



Data from Comprehensive Driving Evaluations: Predictors of Failing a Road Test

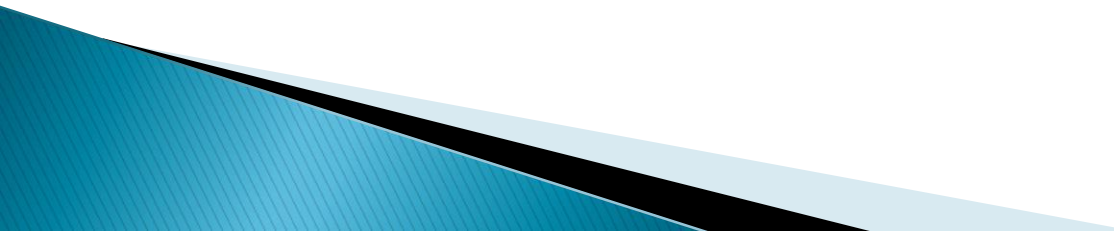
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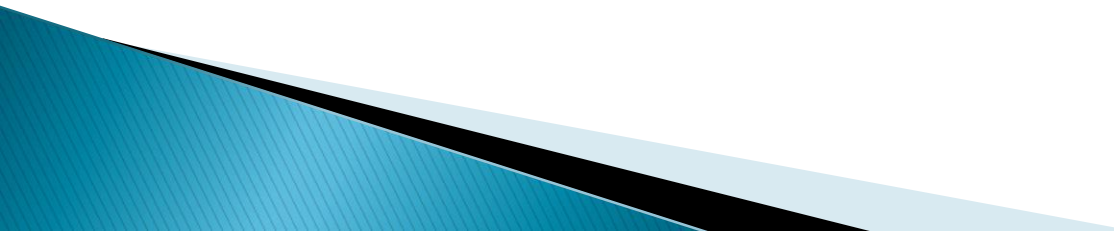
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Background

- ▶ Older drivers – fastest growing segment
 - Expected to double in the next decade
 - ▶ Older drivers have higher collision rates/mileage
 - More serious injuries and fatalities (Staplin et al., 2003)
 - Begins around age 70 (Bedard et al., 2001; Dickerson et al., 2007)
 - ▶ Determining the most effective means to identify, screen and assess medically at-risk drivers has become a major concern
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Prior Studies

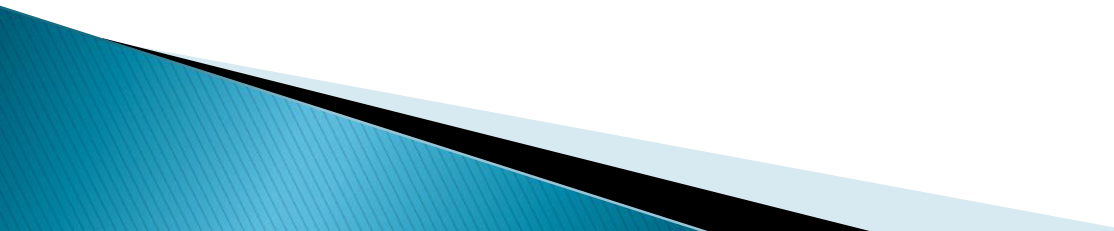
- ▶ Many studies that have examined driving performance
 - Have recruited specific medically at-risk groups (e.g. Parkinson's disease, MCI)
 - ▶ Some have control group (healthy older drivers)
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Objective

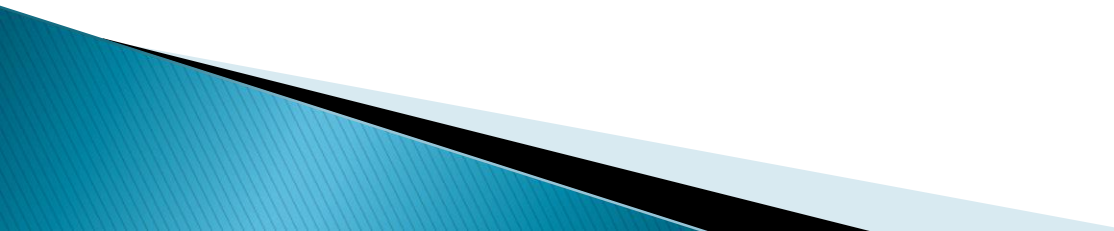
- ▶ The purpose was to collect data from drivers referred for a comprehensive driving evaluation to determine predictors of failing the road test.

Who is referred?

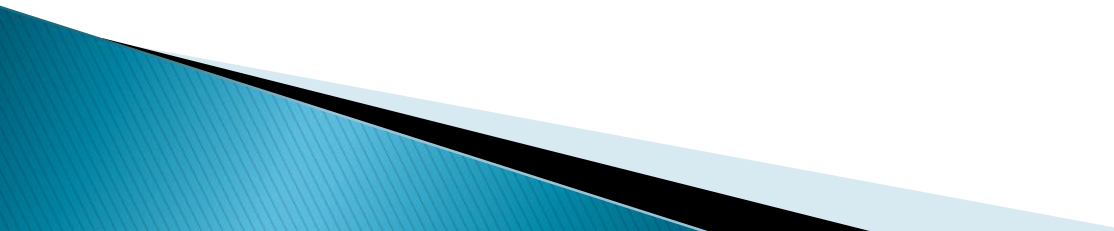
Taking a Road Test:

- At-fault accident after age of 70
 - Physician Referral
 - Police Referral
 - MTO screening (as of January 28th 2014)
 - a vision test
 - a driver record review
 - an improved, in-class group education session
 - two short, in-class screening exercises
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Recruitment

- ▶ Data was collected from one driving assessment center in South-Western Ontario
 - ▶ Data was collected retrospectively from 2012-2015 and prospectively from 2015 to January, 2017
 - ▶ Sample: 200 client records
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Variables Collected

- ▶ Demographics (age, gender)
 - ▶ Montreal Cognitive Assessment [MoCA]
 - ▶ Screen for the Identification of Cognitively Impaired Medically At-Risk Drivers [SIMARD]
 - ▶ Trails A & B
 - ▶ Useful Field of View [UFOV]
 - ▶ On-road pass/fail outcomes
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Findings

Sample Characteristics (N=200)	Mean (SD) or n (%)
Gender <ul style="list-style-type: none"> Male Female 	146 (73.4%) 53 (26.6%)
Mean Age	69.6±14.4
Reasons for Referral <ul style="list-style-type: none"> Medical/Physician Other 	164 (82.0%) 36 (18.0%)
Referred by MTO <p>Yes</p> <p>No</p>	61 (30.5%) 239 (69.5%)

Findings

Primary Diagnosis (N=200)	N (%)
• Dementia	29 (14.5%)
• MCI	58 (29.0%)
• CVA	41 (20.5%)
• MS	7 (3.5%)
• PD	9 (4.5%)
• TBI	5 (2.5%)

Findings





Clinical Test Scores	Mean (SD) or N (%)
MoCA (n=190)	22.0±4.6
Trails A (n=188)	69±75 seconds
Trails B (n=190)	244±170 seconds
UFOV (n=151) <ul style="list-style-type: none"> • Very low or low • Low/moderate • Moderate to high 	83 (55.0%) 27 (17.9%) 41 (27.1%)
Simard (n=155) <ul style="list-style-type: none"> • 30 or less • 31 to 70 • >70 	33 (21.3%) 94 (60.6%) 28 (18.1%)

Findings

- ▶ Pass/Fail (n=194)
 - Pass (n=54; 28%)
 - Fail (n=60; 31.1%)
 - Fail but lessons and re-test recommended (n=80; 41.1%)

- ▶ Pass/Fail (n=194)
 - Pass (n=54; 27.8%)
 - Fail (n=140; 72.2%)

Findings

	Pass (n=54)	Fail (n=140)	Significance
Age	61.0±14.8	72.9±12.9	t=-5.21, p<.001
Gender	 28.9%  71.1%	 25%  75%	NS
MoCA	24.3±4.0	21.1±4.5	t=4.79, p<.001
Trails A	47±17 sec	70±33 sec	t=-6.04, p<.001
Trails B	144±117 sec	278±160 sec	t=-6.32, p<.001

Findings

	Pass (n=44)	Fail (n=106)	Significance
UFOV			
1	31 (70.5%)	18 (17%)	$\chi^2 = 43.53,$ $p < .001$
2	8 (18.2%)	25 (23.6%)	
3	2 (4.5%)	25 (23.6%)	
4	2 (4.5%)	21 (19.8%)	
5	1 (2.3%)	17 (16.0%)	
SIMARD			
1	2 (4.7%)	30 (27.0%)	$\chi^2 = 30.61,$ $p < .001$
2	22 (51.2%)	72 (64.9%)	
3	19 (44.2%)	9 (8.1%)	

Regression Model

(N = 126; -2 Log Likelihood = 80.63; Nagelkerke R = .627)

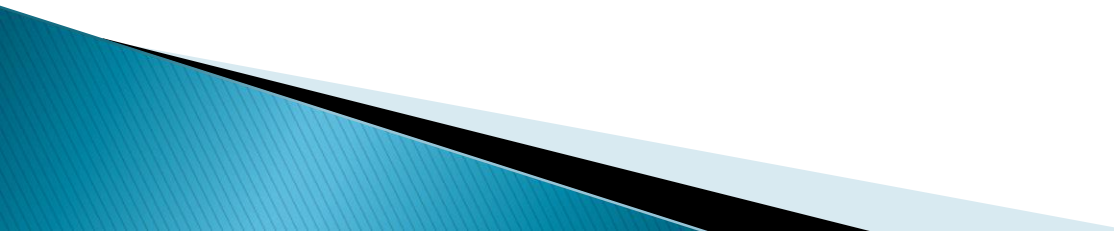
Odds Ratio Estimate

EFFECTS	DF	B	SE	Significance (<i>p</i> < .05)	<i>e</i> ^B	95% CI
Age	1	0.02	.03	.54	1.02	.962-1.077
MoCA	1	-.118	.11	.30	.889	.711-1.111
Trails A	1	.02	.02	.24	1.02	.984-1.064
Trails B	1	-.009	.01	.06	1.01	.999-1.02
UFOV	4	9.57	4.76	.029	4.09	1.151-14.51
5		1.409				
4		2.944				
3		1.616				
2		17.76				
Simard	2	.483	.829	.99	.990	.195-5.027
30-70		.000				
Less than 30		.330				

Conclusions

- The findings suggest that on a high level, the UFOV Risk indices of 4 and 5 are predictive of failing a road test.
- But it's not perfect!
- Limitations
 - Sample size

Next Steps

- Merging of other CDE sites (larger database)
 - Re-do the analysis (and examine specific medical conditions)
 - Examine both predictors of driving errors and failing a road test
 - Examining change scores in those who undergo a second road test (after training)
 - ROC assessments to determine cut-points of tests
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