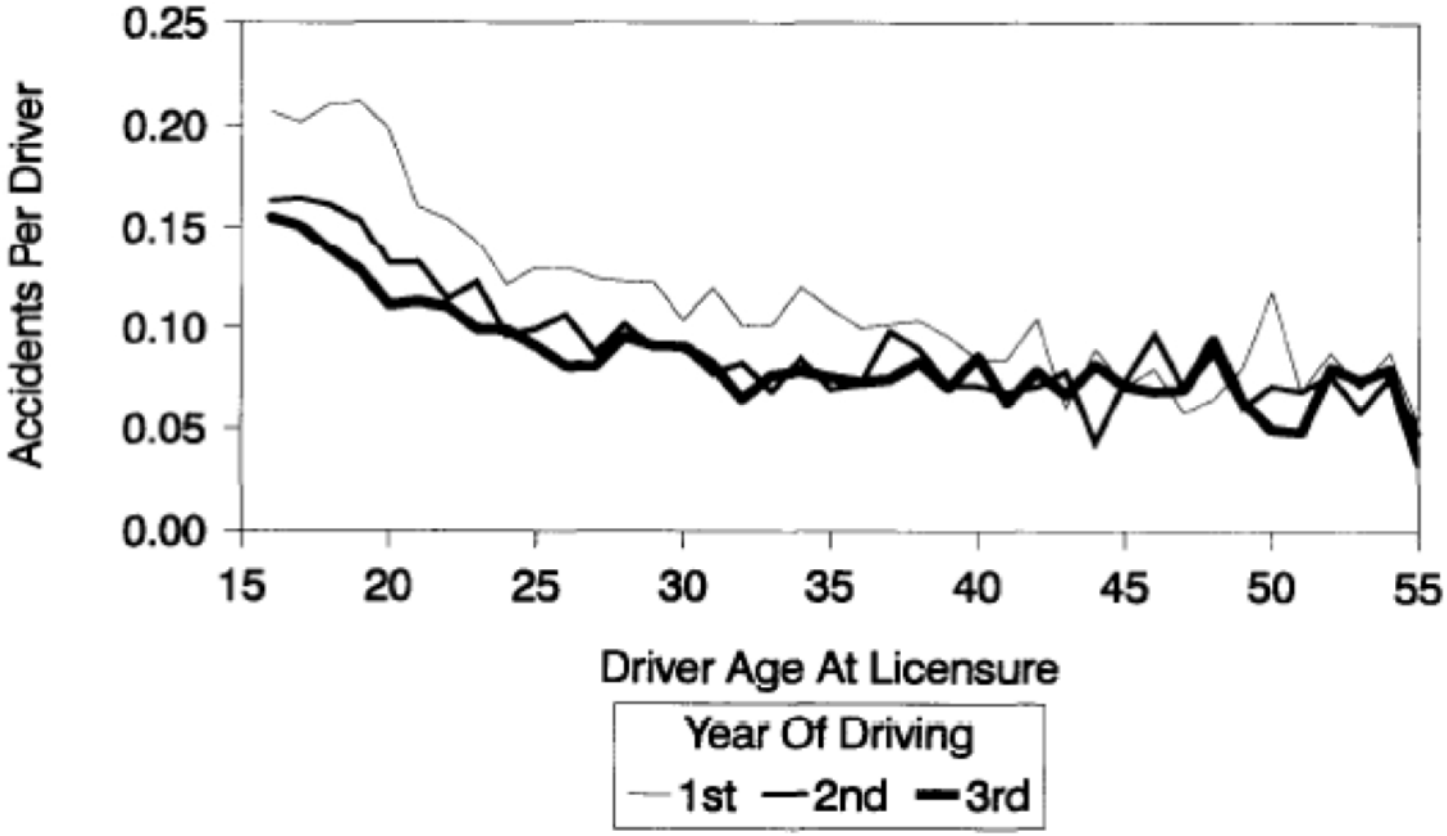
אוניברסיטת בן-גוריון בנגב
Ben-Gurion University of the Negev

# Young Drivers – The North American Experience

David Shinar
Ben Gurion University

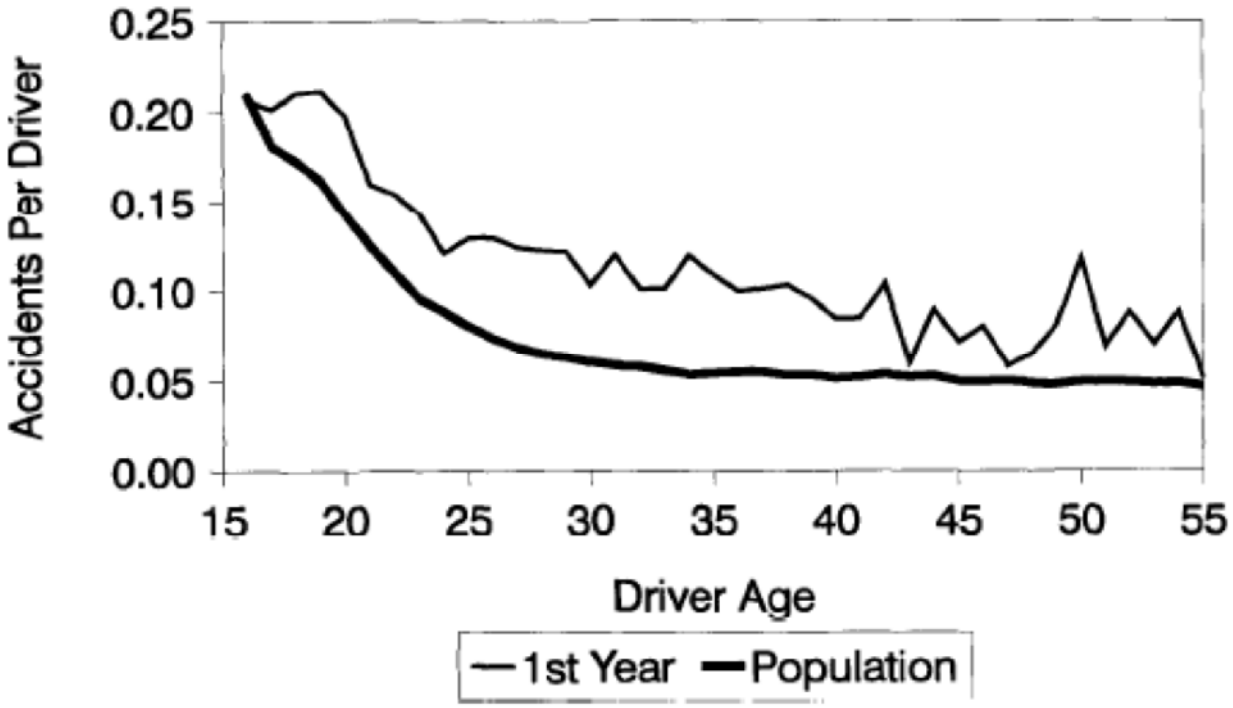
Presentation for Or Yarok Conference
November 20, 2005

# שנת הנהיגה הראשונה היא הבעייתית



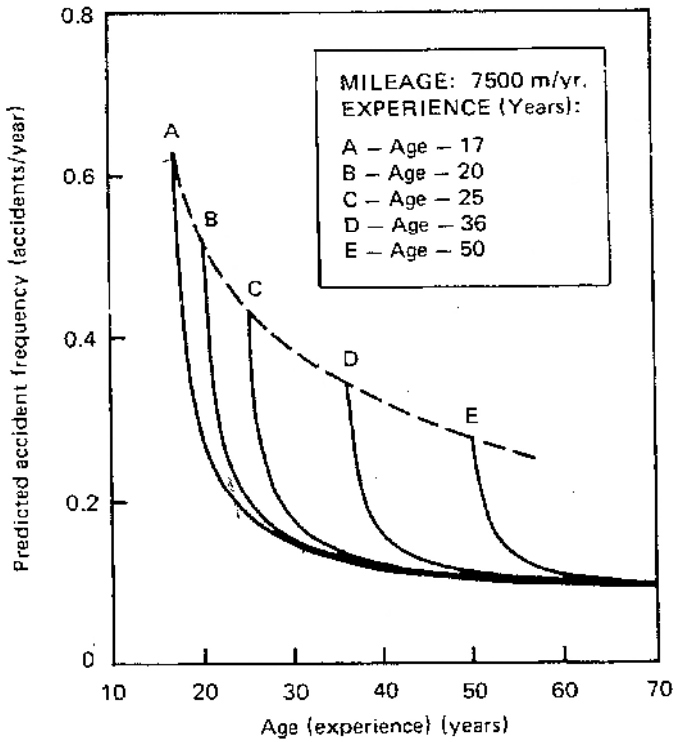

BC Culpable crashes Cooper Pinili and Chen (1995)

# מעורבות היתר בשנה הראשונה נשארת גם בגיל מבוגר יותר




BC Culpable crashes (Cooper et al. 1995)

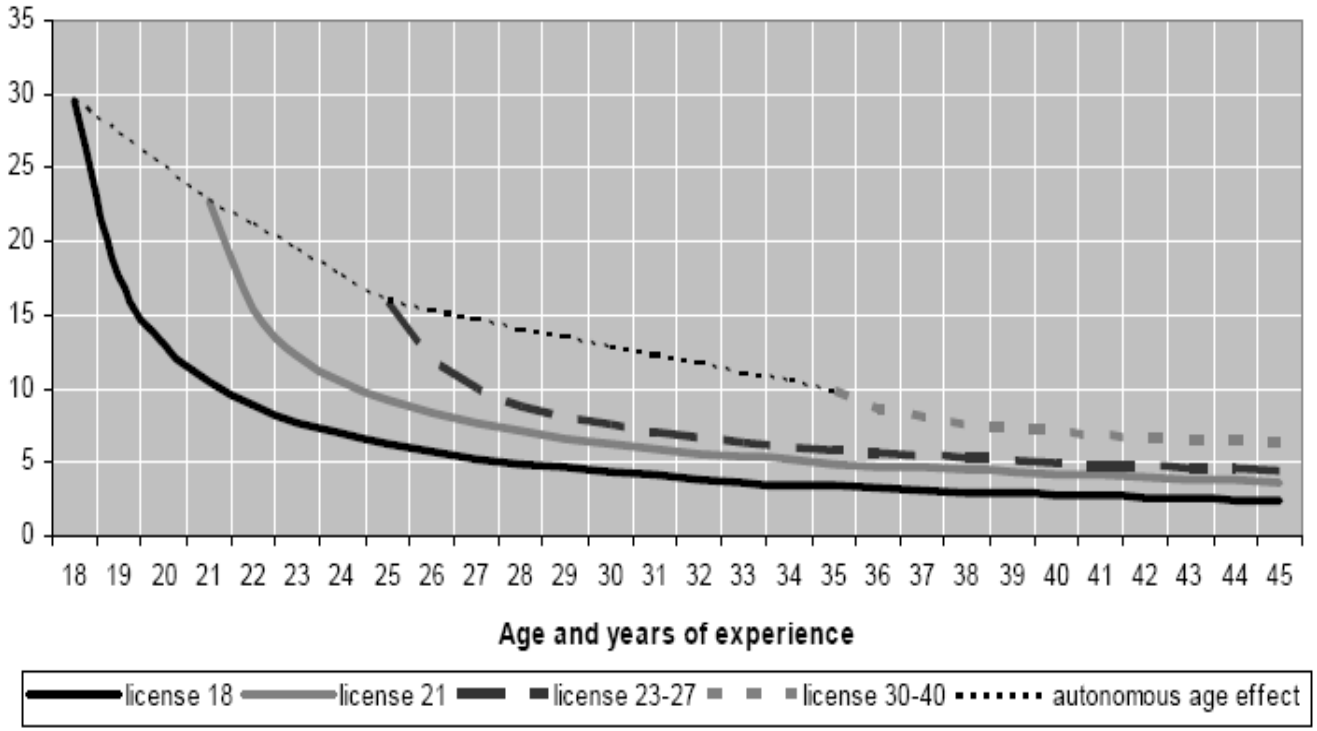
# לניסיון השפעה גדולה יותר מאשר לגיל




**England. Stat model based on questionnaire survey**

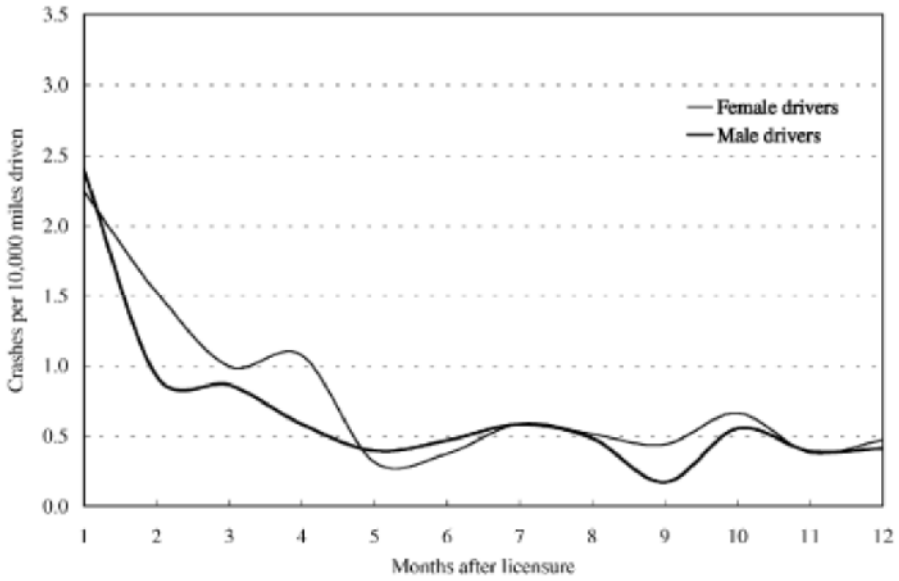
Maycock et al. 1991

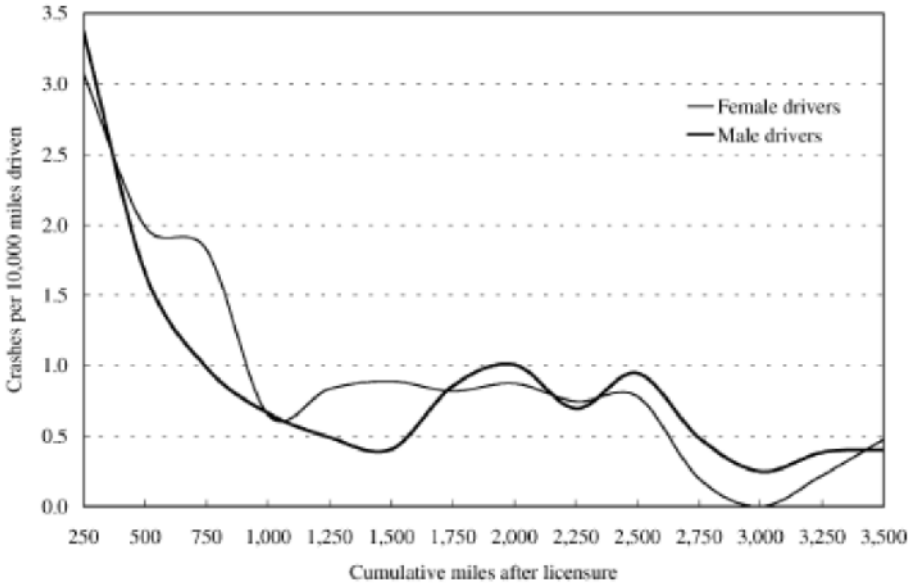
# השפעת הגיל והניסיון – נתונים אמפיריים




**Netherlands. Empirical data** Vlakveld (2004)

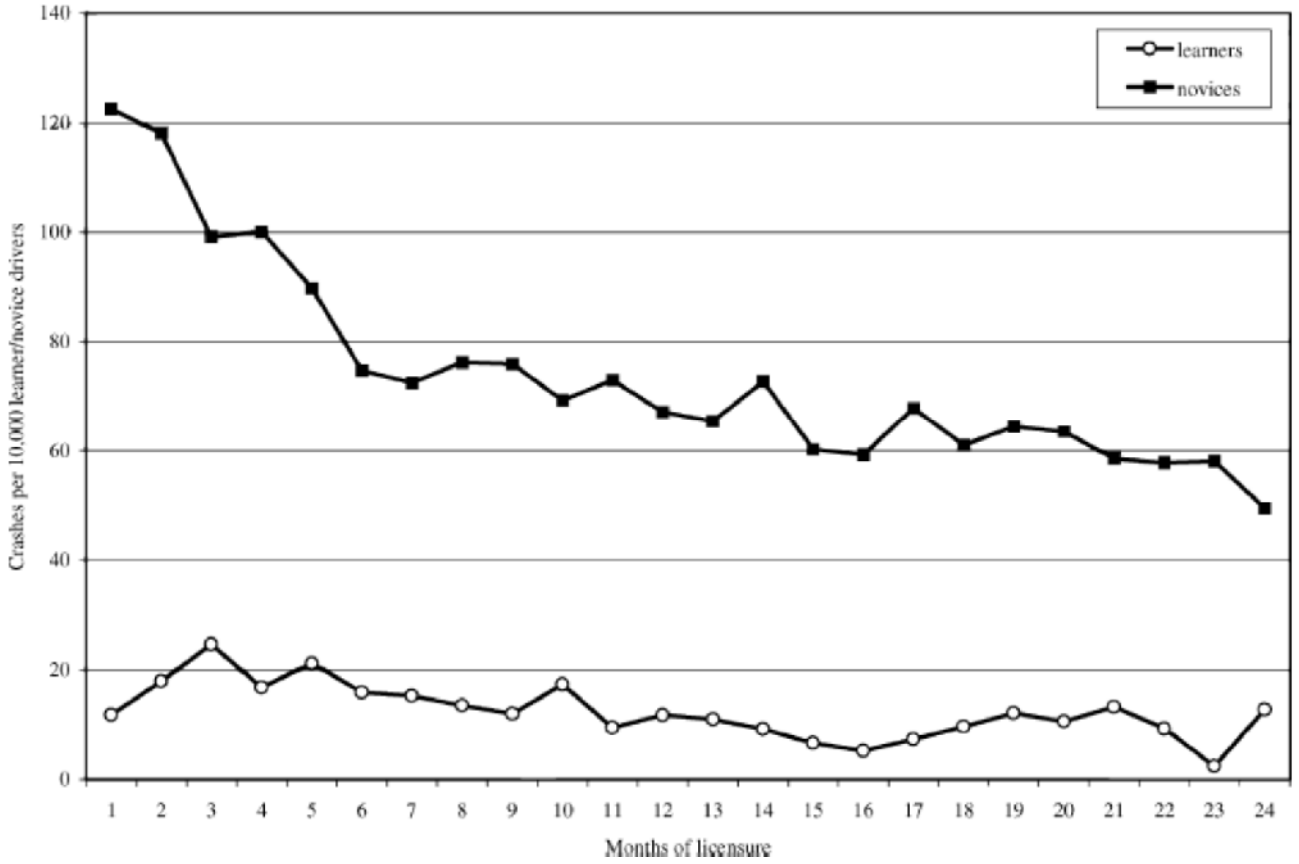
# עיקר התאונות – בחודשים וקילומטרים הראשונים




**USA teen drivers survey data** McCartt et al. 2003

# בתקופת הליווי המעורבות בתאונות נמוכה, אבל...




Nova Scotia Canada Learners vs new drivers

Mayhew Simpson Pack (2003)

# תרומת "הוראת הנהיגה" באה"ב

- All the rage until the late 60's.
- But controlled evaluation studies show no benefit
- Now being promoted as part of GDL
- Currently:
  - 18 States require Driver Ed before licensing
  - 24 States have Curriculum guide requirements (9 based on American Driver Traffic Safety Education Assoc.)
  - 40 States have parent/guardian requirements ( but only 2 require verification)

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# הגישה היום – שילוב ההוראה עם הרישיון המדורג

- Driver Education
- Additional pre and post licensing requirements - GDL

# יעילות הרישיון המדורג – קנדה

Simpson et al. 2005

GDL Evaluations in Canada

| Province | GDL Date | Authors | Target Goup(s) | Results | |
|---|---|---|---|---|---|
| | | | | % Reduction | Measures |
| Nova Scotia | 1994 | Mayhew et al. 2001 | drivers age 16 | -37% | number of crashes |
| | | | | -31% | number of injury crashes |
| | | | | -24% | per capita crash rate |
| | | | | -34% | per capita casualty crash rate |
| | | | all novice drivers | -19% | per driver crash rate |
| | | | age 16 | -22% | |
| | | | age 17-24 | -21% | |
| | | | age 25+ | -43% | |
| Nova Scotia | 1994 | Mayhew et al. 2003 | all novice drivers | | |
| | | | age 16-17 | -29% | per driver crash rate (L stage 1st year) |
| | | | | -9% | per driver crash rate (I stage 1st year) |
| | | | | -11% | per driver crash rate (I stage 2nd year) |
| | | | | no change | per driver crash rate (additional 3rd year) |
| | | | age 18 and older | -31% | per driver crash rate (L stage 1st year) |
| | | | | -2% | per driver crash rate (I stage 1st year) |
| | | | | +24% | per driver crash rate (I stage 2nd year) |
| | | | | +32% | per driver crash rate (additional 3rd year) |
| Ontario | 1994 | Boase and Tasca 1998 | all novice drivers | -31% | per driver crash rate |
| | | | age 16-19 | -31% | |
| | | | age 20-24 | -42% | |
| | | | age 25-34 | -38% | |
| | | | age 35-44 | -37% | |
| | | | age 45-54 | -24% | |
| | | | age 55+ | -19% | |
| | | | all novice drivers | -24% | per driver casualty crash rate |
| Quebec | 1997 | Bouchard et al. 2000 | all novice drivers | -5% | number of fatalities |
| | | | | -14% | number of injuries |
| | | | | -7% | per driver fatality rate |
| | | | | -17% | per driver injury rate |
| British Columbia | 1998 | Wiggins 2004 | all novice drivers | -16% to -17% | per driver crash rate |

# יעילות הרישיון המדורג – אה"ב

Simpson et al. 2005

GDL Evaluations in the United States

| State | GDL Date | Authors | Target Goup(s) | Results | |
|---|---|---|---|---|---|
| | | | | % Reduction | Measures |
| California | 1998 | AA Southern Cal. 2001 | drivers age 16 | -23% | number of casualty at-fault crashes |
| | | | | -17% | number of non-injury at-fault crashes |
| | | | | -40% | number of teen pass. deaths/injuries |
| California | 1998 | Rice et al. 2004 | drivers age 16-17 | -17% to -28% | per capita fatal or severe injury crash rate |
| | | | | -20% to -29% | per capita struck object crash rate |
| | | | | -17% to -22% | per capita multiple vehicle crash rate |
| | | | | -28% to -37% | per capita non-collision crash rate |
| | | | | -10% to -13% | per capita minor injury crash rate |
| California | 1998 | Cooper et al. 2004 | drivers age 16 | -19% to -26% | per capita fatal/injury crash rate |
| | | | | -17% | number of at-fault crashes |
| California | 1998 | Masten and Hagge 2004 | drivers age 15-17 | no change | per capita fatal/injury crash rate |
| | | | drivers age 16 | no change | per capita fatal/injury crash rate |
| | | | drivers age 16-17 | -9% | proportion of night crashes |
| | | | | -14% | proportion of crashes with pass. under 20 |
| Connecticut | 1997 | Ulmer et al. 2001 | drivers age 16-18 | -22% | per capita casualty crash rate |
| Florida | 1996 | Ulmer et al. 2000 | drivers age 15-17 | -9% | per capita casualty crash rate |
| | | | age 15 | -19% | |
| | | | age 16 | -11% | |
| | | | age 17 | -7% | |
| Kentucky | 1998 | Agent and Pigman 2000 | drivers age 16-18 | -33% | number of crashes |
| | | | | -34% | number of fatal crashes |
| | | | | -28% | number of injury crashes |
| | | | | -32% | per driver crash rate |

# עילות הרישיון המדורג – אה"ב (המשך)
# Simpson et al. 2005

| | | | | | |
|---|---|---|---|---|---|
| Michigan | 1997 | Shope et al. 2001 | drivers age 16 | -25% | per capita crash rate |
| | | | | -24% | per capita injury crash rate |
| Michigan | 1997 | Elliot and Shope 2003 | drivers age 16 | -25% | per capita crash rate |
| | | | | -24% | per capita single vehicle crash rate |
| Michigan | 1997 | Shope et al. 2004 | drivers age 16 | -29% | per capita crash rate |
| | | | | -44% | per capita fatal crash rate |
| | | | | -38% | per capita fatal plus non-fatal injury rate |
| | | | | -38% | per capita non-fatal injury rate |
| North Carolina | 1997 | Foss et al. 2001 | drivers age 16 | -23% | per capita crash rate |
| | | | | -57% | per capita fatal crash rate |
| | | | | -28% | per capita injury crash rate |
| | | | | -23% | per capita non-injury crash rate |
| | | | | -19% | per driver crash rate |
| Ohio | 1999 | Dept. of Public Safety | drivers age 16-17 | -60% | per capita crash rate |
| | | | | -69% | per capita fatal crash rate |
| | | | | -59% | per capita injury crash rate |
| | | | | -60% | per capita non-injury crash rate |
| | | | | -23% | per driver crash rate |
| | | | | -24% | per driver fatal crash rate |
| | | | | -21% | per driver injury crash rate |
| | | | | -23% | per driver non-injury crash rate |
| Utah | 1999-2001 | Hyde et al. 2005 | drivers age 16 | -5% | per capita crash rate |

# הרישוי המדורג עובד – אבל רק בתקופת הפיקוח

BC CA GDL and Pre-GDL drivers Wiggins (2005)

Figure 4: Age and Gender Adjusted Novice Driver Crash Involvement Rates by Month

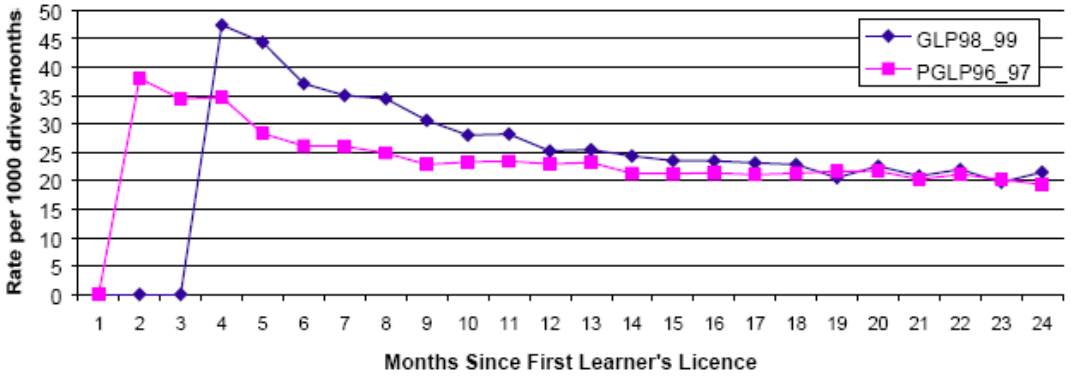
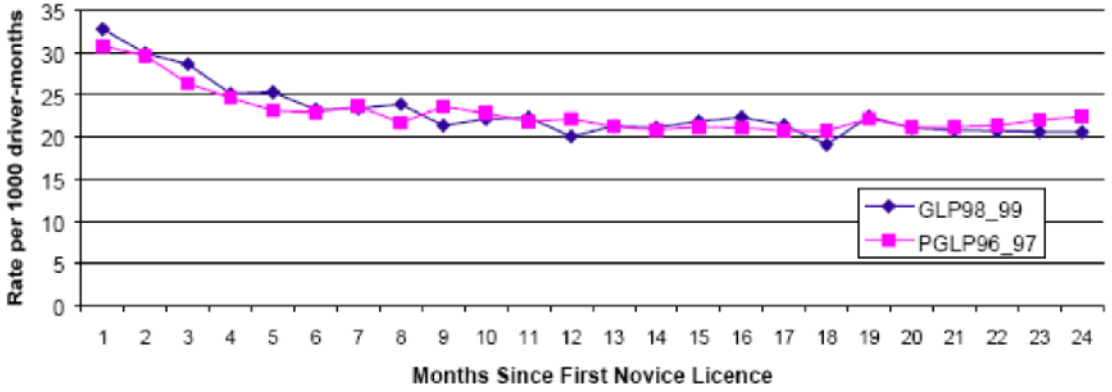



Figure 5: Age and Gender- Adjusted Novice Driver Crash Involvement Rates by Month



# הוראת הנהיגה – הניסיון הקנדי. עוזרת?

Figure 9: Age and Gender Adjusted GLP Driver-Crash Rates by Month – GLP Drivers who did and did not submit a Driver Training Course Declaration of Completion

BD CA Driver Ed Wiggins (2005)

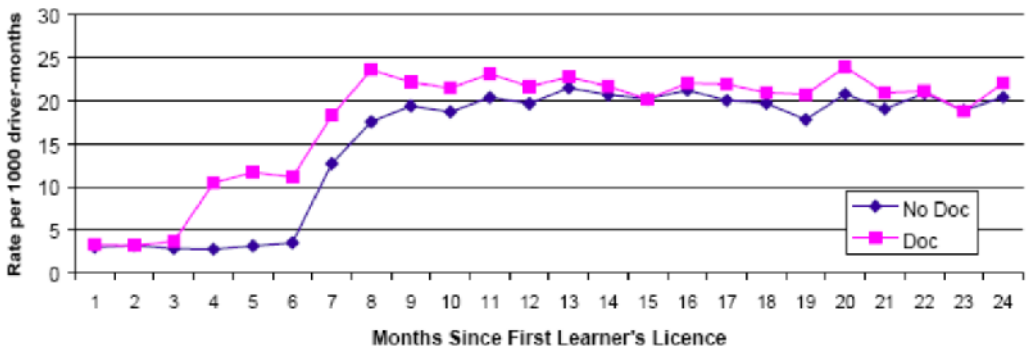
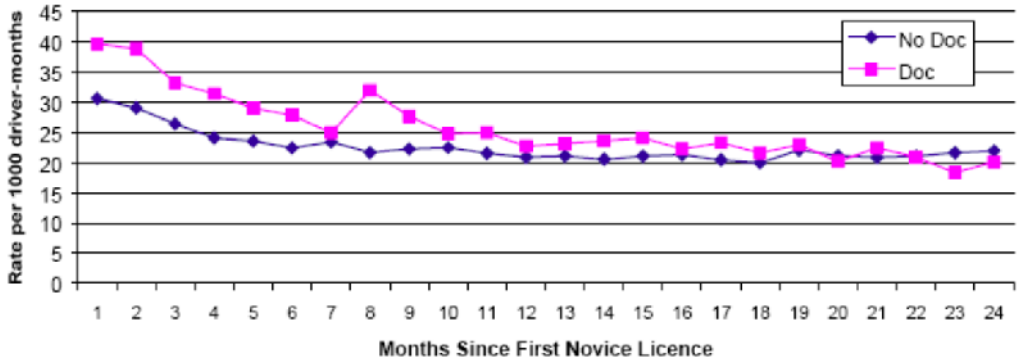



Figure 10: Age and Gender Adjusted Novice Driver-Crash Rates by Month – GLP Drivers who did and did not submit a Driver Training Course Declaration of Completion



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# IIHS GDL Classification

Insurance Institute for Highway Safety taxonomy of licensing systems for young drivers

| IIHS characterization | Definition |
|---|---|
| Good | Both of the following two conditions are required:<br>-A mandatory learner's period of at least 6 months<br>-An "optimal" restriction on the initial license that lasts until age 17 (either a night driving restriction beginning by 10 p.m. or allowing no more than one teen passenger) |
| Fair | Either of the following two conditions are required:<br>-An "optimal" night-driving or passenger restriction lasting until age 17 without regard to the learner's period<br>-A mandatory learner's period of any length and an "optimal" night-driving or passenger restriction lasting until age 16 1/2. |
| Marginal | Any of the following three conditions is required:<br>-A mandatory learner's period of any length and either a night-driving or passenger restriction.<br>-A mandatory learner's period of at least 6 months<br>-Any night-driving or passenger restriction on the initial license. |
| Poor | A mandatory learner's period less than 6 months and no restrictions on night driving or passengers. |

*Source:* Insurance Institute for Highway Safety www.iihs.org/safety_facts/state_laws/grad_license.htm.

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# צעירים הרוגים באה"ב (1992-2002)
# Morrissey (2006) FARS

**Estimated decreases in percent of fatalities for teen drivers (15-17 years old) in states with different levels of GDL (* indicates that the effect is significant at p<.05)**

| **Quality of GDL program** | Fatalities of teen drivers | Daytime fatalities of teen drivers | Night fatalities of teen drivers | Fatalities of teen drivers w passngrs | Teen passngr fatalities | All traffic teen fatalities |
|---|---|---|---|---|---|---|
| Good | 19.4* | 29.0* | 10.1 | 3.3 | 34.6* | 19.2* |
| Fair | 5.4 | 1.7 | 12.6* | 8.4 | 13.8* | 5.8* |
| Marginal | 0.7 | 1.1 | 1.6 | 10.3 | 22.7* | 4.7 |

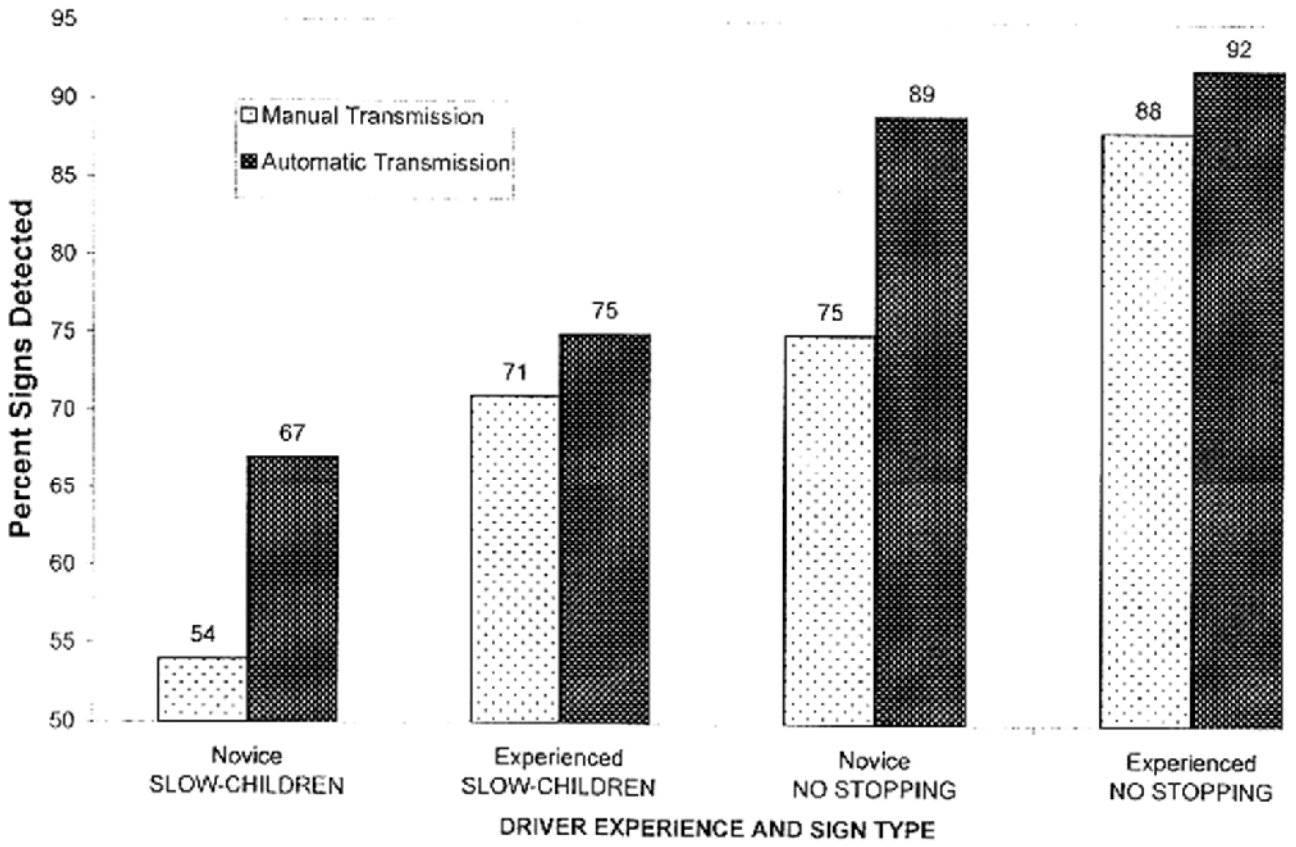
# הסיבות לתאונות צעירים 16-19 על סמך ניתוח תוכן של תיקי תאונות: Careless or Cueless?

Percent of crashes attributable to deficiencies in specific driving behaviors

| Behavior | Percentage | Behavior | Percentage | Behavior | Percentage |
|---|---|---|---|---|---|
| *Basic control* | *8.0* | *Search ahead* | *19.1* | *Adjusting speed* | *20.8* |
| Lane keeping | 2.6 | Distance | 3.1 | Traffic/road conditions | 8.7 |
| Turning path | 1.3 | Roadsides | 4.3 | Curves | 6.1 |
| Braking | 1.3 | Before left turns | 4.8 | Slick surfaces | 2.3 |
| Turning speed | 0.7 | Car ahead | 3.1 | Slick curves | 1.5 |
| Other | 2.1 | Left-turning vehicle | 2.9 | High speed | 0.7 |
| *Traffic controls* | *5.6* | Next lane | 0.9 | Other | 1.5 |
| Traffic lights | 1.7 | *Search to the side* | *14.2* | *Maintaining space* | *9.8* |
| Stop signs | 1.3 | Intersection: burdened | 7.7 | Following distance | 5.8 |
| Lane use | 1.5 | Intersection: privileged | 5.5 | Crossing and entering | 1.4 |
| Passing | 0.6 | Sight obstructed | 0.8 | Side clearance | 1.3 |
| Other | 0.5 | Other | 0.2 | Overtaking | 1.1 |
| *Attention* | *23.0* | *Search to the rear* | *9.4* | Other | 0.2 |
| Maintaining attention | 18.6 | Slowing | 3.0 | *Signals* | *1.2* |
| Avoiding distractions | 3.8 | Backing | 2.1 | Interpreting signals | 0.8 |
| Attention sharing | 0.07 | Periodically | 2.1 | Signaling intent | 0.3 |
| *Driver–vehicle* | *6.3* | Changing lanes | 1.5 | Signaling presence | 0.1 |
| Alcohol impairment | 2.4 | Other | 0.7 | *Emergencies* | *9.4* |
| Fatigue | 1.7 | *Other search* | *0.9* | Swerving | 5.6 |
| Vehicle | 1.5 | | | Skid recovery | 1.4 |
| Other | 0.7 | | | Braking | 1.0 |
| | | | | Tire failure | 0.7 |
| | | | | Brake failure | 0.7 |

CA & MD 16-19 Yrs Old crash narratives McKnight and McKnight (2003)

# חשיבות הניסיון במימנות ספציפית: החלפת הילוכים




Shinar, Meir Ben Shoham 1998

Israel: Gear shifting and sign detection

Shinar Meir Ben-Shoham (1998)

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# המלצת ה TIRF לשלב הלימוד ב GDL

- Minimum entry age:
  -- 16 years old
- Entry requirements:
  -- Vision test
  -- Knowledge test
  -- Parental consent: yes, if under 19
- Minimum duration:
  -- 12 months
- Maximum holding period:
  -- 24 months
- Supervisory driver:
  -- Fully licensed for one year at least 25 years or older
  -- Seated in the front seat
- Minimum amount of supervised driving:
  -- 50 (including 10 at night, 10 different hours in winter conditions)
- Driver education/training:
  -- voluntary, segment one on basic skills
  -- no time discount
- BAC:
  -- Zero for novice
  -- Zero BAC for supervisor
- Night restriction:
  -- No driving between midnight and 6:00 a.m.
- Passenger restriction:
  -- Only supervisor in front seat
- "L" sign/Plate:
  -- mandatory
- Minimum exit age:
  -- 17 years old
- Other Features
  -- Penalties for GDL violations (e.g., fines, demerit points)
  -- Lower demerit point threshold than for fully licensed drivers
  -- Suspension/probation followed by return to start of stage
  -- Extend stage by the duration of the suspension/prohibition

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# המלצת ה TIRF לשלב הבינים ב GDL

- Minimum entry age:
  -- 17 years old
- Entry requirements:
  -- Road test
- Minimum duration:
  -- 24 months
- Maximum holding period:
  -- 24 months
- BAC:
  -- Zero for novice
  -- Zero for supervisor
- Night restriction:
  -- Unsupervised driving from 9 p.m. to 6:00 a.m.
- Passenger restriction:
  -- No teen passengers when driving unsupervised for novices under 20
- "N" sign/Plate:
  -- mandatory
- Driver education:
  -- voluntary, segment 2 on advanced safety skills
  -- no time discount
- Exit requirements:
  -- Enhanced on-road exit test
- Minimum exit age:
  -- 19 years
- Other Features
  -- Penalties for GDL violations (e.g., fines, demerit points)
  -- Lower demerit point threshold than for fully licensed drivers
  -- Suspension/probation followed by return to start of stage
  -- Extend stage by the duration of the suspension/prohibition

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# Thank You

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