Evaluation of a School-Based Visual Screening for Kindergarten Children

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Amblyopia: 3-5%

- Treatment more effective before age 7

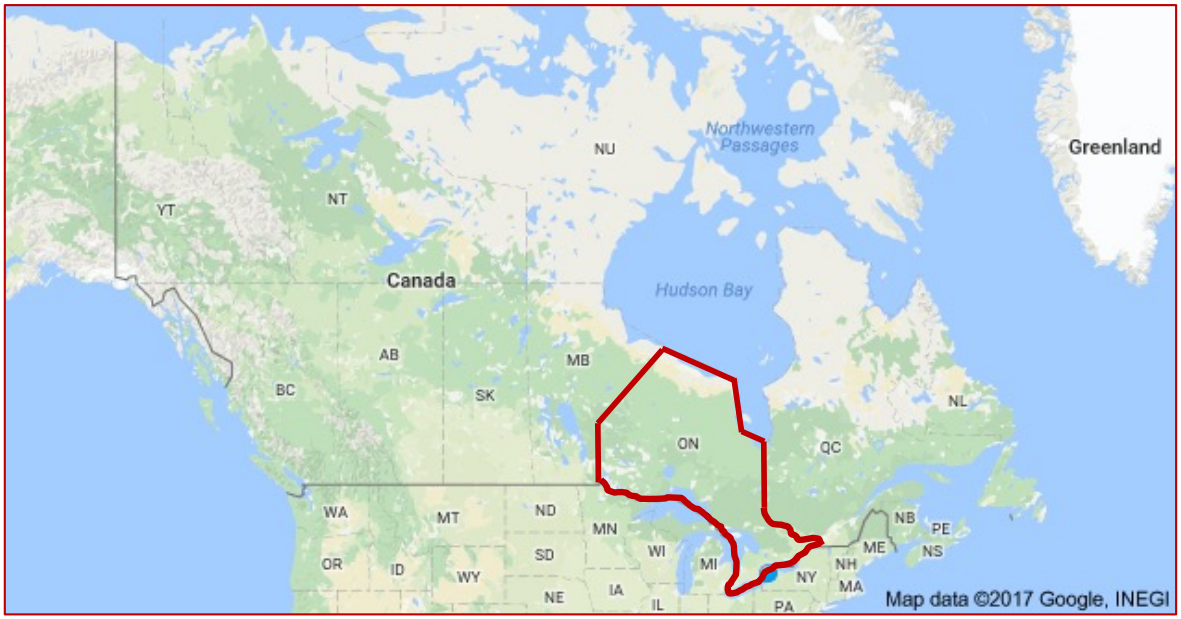
Refractive Errors: 10%

- Hyperopia, Astigmatism
- Worse reading readiness lower IQ scores
  - 6 weeks after wearing glasses, IQ scores improved

Bradfield (2013); Drover et al. (2008); Roch-Levecq et al. (2008); VIP-HIP Study Group (2016)

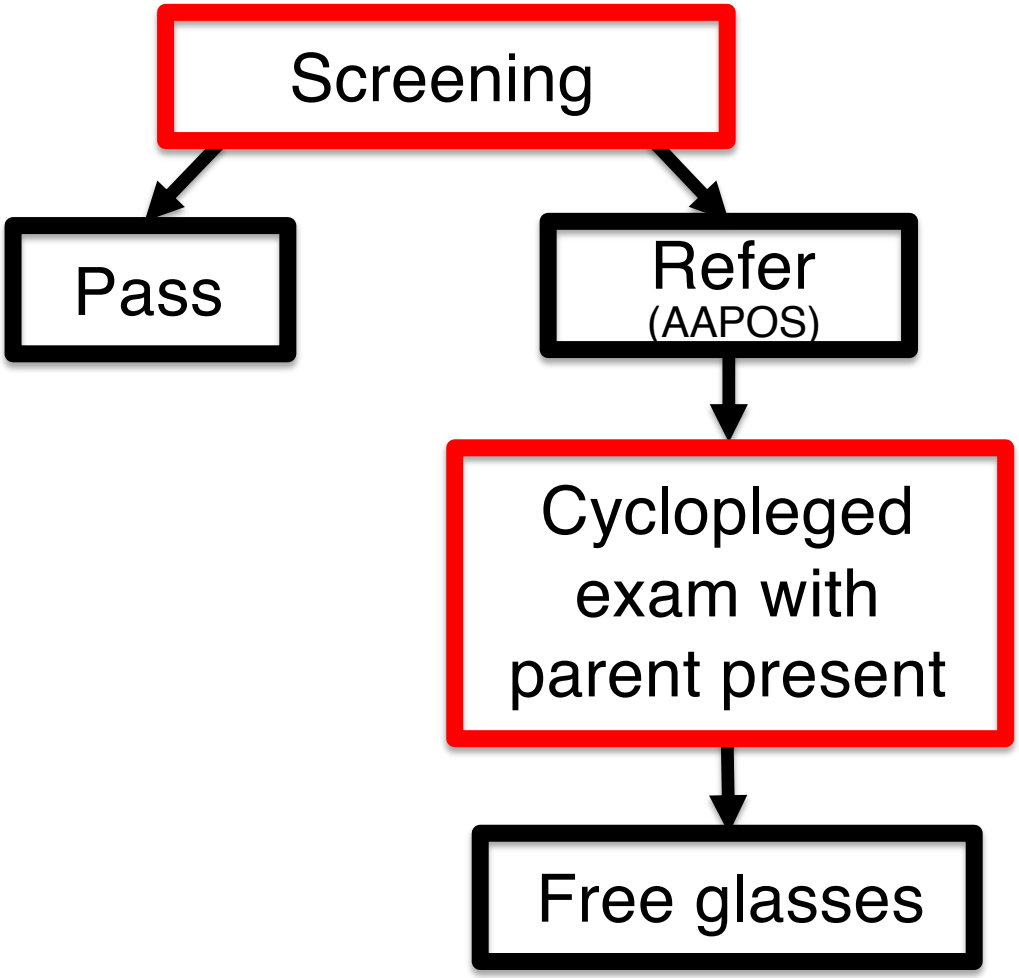
Status Quo

- Most preschool children not checked
- Optometry exams: <14% of children under age 6 years (despite no cost to parents)



Ontario Association of Optometrists (2015)

Our School-Based Model



Screening Tests

1. Cambridge Crowding Cards 

2. Randot Stereo Acuity 
3. Plusoptix S12C Autorefractor 
4. Spot Autorefractor 
5. Pediatric Vision Scanner 

Study 1: Will screening make a difference in detection of refractive errors?

Measure: number of children wearing glasses

3 schools with screening & exams vs. 3 schools with no program

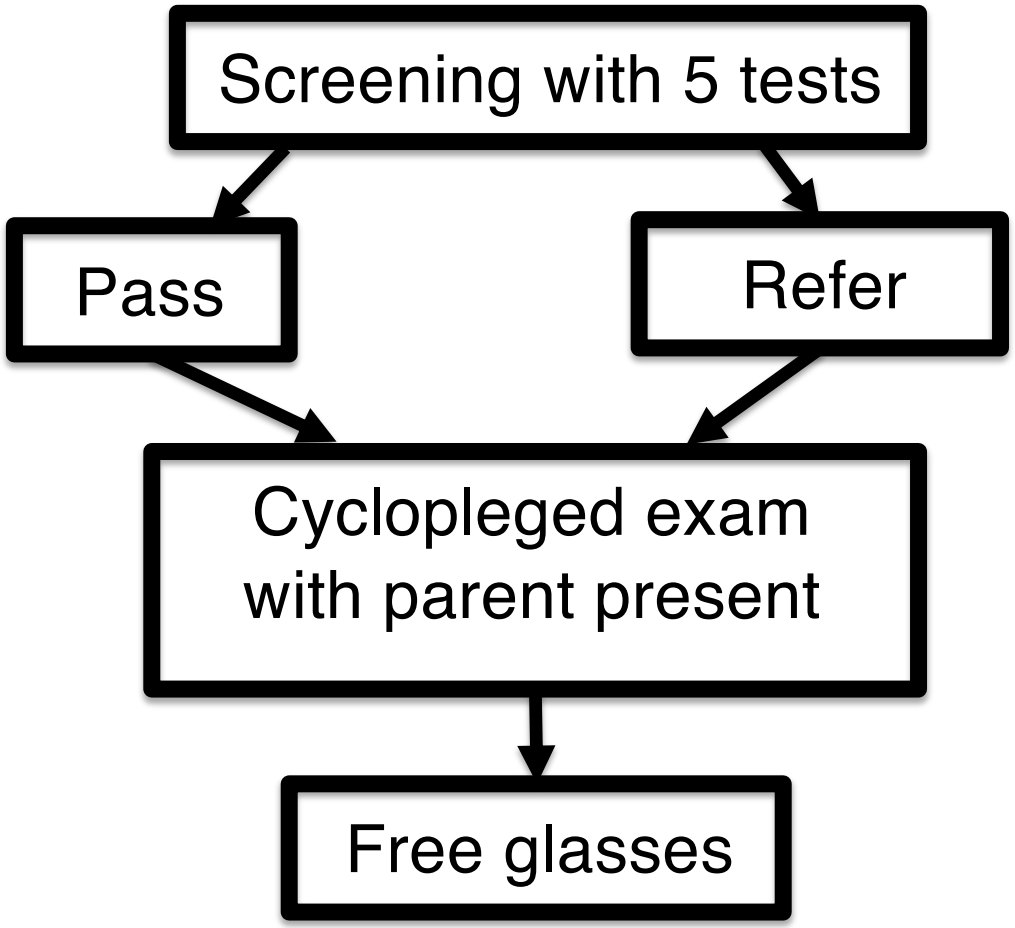
	Children Enrolled	September Glasses Counts	June Glasses Counts
Our Program	661	14 (2%)	56 (10%)
No Program	581	15 (2%)	20 (3%)

“No Program” schools received the program the following year

Study 2: How accurate is screening?

- 712 children age 3-6 years (mean age = 5.3 years)
- Screening & exams *in school*

Research Design



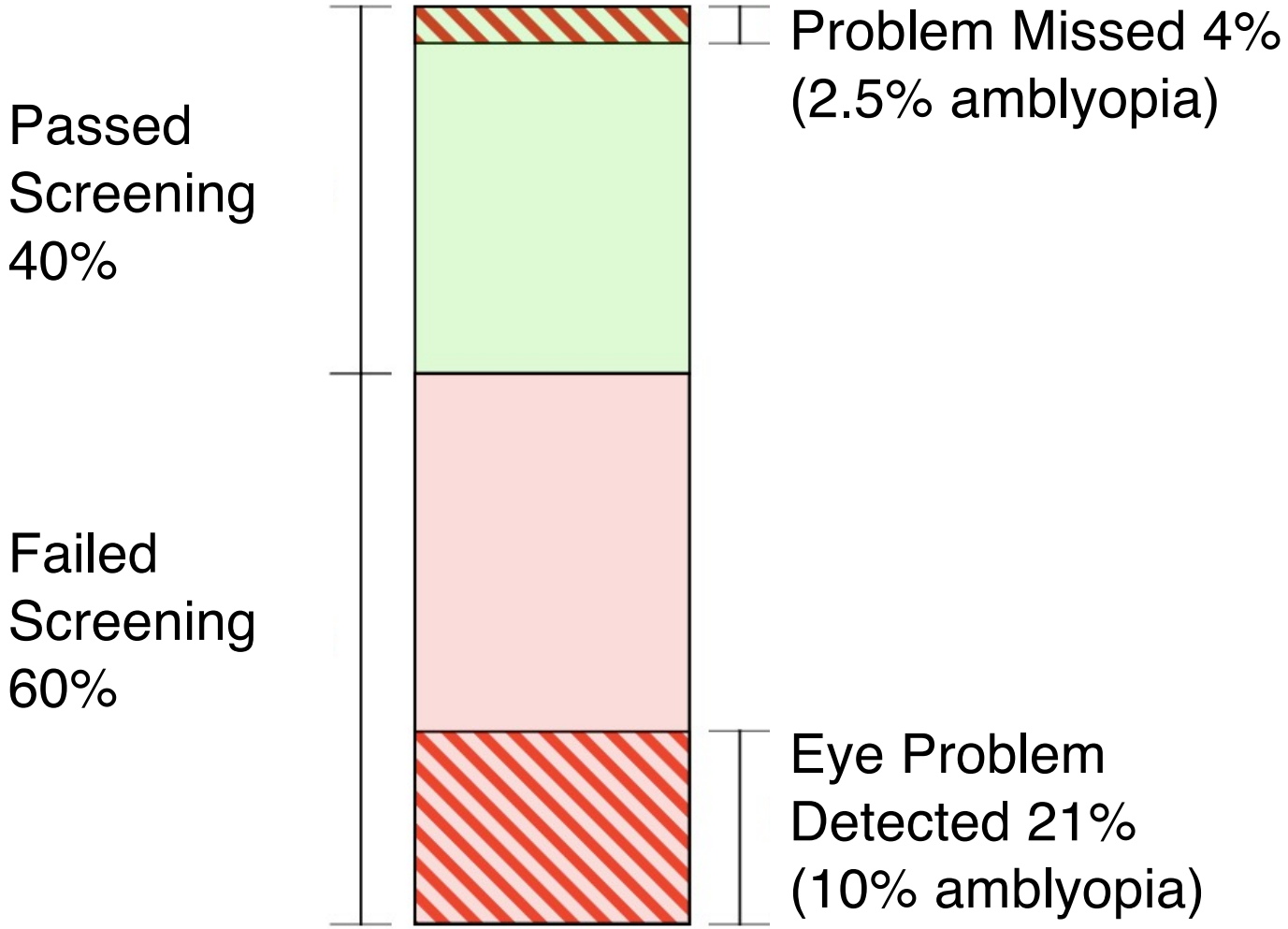
Outcome Variables

- Amblyopia suspect: ≥ 2-line difference & worse than 20/40 in one eye
- Amblyopia risk factors:
  - Strabismus (tropias > 10D)
  - Reduced stereo (>100 arcsec)
  - High RE: > +4.0D or > +3.0D with acuity worse than 20/40 in any eye
  - Anisometropia

Refractive Errors

	31-48 months	> 48 months
Anisometropia (SE)	> 2.0D	> 1.5D
Hyperopia	> +4.0D	> +3.5D
Myopia	< -3.0D	< -1.5D
Astigmatism	> 2.0D	> 1.5D

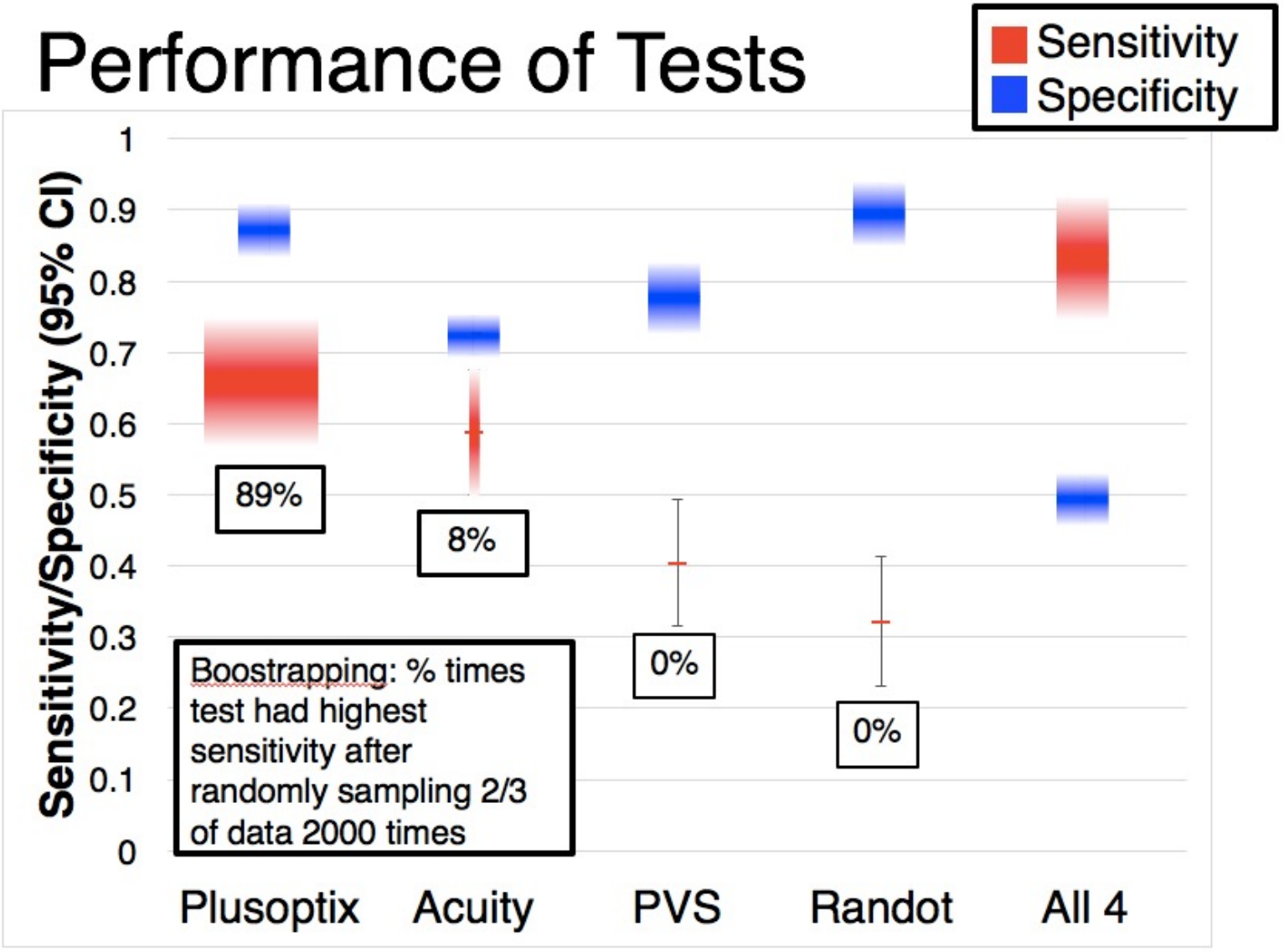
Study 1: Findings (N = 712)



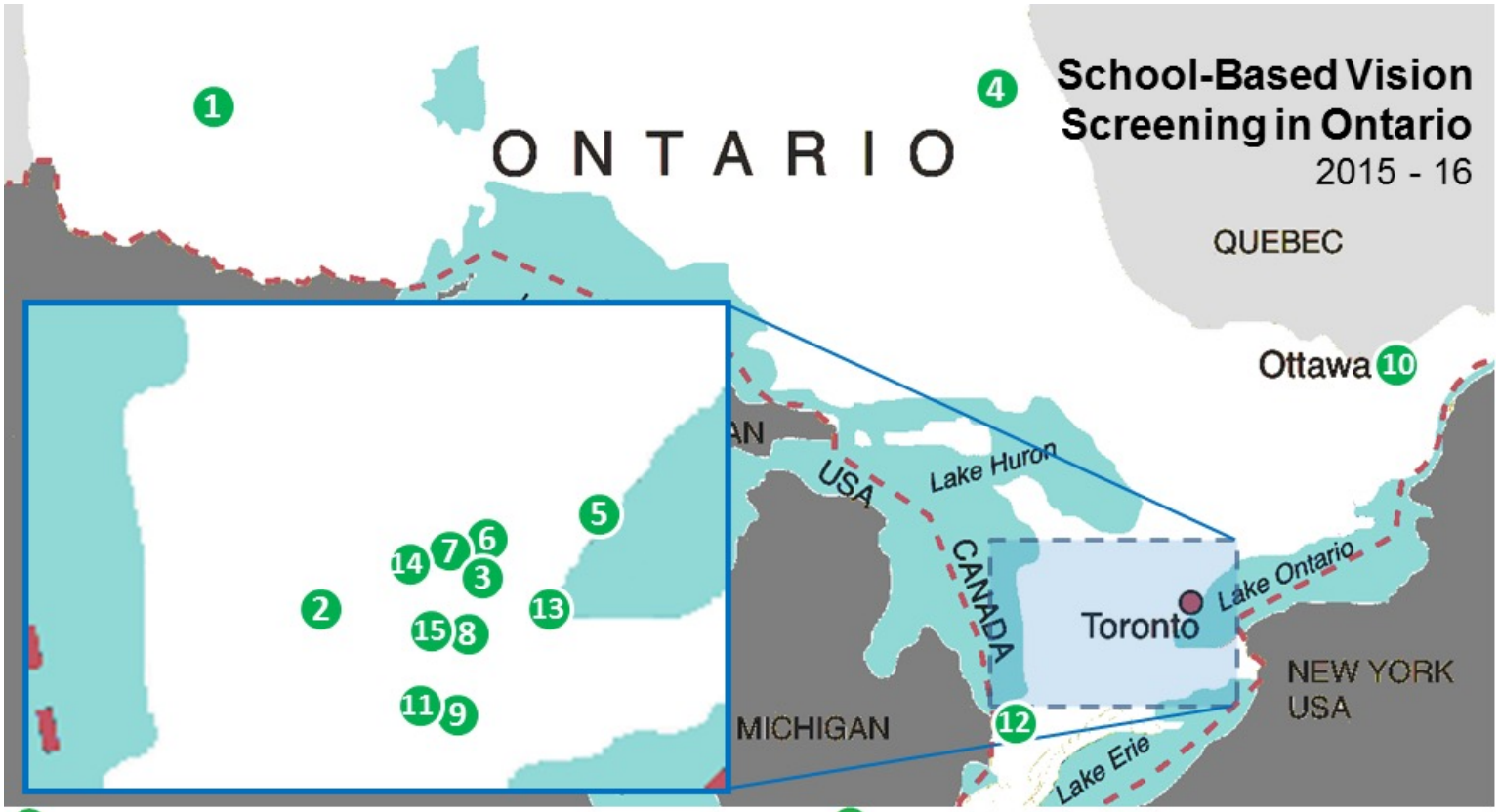
Study 1: Findings (N = 712)

Junior Kindergarten	Senior Kindergarten
Sensitivity = 0.80	Sensitivity = 0.91
Specificity = 0.42	Specificity = 0.58

Performance of Tests



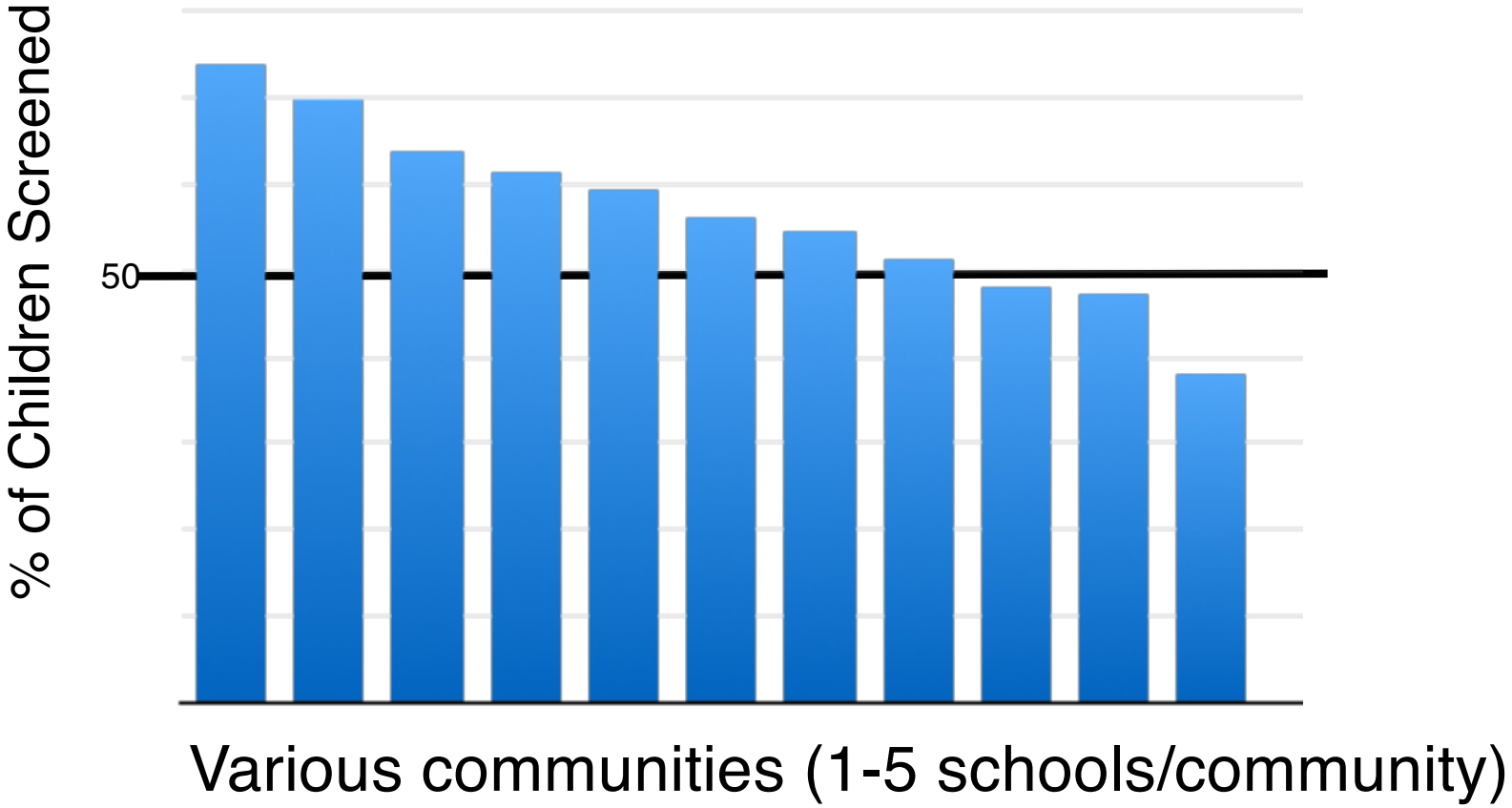
Study 3: Feasibility



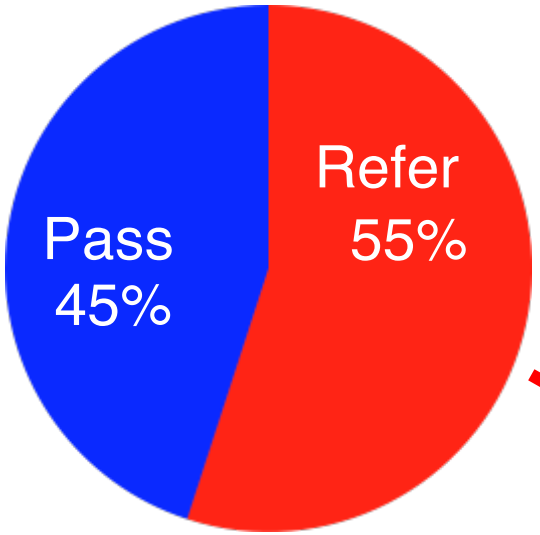
1. **LAC SEUL FIRST NATIONS** (872)
2. **WELLESLEY** (10,713)
3. **GUELPH** (121,688)
4. **KIRKLAND LAKE** (8,493)
5. **TORONTO** (6,054,191)
6. **ERAMOSA** (8,511)
7. **ROCKWOOD** (3,869)
8. **CAMBRIDGE** (126,748)
9. **NORWICH** (10,721)
10. **OTTAWA** (883,391)
11. **WOODSTOCK** (37,754)
12. **SARNIA** (89,555)
13. **HAMILTON** (519,950)
14. **FERGUS** (19,126)
15. **KITCHENER** (219,153)

(Population)

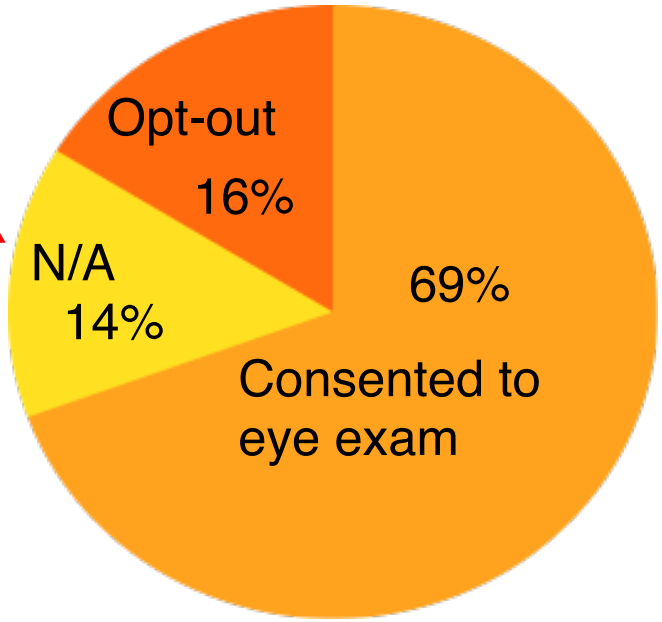
Variable Referral Rates (N = 2534)

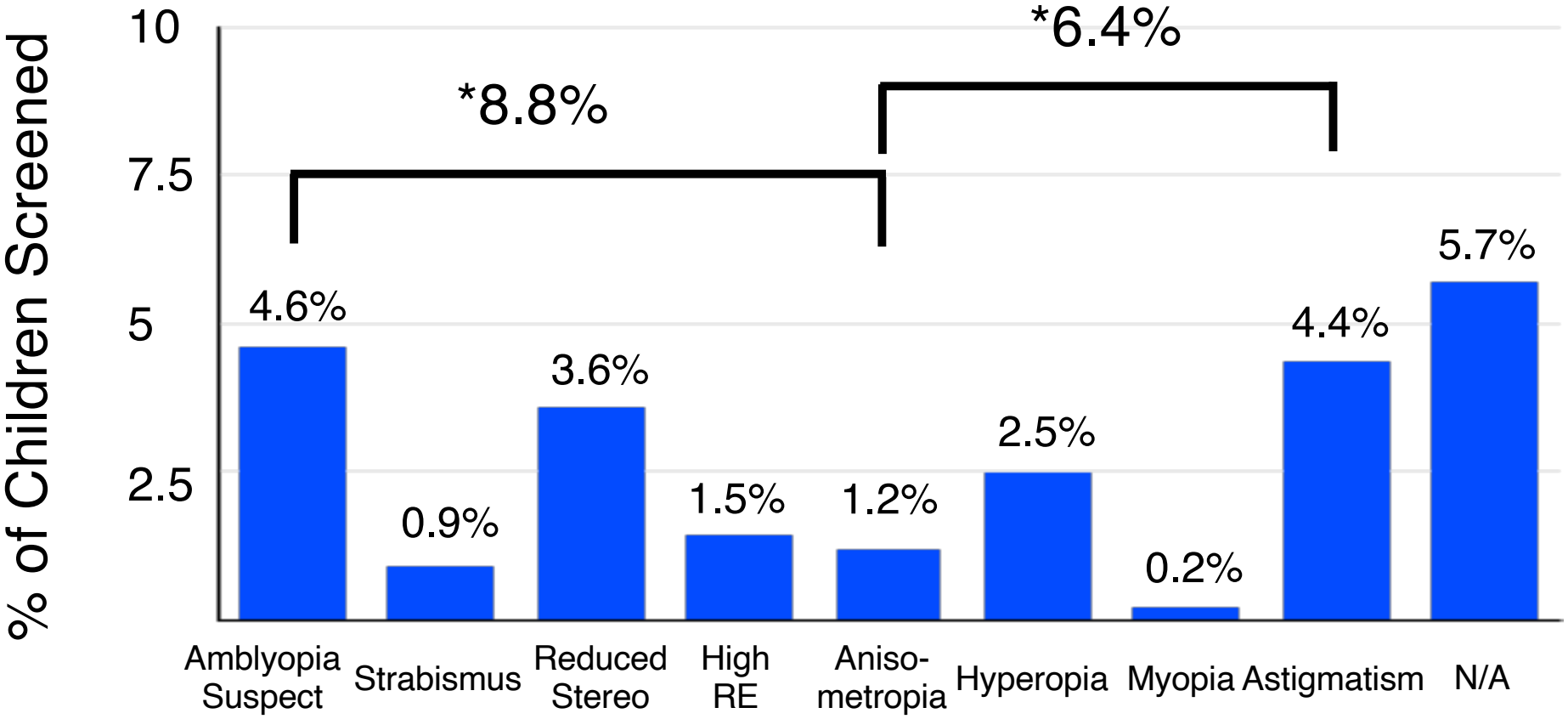


Do parents consent to the follow-up optometry exam?



#1 reason for opt-out (80%):
"already under care"





*4.1% had amblyopia (& risk factors) & refractive errors

Let your children see the future!

www.visionscreening.ca

Acknowledgments

- **Optometrists**:
  - Eye See…Eye Learn®, Ontario Association of Optometrists
  - Toronto Gift of Sight & Sound
- **Complimentary Glasses**:
  - Nikon and OGI through ESEL®
  - Clearly™ through Toronto Gift of Sight & Sound
- **Screeners**: 5 screeners = 25-30 children/hour
  - Oxford County, Lambton, Timiskaming Health Units
  - District A15 Lions: Fergus, Rockwood, Guelph Royal City, Galt Cambridge, Wellesley, and Ariss-Maryhill
  - iScreen (University of Ottawa medical students)