

Graduated Licensing: Progress During the Last Decade

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Ferguson, Teoh, McCartt. 2007. Teen crash risk and progress during the last decade. Journal of Safety Research. Journal of Safety Research. 38: 137-145.

Overview

- ◆ Historically teenage drivers, but especially 16 year-olds, have had the highest crash rates
- ◆ What has happened to fatal and non-fatal crash rates since the advent of GDL in many states
- ◆ How effective is GDL in reducing crashes?
- ◆ Which components are the most effective?

Crash rates

- ◆ Ideally a comprehensive evaluation of crash rates and crash rate trends would include:
 - rates per population
 - rates per licensed driver
 - rates per mile traveled

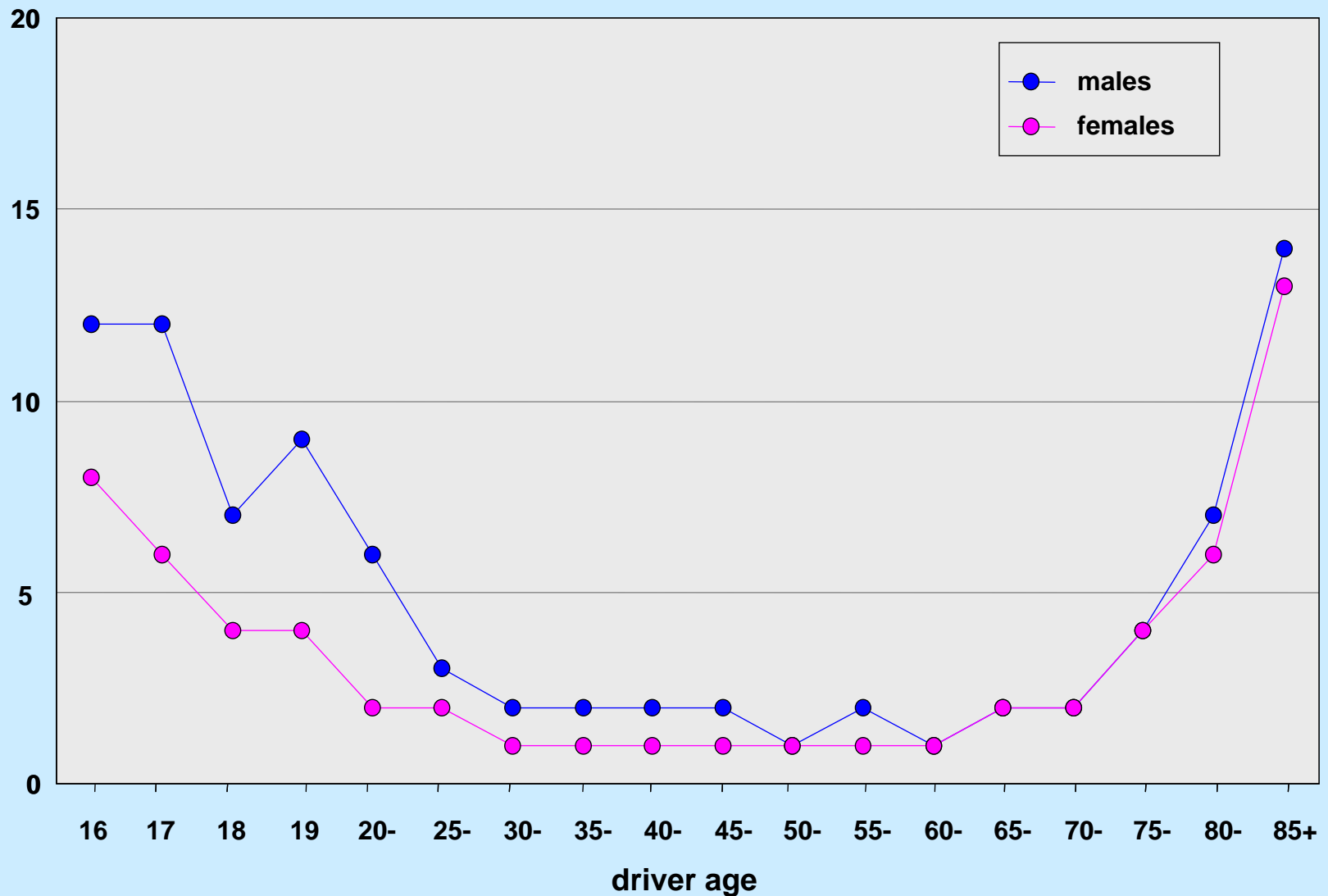
Data shortcomings

- ◆ Reliable national data for licensed drivers not available
 - Large year-to-year differences in licensed driver counts in some states that could not be explained by fluctuations in population or changes in state licensing laws
- ◆ Most recent mileage data from 2001-02 travel survey
 - Scheduled 2006 survey was not conducted

Crash rates per mile traveled

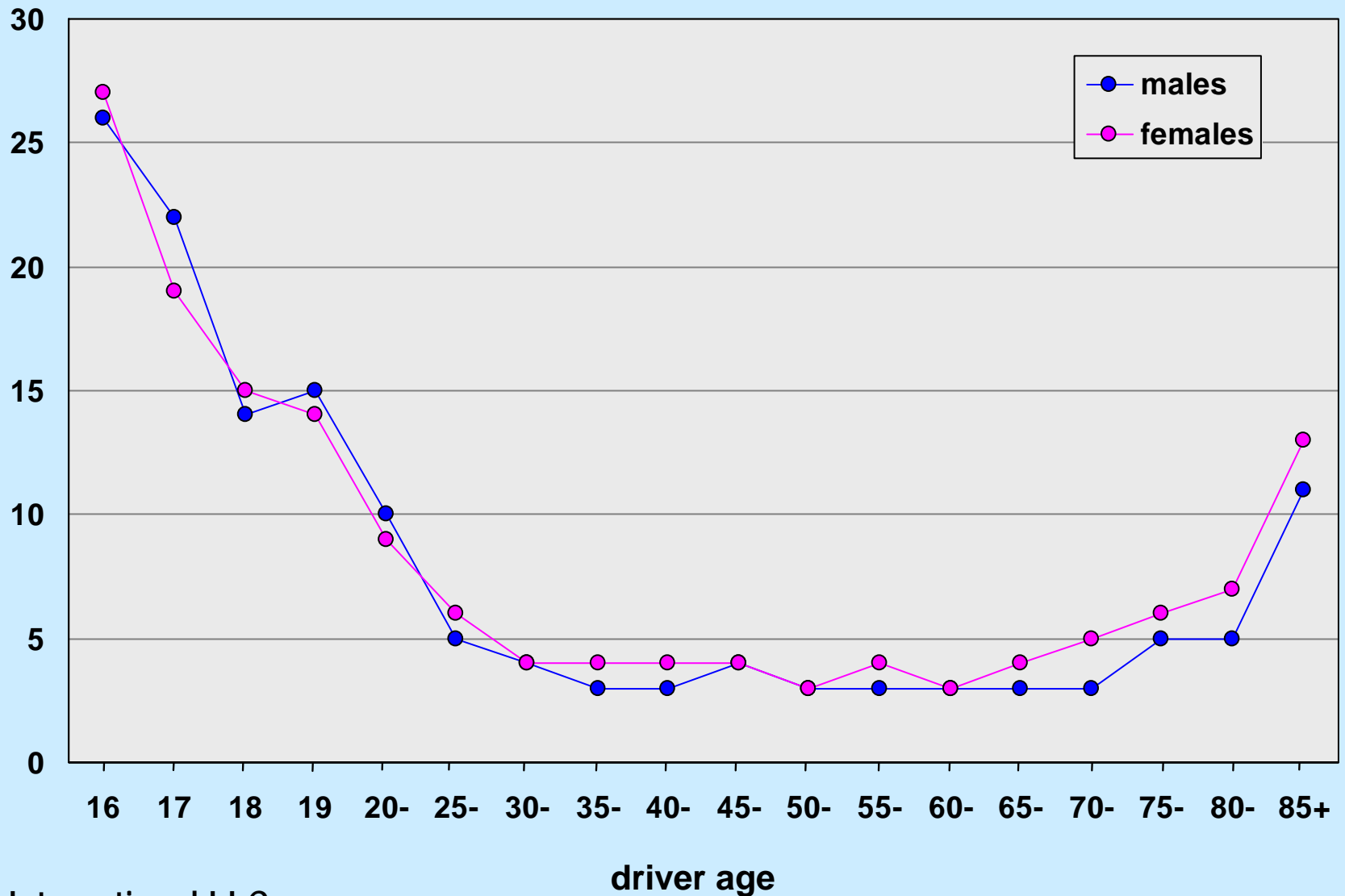
Fatal crashes per 100 million miles

By driver age, FARS, NHTS, 2001-02



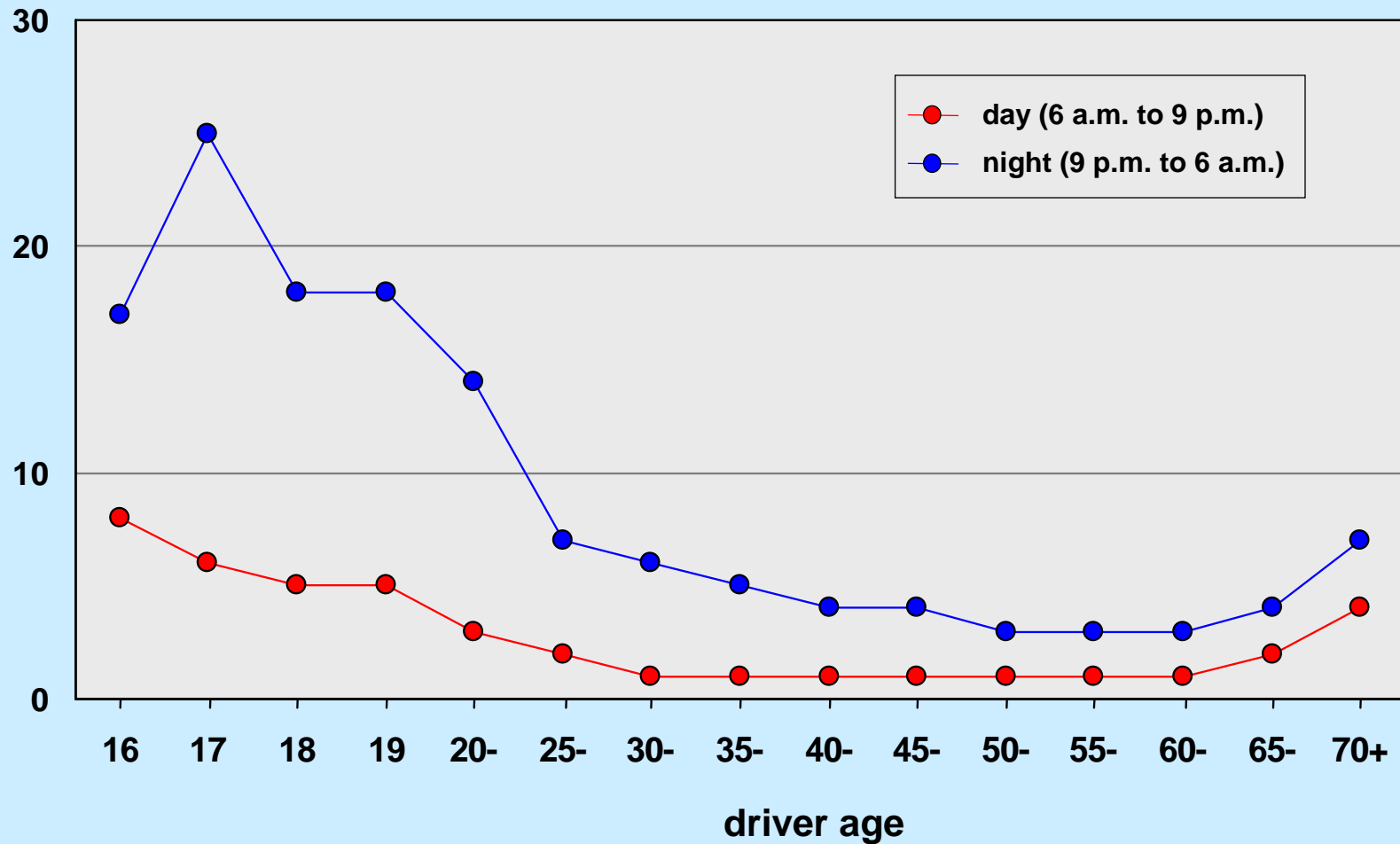
Police-reported crashes per million miles

By driver age, NASS/GES, NHTS 2001-02



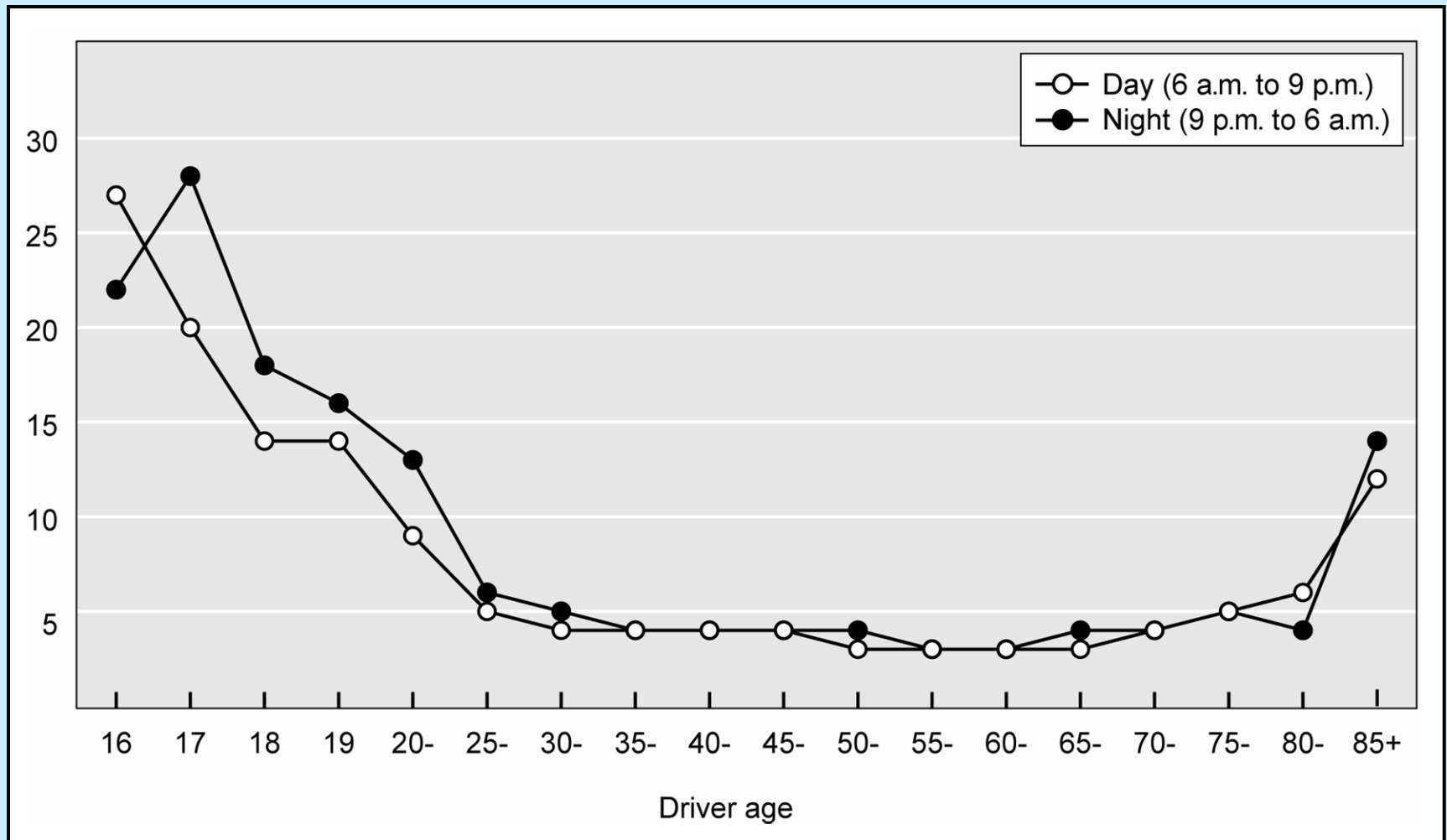
Fatal crashes per 100 million miles

Day vs. night, by driver age, FARS, NHTS 2001-02



Police-reported crashes per million miles

Day vs. night, by driver age, NASS/GES, NHTS 2001-02

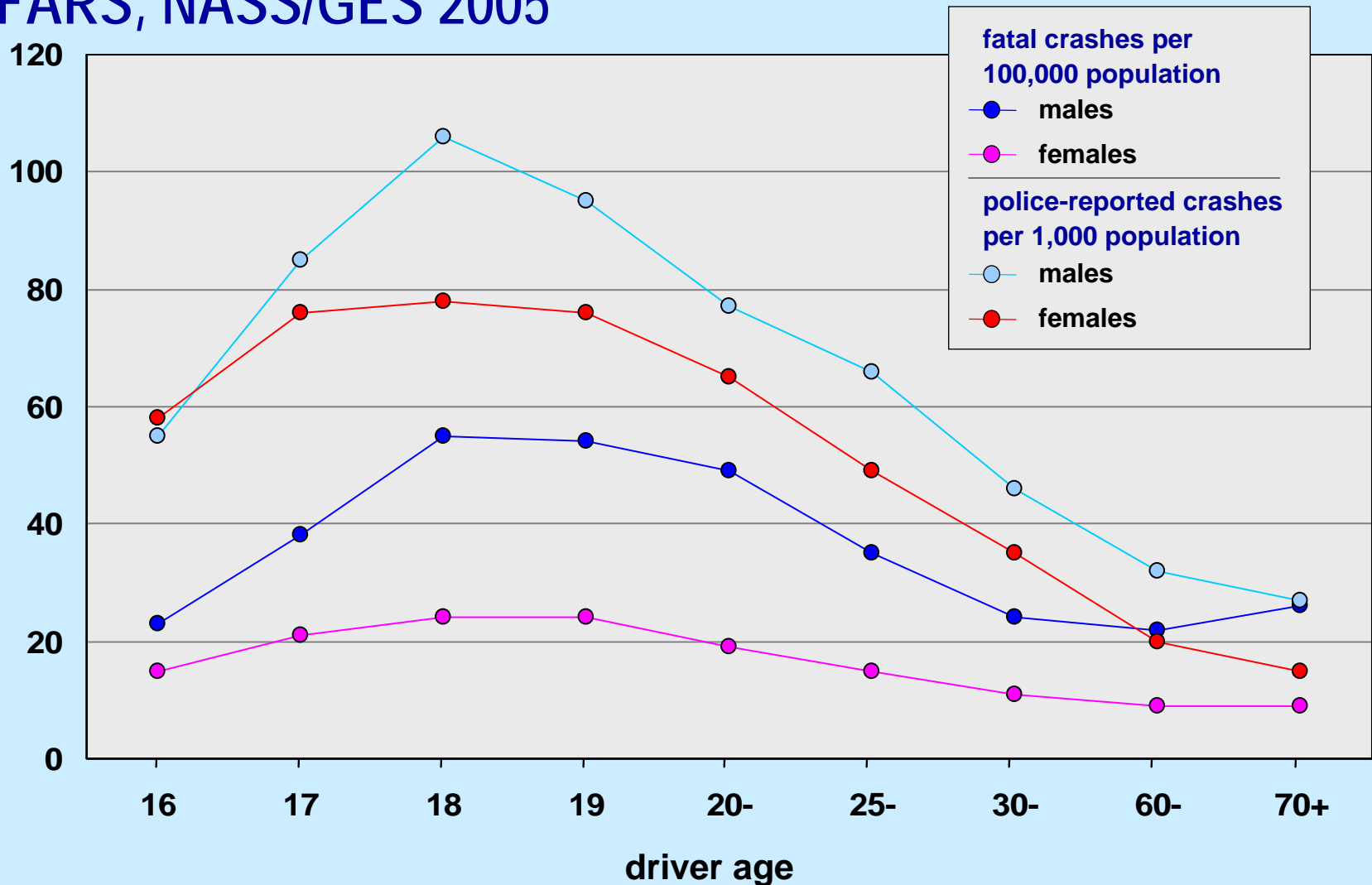


Crash rates per population

- ◆ Fewer teenage drivers are licensed and they drive fewer miles than older drivers
- ◆ Within the subset of teenage drivers, 16 year-olds are less likely to be licensed and they drive fewer miles

Fatal and police-reported crashes per population by driver age and gender

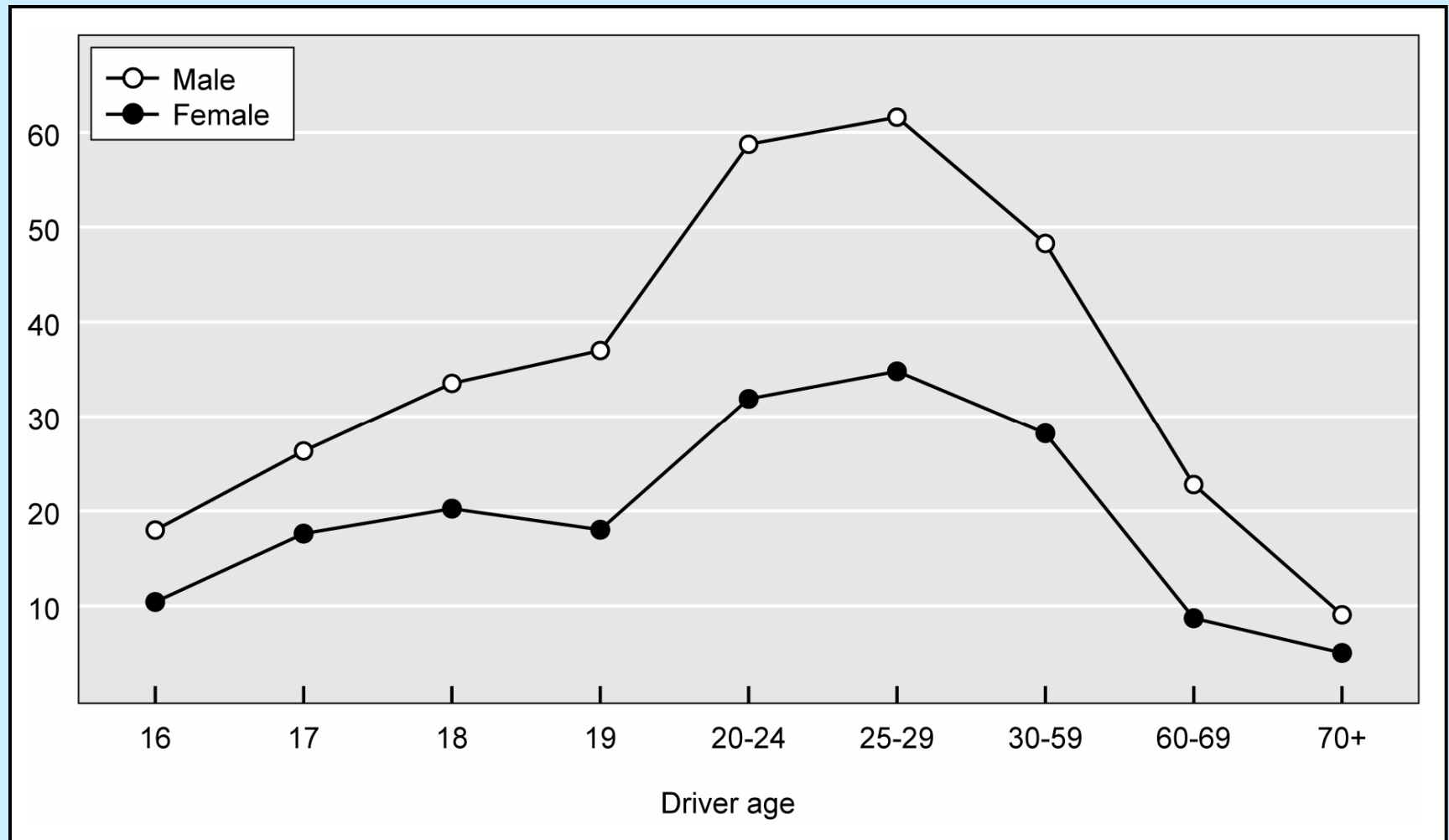
FARS, NASS/GES 2005



Young driver crash characteristics

Percent of fatally injured passenger vehicle drivers with positive BACs

By driver age and gender



Fatal crash characteristics

Percent by driver age, FARS 2005

| | 16 | 17 | 18 | 19 | 20-25 | 26-49 |
|----------------|----|----|----|----|-------|-------|
| driver error | 74 | 73 | 71 | 68 | 64 | 51 |
| speeding | 34 | 32 | 33 | 33 | 30 | 19 |
| single vehicle | 49 | 47 | 44 | 46 | 45 | 38 |
| 3+ occupants | 29 | 24 | 23 | 24 | 19 | 17 |
| positive BACs | 15 | 23 | 30 | 32 | 53 | 48 |

16-17 year-old driver fatal crash characteristics

Alone vs. with teen passengers, 2005

| | percent | | | |
|----------------|--------------|------------------|-------------------|--------------------|
| | driver alone | 1 teen passenger | 2 teen passengers | 3+ teen passengers |
| single vehicle | 41 | 45 | 57 | 69 |
| speeding | 30 | 34 | 42 | 46 |
| driver error | 71 | 75 | 78 | 85 |
| 0.08+ BAC | 10 | 10 | 7 | 10 |

Crash rate trends

Fatal crashes per 100,000 population

By driver Age, 1996 vs. 2005 FARS

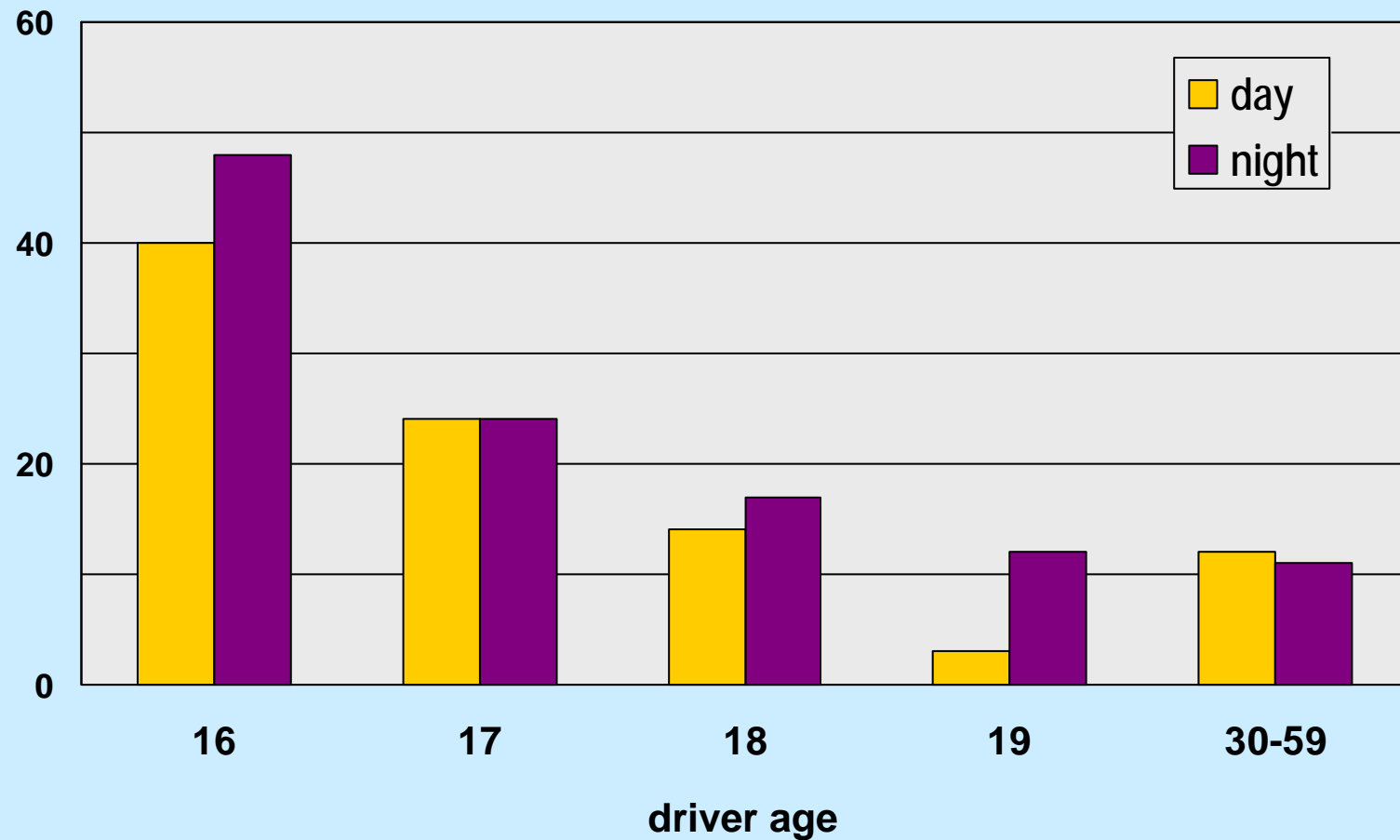
| age | 1996 | 2005 | percent reduction |
|-------|------|------|-------------------|
| 16 | 33 | 19 | 42 |
| 17 | 39 | 30 | 23 |
| 18 | 47 | 40 | 15 |
| 19 | 43 | 40 | 7 |
| 30-59 | 20 | 17 | 15 |

Fatal crashes of 16-year-old drivers

By passenger presence, 1996 vs. 2005 FARS

| | crashes | | percent reduction |
|------------------------------|---------|------|-------------------|
| | 1996 | 2005 | |
| no passengers | 426 | 324 | 24 |
| teenage passengers only | | | |
| one | 309 | 206 | 33 |
| two | 175 | 93 | 47 |
| three or more | 144 | 72 | 50 |
| total | 628 | 371 | 41 |
| other passenger combinations | 215 | 110 | 49 |
| total | 1,269 | 805 | 37 |

Percent reductions in fatal crashes per capita By time of day, FARS 1996 vs. 2005



Percent fatally injured passenger vehicle drivers with positive BACs

By driver age, 1996 vs. 2005 FARS

| age | percent | | percent reduction |
|-------|---------|------|-------------------|
| | 1996 | 2005 | |
| 16 | 18.2 | 15.3 | 16 |
| 17 | 25.1 | 23.2 | 7 |
| 18 | 31.2 | 29.6 | 5 |
| 19 | 35.4 | 32.2 | 9 |
| 20-24 | 53.4 | 52.5 | 2 |
| 25-29 | 56.2 | 55.1 | 2 |
| 30-59 | 45.9 | 42.3 | 8 |
| 60-69 | 21.0 | 18.0 | 14 |
| 70+ | 9.0 | 7.7 | 14 |

Is Graduated Licensing Effective?

Shope, 2007

- ◆ Consistent, positive findings
- ◆ Reductions 6% (15-17 yrs traffic fatalities) to 40% (16 yrs driver involvement in injury crashes)
- ◆ Greater reductions with stronger GDL programs
- ◆ Greater reductions among teenage than older drivers
- ◆ No increase in crash risk for 17 or 18 yr-olds

Is GDL effective?

Shope, 2007

- ◆ YES, GDL is effective
- ◆ More studies since 2002, more positive results
- ◆ More sophisticated studies, more positive results
- ◆ Longer follow-up periods, more positive results
- ◆ GDL reduces crashes, fatal and injury crashes, hospitalization rates and charges

GDL components

Williams, 2007

- ◆ Extended learner period
- ◆ Parent certification requirements
- ◆ Nighttime restrictions
- ◆ Passenger restrictions

Learner stage mandatory holding periods*

Williams, 2007

| number of months | number of jurisdictions |
|------------------|-------------------------|
| 12 | 5 |
| 9 | 2 |
| 6 | 40 |
| 2-5 | 1 |
| 0 | 3** |

*Two states have lesser requirements for driver education graduates

**Includes Wyoming, which has a 10-day holding period

Learner stage parent certification requirements*

Williams, 2007

| number of hours | number of jurisdictions |
|-----------------|-------------------------|
| 100 | 1 |
| 60 | 2 |
| 50 | 17 |
| 40 | 10 |
| 35 | 1 |
| 30 | 5 |
| 25 | 1 |
| 20 | 4 |
| 0 | 10 |

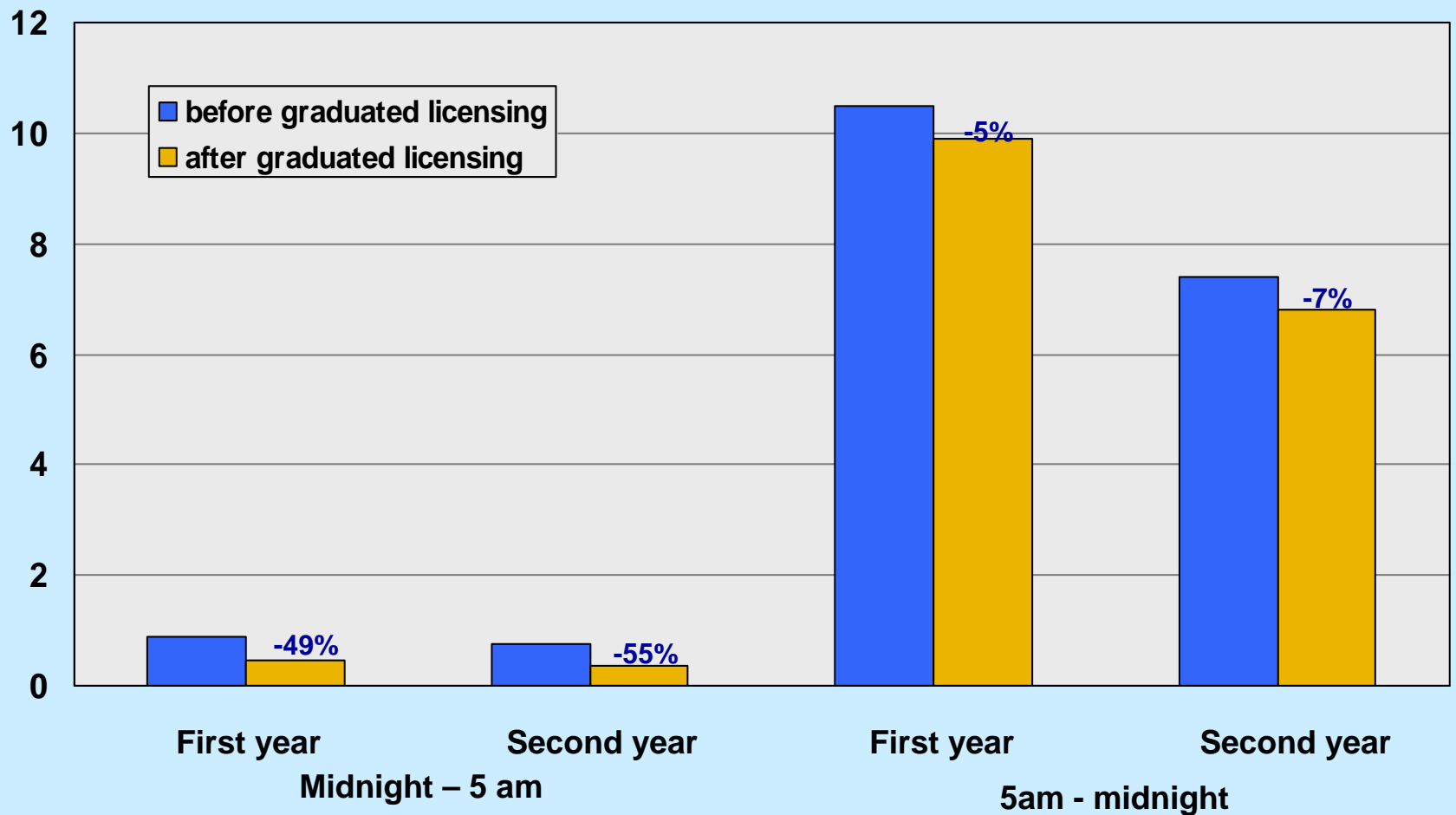
*Six states have lesser requirements for driver education graduates

Practice driving

Williams, 2007

- ◆ Does quantity of driving increase?
- ◆ Does more driving experience produce better drivers?
- ◆ What about types of driving done?

Crashes per 100 drivers per year during restricted and unrestricted hours before and after GDL 16-19 year-olds in Nova Scotia



Post GDL: No unsupervised driving

Beginning hours for night driving restrictions*

September 2007

| hour | number of jurisdictions |
|----------------|-------------------------|
| 6 pm | 1 |
| Sunset | 1 |
| 9 pm | 2 |
| 10 pm | 5 |
| 11 pm | 12 |
| Midnight | 18 |
| 12:30 am | 2 |
| 1 am | 5 |
| No restriction | 5 |

*Five states have different start times depending on day of week or time of year; the table tallies the earlier hour

Percent crash reductions, Nighttime vs. daytime*

Williams, 2007

| | | percent reduction | |
|----------------|------------------|-------------------|-----|
| jurisdiction | restricted hours | night | day |
| Florida | 11-6 | 16 | 9 |
| Michigan | 12-5 | 59 | 32 |
| North Carolina | 9-5 | 47 | 22 |
| Nova Scotia | 12-5 | 49 | 5 |

*Data are for 16 year-olds in Florida, Michigan, and North Carolina and for 16-17 year olds in Nova Scotia

Maximum number of passengers allowed*

September 2007

| number of passengers | number of jurisdictions |
|----------------------|-------------------------|
| None | 15 |
| 1 | 21 |
| 2 | 2 |
| 3 | 2 |
| No restriction | 11 |

*Ten states relax their restrictions over time (e.g., allowing none the first 6 months then up to 3); the table includes the restriction that applies immediately after licensure

Effects of passenger restrictions

Williams, 2007

- ◆ New Zealand reported moderately positive effects
- ◆ Four studies of CA GDL have indicated positive effects
 - Zwicker et al., found a 38 percent reduction in 16 year-old per capita crashes in which teenagers were injured or killed
- ◆ Positive effects in CA, MA, and VA found in forthcoming study
- ◆ In NC, crashes with multiple passengers declined by 32 percent among 16 year-old drivers

Conclusions

- ◆ Lowest number of teens killed in passenger vehicles since 1992 despite highest population of teens since 1977
- ◆ Dramatic reductions in 16 year-old driver fatal and police-reported crashes per population during last decade
- ◆ Gains somewhat greater at night than during the day
- ◆ Fatal crashes involving alcohol declined more among 16 year-olds than among older teens
- ◆ GDL proven effective with stronger evidence for nighttime and passenger restrictions than for other components