



An evaluation of Ontario's GES for licence renewal of seniors aged 80 and above

**Marisela Mainegra Hing, Ph.D.
Research Scientist**

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Background

- > **Licence renewal cycles:** There is great variance in how this process operates from jurisdiction to jurisdiction.
- > **MTO Group Education Session (GES):**
 - » Pre-1996: annual road, vision and knowledge test.
 - » Post-1996: 2-year renewal cycle, vision and knowledge test, group education class and road test only for those who needed it.
 - » 2005: enhancement, resources, materials and tools.



Objectives

- > Evaluate Ontario's 80 and Above Licence Renewal Program by assembling and analyzing relevant data and using appropriate statistical methods.
- > This evaluation includes a consideration of evidence in order to determine if there is a need for changes to improve the effectiveness of the program.



Methodology

- > **Time Series Analysis** of senior driver records for those aged 80 and older both before and after implementation and enhancement of GES.
- > **Logistic Regression and Survival Analysis** examining senior driver records prior to and following their participation in the GES program.



Time series analysis





Time series analysis: data

Monthly counts of drivers aged 80 years and older involved in crashes in Ontario between Jan. 1991 and Dec. 2010:

- > Drivers 80+ in **fatal and major injury** crashes (at least one fatality or one hospitalization);
- > Drivers 80+ in fatal, major and **minor injury** crashes (excluding minimal injuries);
- > Drivers 80+ in fatal, major and minor injury crashes, engaged in **improper driving behaviour**;
- > Drivers 80+ in fatal, major and minor injury crashes, **engaged in left-turning maneuver**.



Time series analysis: design

Quasi-experimental before/after:

- > Implementation of GES in October 1996;
- > Enhancement of GES in July 2005.

Experimental and control groups:

- > Experimental: ON drivers 80+;
- > Internal control: ON drivers 75-79;
- > External control: CA minus ON drivers 80+.



Time series analysis: results

	Coef.	P	95% CI	
Model for fatal and major injury crashes				
temporary effect-1-month 7	3.58*	<0.0001	1.61	5.54
Model for the log of fatal, major and minor injury crashes				
temporary effect-1- month 11	0.19	0.052	-0.002	0.38
Model for fatal, major and minor injury crashes with improper driving behaviour				
sudden p. effect-1- month 10	-0.64	0.13	-1.46	0.19
sudden p. effect-2- month 10	0.24	0.12	-0.06	0.55
Model for fatal, major and minor injury crashes with a left-turning maneuver				
gradual p. effect-2- month 7	-0.001	0.07	-0.003	0.000



Time series analysis: conclusion

- > Probably no effect associated with the implementation or enhancement of GES.
- > Lack of effect is notable: the frequency of testing drivers was decreased from annual to biennial in 1996. One would have expected an increase in crashes due to this decrease and an increase in the number of licences among drivers of at least 80 years old.
- > From this perspective, GES did have a positive impact.



Logistic regression and survival analysis





Logistic regression and survival analysis: data and data analysis

- > Seniors who **took GES** between 1996 and 2012. Comparing safety of groups defined by passing or failing knowledge and road tests and having or not demerit points.
- > 79 year old drivers not in GES in 1998 and 2007 to be compared with 80 year old drivers in GES (age bias but no pre-existing trends bias);
- > 80-83 not in GES in 1993 to be compared with 80-83 in GES in 1997 (pre-existing trends bias but no age bias).



Logistic regression and survival analysis: results

- > Participation in GES is associated with an improvement in the safety of senior drivers: a decrease in the odds of collisions, convictions and suspensions regardless of whether they passed the first attempt knowledge test or not.
- > Special attention should be given to those who fail their first attempt of the road test or have demerit points as this is associated with an increase in odds of collisions, convictions and suspensions after GES.



Logistic regression and survival analysis: results

- > Failing the road test and/or having demerit points are strong indicators of future crashes, convictions and suspensions whereas the knowledge test does not have predictive value.
- > GES in and of itself may have a direct positive impact on the safety of senior drivers (i.e., decreases chances of crashing and conviction).



Conclusions

- > **Two ways GES may have a positive impact on participants:**
 - » GES improves knowledge and driving behaviour.
 - » GES successfully screens out unsafe drivers.
- > **It is unclear which has a greater impact, thus recommendations should be made with both in mind.**



Recommendations

> Consider elimination of knowledge test

- » Knowledge test is not a good indicator of future crash involvement.
- » Failing the road test and having demerit points are better predictors of future crash involvement.



Recommendations

- > **Consider decreasing frequency of renewal to 3 or 4 years**
 - » Reduction from annual to biennial in 1996 did not have negative repercussions.
 - » Other jurisdictions use cycles of up to 4 years.
 - » Burden on system and drivers is reduced.
 - » Important to monitor this change and remain flexible to revert back if necessary.



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Co-authors:

Ward Vanlaar

Robyn Robertson

Dan Mayhew

Traffic Injury Research Foundation, Ottawa

David Carr

Washington University, St. Louis



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