

The Novice Young Driver Problem
Research on Causes and Solutions

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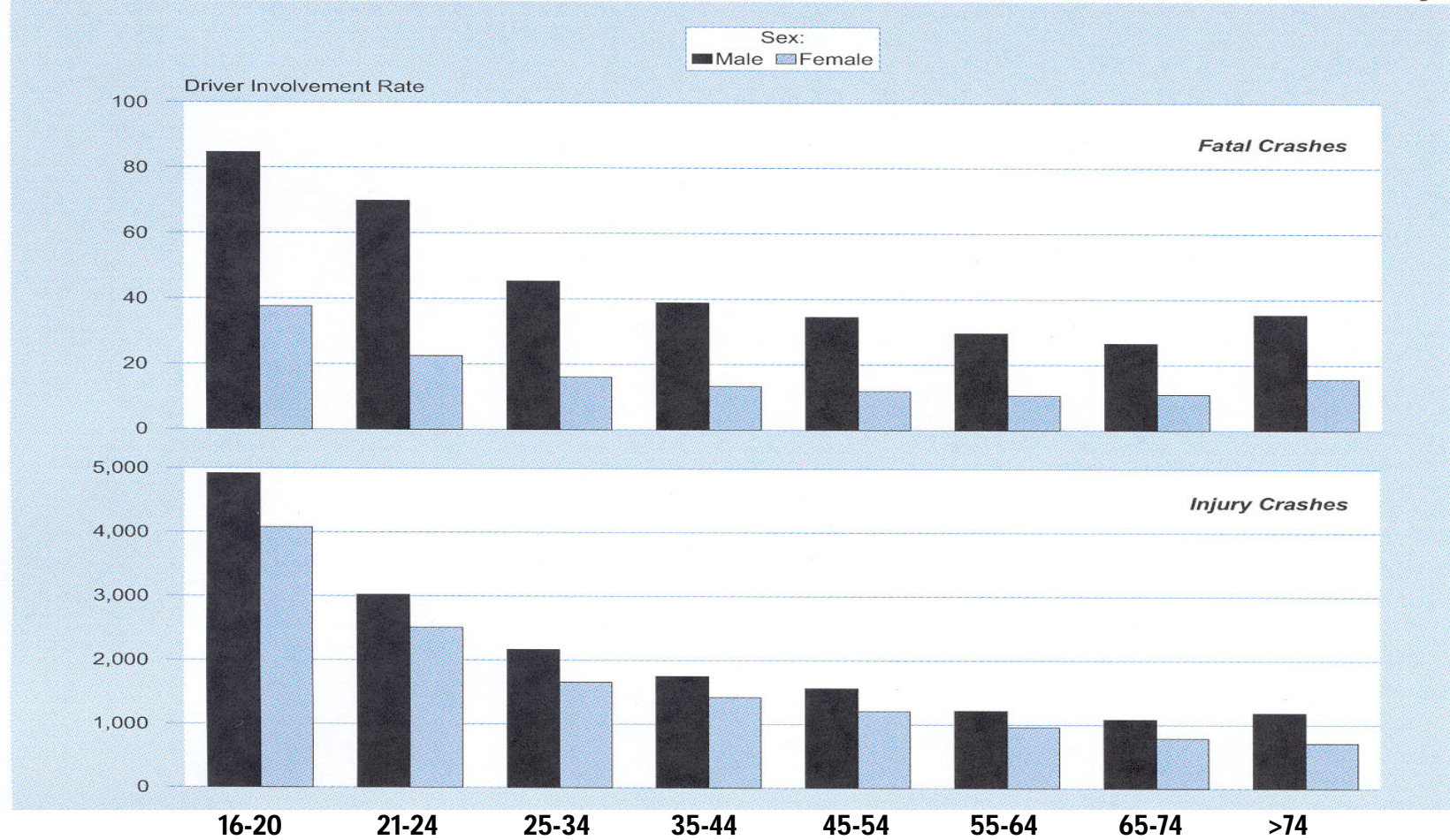
Overview

- 1) The novice teen driver problem
- 2) Solutions to the problem



Fatal and Non-fatal Crashes by Age and Sex

Driver Involvement Rates per 100,000 Licensed Drivers by Age, Sex, and Crash Severity

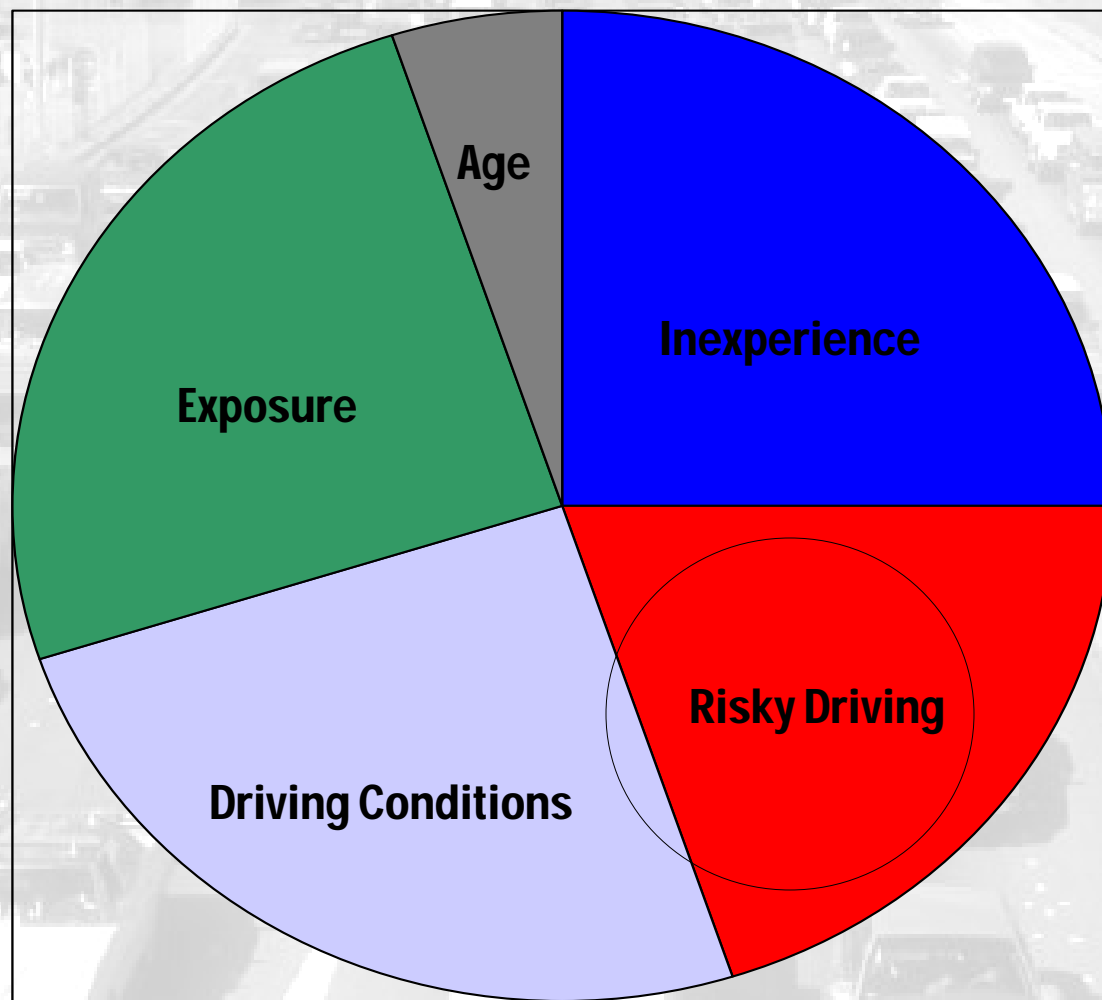


NCHS, NHTSA, 2004

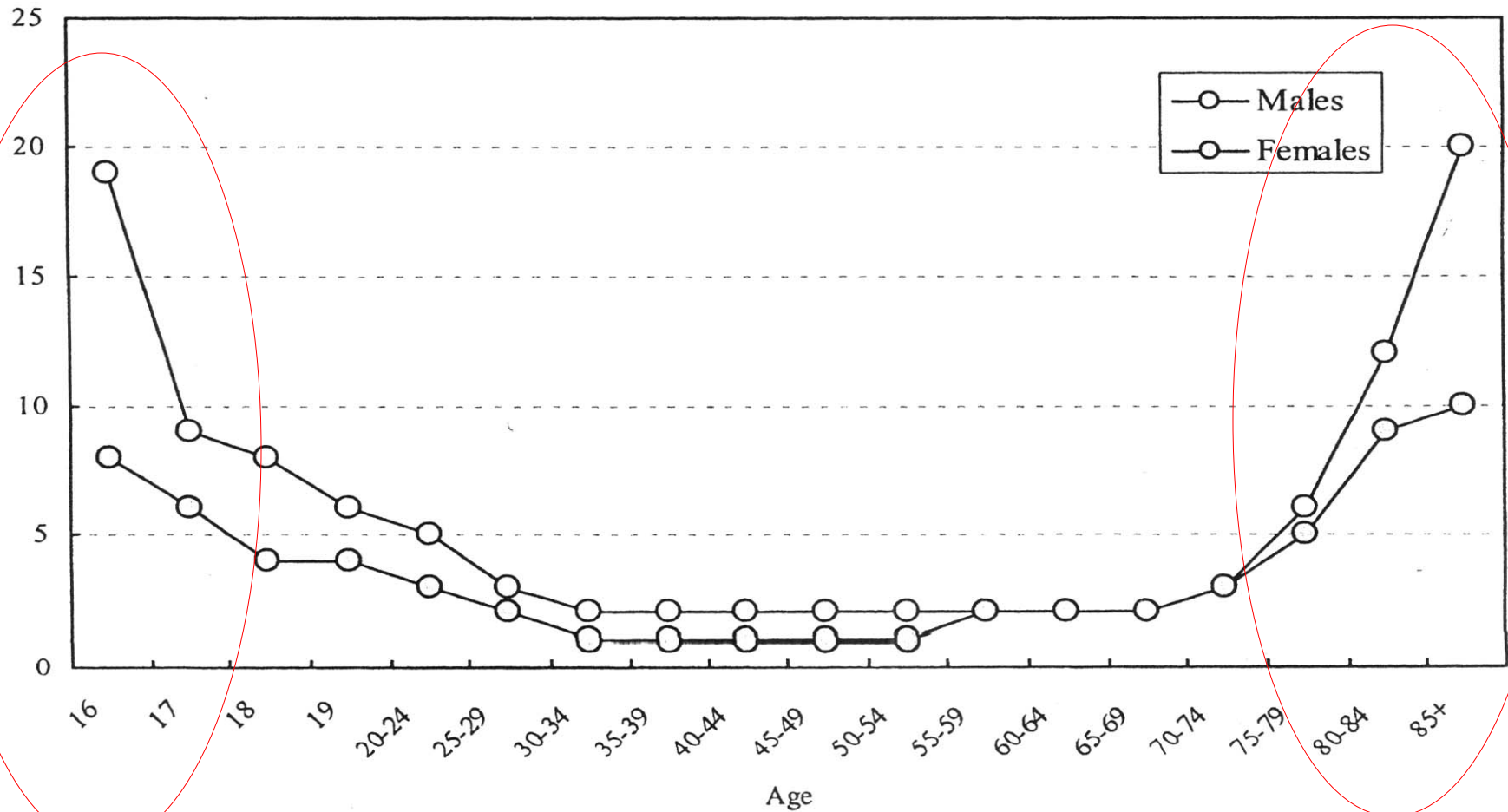


The Young Driver Problem

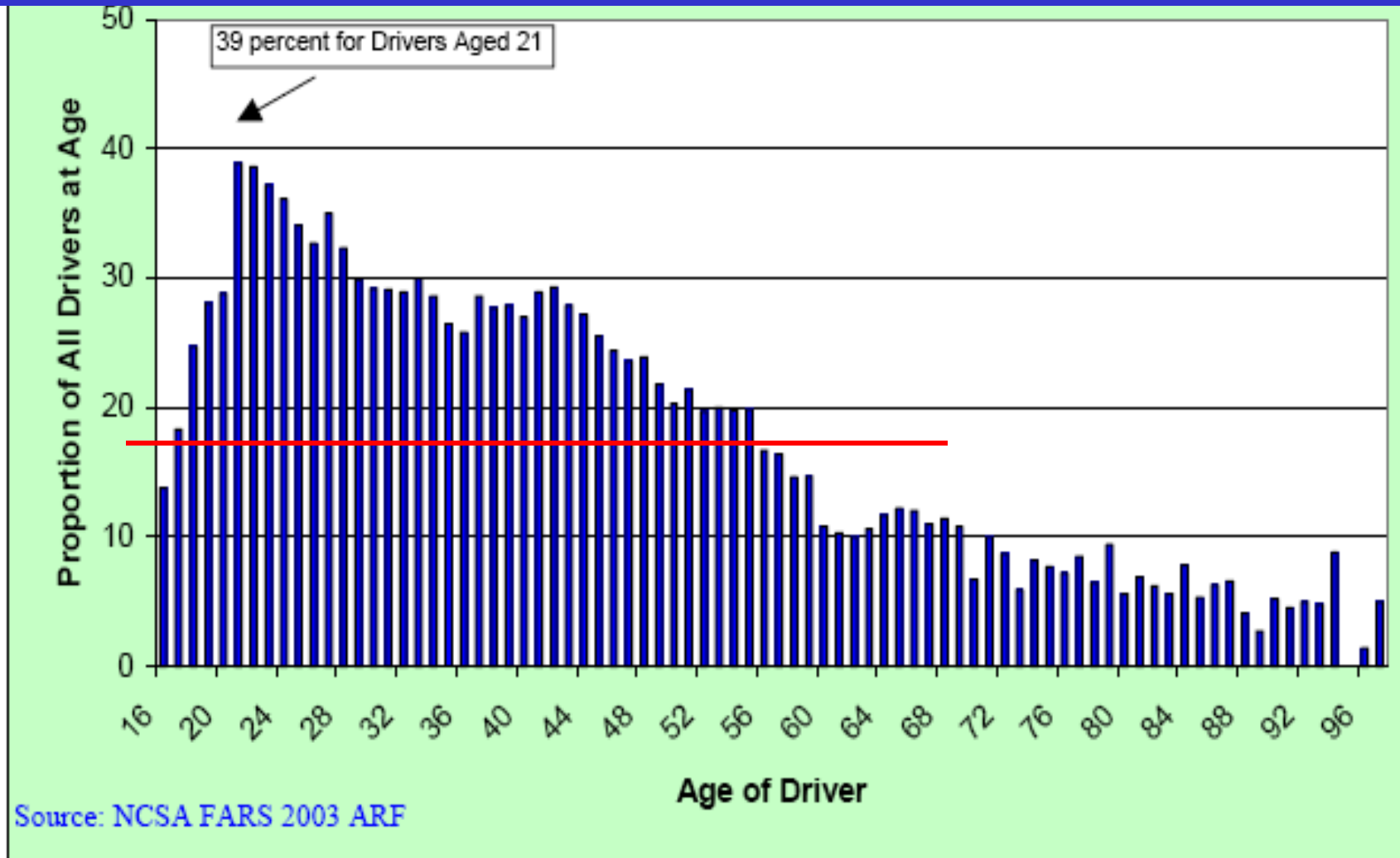
Pieces of the Puzzle



Driver Fatal Crash Involvement/Million Miles



Proportion of Alcohol-Related Fatal Crashes by Driver Age

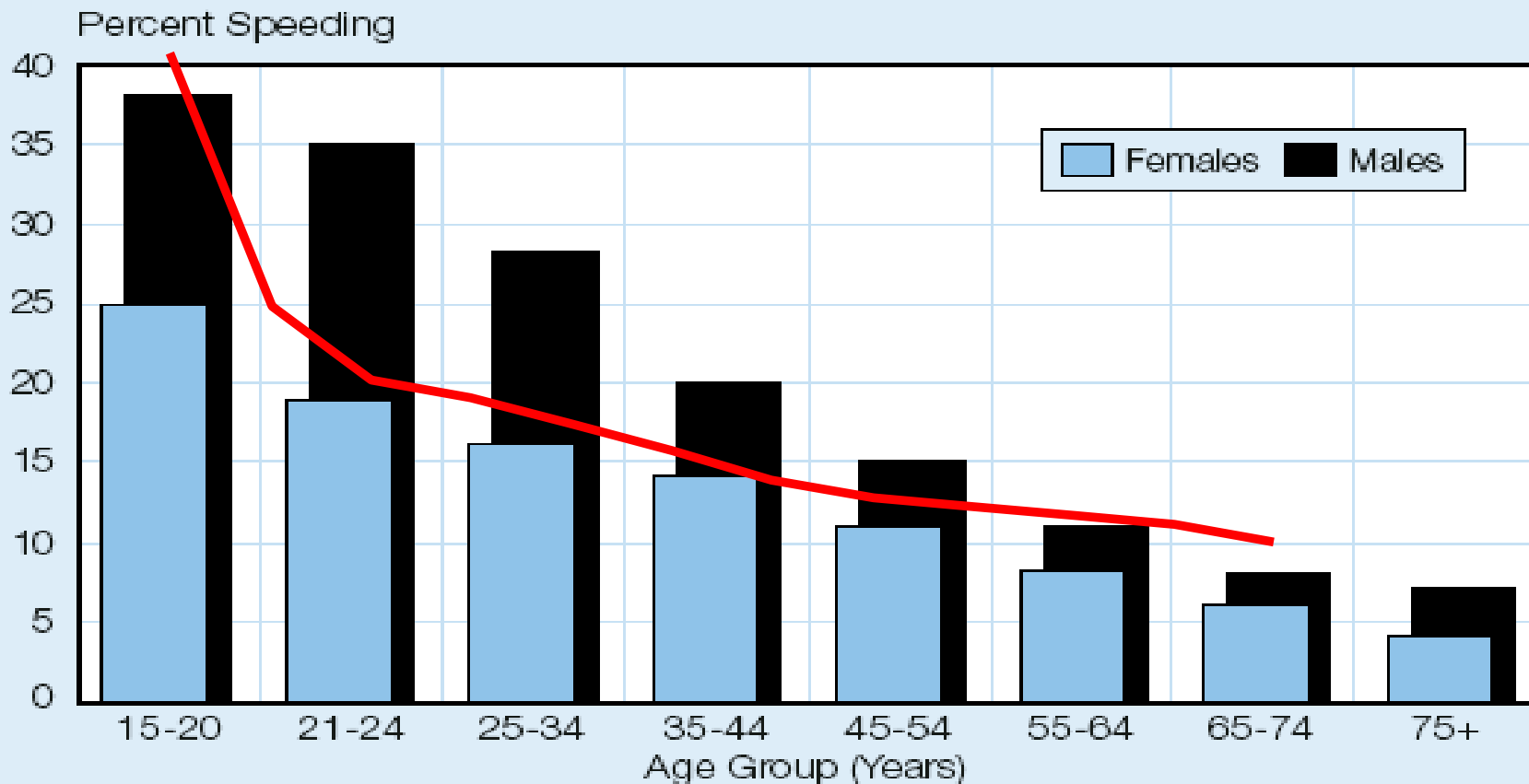


Source: NCSA FARS 2003 ARF



Speed Increases Error

Speed-Related Fatal Crashes by Age and Sex

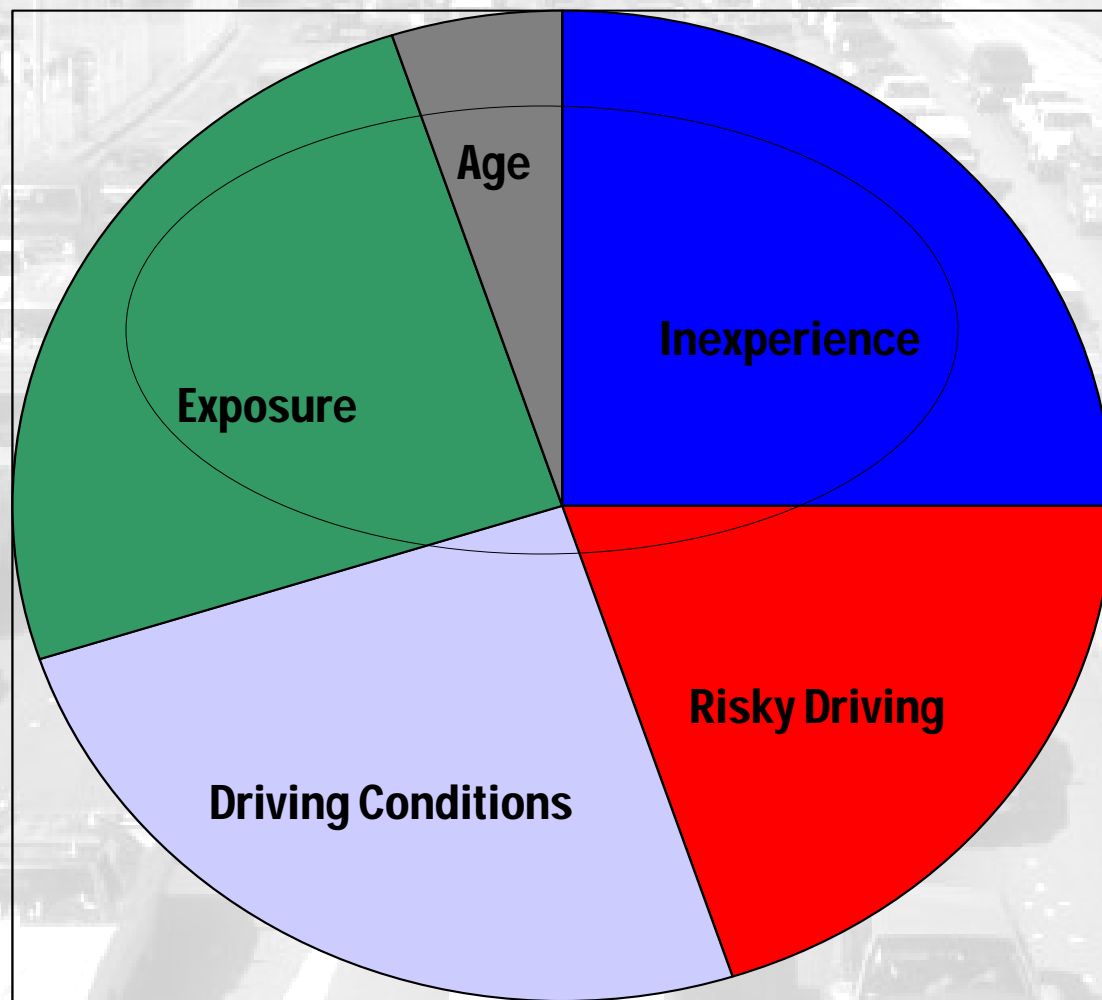


NCHS, NHTSA, 2004



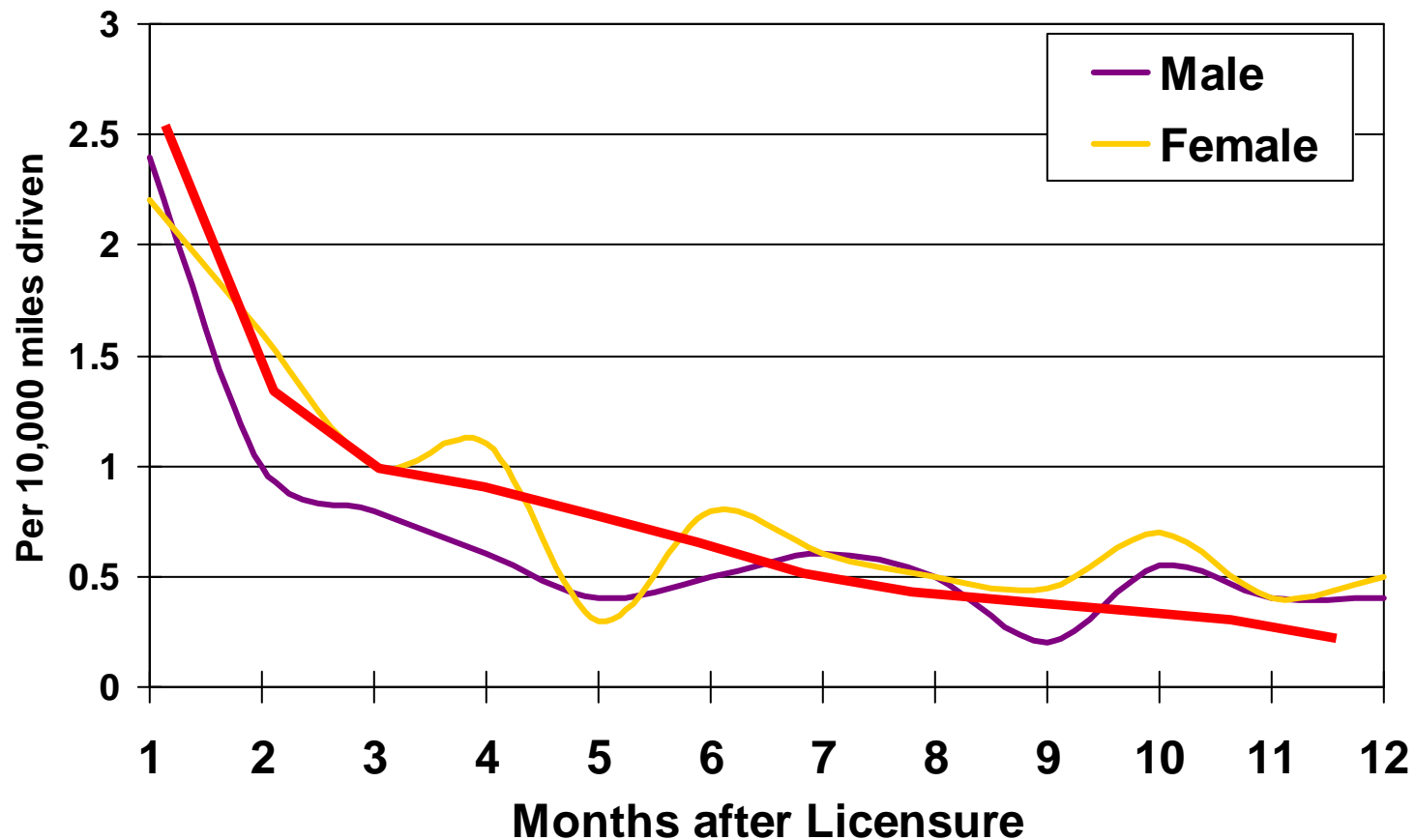
The Young Driver Problem

Pieces of the Puzzle



Learning, Error, and Experience

Error declines with practice/experience forming the learning curve

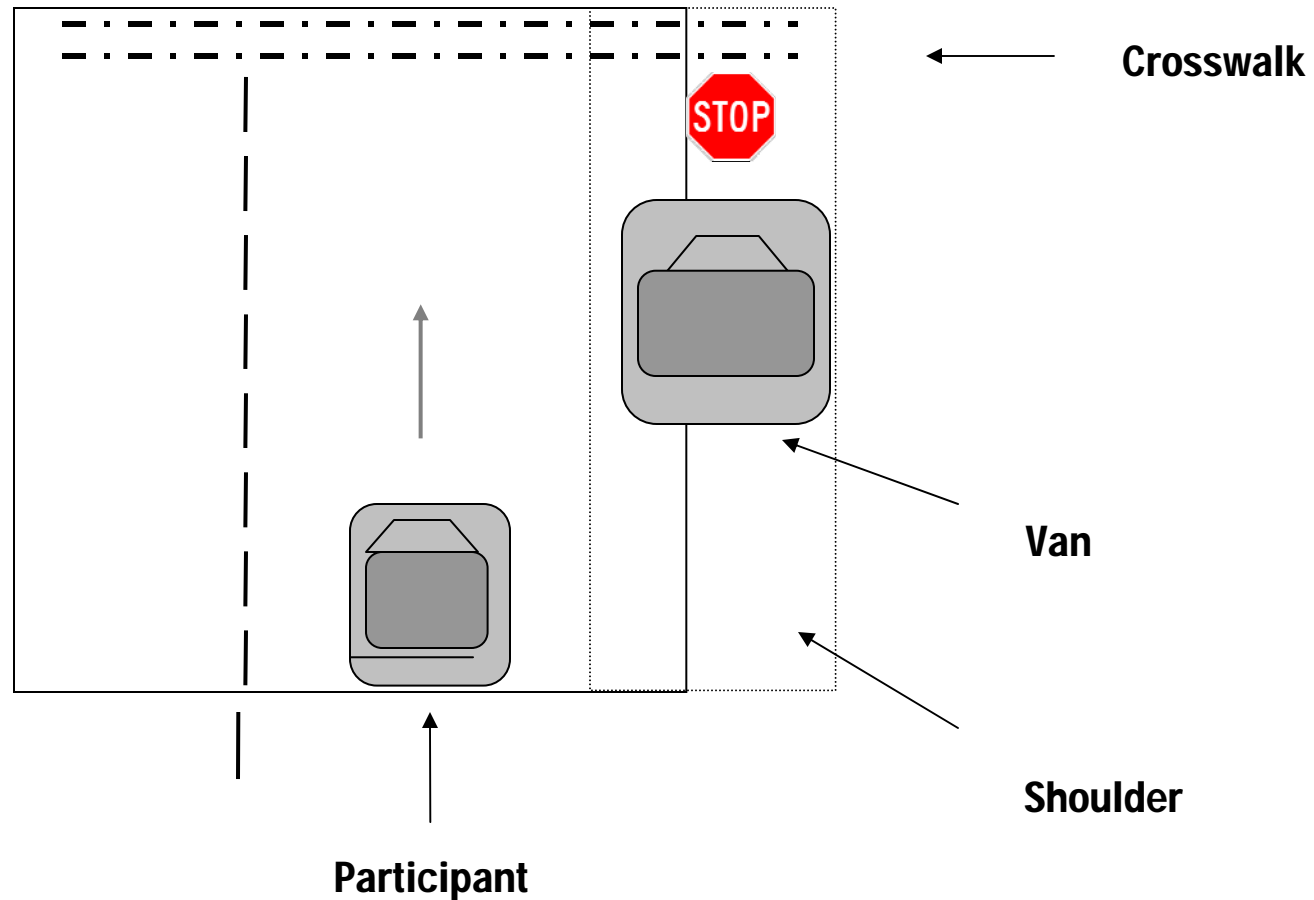


McCartt et al, 2002



Test Track: Hazard Detection Task

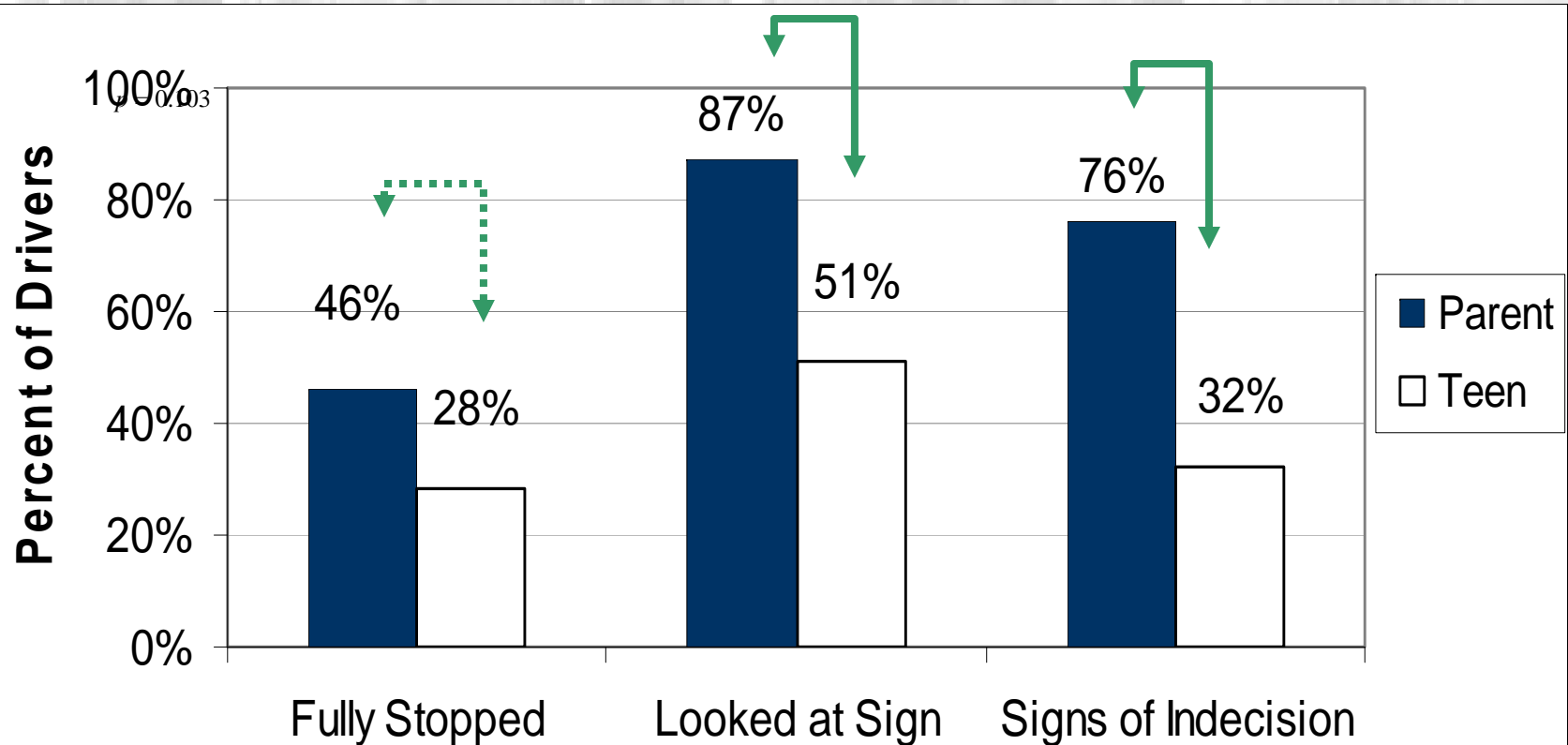
Hidden Stop Sign (n= 40 teens, 40 parents)



Lee, Simons-Morton et al, 2008

Test Track: Hazard Detection Task

Results of Hidden Stop-Sign Scenario



N = 20 novices
N = 20 adults

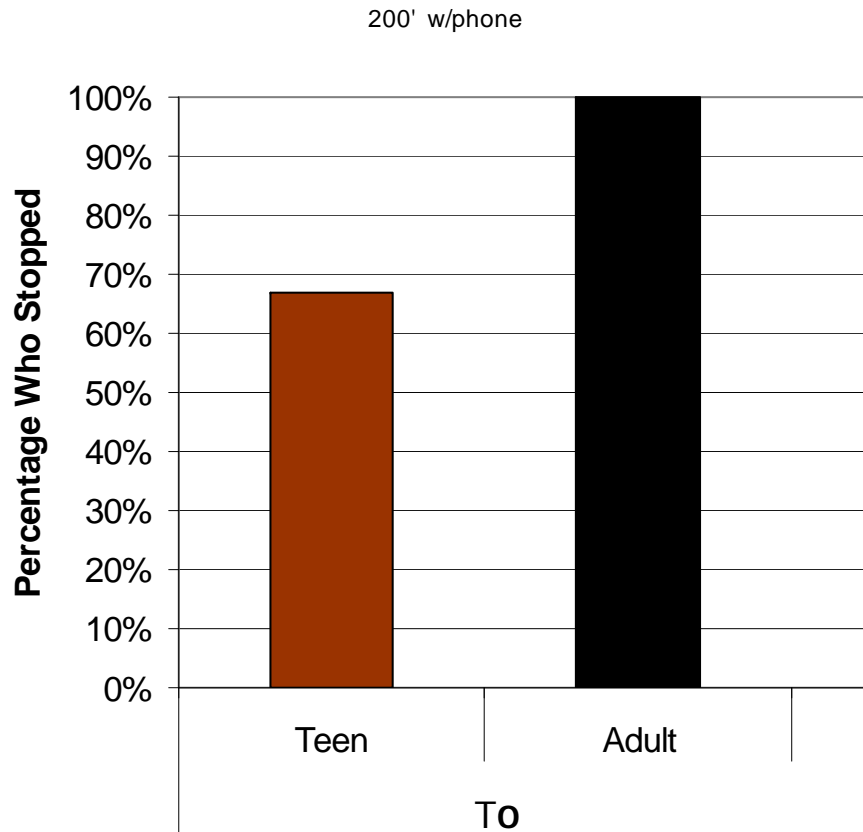
Hidden Stop Sign Task Questions

Lee, Simons-Morton et al, 2008



Test Track: Complexity, Cognitive Demands, & Error

Intersection Stopping Behavior

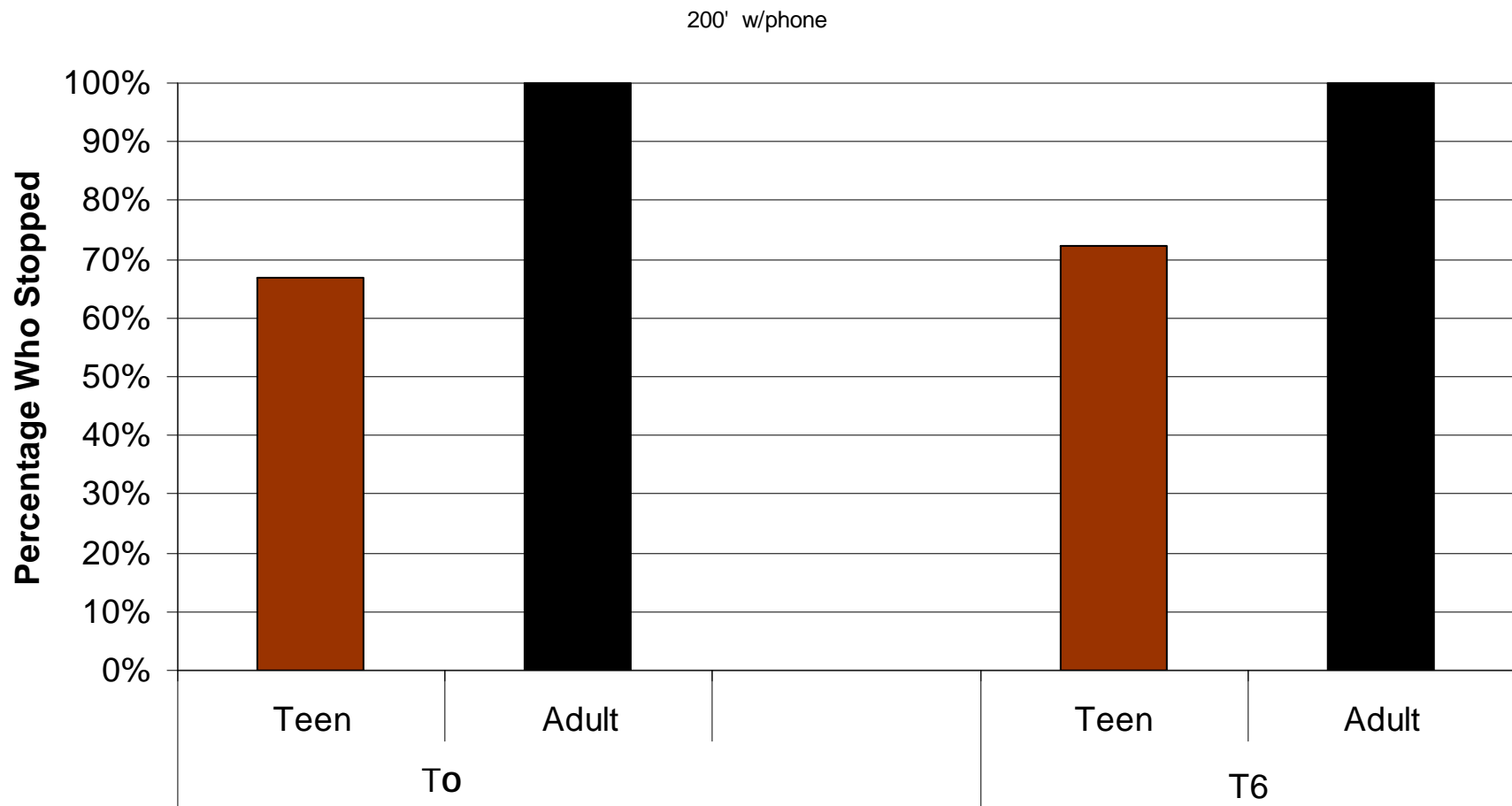


N = 16 novices
N = 16 adults



Test Track: Complexity, Cognitive Demands, & Error

Intersection Stopping Behavior (n=16 teens; 16 experience adults)

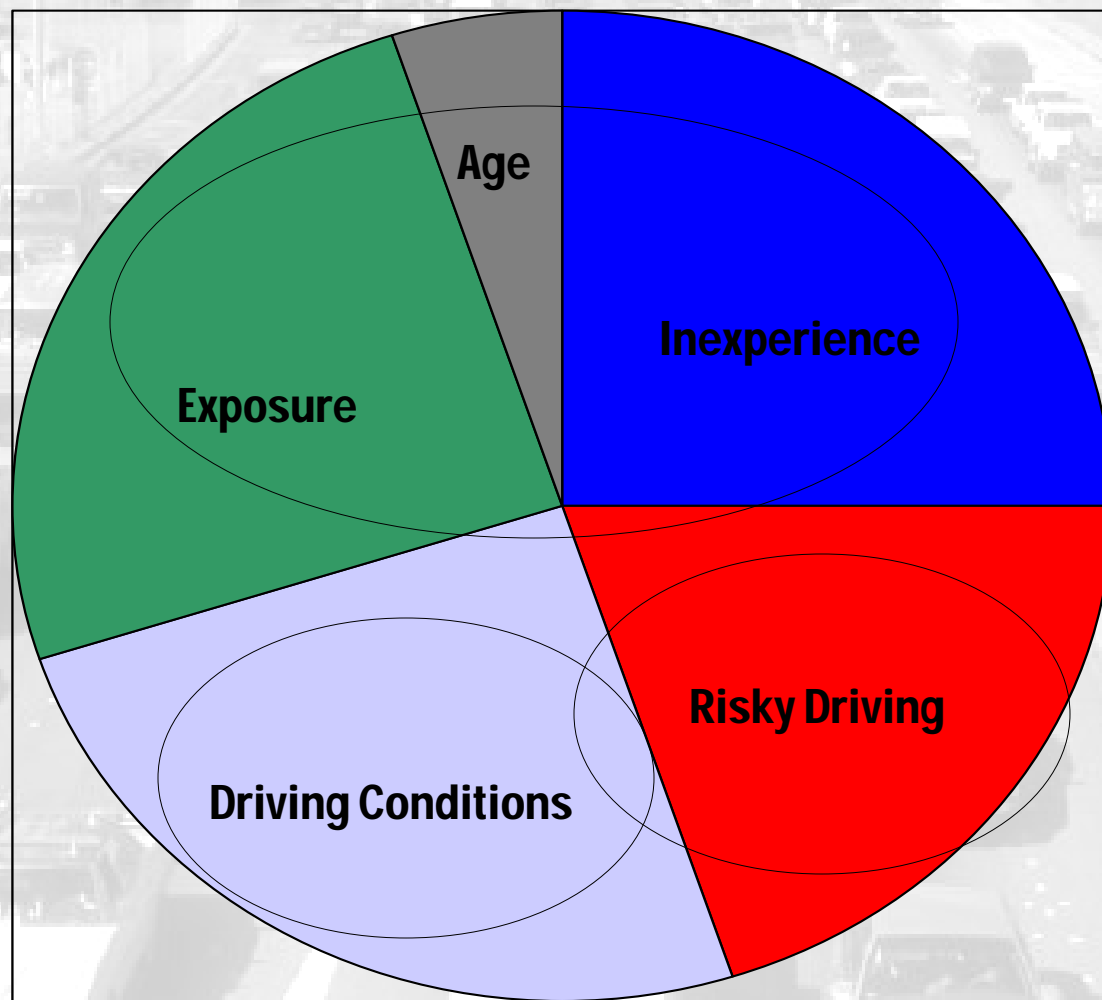


Olsen, Simons-Morton, Lee, 2006



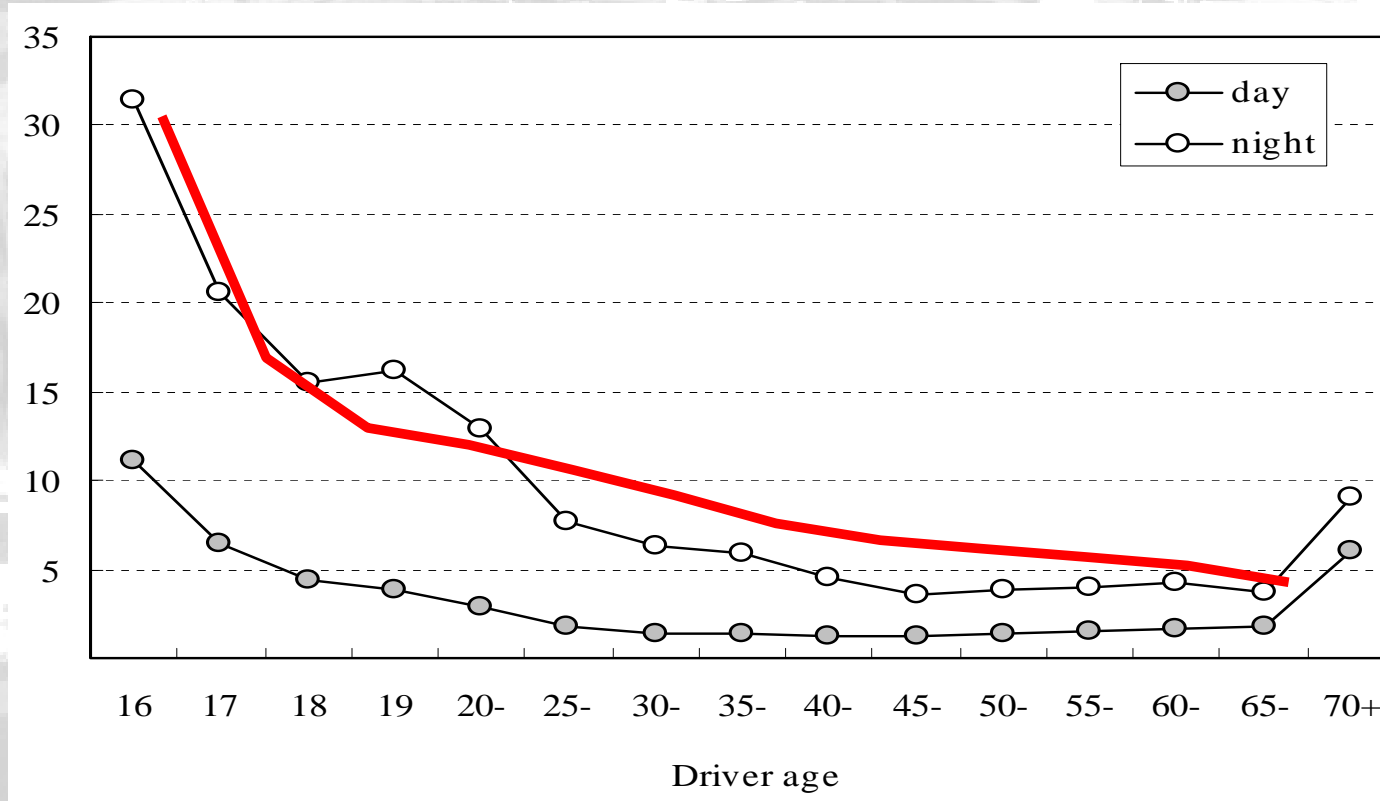
The Young Driver Problem

Pieces of the Puzzle



Driving Conditions

Night Driving Fatal Crash Rate/Miles Driven/Age



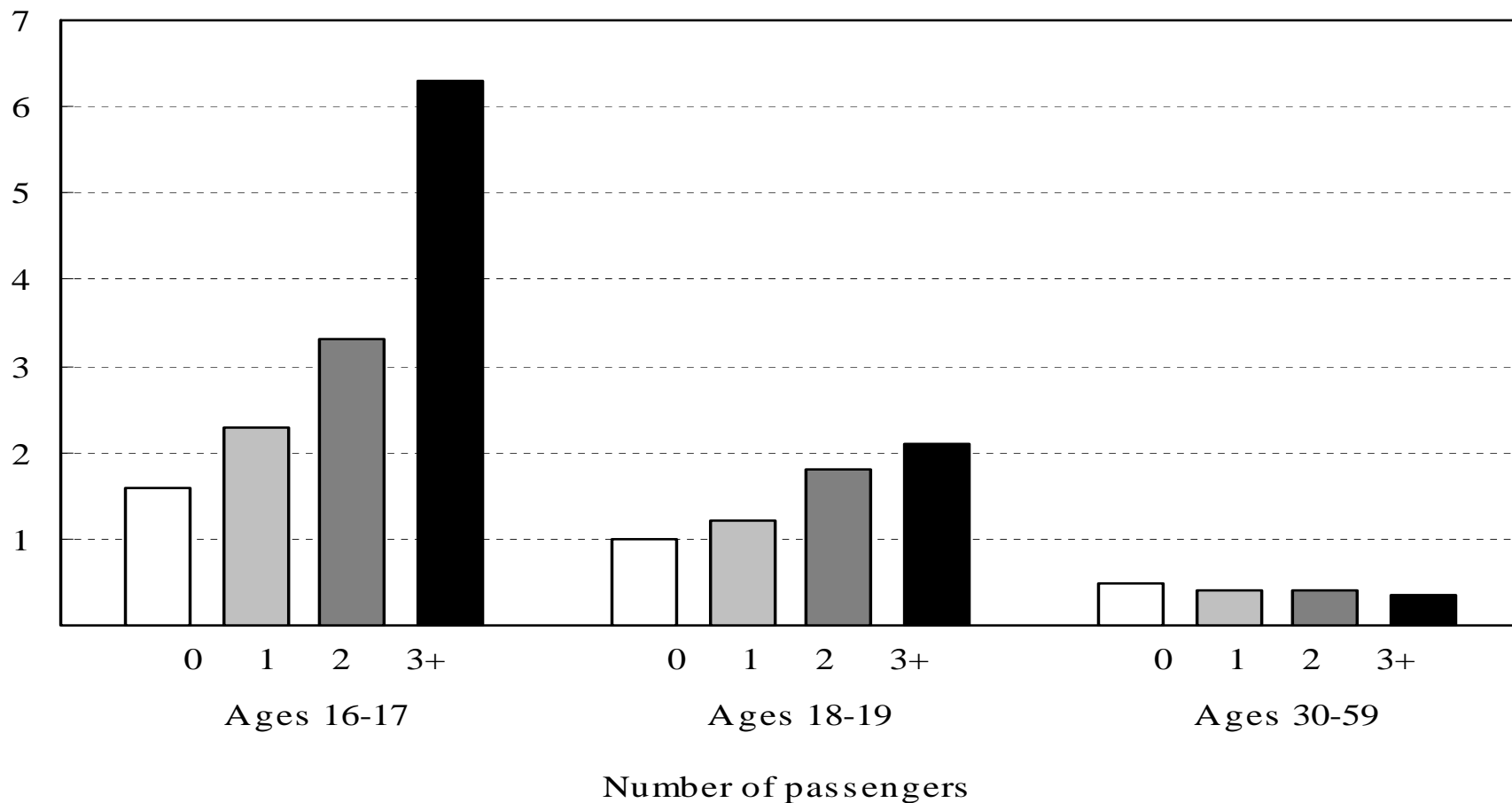
FARS, NPTS, '95-'96

Williams, 2003



Driving Conditions

Teen Passengers Increase Error



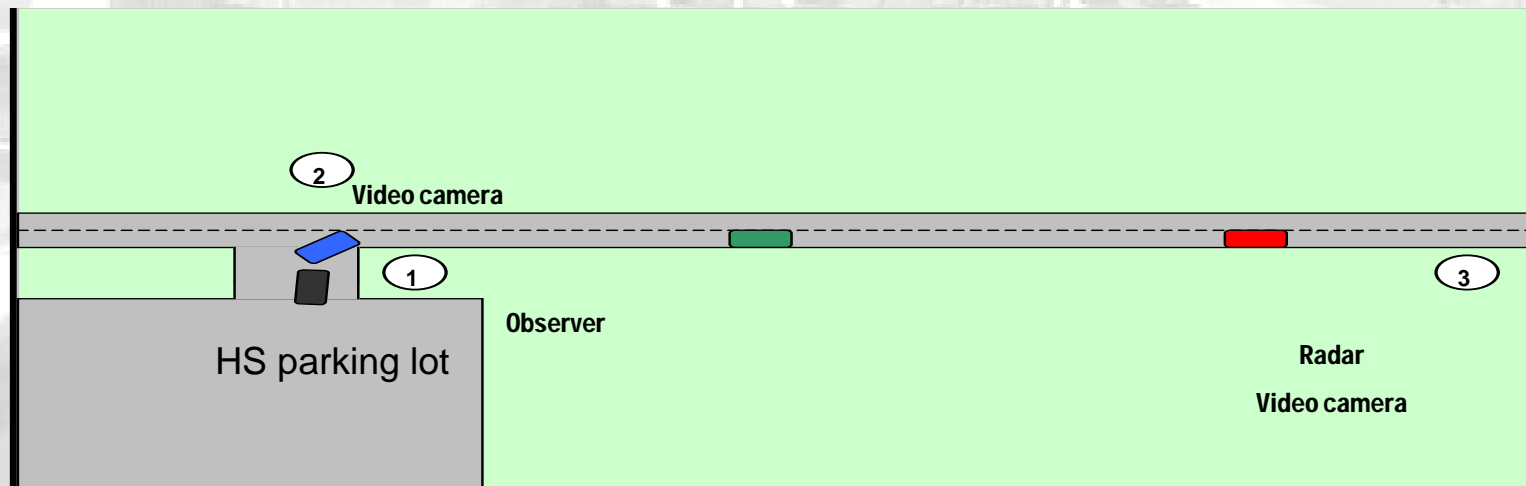
NPTS and NASS/GES

Fatal crashes/10,000 trips

Chen, Baker, 2003



Effects of teen passengers on driving performance?



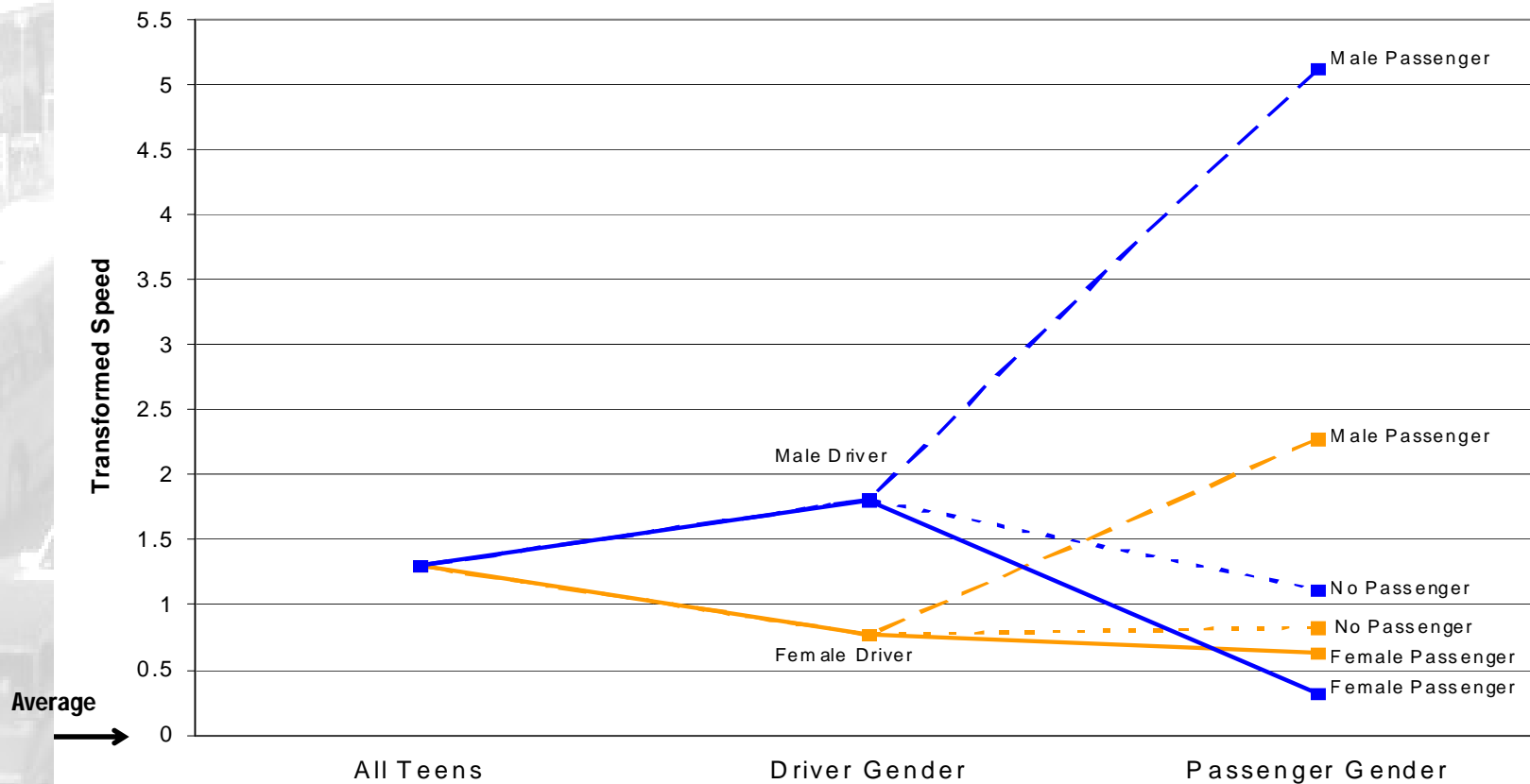
- 10 area high schools; 3000 observations
- Compared teen drivers with usual traffic
 - Speed - radar gun
 - Close following - video

Simons-Morton, Lerner, Singer, AAP, 2005



Teen Passengers and Speed

Transformed Speed/Driver & Passenger Sex

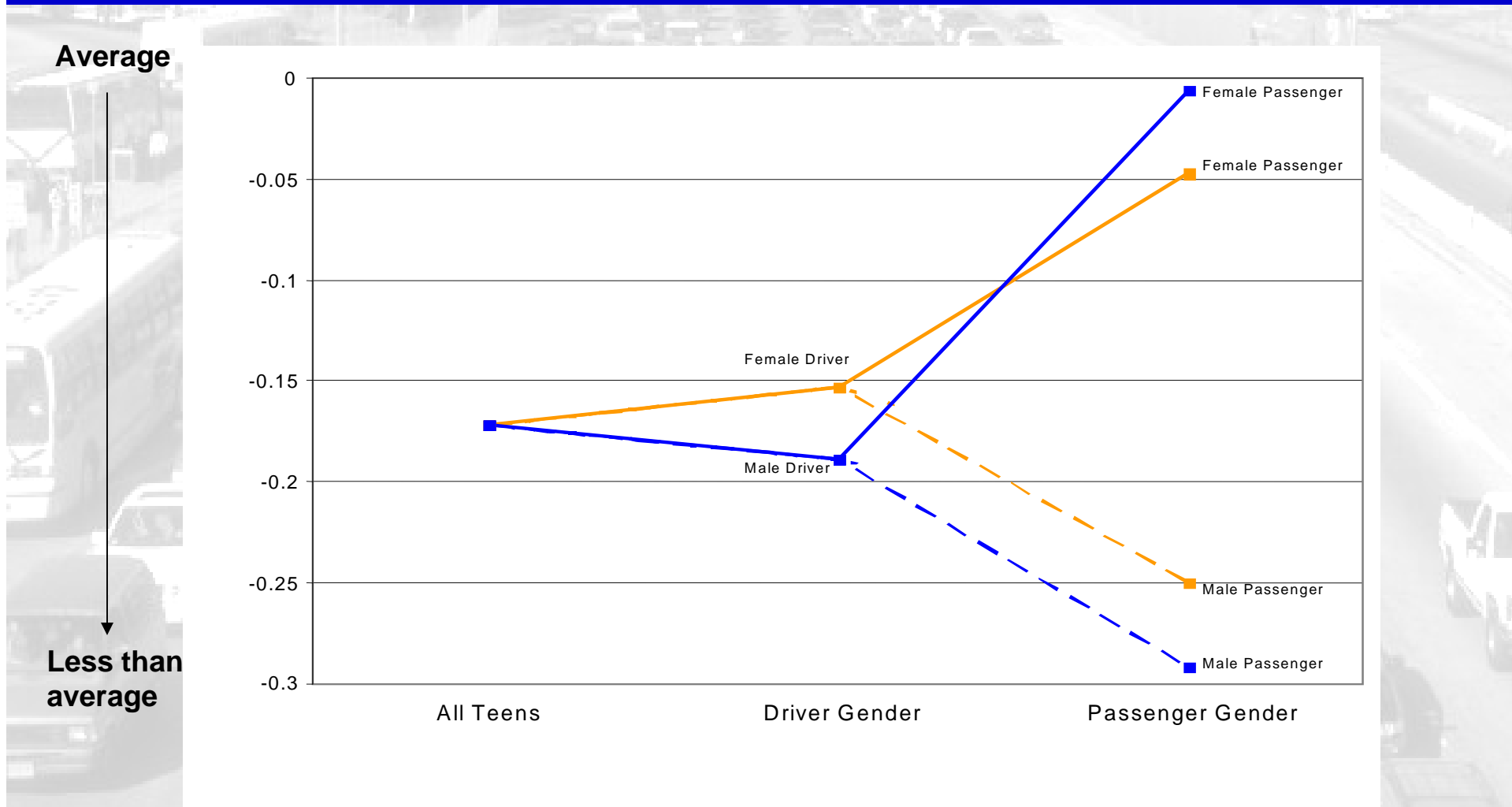


Simons-Morton et al, AAP, 2005



Teen Passengers and Following Distance

Transformed Headway/Driver & Passenger Sex

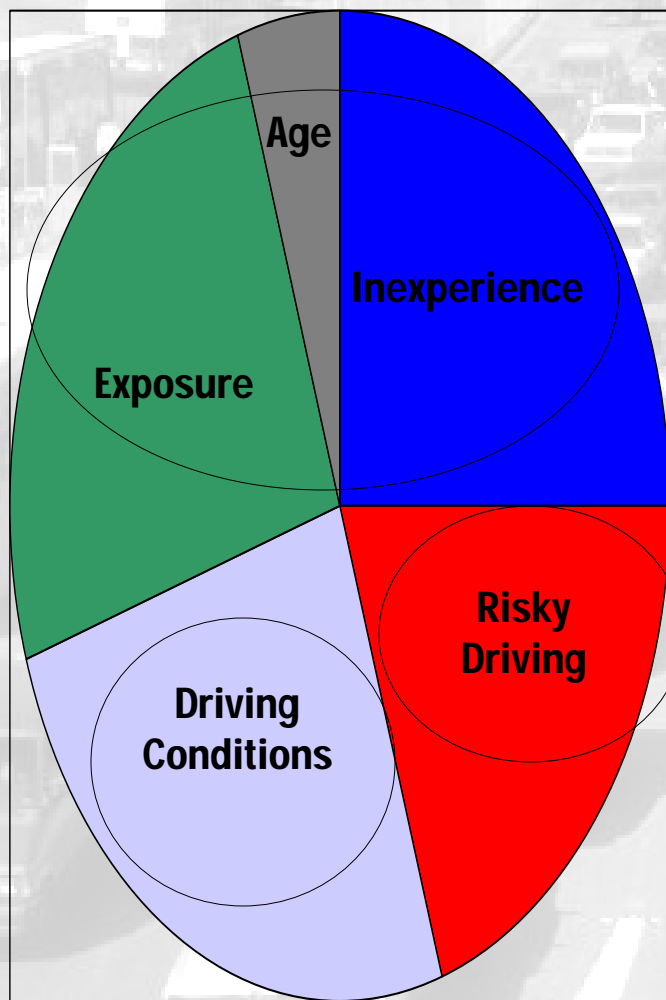


Teen Passengers



The Novice Young Driver Dilemma

Summary – Part 1



Dilemma

- Driving safety proficiency requires independent driving experience
- Experience increases exposure and risk

Part 2: Improving Young Driver Outcomes? Solutions

1. **Delay licensure**
2. **Allow initial driving under less risky driving conditions**



Solving The Novice Young Driver Problem

Safety Approaches

| Safety Approaches | Goal/Evidence Base for Safety |
|-------------------------|--|
| ➤ Driver Training | Prepare for license exam (None) |
| ➤ Supervised practice | Gain experience (None) |
| ➤ GDL | Limit driving exposure (Substantial) |
| ➤ Parent Management | Limit driving conditions (Good) |
| ➤ Electronic monitoring | Reinforce acceptable driving performance (promising) |



The Limits of Training and Parent Supervised Practice

| Safety Approaches | Goal/ Safety Effects |
|----------------------------|---------------------------|
| ➤ Driver training, testing | License attainment (None) |
| ➤ Supervised practice | Practice skills (None) |

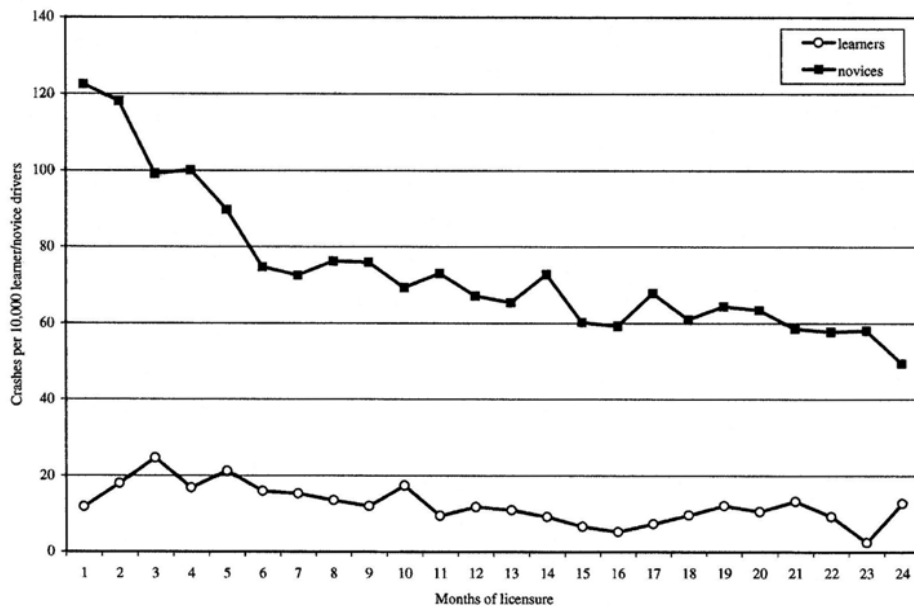


Fig. 1 Crash rates by license status and months of licensure.

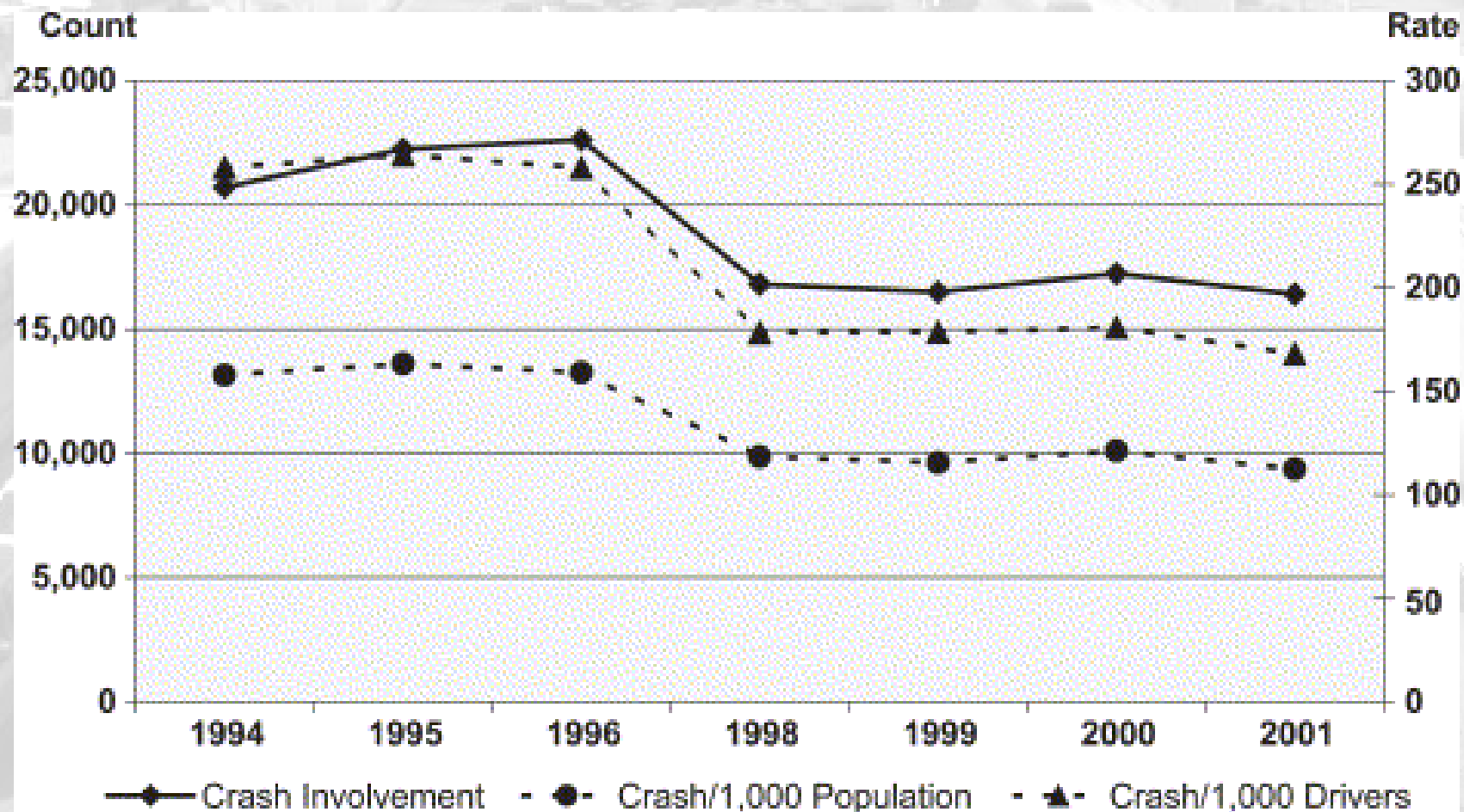


Mayhew, et al., 2003



GDL is Effective Policy

Effects of GDL in Michigan



Shope, Molnar, 2004



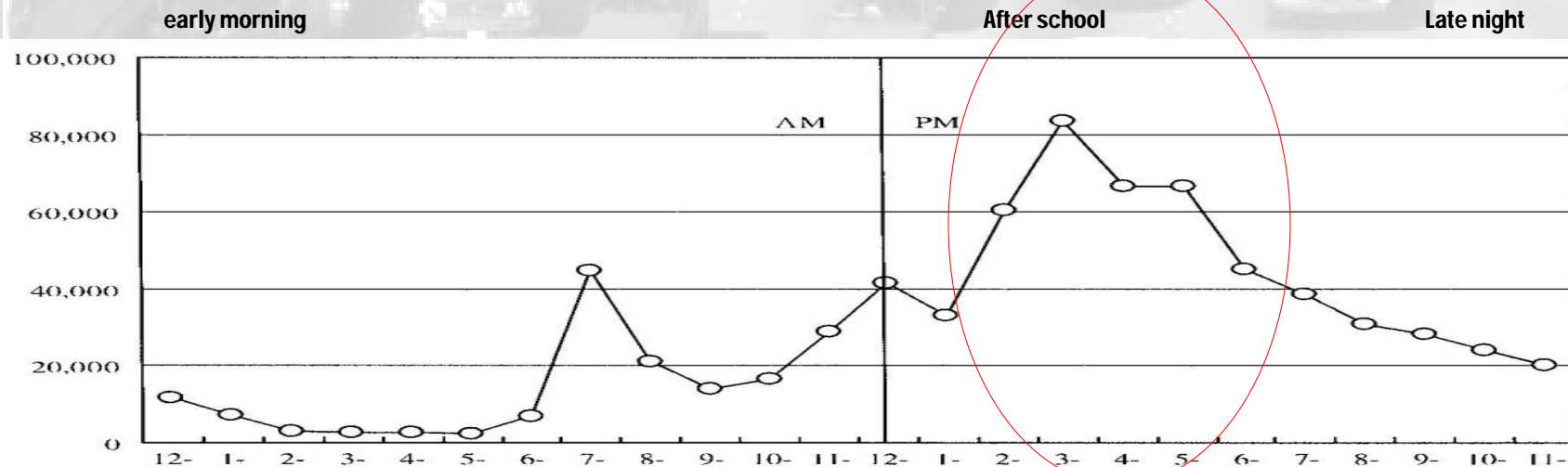
Relative Advantages

| Advantages | Limitations |
|---|-------------------------------------|
| Once adopted, applies to everyone | No state policies are strict |
| Protective benefits; policies evolve | Highest risks only |
| Parents empowered | Parents should do more |



The Limits of GDL

| Advantages | Limitations |
|--------------------------------------|------------------------------|
| Once adopted, applies to everyone | No state policies are strict |
| Protective benefits; policies evolve | Highest risks only |
| Parents empowered | Parent should do more |



16, 17 y.o. crashes by time of day (Williams, 2003)



Enhancing GDL Parent Role

- **Deciding when to test**
- **Supervising practice driving**
- **Managing early driving experience**
 - **Setting initial limits**
 - **Granting additional privileges**
- **Compatible with GDL and parenting practices**



Authoritative Parents are Demanding and Responsive



Research on Parent Management of Novice Teen Driving

Parents set limits on novice teens

- Near all set limits; not strict; rapid decline (*PS, 2001; IP, 2004; AJPH, 2005*)
- More in GDL vs non-GDL state (*AAP, 2005*)

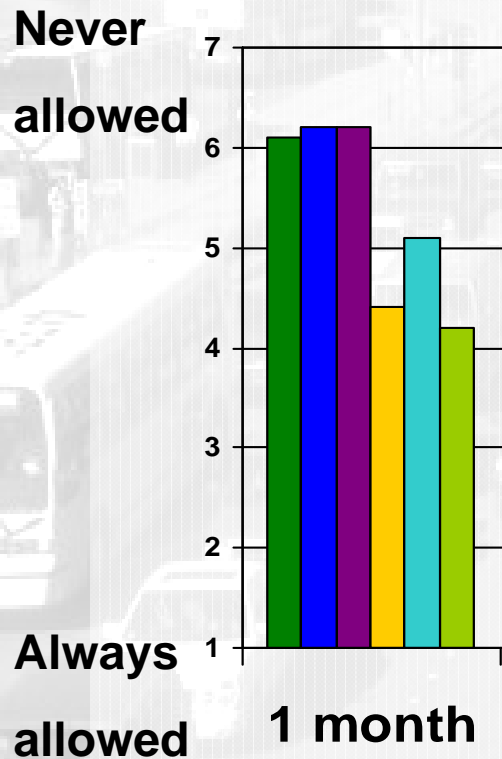
Greater parent limits associated with better driving outcomes:

- risky driving, violations, crashes (*JAR, 2000; PS, 2001; HEB, 2002; TIP, 2006*)

Simons-Morton & colleagues



Parental Restrictions on Trip and Risk Conditions

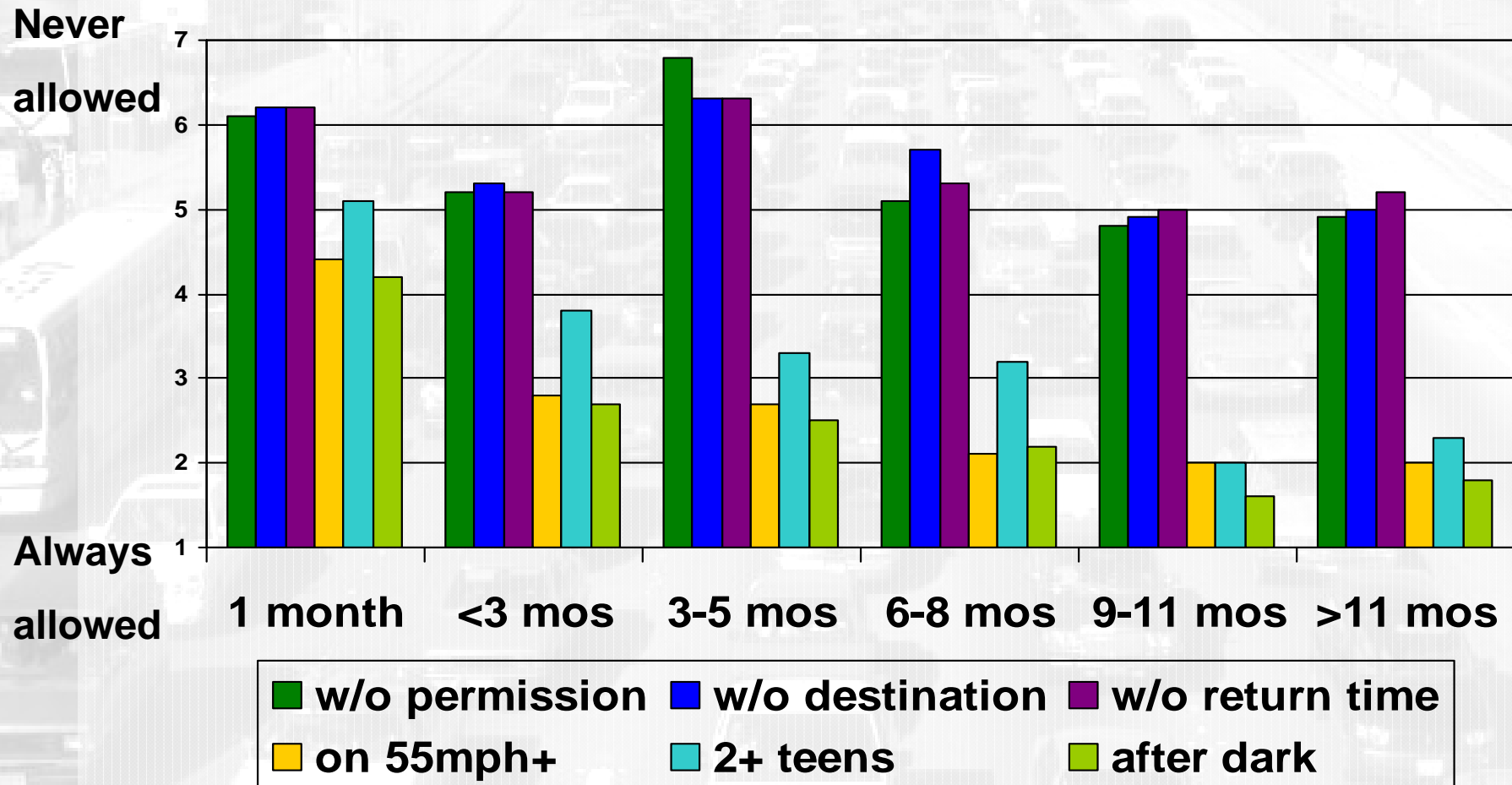


■ w/o permission ■ w/o destination ■ w/o return time
■ on 55mph+ ■ 2+ teens ■ after dark

Hartos, Simons-Morton. 2001



Parental Restrictions on Trip and Risk Conditions



Hartos, Simons-Morton. 2001



Technology

Data collection by Event Recorder



Error Feedback



HAND OVER THE KEYS WITH CONFIDENCE.

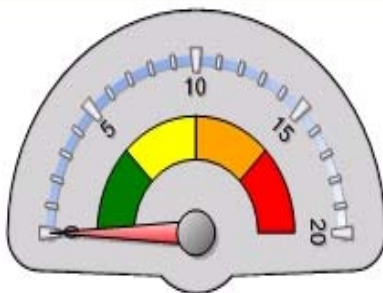
[Home](#) [Events](#)

Welcome, Rusty Weiss | [Help](#) | [Sign Out](#)

Select Driver:

Dashboard for:

Risk Level



Risk Level is Low as of
Tuesday, October 30, 2007

Events



New Events: 0

Overdue Events: 6

[View events for Caitlin Butler \(teen - girl\)](#)

Overall Performance for the Last 12 Weeks



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The Checkpoints Program

Persuasive Communications

- video
- newsletters
- driving agreement



Parent Management of Teen Driving

- increase limits on teen driving



Mediators¹

- risk perceptions
- restriction norms, expectations, efficacy



¹Protection motivation theory





The Checkpoints Parent-Teen Driving Agreement

PART I: DRIVING RULES: These are absolutes — ones that apply to every trip, every time

| Teen driver will: | Parent will: |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> Always obey all traffic laws <input type="checkbox"/> Never speed, tailgate, or cut others off <input type="checkbox"/> Always wear a seat belt and require all passengers to wear seat belts <input type="checkbox"/> Never drive after taking any drugs or alcohol or ride with a driver who has taken any drugs or alcohol <input type="checkbox"/> Always tell parent/guardian where going and with whom <input type="checkbox"/> Always call home if going to be late <input type="checkbox"/> Always call home if for any reason it is not safe to drive or ride | <ul style="list-style-type: none"> <input type="checkbox"/> Be a good role model behind the wheel <input type="checkbox"/> Point out and discuss safe and dangerous driving situations and practices <input type="checkbox"/> Apply rules fairly and consistently <input type="checkbox"/> Consider necessary exceptions to driving limits <input type="checkbox"/> Provide a safe ride home (no questions asked at that time) |

PART II: DRIVING PRIVILEGES: These need to be tailored to your teen's driving progress

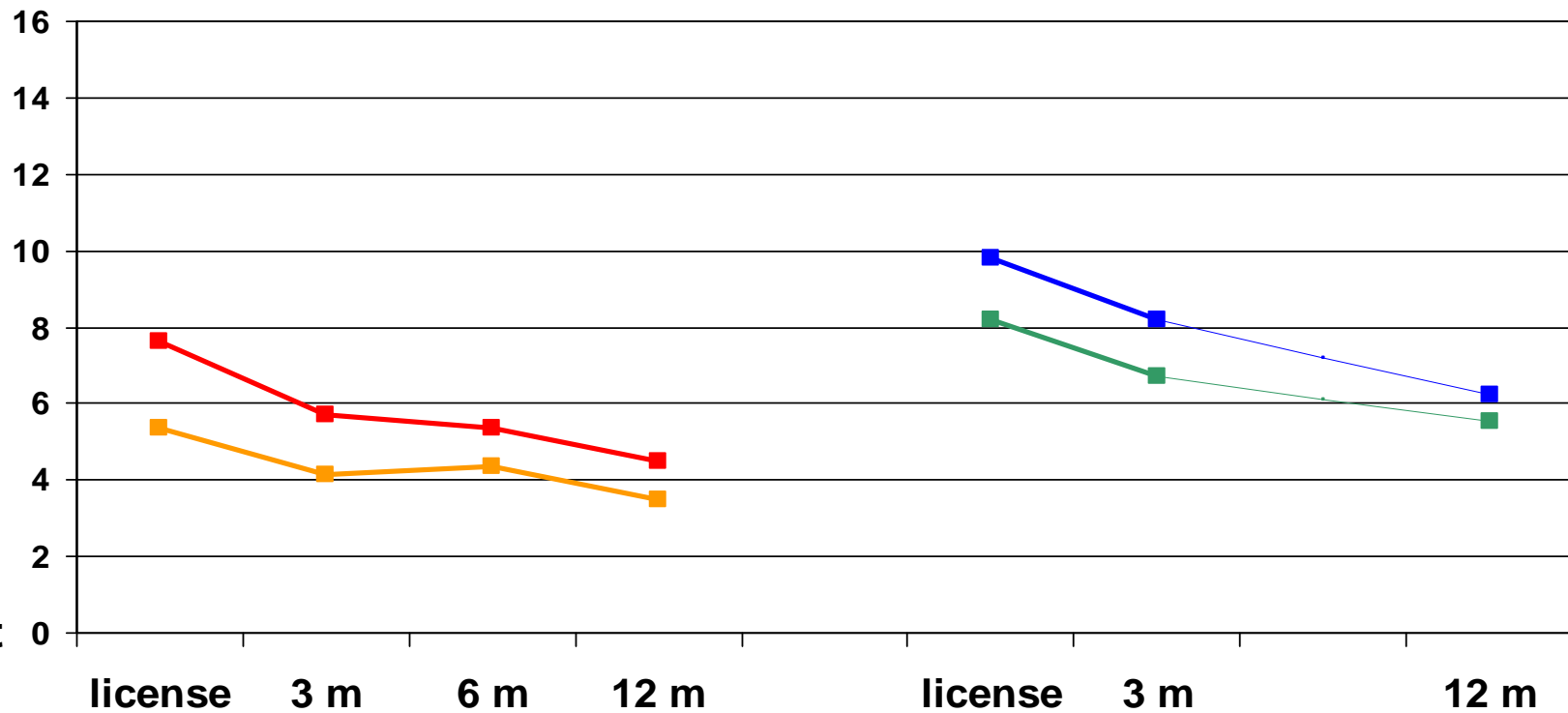
| DRIVING PRIVILEGES | <i>Nighttime</i> | <i>Teen passengers</i> | <i>Weather</i> | <i>Road types</i> | <i>Review date</i> | <i>We agree Initials</i> |
|-----------------------------|------------------|------------------------|----------------|-------------------|--------------------|--------------------------|
| Checkpoint 1 Month 1 | 8 pm | None | Dry | Local | | ____ |
| Checkpoint 2 Months 2-6 | 9 pm | None | Moderate | No high speed | | ____ |
| Checkpoint 3 Months 7-12 | 11 pm | 1 | Most | Most | | ____ |

WE AGREE (sign) _____ PARENT _____ TEEN

RCT #2: Checkpoints at time of permit

n = 469 MD families; mailed video, agreement, newsletters

most



least

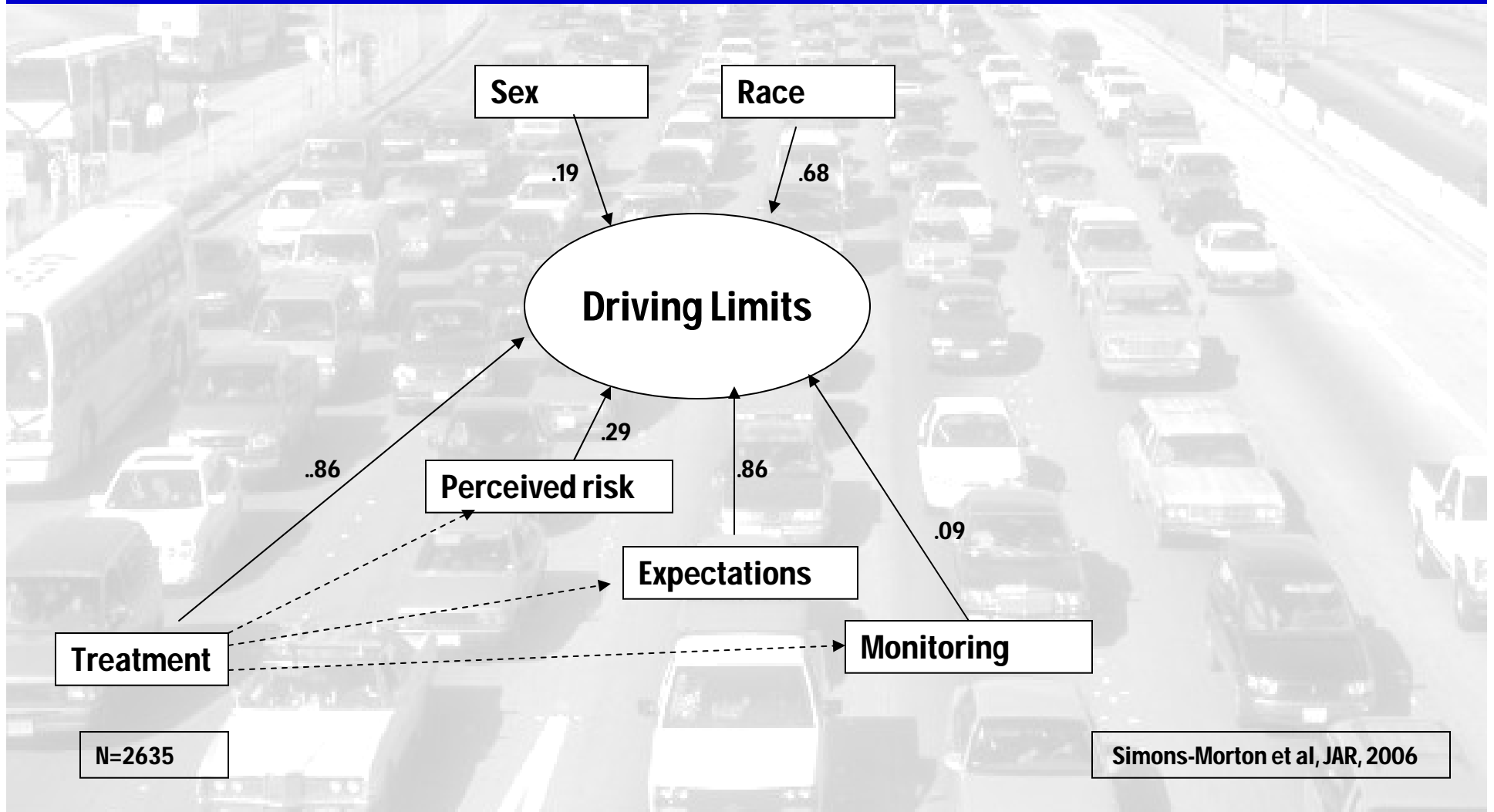


Simons-Morton et al., AJP, 2005



RCT #3: CT Statewide Trial

Mediating Effects of Perceptions on Driving Limits At Licensure



RCT #3: Tx Effects on Driving Outcomes

| Variables | Range | Checkpoints (n=1280) | | Comparison (n=1355) | | t |
|--------------------|-------|-------------------------|-----------|------------------------|-----------|--------------|
| | | <u>M</u> | <u>SD</u> | <u>M</u> | <u>SD</u> | |
| Risky driving | | | | | | |
| 3-months | 0-12 | 2.38 | 2.09 | 2.52 | 2.1 | -1.8* |
| 6-months | 0-12 | 2.62 | 2.11 | 2.81 | 2.2 | -2.3* |
| 12-months | 0-12 | 2.76 | 2.37 | 2.95 | 2.5 | -1.9* |
| Traffic violations | | | | | | |
| 12-months | 0-7 | .40 | .80 | .46 | .84 | -2.1* |
| Crashes | | | | | | |
| 12-months | 0-8 | .47 | .71 | .48 | .72 | NS |

*P<.05

Simons-Morton et al., 2006



Many Challenges to Improving Parental Management

1. **Parent ambivalence**
 - 1) Tedium of chauffeuring teen
 - 2) Tenuous parent-teen relations
 - 3) Normative expectations
2. **Changing social norms**
 - 1) Teen driving as a privilege vs right
 - 2) Parent responsibility to set limits
 - 3) Policy + programs
3. **Implement Parent Management Programs**
 - A. **Integrate into GDL**
 - B. **Diffuse broadly**
 - 1) Driver education
 - 2) MVA
 - C. **Combine with technology?**



Young Driver Collaborators

NICHD: Jessica Hartos; Marie Claude Ouimet; Eric Olsen

VTTI: Tom Dingus; Charlie Klauer; Suzie Lee

UMTRI: Jean Shope; Ray Bingham

PRG, Inc.: David Preusser; Bill Leaf

WESTAT: Neil Lerner



Thank you

Thank you

The End

