Mandatory Retesting of Drivers

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Introduction

- The demographic profile of drivers in many countries are changing as the baby boomer generation matures.
- Older drivers on the roads have generated much concern among some road safety researchers and policy makers.
- Major concerns: Anticipated decrease in driving ability.
- Extensive research have been conducted on the relative performance of older drivers and on their crash risks relative other age groups.
- Antsey et al (2005) provides a good summary of the major findings in the research literature.
Ageing Driver Performance

- **Selective attention** is found to be correlated with crashes but the correlation is only 0.03, which implied that these abilities were able to explain less than 0.1% of the variations in crash risks.

- **Divided attention** is also found to be correlated with crashes but the correlation is only 0.14, which implied that these abilities were able to explain less than 2% of the variations in crash risks.

- **Visual attention** is found to be correlated with crashes. The highest correlation (0.32) is for the useful field of view. UFOV is able to explain about 10.2% of the variations in crash risks.

- **Movement Perception Test:** correlation is only 0.26, which implied that these ability were able to explain less than 7% of the variations in crash risks.
Ageing Driver Performance

• **Mental flexibility – Incompatibility Test**: correlation is only is only 0.14, which implied that these abilities were able to explain less than 2% of the variations in crash risks.

• **Visual-spatial Test – Paper Folding Test**: correlation is only is only 0.33, which implied that these abilities were able to explain less than 11% of the variations in crash risks.

• **Reaction Time**: correlation is only is only 0.25, which implied that these abilities were able to explain about 6.25% of the variations in crash risks.

• **Visual Memory – Wechsler Test**: correlation is only is much higher at 0.5, which implied that these abilities were able to explain about 25% of the variations in crash risks.

• **Traffic Sign Recognition Test**: correlation is only is much higher at 0.65, which implied that these abilities were able to explain about 42% of the variations in crash risks.
Ageing Driver Performance

- **Mental Status – MMSE**: Results very mixed from not important at all to correlation of 0.72, which implied that these abilities were able to explain 0%-52% of the variations in crash risks.

- **Mental Status – MMSE**: Results very mixed from not important at all to correlation of 0.34, which implied that these abilities were able to explain 0%-11.5% of the variations in crash risks.

- Overall, the results are not encouraging for the various driver performance tests.

- They do fairly well in predicting test scores on driving simulator or even on-road test driving test but only low-moderate in predicting crashes.

- **Driver Performance ≠ Driver Behavior ≠ Safety**
Ageing Drivers Licensing in Alberta

- Increasing number of licenses issued to ageing does **not** result in more fatal crashes on the roads
Increasing number of licenses issued to ageing does not result in more fatal crashes on the roads
Ageing Drivers Licensing in Alberta

- Increasing number of licenses issued to ageing is correlated with more injury crashes on the roads
Ageing Drivers Licensing in Alberta

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Ageing Drivers Licensing in Alberta

- However, the positive relationship is also true for both younger drivers (25 yrs and below) and middle-aged drivers (25-65 yrs old).
- Multivariate statistical analysis is needed to estimate the marginal effects of changing driver mix on injury crashes.
- Poisson regression model is estimated.

| Variable   | Coefficient | P[|Z|>z] | Mean of X |
|------------|-------------|--------|-----------|
| Constant   | 6.407530386 | .0000  | 8.0000000 |
| TREND      | -.2035608051| .0000  | 3840244.3 |
| GAS        | .2156007E-06| .0000  | 356724.13 |
| Young      | .7978394E-05| .0000  | 1545380.1 |
| MidAge     | -.3995102E-05| .0000  | 170185.93 |
| Ageing     | .4338395E-04| .0000  |           |
Ageing Driver Re-Licensing in Canada

- No uniform license renewal and re-testing policies across Canada.

- **Ontario:**
  - Every 2 years from 80 onwards
  - Vision test
  - Written test
  - Discussion
  - On-road test if recommended after discussion

- **Alberta:**
  - 75 onwards
  - Medical report
  - Vision test

- **British Columbia:**
  - Every 2 years from 80 onwards – medical exam
  - Testing only when reported (police or medical)
Ageing Driver Re-Licensing in Canada

- No clear relationship between testing requirements for ageing drivers and overall safety.
Concluding Remarks

- The general conclusion is that age is NOT an important factor in deciding whether one should get a license or not.
- Physical & cognitive abilities vary considerably among drivers of the same age group.
- Although our physical abilities decrease as we age, we gain experience and many of compensate by driving more carefully, driving in less risky environment and simply driving less.
- There is no correlation between the number of fatal crashes on the roads and the number of licenses issued to drivers aged 65 and above.
- There is a positive correlation between the number of injury crashes on the roads and the number of licenses issued to drivers aged 65 and above.
- This correlation may reflect the increased fragility of ageing drivers.
Concluding Remarks

• Although several perceptual and cognitive tests have been found to be correlated with crash risks, most of the correlations are quite small.

• More importantly, most of the studies did not report any measure of predictive validity or accuracy of the tests.

• Without knowing the sensitivity and specificity, we do not know if these tests can accurately predict whether a driver will be involved in the crash in the near future.

• It is therefore not surprising that jurisdictions with stricter license renewal requirements for ageing drivers did not necessarily experience lower crash rates.

• More research into identifying tests with higher predictive validity is needed before any mandatory re-testing can be recommended.

Thank You!

Questions?
References


• Tay R (in progress) *Effectiveness of Mandatory Re-testing of Drivers*, report to the Alberta Motor Association Traffic Safety Foundation.