

Rural Kentucky High School Students' ATV Riding Practices, Mishaps and Injury Events

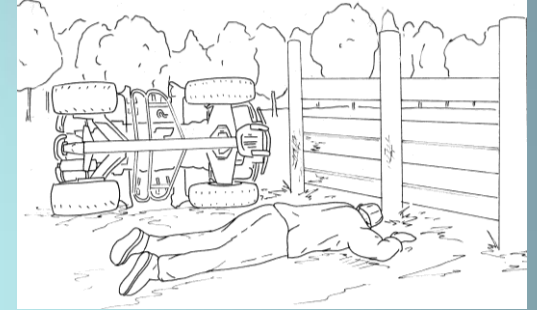
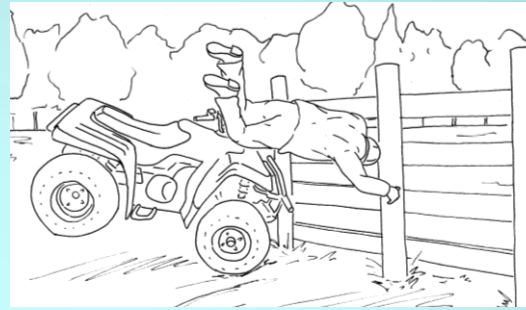
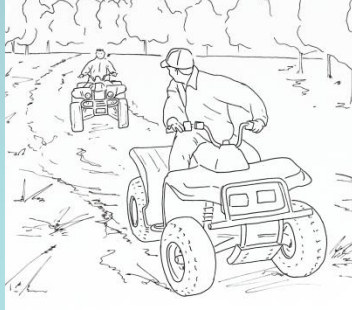
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Paper presented at *Plenary Session* of the *ISASH Summer Meeting*, June 23 - 27, 2013, Sandusky, OH. The work reported was supported by *CDC/NIOSH Cooperative Agreements* 5u54Oh00575-11&12 to the *University of Kentucky, Southeast Center for Agricultural Health and Injury Prevention*. Human subjects' approval was granted by *University of Kentucky IRB protocols* 06-0557-P4s and 06-0557.

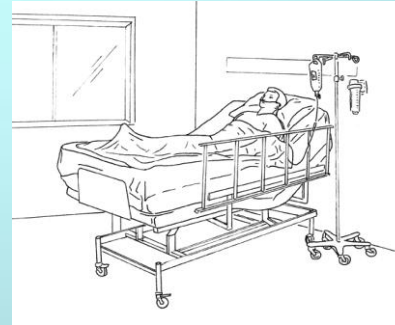
Brad's story - A sentinel event

Pre-event



Injury Event

Post Event



Brad's Story via the Haddon Matrix

Injury Phase	Injury Factors for Brad's Last Ride			
	Human Individual	Injury Agent(s)	Physical Environment	Social Environment
Pre-event	no helmet, lack of supervision,	ATV/rider mass momentum, immobile fence	noise, velocity, reaction time, immobile object	racing, horseplay, risk taking
Event	Brad's loss of ATV control	un-helmeted skull strikes fence post	huge impact forces to skull and brain	competition, operator distraction
Post Event	severe TBI, EMT and hospital ICU care, life-long nursing care	huge millisecond deceleration forces to brain	brain tissue tears, liquefies, and is destroyed	life-long care costs, loss of cognitive, motor, social abilities

Background

Authors' and high school teachers' 12 years of farm safety collaborative efforts in 10 rural KY counties.

Author and teacher teams designed a simulation exercise that paralleled the sentinel event.



Student actors recreating the injury event

Community Characteristics

- Located in rural central KY
- 941 farms, 118,712 acres, 50% cropland, 25% woodland, 19% pasture.
- AVS \$26,332,000, cattle 60%, forage crops 40%
- 611 non-farm business employ 9,598 non-farm workers
- 40% of high school students live and/or work on farms.



Student ATV driving years experience

Of the 157 students, 116 (73%) reported having driven ATVs, distributed as 67 males and 49 females. Years of ATV driving was reported by 111 students.

Table 1: Mean years ATV driving by gender

Gender	n	Mean Years	95% CI	p <
male	64	8.35	7.48 – 9.24	.0001
female	47	5.35	4.44 – 6.26	

Annual ATV driving events by gender

Table 2: Mean annual driving events by gender

Gender	n	Mean Events	95% CI	p <
male	58	292.2	231.5 – 352.8	.006
female	42	127.7	95.8 – 159.5	

Annual ATV combined driving/riding events

Table 4: Mean annual combined driving/riding events by gender

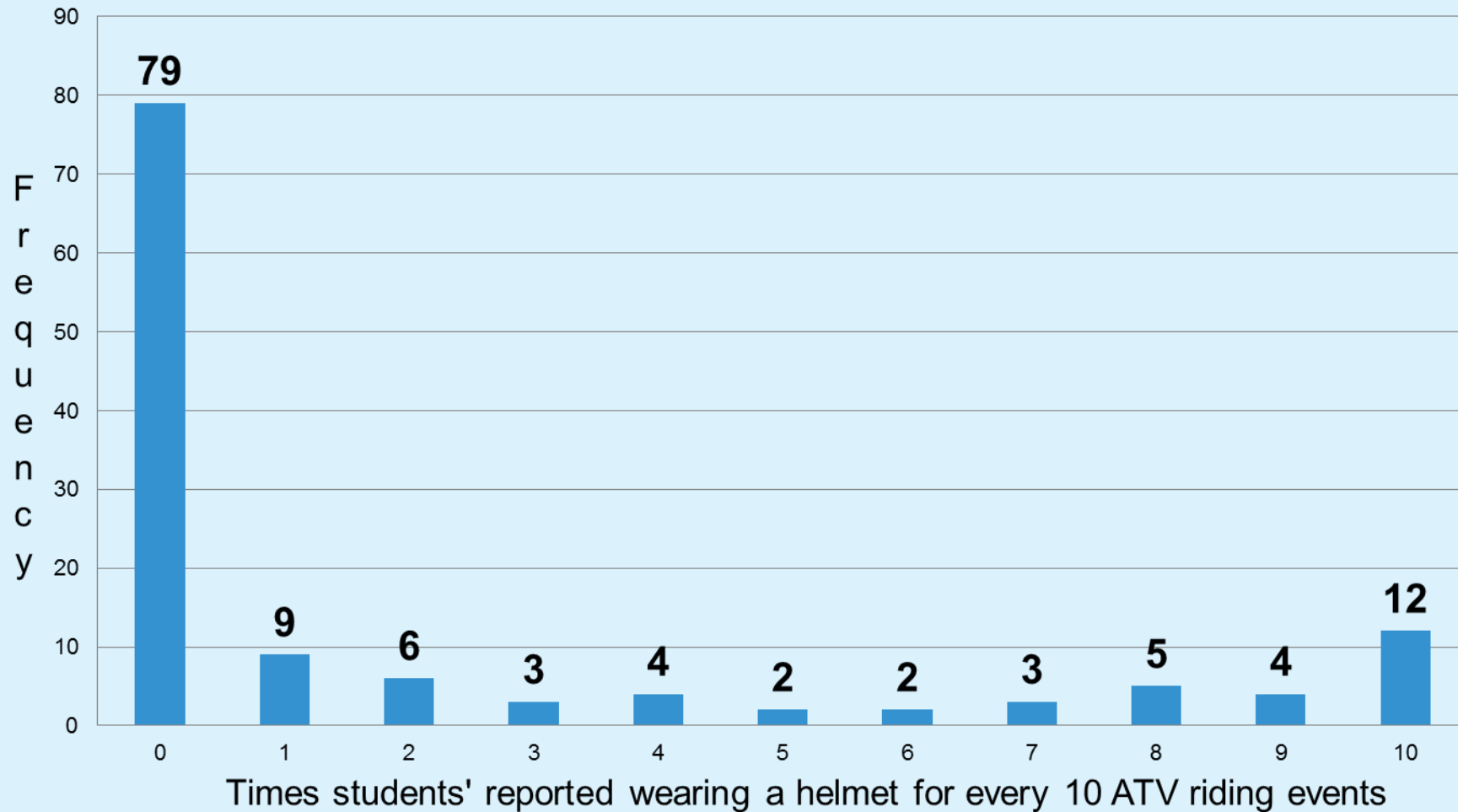
Gender	n	Mean Events	95% CI	p <
male	61	329.5	261.1 – 397.9	.0002
female	51	175.4	132.5 – 218.3	

Duration of ATV driving and second rider events

Table 3: Mean hours duration of ATV driving and/or riding by gender

Gender	n	Mean Hours	95% CI	p <
male	70	2.49	2.08 -2.90	.0003
female	54	1.80	1.51 – 2.09	

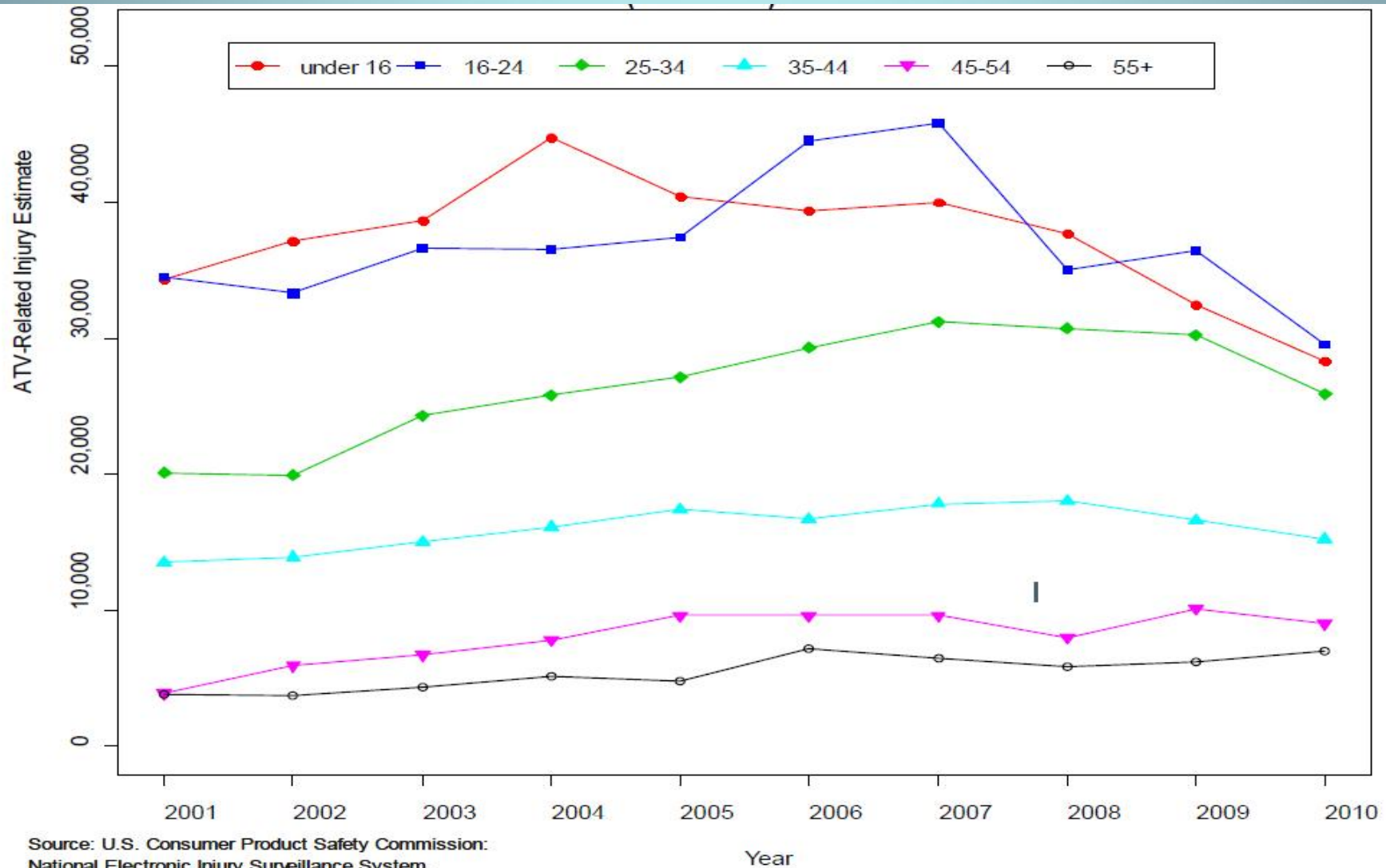
Student reported helmet use for every 10 ATV riding events



Student reported ATV mishaps

- 34 (21.7%) of the 157 students reported an ATV mishap
- 12 ATV collision events with trees, stumps, fences, ditches, another ATV and a car.
- 9 additional ATV overturns
- 13 students did not report details of their ATV mishaps.
- However, 30 of the 34 described injuries including
 - Concussions, unconsciousness
 - Fractures to nose, skull, arms, legs, collar bones, and ribs
 - Lacerations to head, eye, arms legs and back
 - Dislocated hip, multiple contusions and sprains

Age group at highest risk for ATV injury



BLR simulation and cost tools

Both are available on line at no charge from the UK Economics of Prevention website at www.mc.uky.edu/scahip_ukcph/EOP/atv.html

or the National Agricultural Safety Database at

<http://nasdonline.org/document/1014/9/d000997/the-kentucky-community-partners-for-healthy-farming-rops-project.html>

Melvin Myers' cost tool is an interactive program with dynamic text and graphics displays when students or others enter cost data into an Excel spread sheet and immediately view numerical and graphic displays of the direct and indirect costs of Brad's injuries and the distribution of these costs among family members, insurance, and social security.