uptake by IMMIGRANT STATUS



Among landed immigrants (>/=5yrs), 77% had screening
 Among Canadian residents, 58% had screening

Uptake by PROVIDER TYPE



Uptake was highest among women with OBs (77%), moderate for women with FPs (64%), and low for women with MWs (27%).

Interpretation of Findings

- Variation in uptake is real; not a function of data quality
- Rurality is key barrier
- Effect of provider type likely related to this
 - ▶ more specialists practice in urban centres
 - ▶ evidence that rural maternity care providers offer screening less than urban providers
- Maternal effects important, but attenuated in adjusted models
 - ▶ immigrant and low SES women doing ok

Limitations

- Uptake does not reflect offer
- Excludes provider care not included in OHIP billing data (e.g. salaried providers)
- Likely excludes some midwives
- Some receiving screening w/o any care
 - ▶ Some care provided w/o billings?
 - ▶ Suggests we've underestimated care provided

Conclusion

- Access especially important in context of program restructuring
 - ▶ Emphasis on first trimester screening
 - ▶ Private pay tests will further fuel access discrepancies
- Need to focus attention on how best to engage women/providers in offering screening
 - ▶ Spatial mapping tools may be of value
- Will continue to use linkable data to follow shifts as program evolves

Acknowledgements

ICES/BORN Study Team

- Michael Campitelli
- Xiaomu Ma
- Tianhua Huang
- Mark Walker
- Astrid Guttman

Funder

- Ontario MOHLTC



MINISTRY OF HEALTH AND LONG-TERM CARE

Thank you