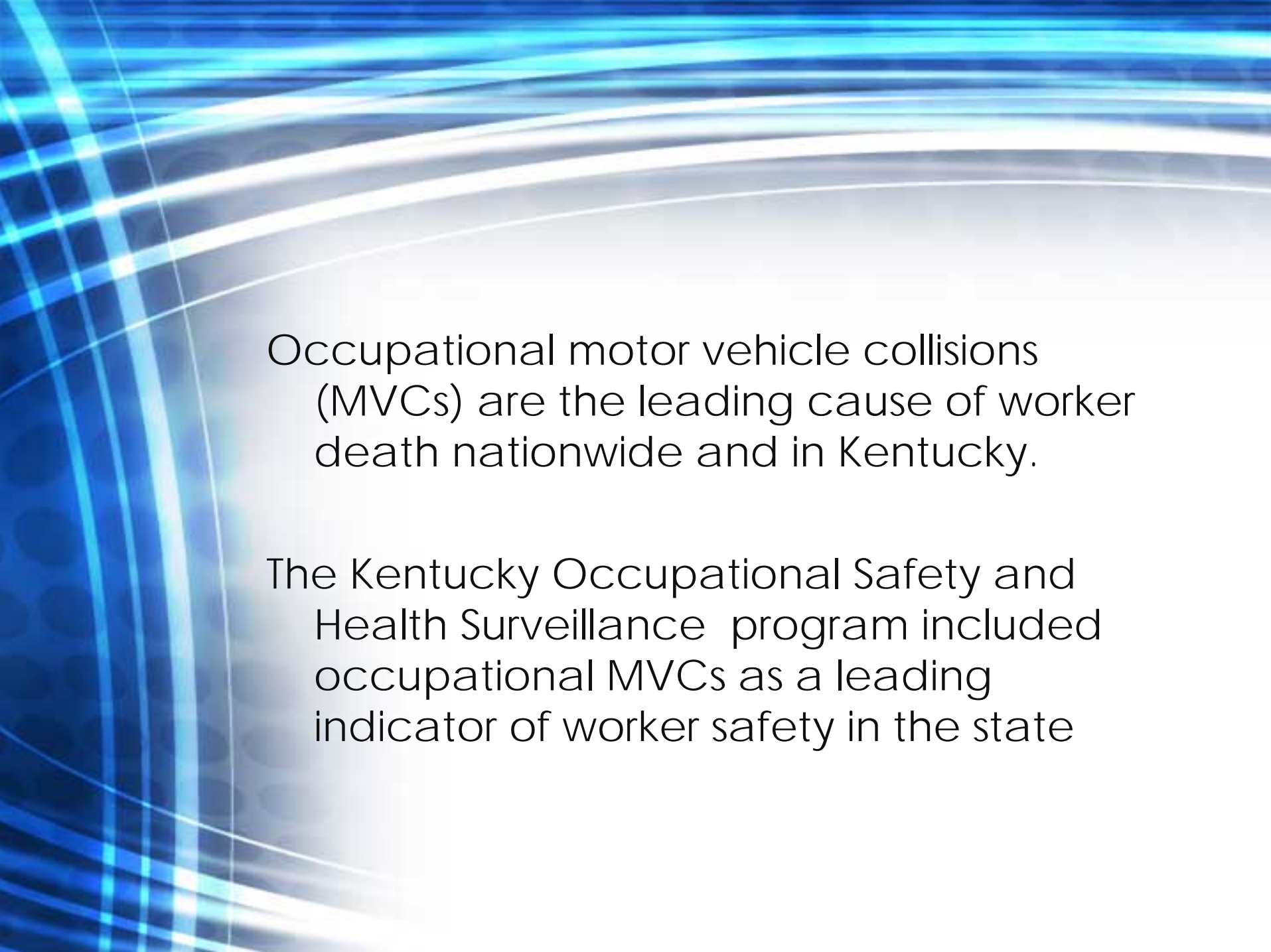


Occupational MVCs as a Leading Indicator of Workers Safety in Kentucky

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- 5,703 fatal occupational injuries in the U.S. in 2004 (CFOI)
- 1,374 (24%) of them due to highway incidents
- Motor vehicle operators recorded 1,005 of the fatal work injuries
- In Kentucky there were 143 fatal occupational injuries in 2004 and more than 30% of them were due to highway motorized incidents



Occupational motor vehicle collisions (MVCs) are the leading cause of worker death nationwide and in Kentucky.

The Kentucky Occupational Safety and Health Surveillance program included occupational MVCs as a leading indicator of worker safety in the state

Objectives

- To create an indicator for occupational fatal and non-fatal MVCs based on available and easily obtainable state data
- To evaluate the reliability of the indicator
- To identify how the indicator can be used to inform and improve the injury prevention programs in the state as well as the development of a new policy for worker safety in the state

Method

- Data on all MVCs occurring in KY are routinely collected by the State Police and entered in the Kentucky Collision Report Analysis for Safer Highways (CRASH) electronic files
- There is no indicator if a person involved in a collision was on the job
- Our definition for work-related collisions was based on unit type, cargo, commercial vehicle indicator, NCIC type, make and model

Definition: occupational vehicle

1. Indicated as a **commercial vehicle** in the uniform police traffic collision report.
 - Typically, a commercial vehicle has at least two axles and six tires and is operated for the transportation of persons or property in furtherance of any commercial or industrial enterprise, for hire or not for hire.
 - Contract school busses and Greyhound busses are considered commercial vehicles.
 - Privately own busses, city busses - not considered commercial.
 - A U-haul is typically not a commercial vehicle.
 - A Truck&Trailer and Truck-Single Unit can either be commercial or non-commercial.
 - Government vehicles are not commercial

2. Unit type

- Bus
- Emergency vehicle – in response
- Emergency vehicle – not in response
- Military vehicle
- Other publicly owned vehicle
- Railroad train
- School bus
- Taxicab
- Truck tractor & Semi-trailer
- Truck & Trailer
- Truck – single unit
- Truck – other combination

Note: Passenger car, Light truck(VAN/SUV/Pickup) or passenger car&trailer can be identified as occupational vehicle if it was identified as a commercial vehicle or if it had some cargo.

3. **NCIC type**

AC (auto carrier)

AD (asphalt distributor)

AM (ambulance)

AR (armored truck)

BU (bus)

CB (chassis and cab)

CH (coach)

CM (concrete mixer)

DP (dump)

DS (truck tractor/diesel)

FB (flatbed or platform)

FT (fire truck)

FR (flatrack)

GG (garbage or refuse)

LD (loader truck)

LL (carry-all)

LW (lunch wagon)

RF (refrigerated van)

SE (truck trailer /semi)

TN (tanker)

TR (truck tractor/gasoline)

TT (tow truck)

UT (utility)

Note: A lot of misspelled; For example, in 2004 :

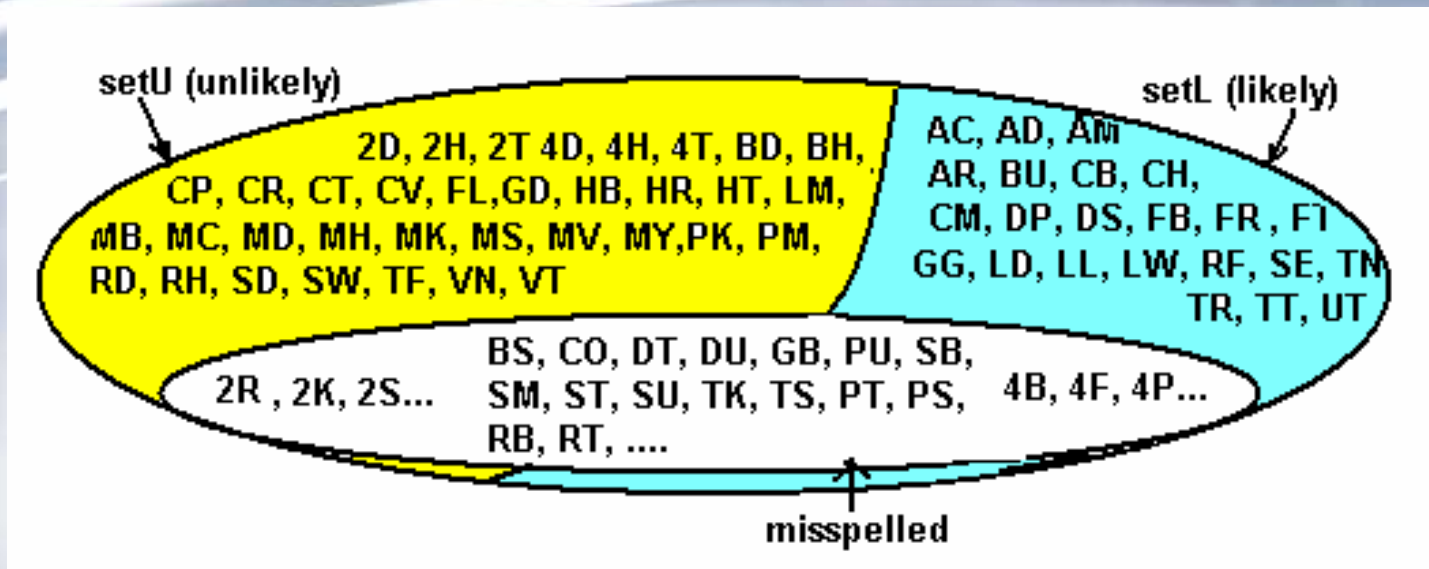
TK- 459

BS – 88

TS – 84

DT – 33

PU - 26



For the vehicles with misspelled NCIC type only, check if the first 2 letters of their vehicle make is among 'PE', 'IN', 'IS', 'GR', 'MA', 'FR', 'ST' (Peterbilt-motors, International, Isuzu, Grumman, Mack, Freightliner, Sterling industrial). If not – remove those records from the Occupational drivers dataset.

Vehicle Type	2004	2003	2002	2001	2000
Bus	600	508	459	493	531
Emergency	366	348	316	353	322
Emergency	851	785	789	753	735
Light truck	20	41	23	21	66
Military Vehicle	67	88	90	63	56
Other Publicly	523	374	311	294	540
Passenger Car	5	17	19	17	30
Railroad Train	*	*	*	0	0
School Bus	1014	963	977	1011	1019
Taxicab	218	224	267	281	322
Truck & Trailer	1533	1150	1026	979	1166
Truck-Single	3328	3124	3127	3334	3401
Truck Tractor &	4567	4268	4077	4276	4684
Truck - Other	295	215	215	217	306
Total Number	13389	12106	11696	12092	13178

Participants in occupational collisions

	Occupational Drivers	Occupational Passengers	Non-occupational Drivers	Non-occupational Passengers
Year				
2004	13,716	18,959	8,438	5,812
2003	12,275	15,523	7,609	5,422
2002	11,828	13,477	7,227	5,197
2001	12,244	10,759	7,555	4,777
2000	13,345	5,649	7,689	4,317
Total	63,408	64,367	38,518	25,525

Number Killed

	Occupational Drivers	Occupational Passengers	Non-occupational Drivers	Non-occupational Passengers
Year				
2004	25	7	76	27
2003	23	6	88	20
2002	16	2	77	30
2001	8	5	77	18
2000	20	6	49	13
Total	92	26	367	108

The odds for the non-occupational driver, involved in a collision with an occupational vehicle, to die are almost 7 times higher than the odds for the occupational driver (OR=6.62)

Number of injured

	Occupational Drivers	Occupational Passengers	Non-occupational Drivers	Non-occupational Passengers
Year				
2004	449	174	764	311
2003	434	179	730	332
2002	437	211	724	304
2001	495	156	753	333
2000	537	187	818	371
Total	2352 (4%)	907	3789 (10%)	1651

The odds for the non-occupational driver, involved in a collision with an occupational vehicle, to get injured are almost 3 times higher than the odds for the occupational driver (OR=2.83)

Collision description (2000 – 2004)

	Single Unit Collisions	Occupational Vehicle as Unit 01
Year		
2004	2,508 (18.3%)	8,672 (63%)
2003	2,399 (19.5%)	7,834 (64%)
2002	2,284 (19.3%)	7,714 (65%)
2001	2,300 (18.8%)	8,008 (65%)
2000	2,502 (18.7%)	8,891 (67%)

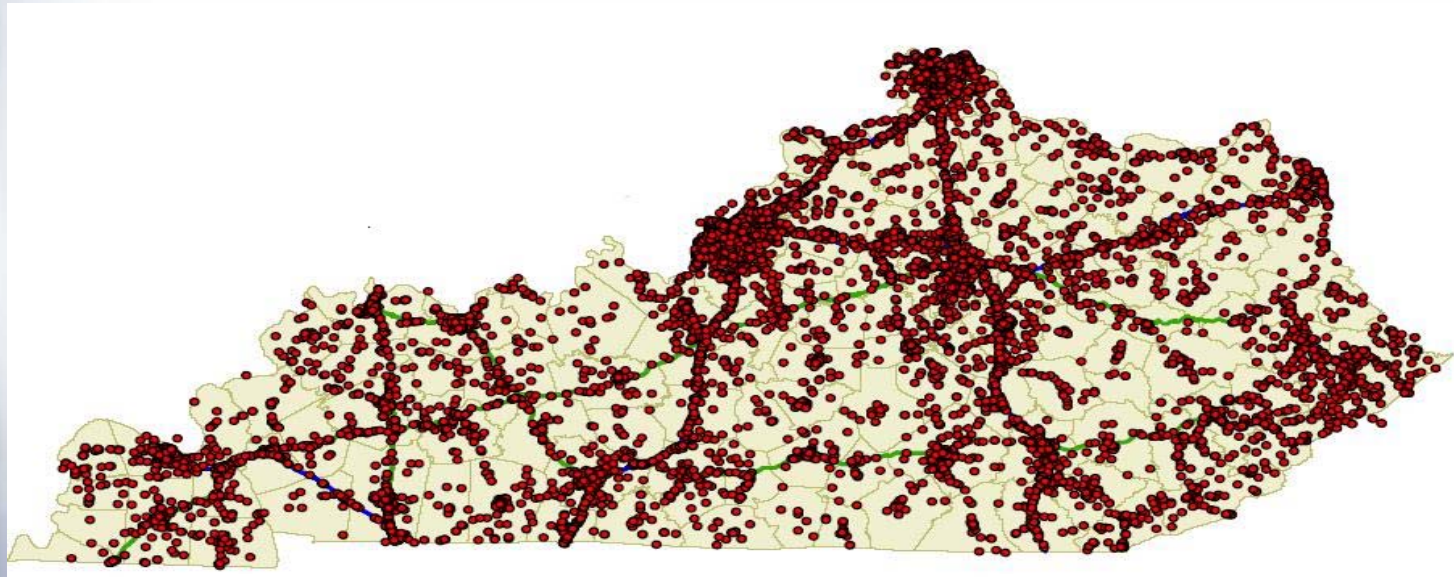
Human Factor

	Single Unit Collision	Occup. Vehicle as Unit 01	Non-occup. Vehicle as Unit 01
Human Factor			
Inattention	2,839 (24%)	10,756 (37%)	5,184 (31%)
Misjudge Clearance	2,149 (18%)	4,540 (16%)	
Not Under Proper Control	904 (7%)		
Failed to Yield Right of Way		2,622 (9%)	2,713 (16%)
Following too close			681 (4%)

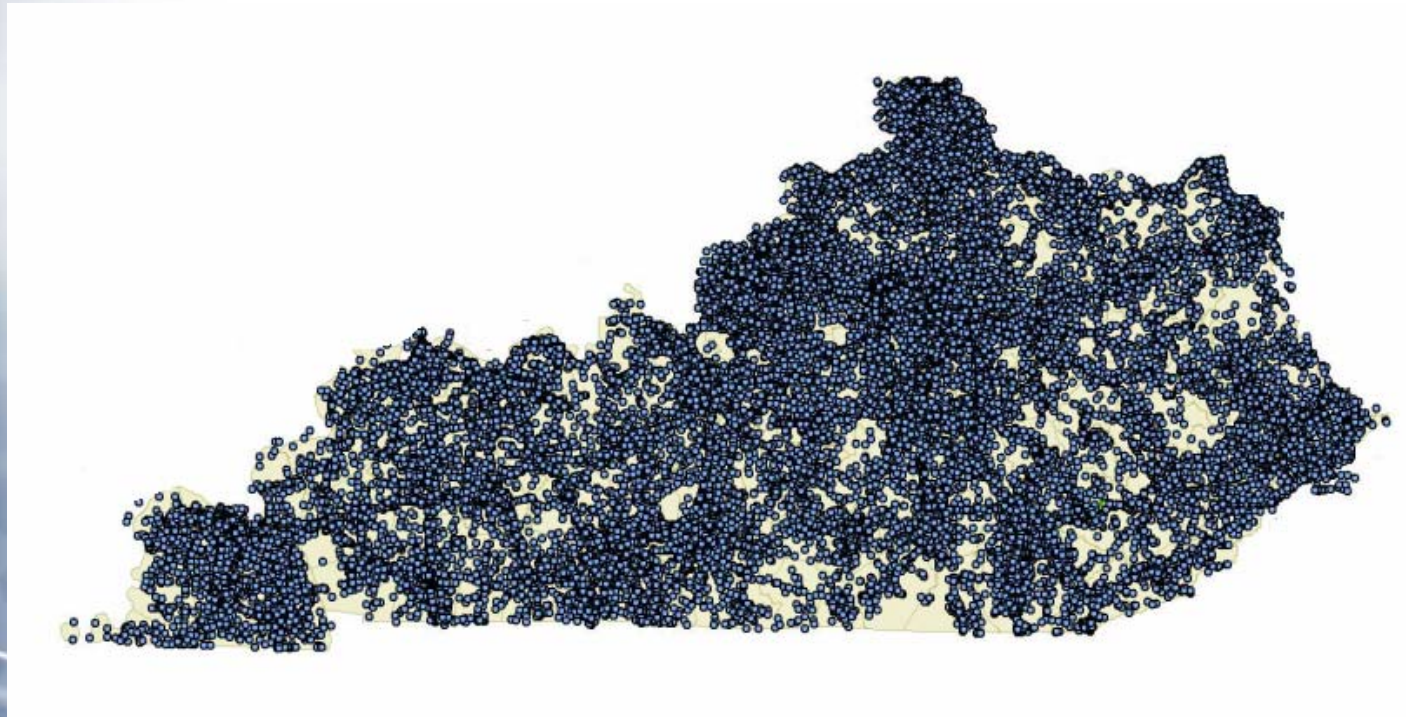
Restraint Use:

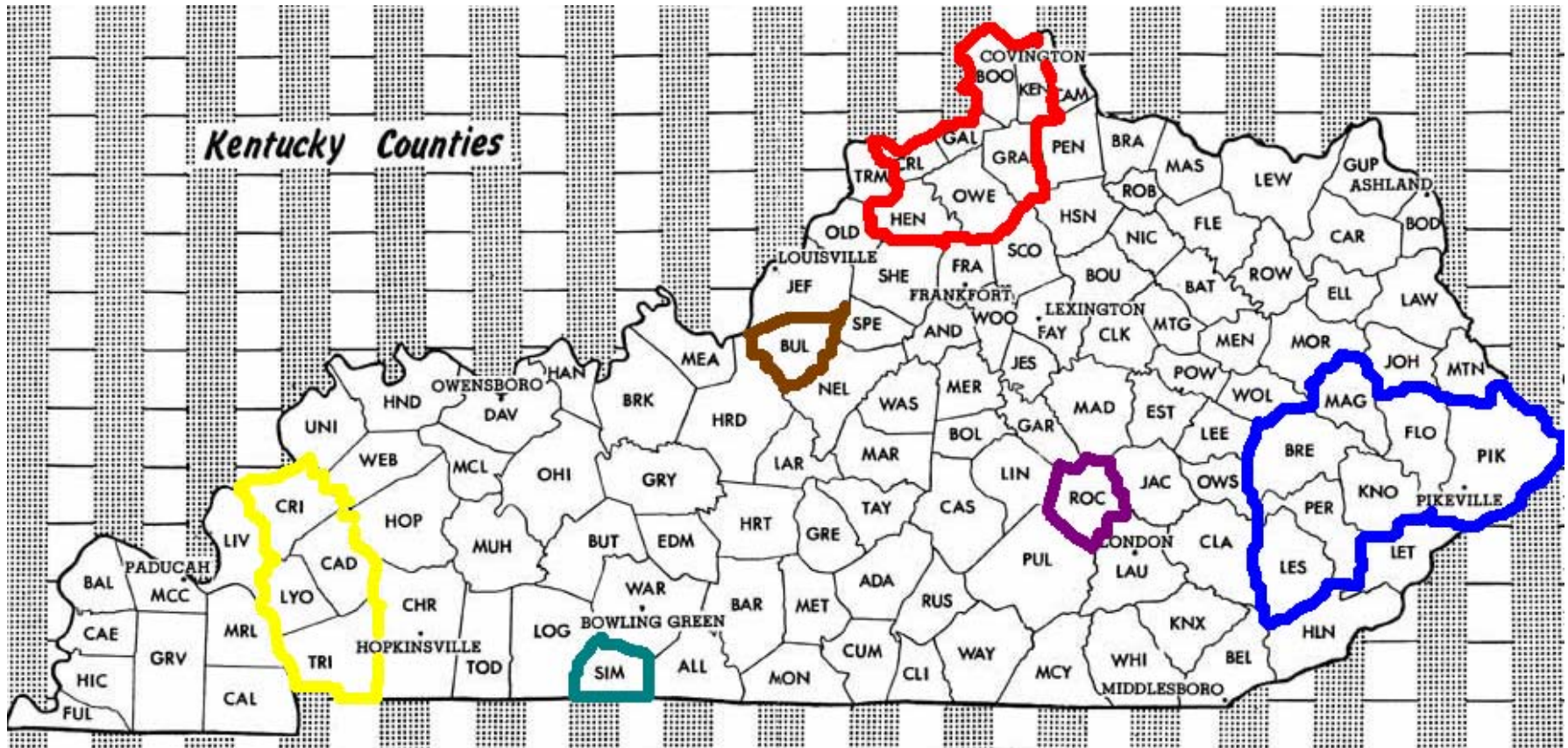
- The percent of occupational drivers who had shoulder/lap belt in use increased from 85% in 2000 to 90% in year 2003 and 91% in year 2004.
- Among the occupational drivers who died, the percent of drivers who had seat belts installed but not in use was 32% in 2000 (6 drivers) and 39% (9 drivers) in 2004

Map of the collisions in KY
involving occupational vehicles, 2004



**Map of the collisions in KY
involving only nonoccupational vehicles, 2004**





Primary cluster: Gallatin, Carroll, Grant, Boone, Kenton, Henry

Secondary clusters: Knott, Perry, Letcher, Floyd, Breathitt, Magoffin, Leslie, Pike

Simpson

Rockcastle

Bullitt

Trigg, Lyon, Christian, Caldwell

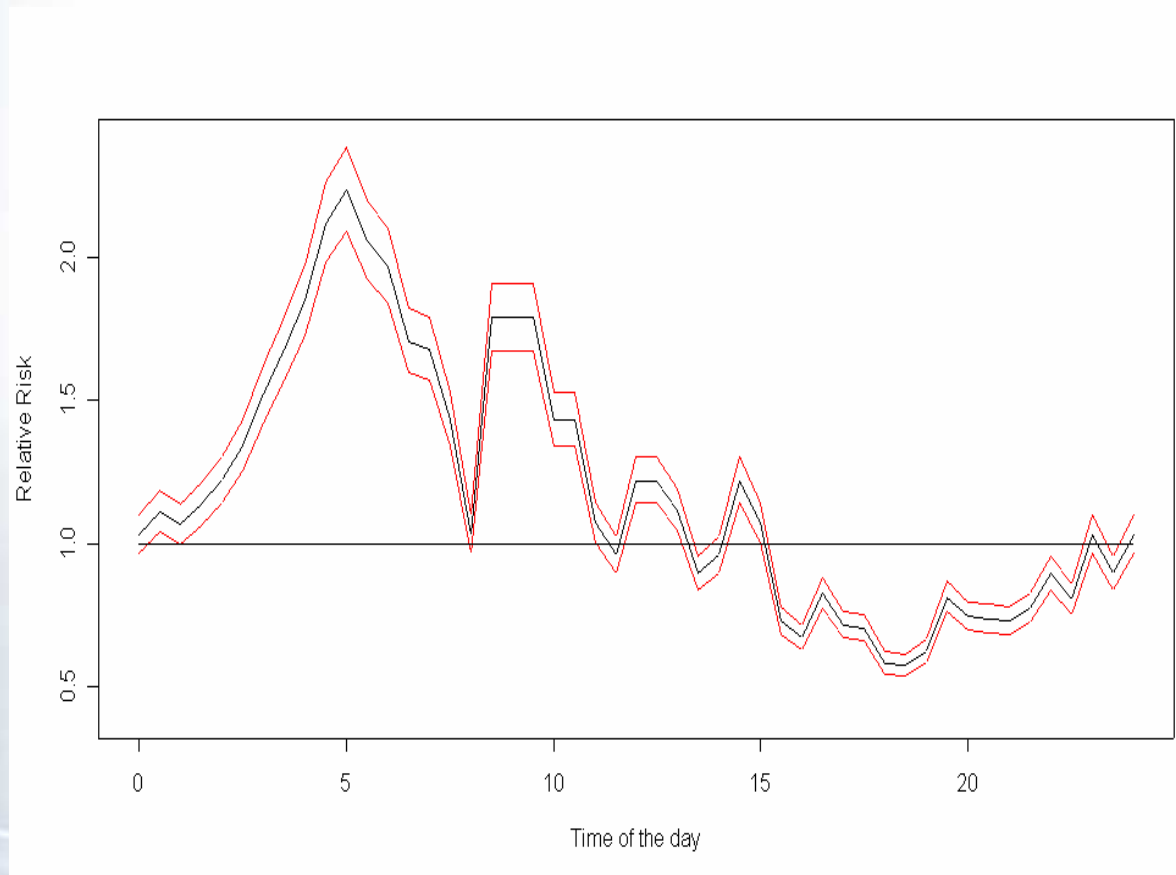
Are occupational drivers at higher risk of creating collisions during the late night and early morning hours?

Cases: 39,357 occupational drivers who created collisions in Kentucky

Controls: 714,621 non-occupational drivers who created collisions in Kentucky

Source: Kentucky Collision Report Analysis for Safer Highways (**CRASH**) electronic database from 2000 - 2004

Relative risk: occupational vs. non-occupational drivers in Kentucky by time of the day (relative risk and 95% CI)



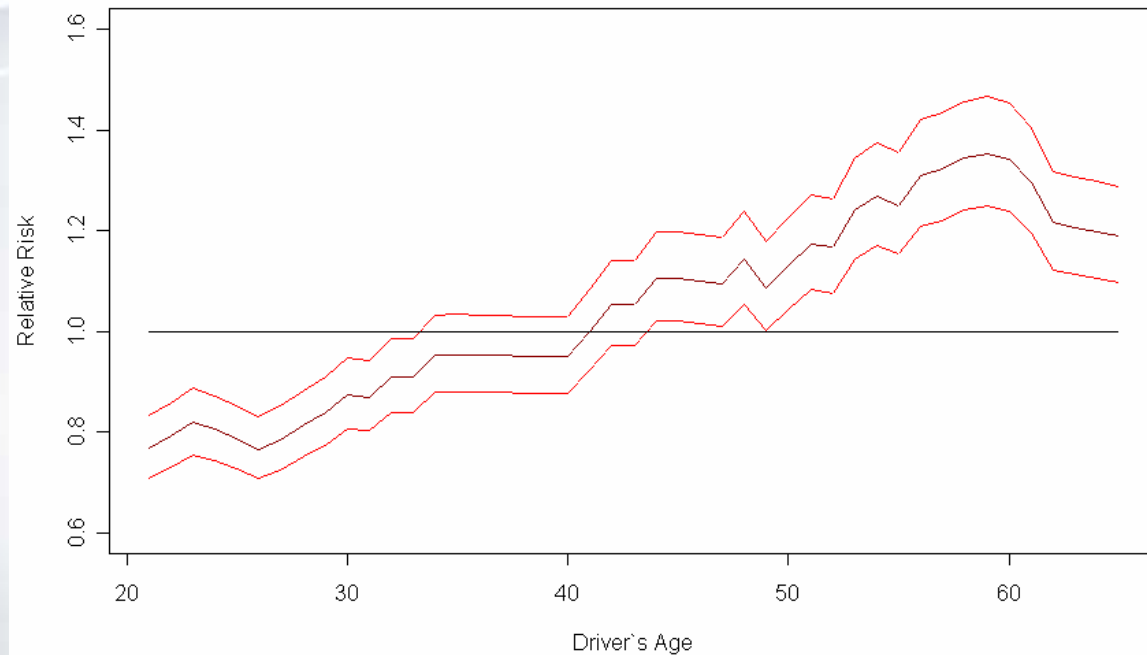
Are out-of-state occupational drivers more likely to cause collisions than in-state occupational drivers?

Cases: 12,640 out-of-state occupational drivers who created collisions in Kentucky

Controls: 12,640 matched Kentucky occupational drivers who created collisions in Kentucky

Age is one key covariate of interest when answering this question

Source: Kentucky Collision Report Analysis for Safer Highways (**CRASH**) electronic database from 2000 - 2004



Out-of-state occupational drivers have a significantly higher risk of creating collisions compared with in-state occupational drivers past age 50. Opposite results are observed for younger drivers

Conclusions

- A standardized definition for occupational motor vehicle collisions has been established:
 - Caveat: Occupational passenger vehicle collisions may not be fully captured
- Data for the indicator can be readily collected from State Police electronic data files

Conclusions

- Data results from the occupational motor vehicle indicator can be used to inform prevention efforts in respective states and nationwide:
 - A nonoccupational driver involved in a collision with an occupational vehicle is 3 times more likely to be injured and 7 times more likely to die than the occupational driver
 - In 2-vehicle collisions involving an occupational vehicle, inattention is more likely to be cited for the occupational driver

Conclusions

- Indicator data can be further analyzed using advanced statistical techniques:
 - Occupational drivers are at higher risk of a motor vehicle collision between 4-6am and 9-10am than nonoccupational drivers
 - Out-of-state occupational drivers who are over 50 years of age are more likely to be involved in a motor vehicle collision than in-state occupational drivers. The relative is opposite for younger drivers.