



MAKING THE RIGHT DECISIONS:

ONTARIO'S MEDICAL REVIEW FOR FITNESS TO DRIVE

Road Safety Research Office

Ma, T., Hanna, J., Aljenabi, N., Chee, J., & Elzohairy, Y.

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Medical Review Section, Driver Improvement Office

AGENDA

Definitions

- ▶ Program background
- ▶ Sample
- ▶ Road Safety
 - ▶ During decision
 - ▶ After decision
- ▶ Future directions



MR PROGRAM BACKGROUND



- ▶ All Ontario drivers must meet medical standards in O. Reg 340/94 s. 14 to operate a vehicle in the province
- ▶ Doctors and optometrists are mandated to report drivers failing to meet medical standards
- ▶ MTO's Medical Review Section (MR) reviews cases, assesses against standards and policies
 - ▶ May seek more information, medical committee advice, road test results etc.
 - ▶ Makes licensing decisions, informs driver.

WHO DID WE EXAMINE?

Drivers with at least one medical report after Jan 1, 2005 and notice of decision before Aug 1, 2017 (n = **319,048**)

Drivers with more than one report (n = 87,939)

Drivers with only one report (n = **319,048**)

Report contained the medical condition(s) of concern (n = **289,430**)

More than one medical condition (n = 37,926)

One medical condition (n = **251,504**)

Condition in top 10 frequently reported (n = **214,655**)*

Sample selection



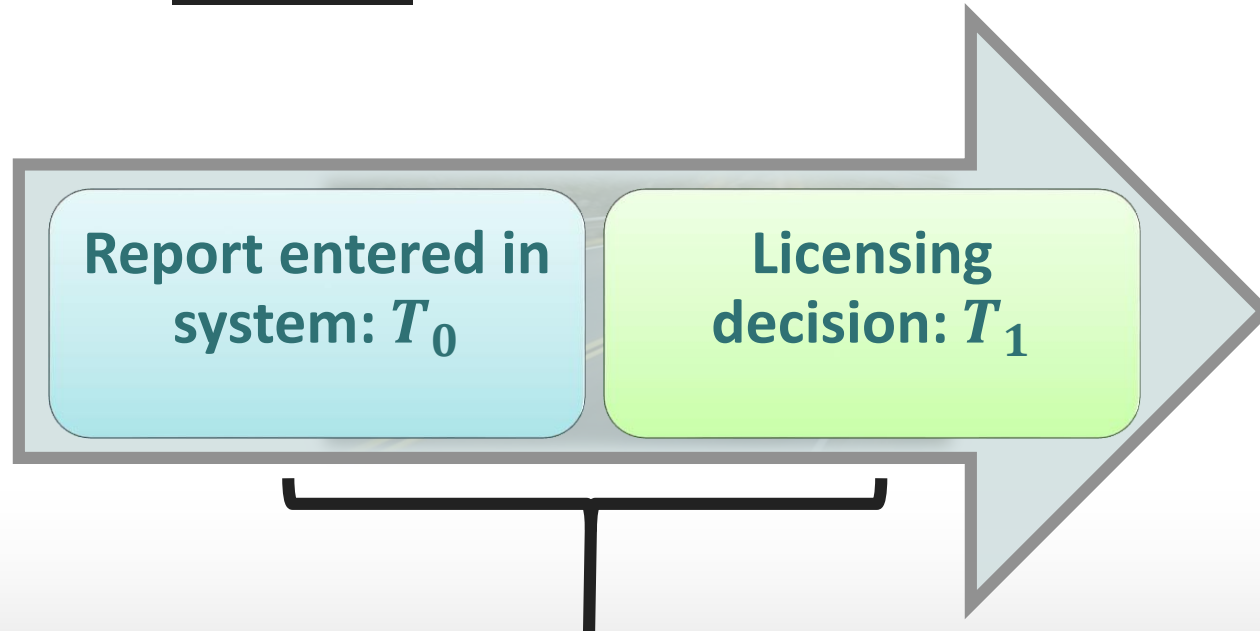
WHO DID WE EXAMINE?

Vision*	Dementia*	Musculoskeletal*	Stroke*
Seizure(s)*	Loss of Awareness*	Obstructive Sleep Apnea	Substance Abuse*
	Diabetes	Mental Health*	

* denotes medical conditions with immediate suspensions

Top 10 medical conditions

ROAD SAFETY DURING DECISION MAKING



Were drivers reported to the program at a *higher risk* than the general population in the time that they were waiting for a decision?

ROAD SAFETY DURING DECISION MAKING

Observed Number of Collisions

Number of collisions by MR drivers between date *report entered* (T_0) and (T_1) in each age-sex group

VS.

Expected Number of Collisions

Number of person-days between T_0 and T_1 for MR drivers in each age-sex group

x

General population collision rate per person-day for each age-sex group

ROAD SAFETY DURING DECISION MAKING

No meaningful difference between drivers in MR program and the general population.

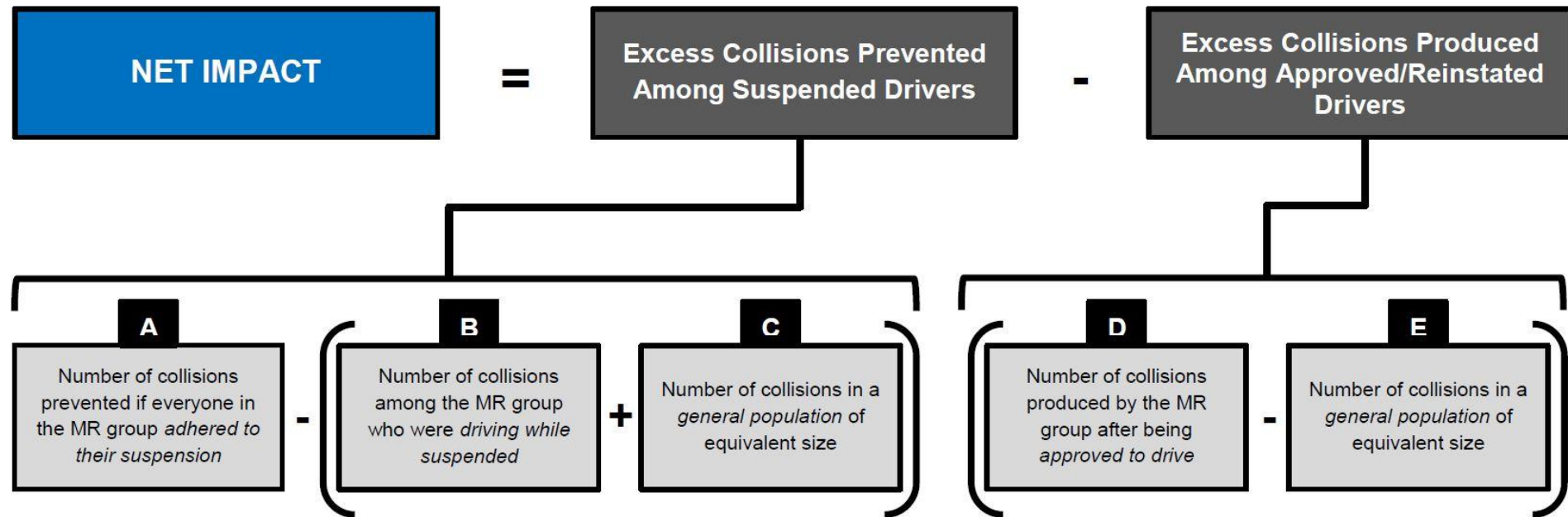
- Lower collision risk among females in MR program

Similarity between groups due to:

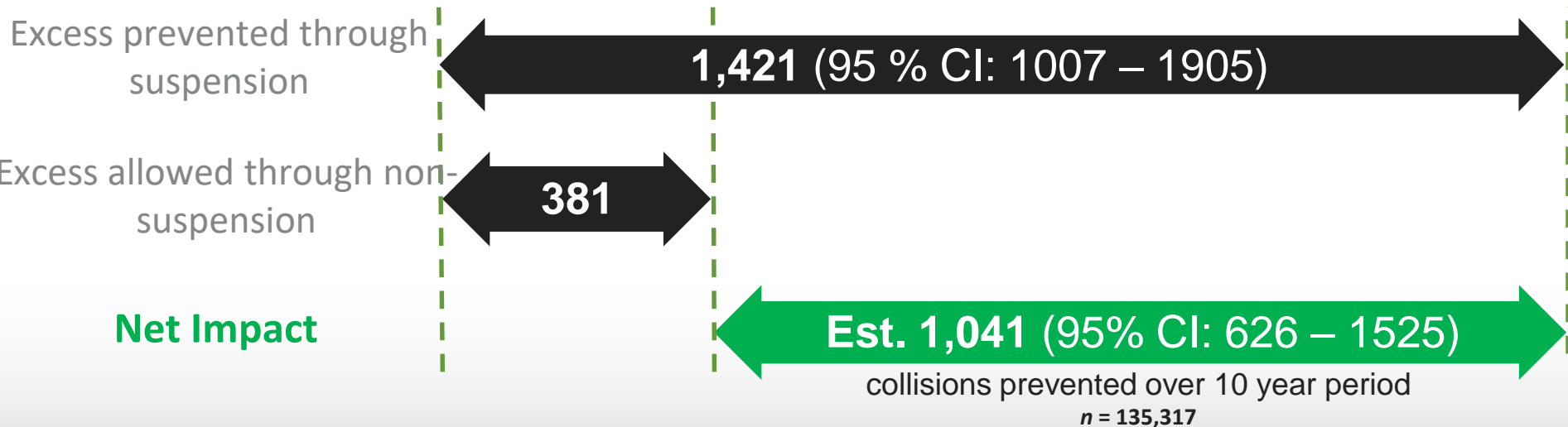
- Timely decision making?
- Potential for decreased road exposure while under review?



Net impact of the medical review program on road safety (2005-2014)



ROAD SAFETY AFTER DECISION MAKING



ROAD SAFETY AFTER DECISION MAKING

Within our sample, the overall net impact of the MR is positive.

However, two medical conditions had negative net impact values, and thus present challenges to road safety:



DIABETES



SLEEP APNEA

Net impact of the medical review program on road safety (2005-2014)

Medical Condition	Excess Collisions Prevented [# (95% CI)]	Excess Collisions Observed	Net Impact [# (95%CI)]
Vision	57.93	31.44	26.49
Dementia	242.67	10.53	232.14
Musculoskeletal	13.59	6.07	7.51
Stroke	118.35	23.48	94.87
Seizure	351.87	-1.28	353.16
Loss of Awareness	294.29	111.08	183.22
Sleep Apnea	75.47	112.19	(-36.72)
Substance Abuse	205.59	38.78	166.80
Diabetes	8.04	52.66	(-44.62)
Mental Health	53.58	-4.23	57.80
Overall (All 10 conditions)	1,421.37	380.72	1,040.65

STRENGTHS

- First evaluation of Ontario's MR program
- Among few comprehensive evaluations of safety impact of such programs
- Large study population

LIMITATIONS

- Use of risk ratios from literature may be crude approximation of risk not accounting for specific severity, or treatment effects
- Restricted sample to those with one unsolicited report due to data limitation; unable to account for comorbidity

IMPLICATIONS

- ▶ Future research
 - ▶ Examine the road safety risk of those with multiple reports and comorbid conditions
 - ▶ Explore how treatment may modify crash risk
 - ▶ Better understand functional impairments and driving
- ▶ Should national (CCMTA, CMA) medical review guidelines with respect to diabetes, obstructive sleep apnea be reviewed?



THANK YOU!

QUESTIONS?