

KENTUCKY OCCUPATIONAL HEALTH INDICATORS REPORT

An Annual Report by the Kentucky Injury Prevention and Research Center

**Authored by
Svetla Slavova
Terry Bunn
Shama Karanth
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EXECUTIVE SUMMARY

Key findings:

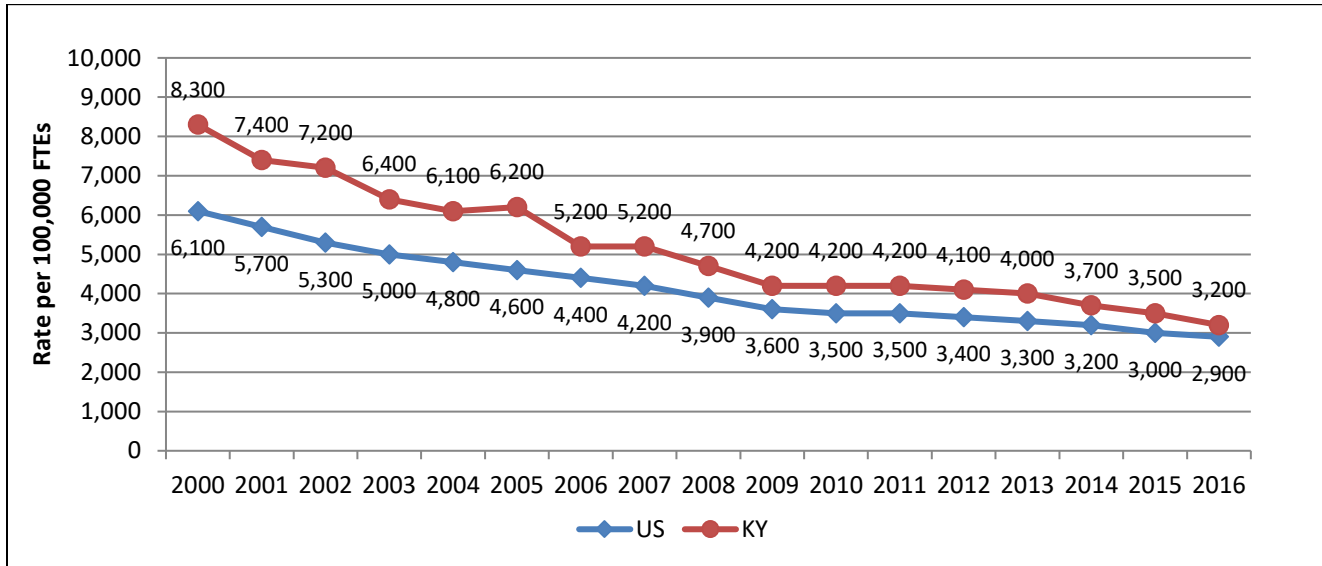
- ❑ Kentucky's 2016 *nonfatal* work-related injury and illness rate remained 9% above the national rate.
- ❑ The 2016 work-related *fatality* rate was 5.0 deaths/100,000 workers, 28% above the US rate of 3.6/100,000.
- ❑ Kentucky's amputation work-related rate was 5 claims/100,000 workers in 2016, equivalent to the US rate.
- ❑ The 2016 age-adjusted pneumoconiosis mortality rate was 29 deaths/million residents, approximately 5 times the U.S. rate.
- ❑ The 2015 acute work-related pesticide-associated injury and illness rate of 2.4/100,000 FTEs, compared with the U.S. rate of 1.7/100,000.
- ❑ In 2016, Kentucky had 7.0% of the workers employed in high risk industries for occupational morbidity. The corresponding U.S. percentage was 4.9%.
- ❑ The 2016 Kentucky occupational motor vehicle injury rate remained the same as the 2015 rate of 82/100,000 workers.
- ❑ The occupations at highest risk for work-related injuries and illnesses in Kentucky were the drivers/sales workers and truck drivers' occupations in 2017.
- ❑ The occupational fall injury incidence rate slightly decreased by 12%, from 2015 to 2016.
- ❑ The average amount of workers' compensation benefits per covered worker in Kentucky was \$359 in 2016, a 6% decrease compared to 2015.
- ❑ There were 65 school bus collisions in 2017, a 20% decrease from 2016.
- ❑ The number of buses involved in motor vehicle collisions increased from 170 in 2016 to 217 in the year 2017.

Note: Definitions and a standardized methodology for the indicator calculations can be found in "[OHI: A Guide for Tracking Occupational Health Conditions and Their Determinants](#)", April 2018.

Indicator #1: Non-Fatal Work-Related Injuries and Illnesses Reported By Employers

In 2016, there were 40,600 non-fatal work-related injuries and illnesses in Kentucky private industry, with an incidence rate of 3,200/100,000 full-time equivalents (FTEs) (Figure 1). The Kentucky rate is about 9% above the national incidence rate of 2,900 /100,000 FTEs in 2016.

Figure 1. Non-Fatal Work-Related Injury and Illness Incidence Rates in Private Industry, 2000-2016

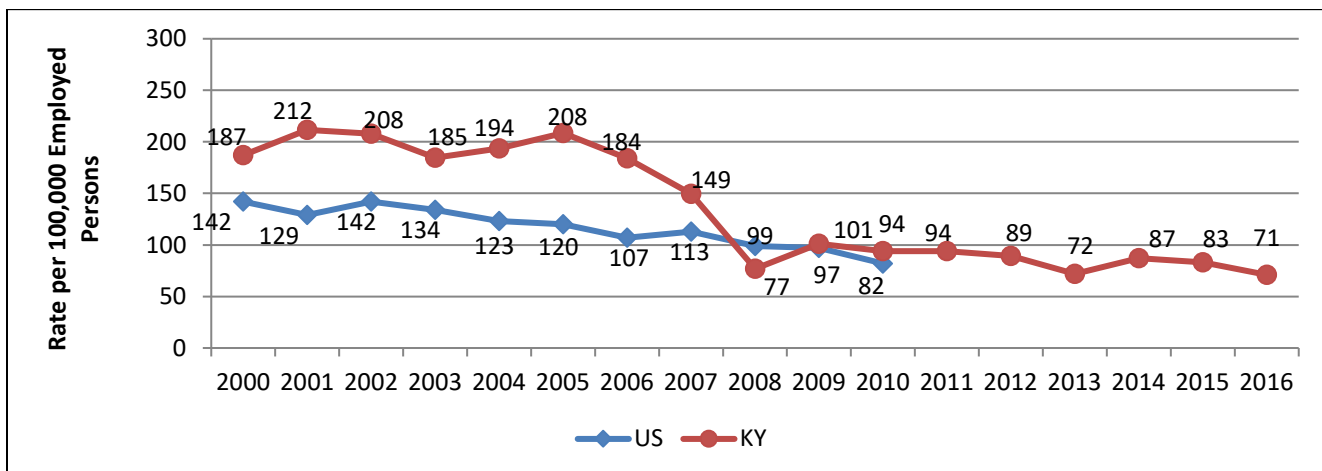


Data Source: Annual Bureau of Labor Statistics (BLS) Survey of Occupational Injuries and Illnesses (SOII).

Indicator #2: Work-Related Hospitalizations

In 2016, there were 1,346 work-related hospitalizations with an annual crude rate of 71/100,000 employed persons age 16 years and older, a 14% decrease from 83/100,000 in year 2015 (Figure 2).

Figure 2. Work-Related Hospitalization Rates, 2000-2016

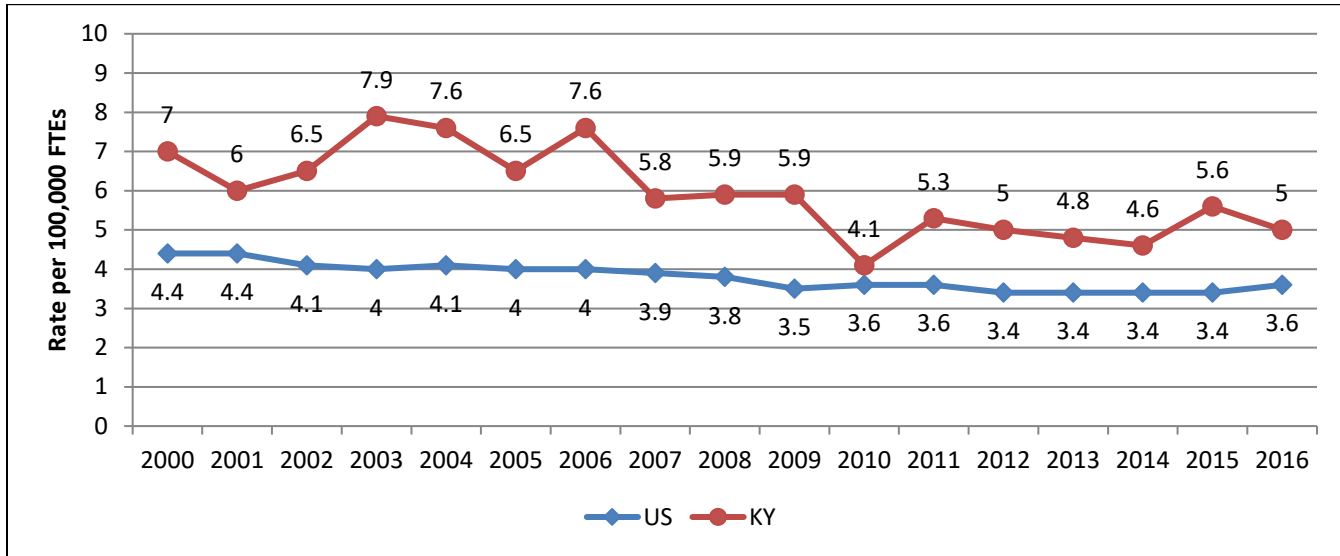


Data Source: Numerator KY data: KY Inpatient Hospital Discharge Claims, Office of Health Policy. Numerator US data: National Hospital Discharge Survey. Denominator data: BLS Current Population Survey data. Rates may differ from rates reported in previous reports as the KY hospital discharge files for the last 4 years were updated.

Indicator #3: Fatal Work-Related Injuries

In 2016 there were 92 fatal occupational injuries in Kentucky, a slight decrease from the reported 99 fatal work-related injuries for 2015. The 2016 Kentucky rate was 5/100,000, or about 28% above the 2016 national rate of 3.6/100,000.

Figure 3. Fatal Work-Related Injury Rates, 2000-2016

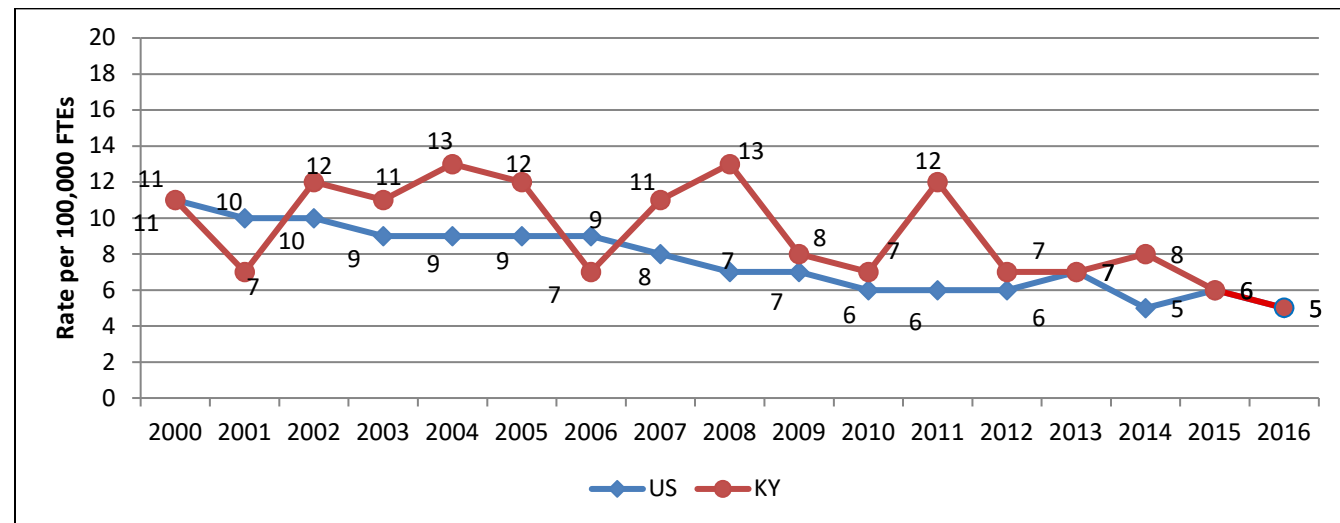


Data Source: Census of Fatal Occupational Injuries (CFOI).

Indicator #4: Work-Related Amputations with Days Away from Work

There were 50 amputation cases with days away from work in 2016, down 20 cases from year 2015. The annual incidence rate of 5 cases per 100,000 FTEs was the same as the U.S. rate in 2016 (Figure 4).

Figure 4. Work-Related Amputation Rates, 2000-2016

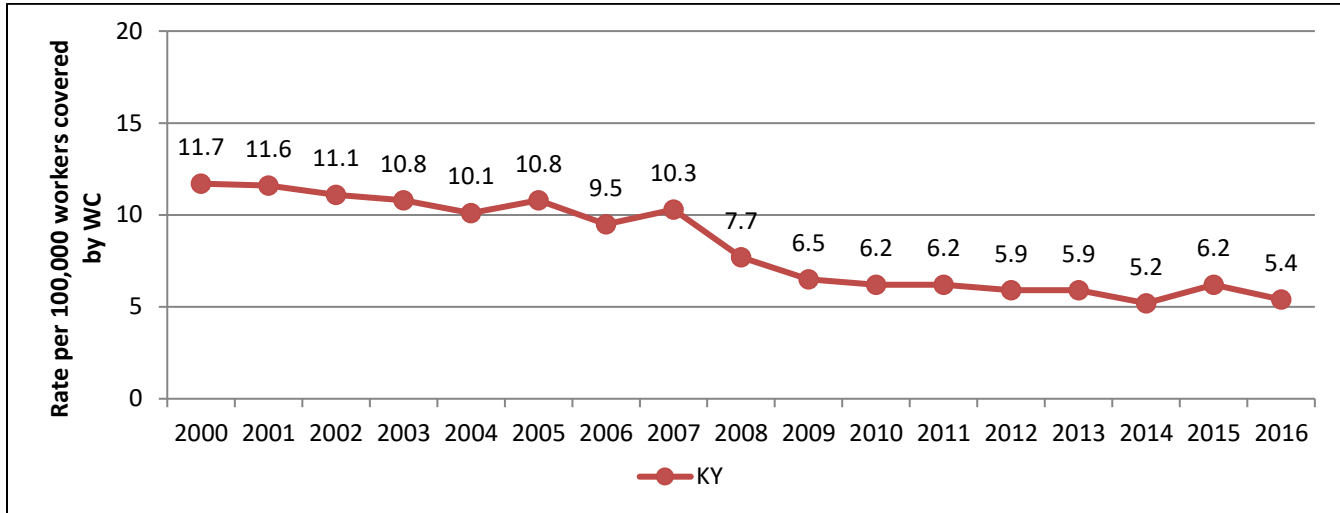


Data Source: Annual BLS Survey of Occupational Injuries and Illnesses (SOII).

Indicator #5: Amputations Filed with the State Workers' Compensation System by Injury Year

There were 98 amputations reported to the Kentucky Department of Workers' Compensation that occurred in year 2016, a 13% decrease from the number of amputation injuries during 2015 (n=111). The 2016 incident rate was 5.4 amputations per 100,000 covered by the state Worker's Compensation system (Figure 5).

Figure 5. Amputation Work-related Rates, 2000-2016

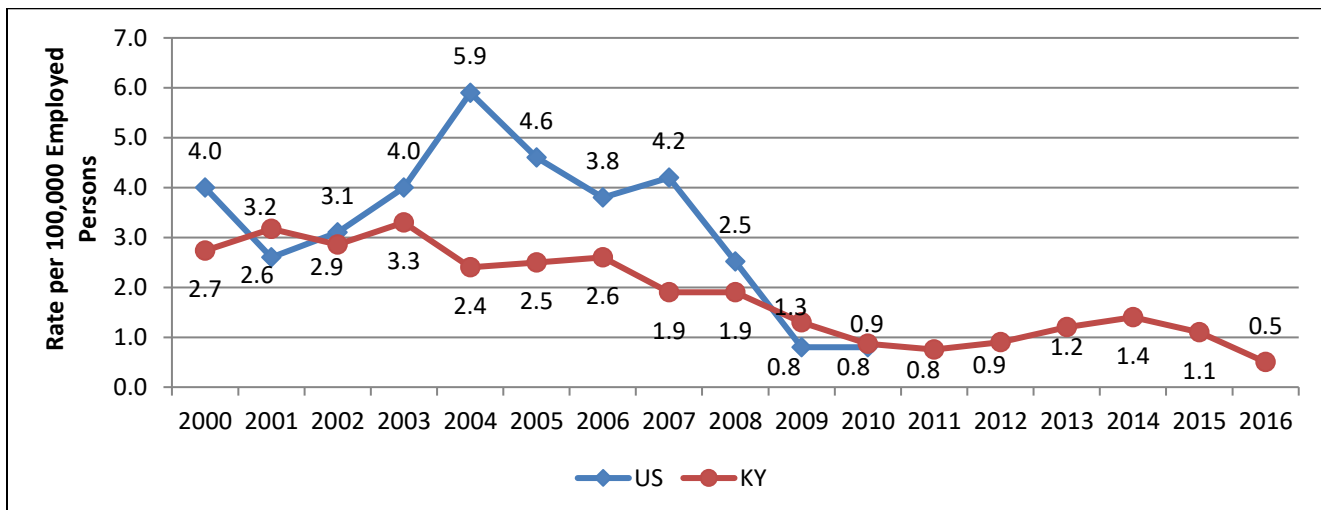


Data Source: Kentucky Department of Workers' Claims.

Indicator #6: Work-Related Burn Hospitalizations

There were 9 work-related burn hospitalizations in 2016 with an annual crude rate for work-related burn hospitalizations of 0.5/100,000 employed persons age 16 years or older. (Figure 6).

Figure 6. Burn Hospitalizations, 2000-2016

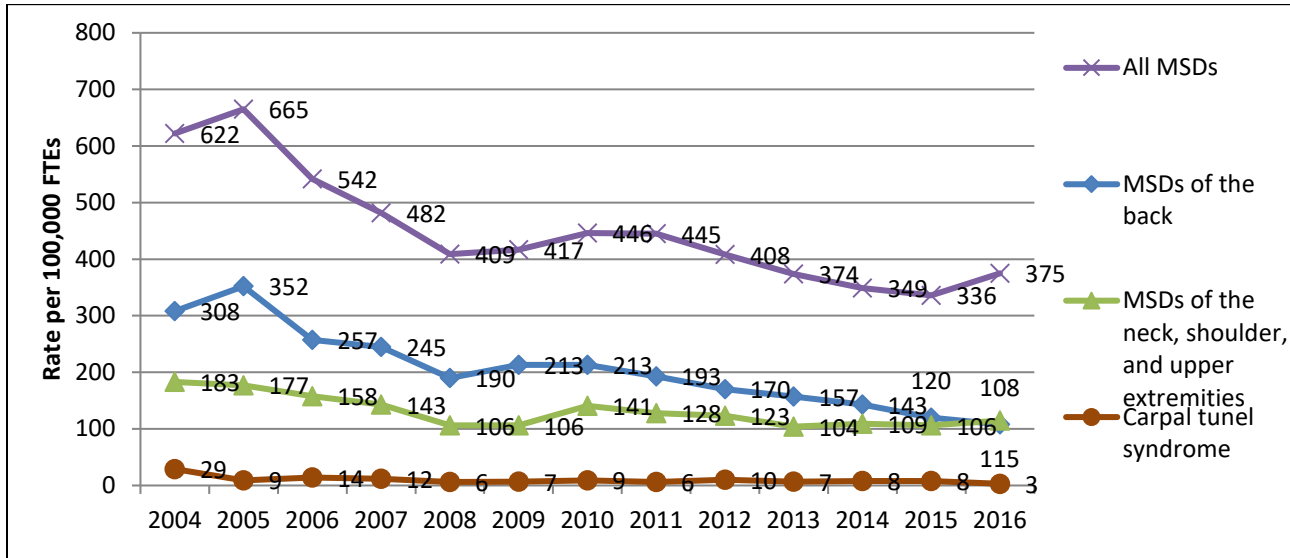


Data Source: Kentucky Office of Health Policy, Cabinet for Health and Family Services.

Indicator #7: Work-Related Musculoskeletal Disorders (MSDs) with Days Away from Work

Kentucky had a total annual MSD incidence rate of 375 cases/100,000 FTEs in 2016 (Figure 7), due primarily to MSDs of the Neck, Shoulder, and Upper Extremities (115/100,000). The incident rate of the MSDs of the back and Carpal tunnel syndrome was at the lowest in the past 12 years.

Figure 7. Musculoskeletal Disorders Incidence Rates Involving Days Away from Work, 2004-2016

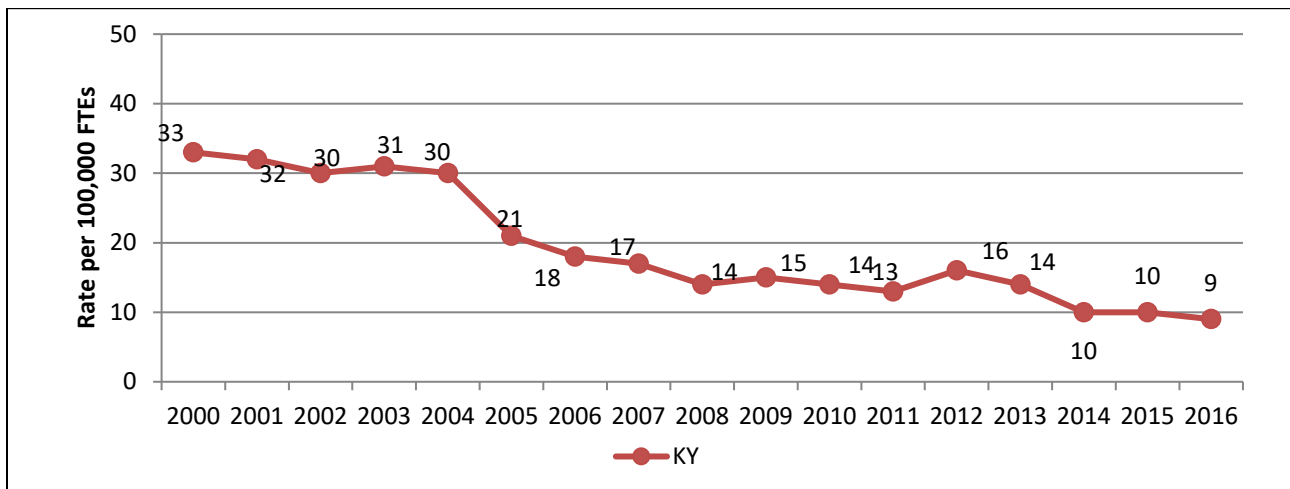


Data Source: Annual Bureau of Labor Statistics (BLS) Survey of Occupational Injuries and Illnesses (SOII).

Indicator #8: Carpal Tunnel Syndrome First Report of Injury Filed with the State Workers' Compensation System by Injury Year

There were 170 Carpal Tunnel Syndrome (CTS) cases reported in 2016, an incident rate of 9/100,000 covered workers, a slight decrease from 10/100,000 in 2015.

Figure 8. Lost Work-Time Claim Rates for Carpal Tunnel Syndrome Cases Identified in State Workers' Compensation Systems, 2000-2016

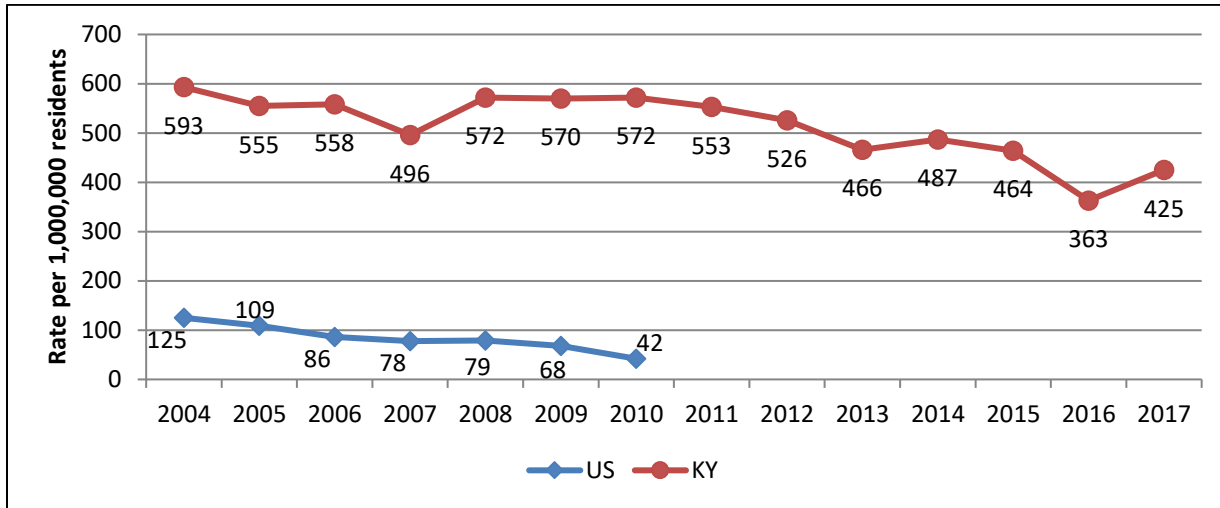


Data Source: Kentucky Department of Workers' Claims.

Indicator #9: Hospitalization from or with Pneumoconiosis

The annual age-standardized rate of pneumoconiosis hospitalizations per million residents in Kentucky increased by 17% from 2016 (363/100,000) to 2017 (425/100,000). U.S. rates for years after 2010 were not available, but the Kentucky rate likely remained about 10 times above the U.S. rate (Figure 9).

Figure 9. Age-Standardized Hospitalization Rates from or with Total Pneumoconiosis, 2004-2017

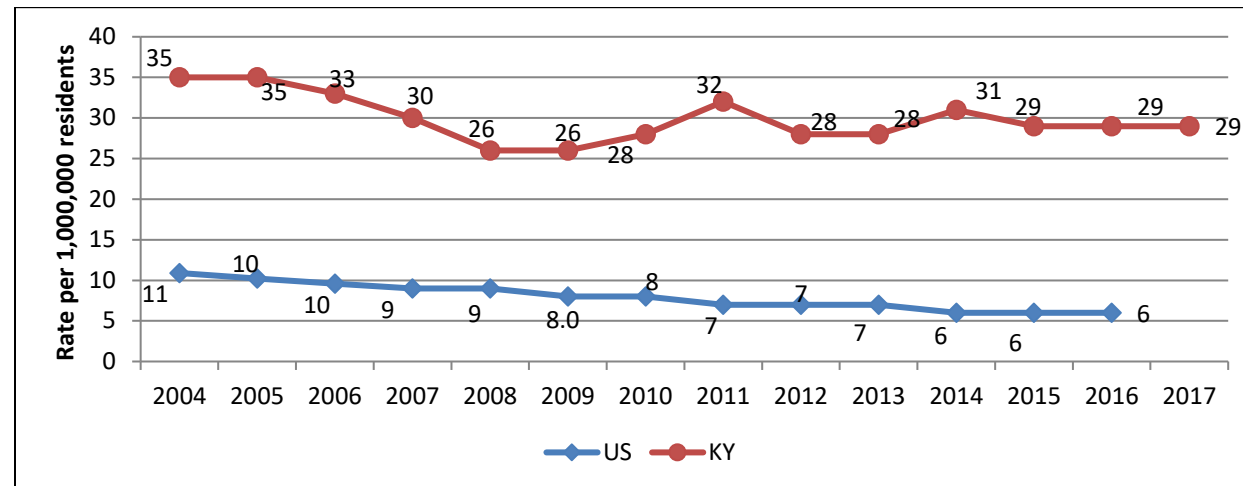


Data Source: Kentucky Office of Health Policy. U.S. rates provided by the CSTE. U.S. rates for years after 2011 were not available.

Indicator #10: Mortality from or with Pneumoconiosis

There were 123 deaths for Kentucky residents ages 16 years or older, who died from or with pneumoconiosis in 2017. The 2017 Kentucky age-adjusted death rate from or with pneumoconiosis for residents 16 years of age or older was 29 per one million residents, about 5 times the U.S. rate (Figure 10). U.S. data was not available for 2017.

Figure 10. Age-Adjusted Mortality Rate from or with Pneumoconiosis, 2004-2017

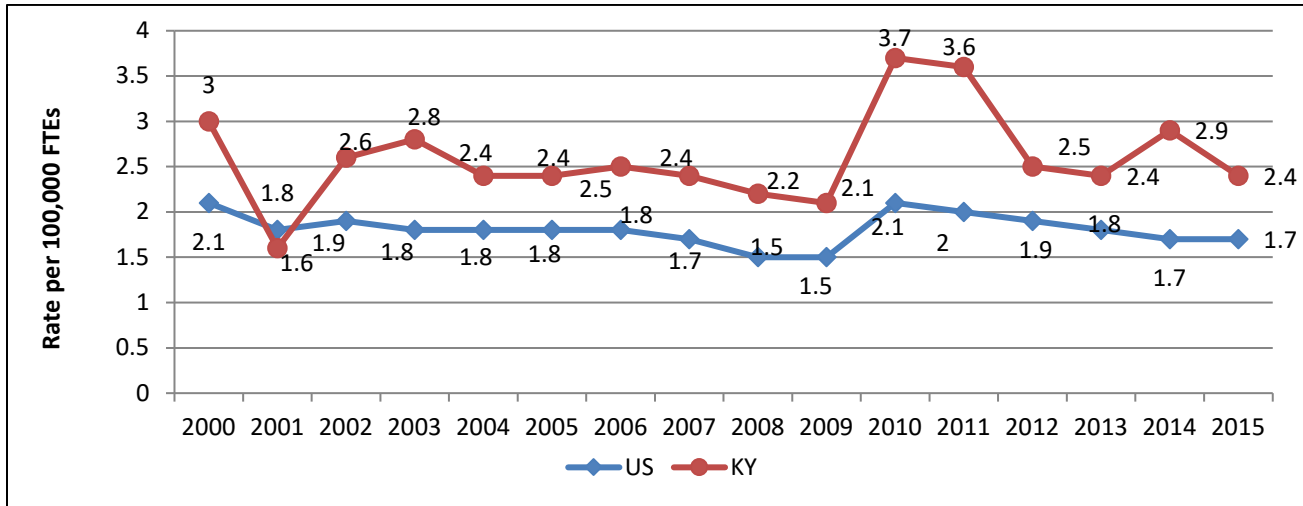


Data Source: Kentucky Office of Vital Statistics and CDC WONDER query system.

Indicator #11: Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers

The annual incidence rate of reported work-related pesticide poisonings in Kentucky remains well above the national rate in recent years. The 2015 Kentucky rate was 2.4/100,000 FTEs (Figure 11). The 2016-2017 data was not available at the time this report was completed.

Figure 11. Work-Related Pesticide-Associated Poisoning Rates, 2000-2015

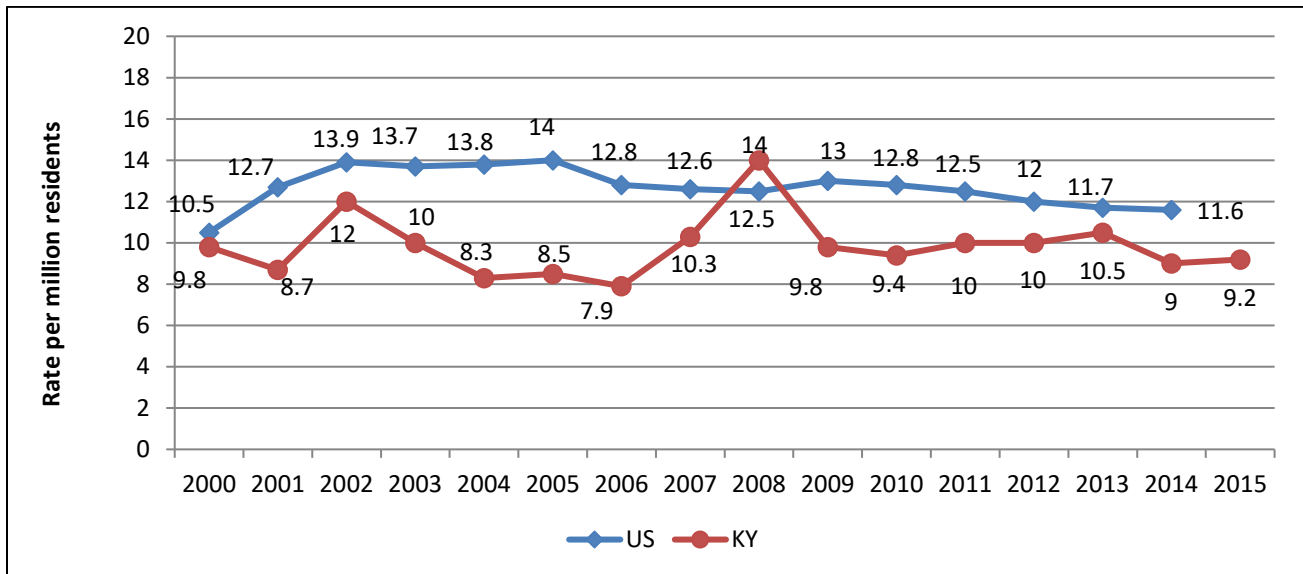


Data Source: American Association of Poison Control Centers.

Indicator #12: Incidence of Malignant Mesothelioma

The 2015 age-adjusted rate of malignant mesothelioma was 9 per one million residents ages 15 years or older; 39 cases were reported to the State Cancer Registry in 2015. The 2015 U.S. rate was not available at the time this report was completed. (Figure 12).

Figure 12. Age-Standardized Incidence Rate of Malignant Mesothelioma, 2000-2015



Data Source: Kentucky Cancer Registry. U.S. rate data provided by NIOSH and Surveillance, Epidemiology, and End Results (SEER) Program.

Indicator #13: Elevated Blood Lead Levels (BLL) among Adults

The 2015 Kentucky annual prevalence rate of persons age 16 years or older with elevated BLL $\geq 10\mu\text{g/dL}$ was 23.8/100,000, 11% decrease from 2014 (Figure 13). The 2015 U.S. rate was not available at the time this report was completed but over the previous 4 years the Kentucky rate was consistently above the U.S. rate. The 2014 Kentucky annual prevalence rate for elevated BLL $\geq 25\mu\text{g/dL}$ was lower than the previous 5 years (Figure 14). In 2015, the Kentucky rate for elevated BLL $\geq 25\mu\text{g/dL}$ was the lowest in last 6 years, 2.3/100,000.

Figure 13. Annual Prevalence Rates of Elevated BLL $\geq 10 \mu\text{g/dL}$ among Persons Age 16 Years and Older, 2009-2015

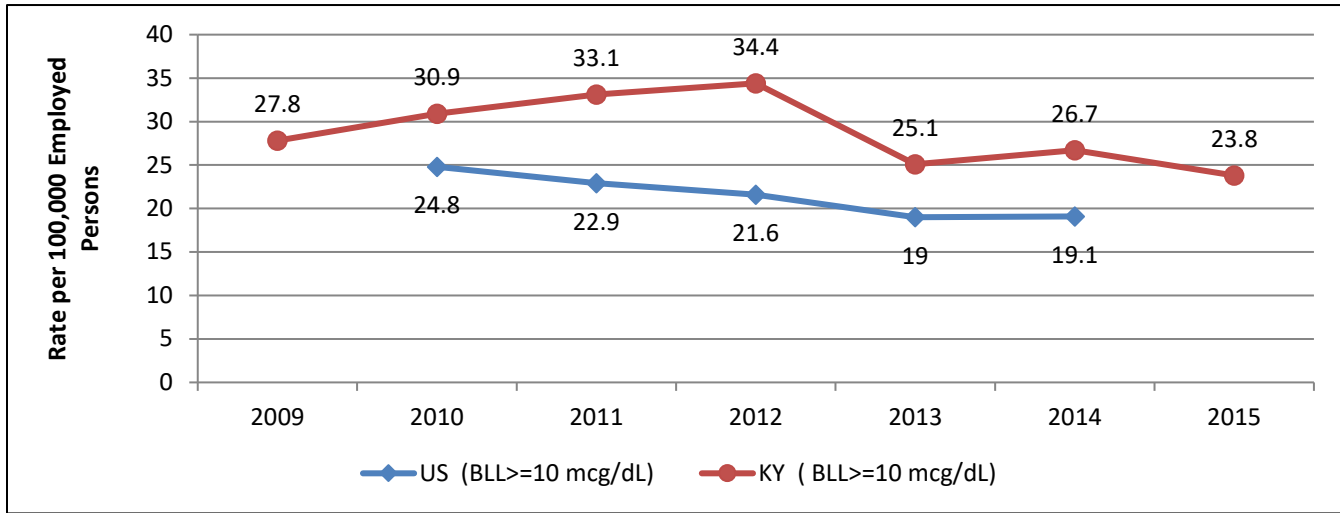
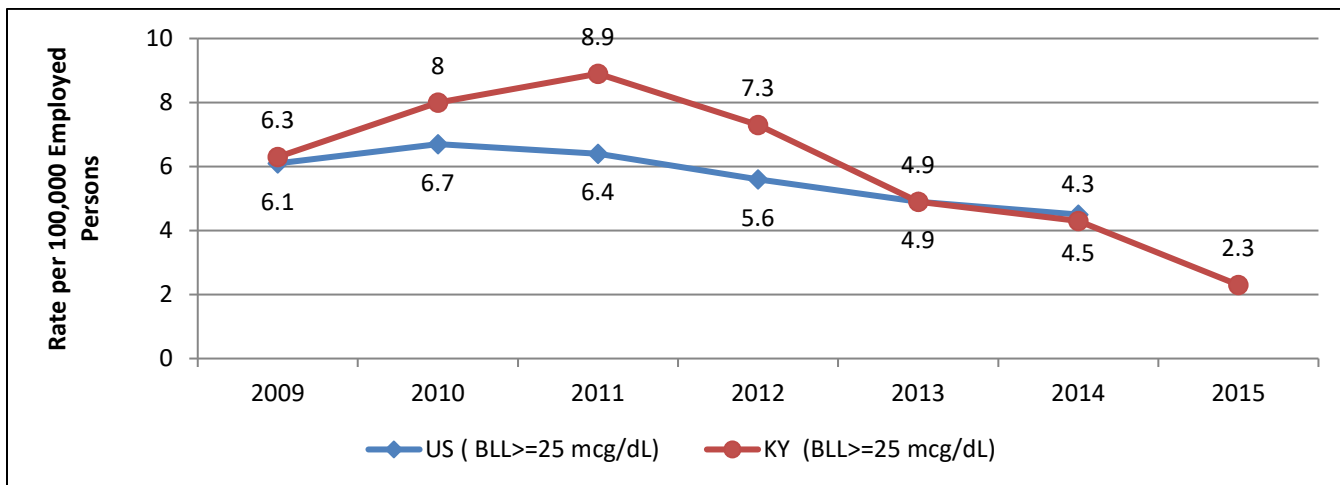


Figure 14. Annual Prevalence Rates of Elevated BLL $\geq 25 \mu\text{g/dL}$ among Persons Age 16 Years and Older, 2009-2015

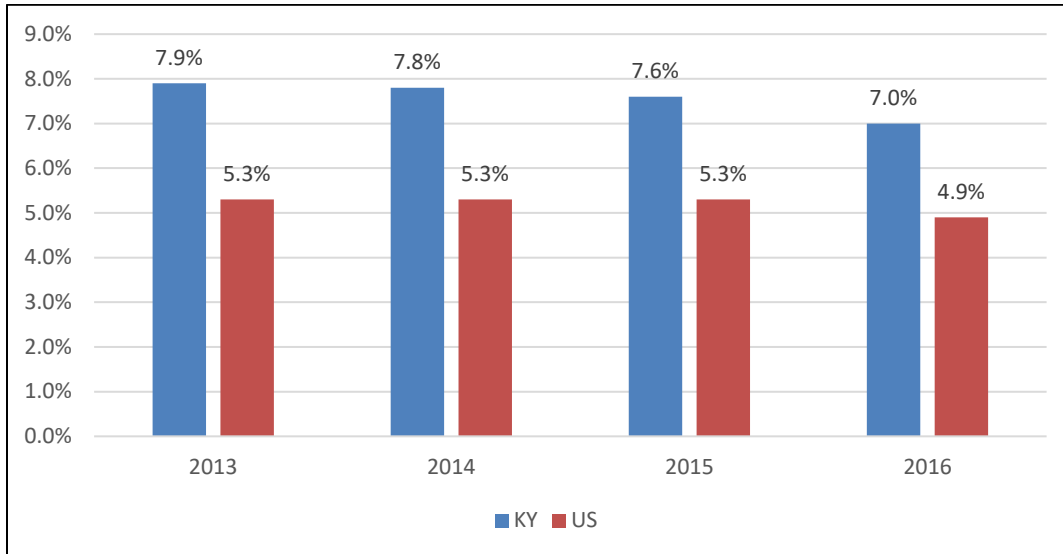


Data Source: Kentucky Lead Poisoning Prevention Program, Division of Adult and Child Health, Cabinet for Health and Family Services. U.S. rates were obtained from the NIOSH ABLES program. U.S. rates for 2015 were not available at the time the report was completed.

Indicator #14: Workers Employed in Industries with High Risk for Occupational Morbidity

The percentage of Kentucky workers employed in high-risk morbidity industries was almost 30% higher than the average annual percentage for the U.S. workers in 2016 (Figure 15).

Figure 15. Percentage of Workers in High Risk Industries for Occupational Morbidity, 2013-2016

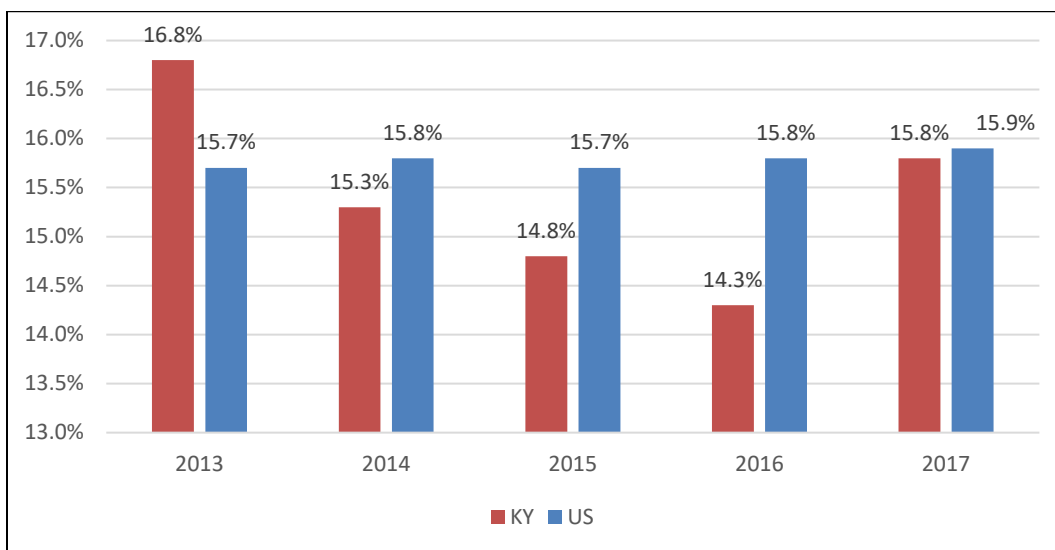


Data Source: Census Bureau County Business Patterns.

Indicator #15: Percentage of Workers Employed in Occupations at High Risk for Occupational Morbidity

The percentage of Kentucky workers employed in occupations at high risk for occupational morbidity increased in 2017 to 15.8%, after declining over the last few years, from 16.8% in 2013 to 14.3% in 2016. At the same time, the percentage of U.S. workers employed in occupations at high risk for occupational morbidity remained stable, between 15.7% and 15.9% (Figure 16).

Figure 16. Percentage of Kentucky Workers in Occupations with High Risk for Occupational Morbidity, 2013 - 2017

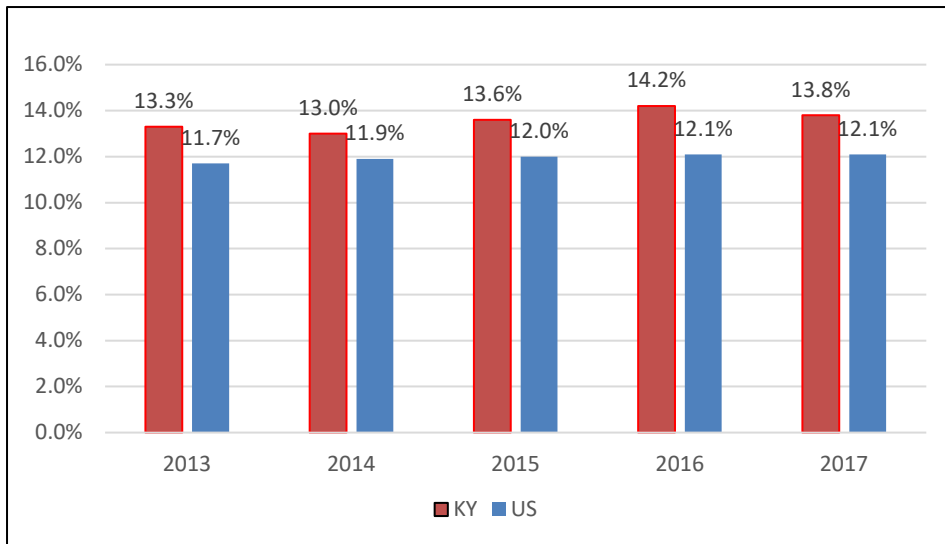


Data Source: Bureau of Labor Statistics (BLS) Current Population Survey (CPS).

Indicator #16: Percentage of Workers Employed in Industries and Occupations at High Risk for Occupational Mortality

In 2017, 16.7 % of Kentucky workers were employed in industries at high risk for occupational mortality; 13.8% of Kentucky workers were employed in occupations at high risk for occupational mortality. Figure 17 shows that the percentage of Kentucky workers employed in occupations at high risk for occupational mortality is 12.3% above the U.S. percentage of workers employed in occupations at high risk for occupational mortality.

Figure 17. Percentage of Workers Employed in Occupations at High Risk for Occupational Mortality, 2013 - 2017



Data Source: Bureau of Labor Statistics (BLS) Current Population Survey (CPS).

Indicator #17: Occupational Safety and Health Professionals

Table 1 shows comparison between Kentucky and the U.S. on rates of occupational safety and health professionals (per 100,000 employees), 2013-2015. The 2016-2017 data was not available at the time this report was completed.

Table 1. Rates of Occupational Safety and Health Professionals in Kentucky and the U.S., 2013-2015.

Rate per 100,000 employees	KY 2013	KY 2014	KY 2015	US 2013	US 2014	US 2015
Rate of board-certified occupational physicians (per 100,000 employees)	NA	1.6	1.5	NA	2.1	2.1
Rate of American College of Occupational and Environmental Medicine members (per 100,000 employees)	2.8	2.3	2.5	2.6	2.2	2.1
Rate of board-certified occupational health registered nurses (per 100,000 employees)	3.6	3.7	3.8	3.2	3.1	2.8
Rate of board-certified industrial hygienists (per 100,000 employees)	3.7	3.8	1.6	4.1	3.9	1.5

Data Sources: American Board of Preventive Medicine, ACOEM, American Board of Occupational Health Nurses Directory, AAOHN, American Board of Industrial Hygiene, AIHA, BCSP, ASSE, BLS Current Population Survey.

Indicator #18: OSHA Enforcement Activities

In 2015, there were 964 employer establishments inspected by KY OSHA, 0.8% of the establishments eligible for inspections. This is a decrease of 6% from the 1027 establishments inspected in 2014 (Table 2). The percentage of OSHA-covered employees eligible for inspections whose work areas were inspected by OSHA decreased from 4.5% in 2012, to 3.8% in 2013, and 3.3% in 2014 and 2015. . The 2016-2017 data was not available at the time this report was completed.

Table 2. OSHA Enforcement Activities, 2012-2015

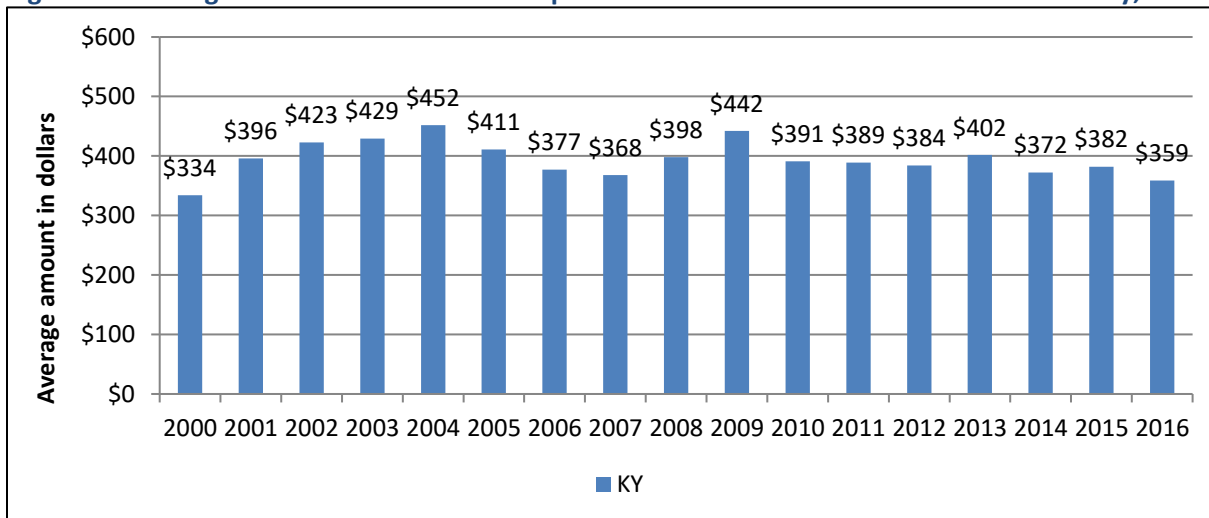
	2012	2013	2014	2015
18.1 Annual Number of Employer Establishments Inspected by OSHA	1,062	842	1,027	964
18.2 Number of OSHA-Covered Establishments that are Eligible for OSHA Inspection (EXCLUDING MINES & FARMS)	109,955	116,838	119,868	121,109
18.3 Percentage of OSHA-Covered Establishments Eligible for Inspection that were Inspected by OSHA	1.0	0.7	0.9	0.8
18.4 Annual Number of Employees Whose Work Areas were Inspected by OSHA	78,923	66,279	59,379	59,854
18.5 Number of OSHA-Covered Employees (EXCLUDING MINERS & FARMERS)	1,737,291	1,758,737	1,786,636	1,817,585
18.6 Percentage of OSHA-Covered Employees Eligible for Inspection Whose Work Areas were Inspected by OSHA	4.5	3.8	3.3	3.3

Data Sources: OSHA annual reports, BLS statistics on Covered Employers and Wages.

Indicator #19: Workers' Compensation Awards

The total amount of workers' compensation benefits paid in Kentucky in 2016 was \$652.8 million. The average amount of workers' compensation benefits paid per covered worker in Kentucky in 2016 was \$359 (Figure 18).

Figure 18. Average Amount of Workers' Compensation Benefits Paid Per Worker in Kentucky, 2000-2016

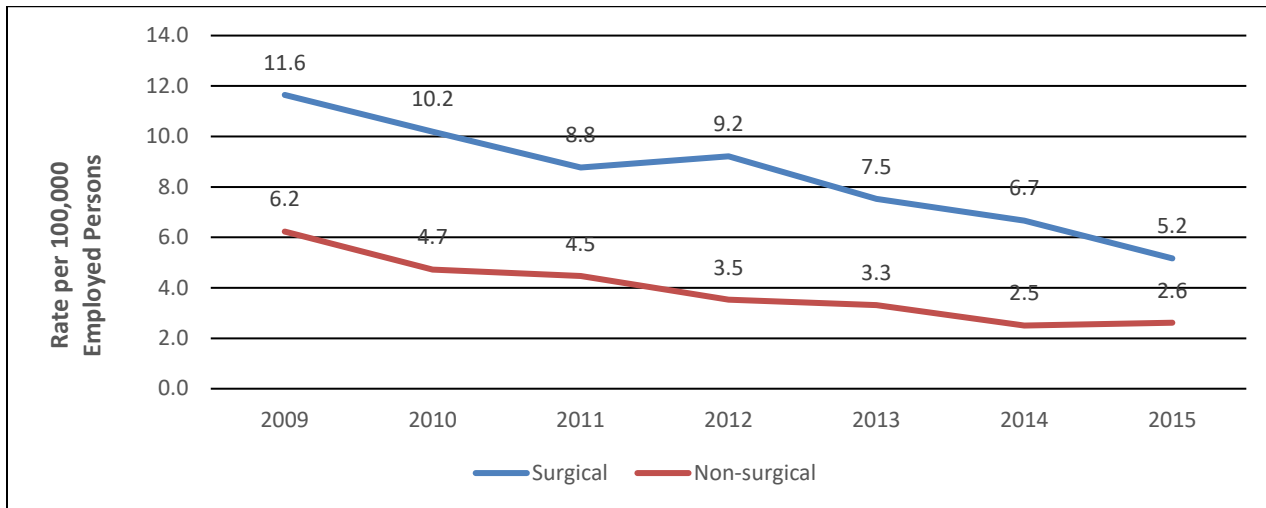


Data Source: National Academy of Social Insurance.

Indicator #20: Low Back Disorders

In 2015, the number of work-related surgical low back disorder hospitalizations for persons 16 years or older in Kentucky for three Qtrs. of the year was 71, with an estimated annual rate of 5.2/100,000 employed people (Figure 19). The estimated rate of non-surgical low back disorder hospitalizations was 2.6/100,000 in 2015. The estimated annual number of work-related low back disorder hospitalizations for persons 16 years and older was 143 with an annual rate of 7.8/100,000 employed persons. Rates for 2016-2017 were not available due to change in ICD codes. Currently the definitions for ICD 10 codes have not been updated by NIOSH.

Figure 19. Kentucky Work-Related Surgical or Nonsurgical Low Back Disorder Hospitalization Rates among Persons 16 Years and Older, 2009-2015.



Data Source: Kentucky Office of Health Policy, Cabinet for Health and Family Services. Data for 2016-2017 was not available due to change in (ICD-9-CM) to (ICD-10-CM) codes.

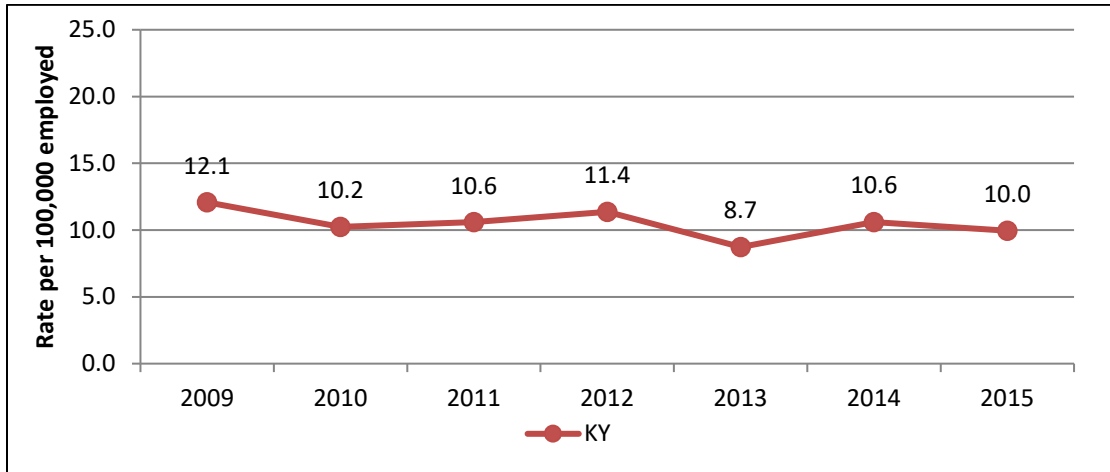
Indicator #21: Asthma among Adults Caused or Made Worse by Work

Using data from the 2011 Asthma Call Back Survey conducted among the Behavioral Risk Factor Surveillance System (BRFSS) respondents, it was estimated that 228,298 (63.5%) of the ever-employed Kentucky adults with current asthma considered that their asthma was caused or made worse by exposures at work. The 2013 Asthma Call Back Survey estimated that 178,353 (62.4) ever-employed Kentucky adults with current asthma considered that their asthma was caused or made worse by exposures at work. Data after 2013 are currently not available.

Indicator #22: Work-Related Severe Traumatic Injury Hospitalizations

In 2015 there were 137 work-related severe traumatic injury hospitalizations in the first three quarters of the year, with an estimated crude annual rate of 10/100,000 employed. Rates for 2016-2017 were not available due to change in ICD codes. Currently the definitions for ICD 10 codes have not been updated by NIOSH.

Figure 20. Kentucky Work-Related Severe Traumatic Injury Hospitalization, 2009-2015

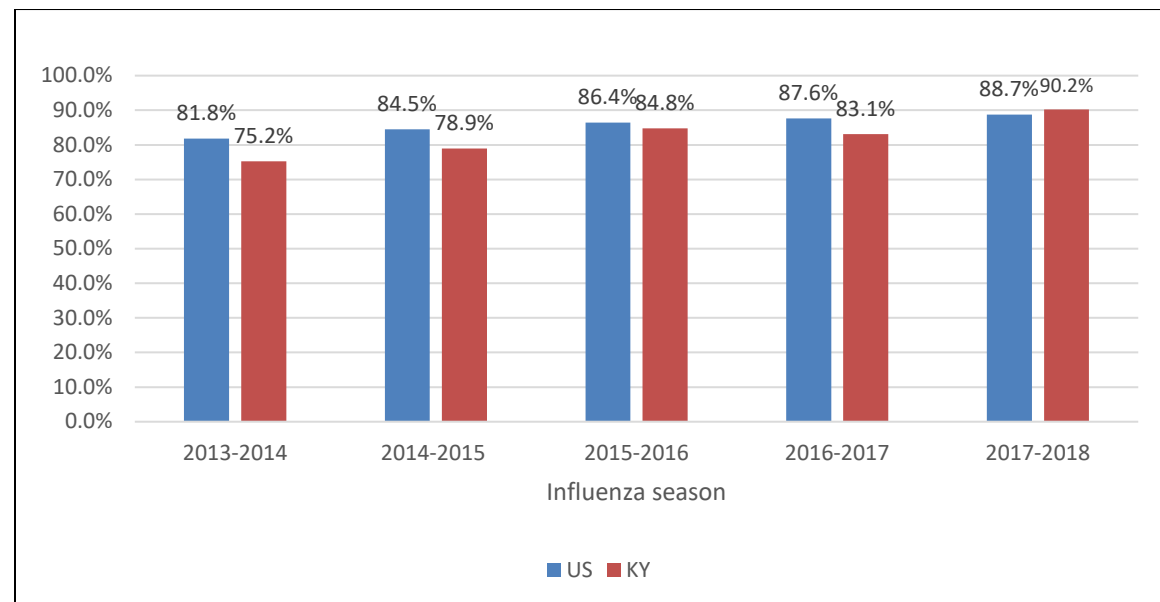


Data Source: Kentucky Office of Health Policy, Cabinet for Health and Family Services.

Indicator #23: Influenza Vaccination Coverage among Hospital Care Personnel

It was reported that in 2017-2018 influenza season, 90.2% of the Kentucky hospital care personnel had influenza vaccination, an 8.5% increase compared to the 2016-2017 influenza season.

Figure 21. Pooled Proportion of Hospital Care Personnel Influenza Vaccination Coverage in Acute Care Hospitals



Data Source: National Healthcare Safety Network www.cdc.gov/nhsn/datastat/.

Indicator #24: Occupational Heat-Related Emergency Department (ED) Visits

The number of identified occupational heat-related ED visits in 2015 for three Qtrs. of the year was 137, annual estimated number for 2015 (n=151). The estimated annual rate ED visits for occupational heat-related illness in 2015 was 8.2/100,000 employed persons. Rates for 2016-2017 were not available due to change in ICD codes. Currently the definitions for ICD 10 codes have not been updated by NIOSH.

Table 3. Occupational Heat-Related Emergency Department (ED) Visits, 2012 - 2015

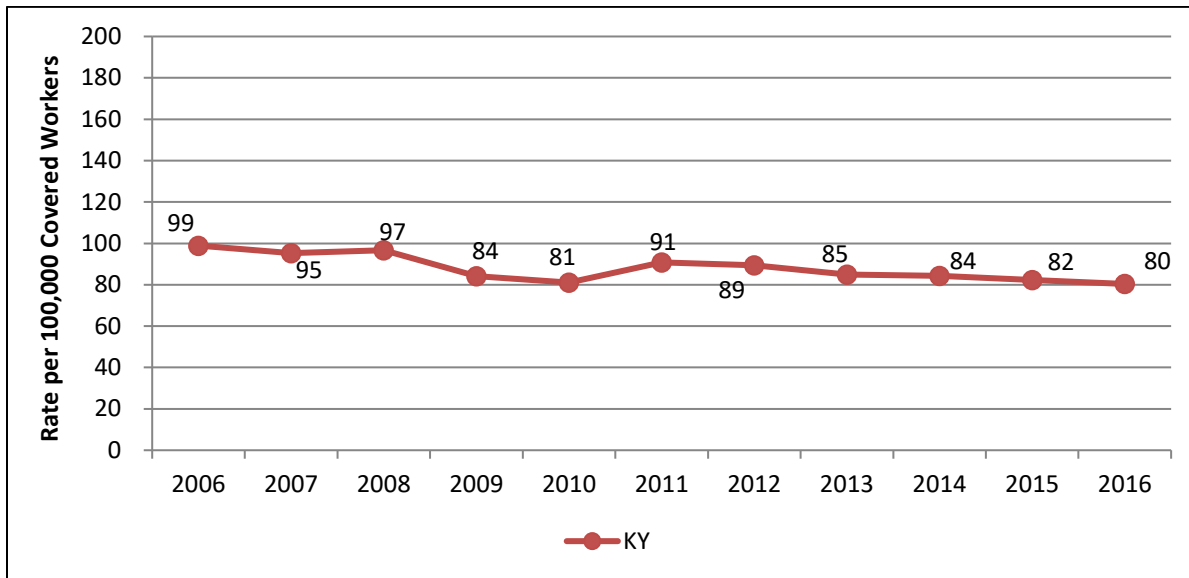
	2012	2013	2014	2015
24.1 Annual Number of Emergency Department Visits for Occupational Heat-Related Illness	164	68	141	151*
24.2 Annual Rate of Emergency Department Visits for Occupational Heat-Related Illness (per 100,000 employed persons)	8.6	3.6	7.5	8.2*

Data Source: Kentucky Office of Health Policy, Cabinet for Health and Family Services. *estimated annual number/rate.

Indicator #25 (Kentucky- Specific): Occupational Motor Vehicle Collisions- First Reports of Injury and Claims Filed with Workers’ Claims by Injury Year

There were 1,463 occupational motor vehicle collision claims or first reports of injury filed with Kentucky workers’ compensation for injuries during 2016, a rate of 80/100,000 covered workers (Figure 20).

Figure 22. Occupational Motor Vehicle Collision Injury Rates, 2006 - 2016



Data Source: Kentucky Department of Workers’ Claims.

Indicator #26 (Kentucky-Specific): Fatal and Non-Fatal Commercial Motor Vehicle Collision Injuries

In 2017, there were slight declines, compared to 2016, in the number of commercial vehicle involved in collisions (n=7085,) as well as a low number of fatalities related to commercial vehicle collisions (n=65), and number of injuries related to commercial vehicle collisions (n=1,425),(Table 3). It is interesting to note that the proportion of commercial vehicles with Kentucky license in 2017 (3,251 out of 7,085; 46 %) is lower than in the year 2016. Among the 65 fatalities related to commercial vehicle collisions in Kentucky seven were commercial vehicle drivers

Table 3. Kentucky Commercial Vehicle Collisions, 2010-2017

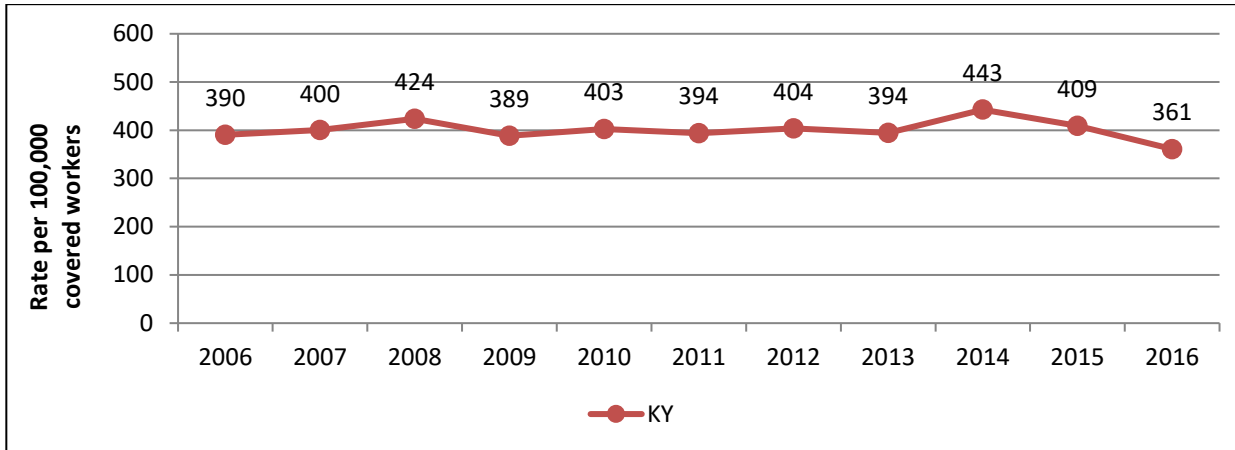
	Year							
	2010	2011	2012	2013	2014	2015	2016	2017
Total number of commercial vehicles involved in collisions in Kentucky	5,984	6,395	6,122	6,296	7,281	7,765	7,433	7,085
Unit number 01 (unit at fault according to the police)	3,840	4,166	3,951	4,097	4,755	4,890	4,665	4,470
Commercial vehicle driver's injury								
Fatal	9	13	10	9	8	9	9	7
Incapacitating	31	48	37	37	40	44	32	35
Non-incapacitating	145	116	110	125	142	145	107	135
Possible injury	139	143	150	139	155	154	136	147
Vehicle fire	33	20	31	25	32	31	30	26
KY license	3,466	3,080	2,848	2,909	3,323	3,384	3,902	3,251
Total number of fatalities in collisions involving a commercial vehicle	99	83	81	72	64	104	86	65
Total number of injuries in collisions involving a commercial vehicle	1,438	1,438	1,392	1,399	1,396	1,700	1,448	1,425
Single vehicle collision	1,316	1,475	1,407	1,440	1,614	1,626	1,474	1,523
Unit type								
Bus	148	136	143	156	171	168	170	217
School bus	59	75	69	71	82	104	81	65
Truck and trailer	1,018	1,125	1,083	1,094	1,313	1,454	1,250	883
Truck – single unit	1,498	1,385	1,419	1,484	1,697	1,704	1,716	1,579
Truck tractor & semi-trailer	3,111	3,491	3,279	3,358	3,884	4,142	4,053	4,164
Truck – other combination	122	138	109	106	110	159	136	144
Other	28	44	20	26	24	33	27	7
Hazard cargo present	171	151	133	136	180	189	140	183

Data Source: Kentucky State Police Collision Report Analysis for Safer Highways (CRASH) database.

Indicator #27 (Kentucky- Specific): Occupational Falls- First Reports of Injury and Claims Filed with Workers' Claims by Injury Year

In 2016, there were 6,566 occupational fall claims and first reports associated with occupational fall injuries. The fall incidence rate was 361/100,000 covered workers, a 12 % decrease from 2015 (Figure 23).

Figure 23. Occupational Fall Injury Incidence Rates, 2006-2016

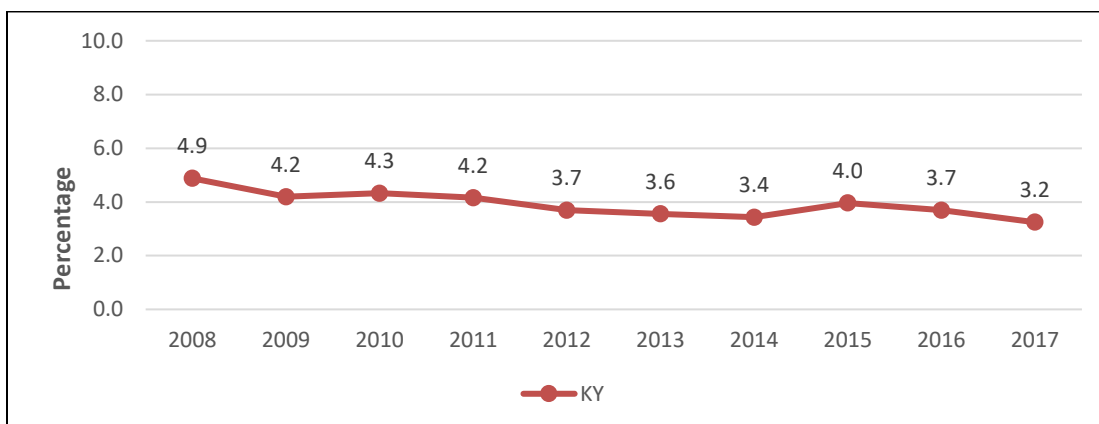


Data Source: Kentucky Department of Workers' Claims.

Indicator #28 (Kentucky- Specific): Work-Related Traumatic Injuries Treated in Kentucky Trauma Hospitals

This indicator uses data from the Kentucky Trauma Registry and reflects the most severe traumatic injuries treated in Kentucky acute care hospitals that are verified trauma hospitals, levels I to IV, or are in the process of applying for designation status. In 2008 there were only 3 verified trauma hospitals in the state, but by 2014, there were 28 verified or in a process of verification facilities submitting data to the state trauma registry databank. Therefore, the increased number of traumatic injury cases reflect largely the expansion of the system. In 2008 there were 324 work-related traumatic injuries, 4.9% of all traumatic injuries treated in the 3 verified trauma centers. In 2017, there were 436 work-related injuries treated in the 28 trauma facilities, constituting 3.2% of all traumatic injuries reported to the state trauma registry.

Figure 24. Work-Related Traumatic Injuries as a Percentage of All Traumatic Injuries Reported to the State Trauma Registry, 2008-2017

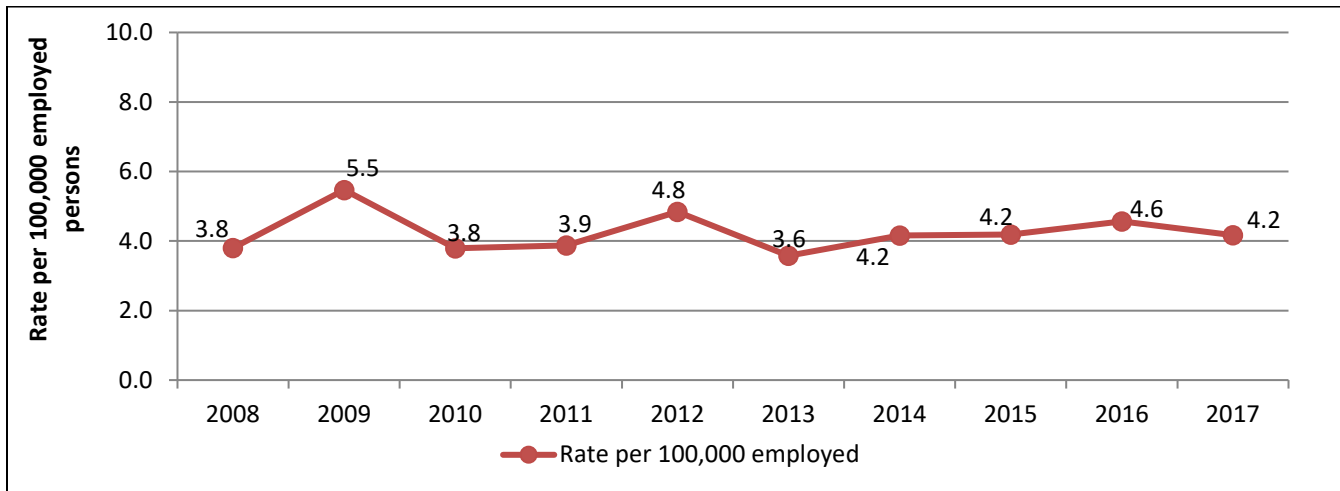


Data Source: Kentucky Trauma Registry. Percentages may differ from the percentages reported in previous reports as the data for the last 4 years were updated.

Indicator #29 (Kentucky- Specific): Work-Related Traumatic Brain Injuries (TBIs) Treated in Kentucky Acute Care Hospitals

From 2008 to 2017, the rate of work-related TBIs fluctuated between 3.6/100,000 and 5.5/100,000 employed persons.

Figure 25. Rate of Work-Related Traumatic Brain Injuries Treated in Kentucky Acute Care Hospitals, 2008-2017

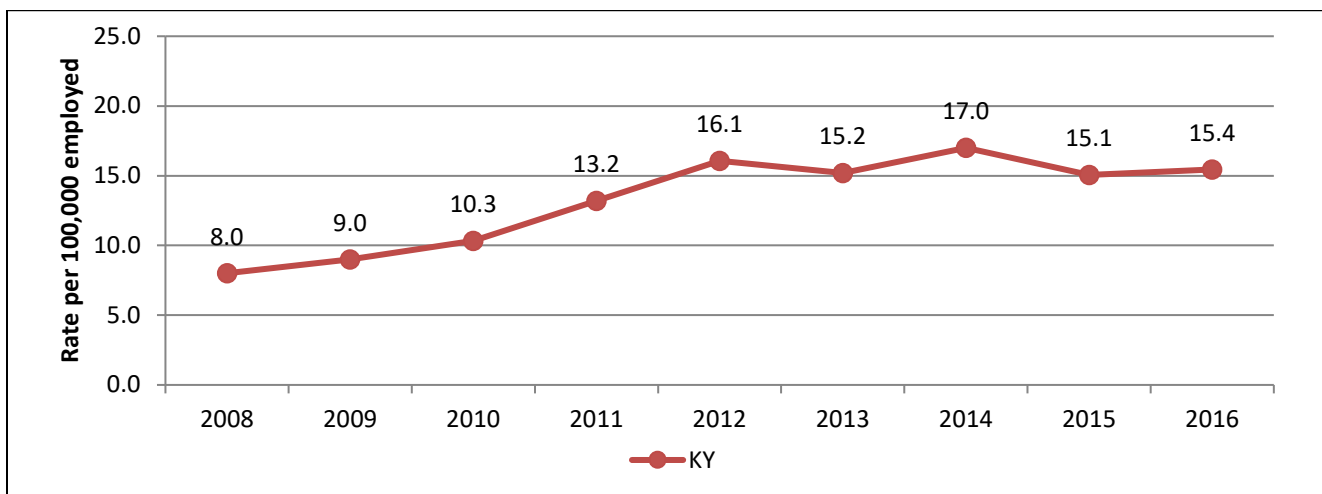


Data Source: Kentucky Office of Health Policy, Cabinet for Health and Family Services. 2016-2017 rates calculated as per ICD.10.CM codes.

Indicator #30 (Kentucky- Specific): Work-Related Concussions Reported to the State Workers' Compensation (WC) System

From 2008 to 2016, the rate of work-related concussions reported to the state workers' compensation system almost doubled, from 8/100,000 covered workers to 15/100,000.

Figure 26. Rate of Work-Related Concussions Reported to the Kentucky Workers' Compensation System, 2008-2016



Data Source: Kentucky Department of Workers' Claims.

Note: Definitions and a standardized methodology for the indicator calculations can be found here "OHI: A Guide for Tracking Occupational Health Conditions and Their Determinants", April 2018.



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The Kentucky Injury Prevention and Research Center (KIPRC) is a partnership between the Kentucky Department for Public Health and the University of Kentucky's College of Public Health that combines academic investigation with practical public health initiatives.

Inquiries should be directed to:

Kentucky Injury Prevention and Research Center
333 Waller Avenue, Suite 242
Lexington, Kentucky 40504
(859) 257-4954 office
(859) 257-3909 fax
<http://www.kiprc.uky.edu>