

## Annual Report- Kentucky Occupational Health and Safety Surveillance Program (7/1/16-6/30/17)

**Principal Investigator:** Terry Bunn

**Program Type:** Overall- Kentucky Occupational Safety and Health Surveillance (KOSHS) program

### Major Outputs/Products.

#### **a. Peer-Reviewed Publications**

1. **Chandler, M., Bunn, T.L., Slavova, S.** 2016. Narrative and Quantitative Analyses Of Workers' Compensation- Covered Injuries In Short-Haul Vs. Long- Haul Trucking Industries. *Int J Injury Control Safety Prom* 4:1-11.
2. Cruz, Y., **Bunn, T.L., Hanner, N., Slavova, S.** 2017. Characterization of Foreign-Born vs. Native-Born Worker Fatalities in Kentucky, 2001–2014. *J Immigr Minor Health*. 2017 Feb 15. doi: 10.1007/s10903-017-0550-3. [Epub ahead of print]
3. Ranzenberger, K., **Bunn, T.L., Slavova, S.** (2016). Healthcare Industry Injuries by Patient Contact Status in Kentucky, 2012-2014. *South Med J*, 2016;109(10):599-605.
4. Witt W.S., **Bunn T.L.** (2017). Workers' Compensation-Reported Injuries among Security and Law Enforcement Personnel in the Private versus Public Sectors. Submitted to *Int J Inj Ctrl Sfty Prom*.

#### **b. Non-Peer-Reviewed Publications & Outputs**

1. **Chandler, M.** Construction Sector Injuries in Kentucky, 2008-2015. Brief.
2. **Chandler, M.** Large Truck Driver Crash & Injury Statistics, 2014. Brief.
3. Two toolkits: a) Trucking Crash Prevention, and b) Preventing Falls in Construction.

#### **c. Presentations**

1. **Bunn TL.** Integration of the Kentucky Occupational Safety and Health Surveillance (KOSHS) Program into State Drug Abuse/Overdose Prevention Efforts. National Occupational Research Agenda. 2017 Expanding Research Partnerships: State of the Science. June 22, 2017.
2. **Chandler, M.** Construction Injuries in Kentucky, 2008-2015. SouthON Annual Meeting. Nashville, TN. April 7, 2017.
3. **Chandler, M.** Characterization of Foreign-Born vs. Native-Born Worker Fatalities in Kentucky, 2001–2014. SouthON Annual Meeting. Nashville, TN. April 7, 2017.
4. **Bunn, T.L., Slavova, S., Rock, P.** Association between Commercial Vehicle Driver At-Fault Crashes and Proximity to Rest Areas and Truck Stops. Fatigue in Transportation Meeting. San Diego, CA. March 20, 2017.
5. **Bunn, T.L.** Integration of the Kentucky Occupational Safety and Health Surveillance Program into the Cabinet for Health and Family Services' Drug Abuse Prevention Efforts. NIOSH State-Based Surveillance meeting, Atlanta GA, December 6, 2016.

#### **d. KOSHS Social Media & Website**

1. The KOSHS Twitter account had a total of 305 new followers during the fiscal 2016-2017 year.
2. Facebook interactions totaled 4,416 during the fiscal 2016-2017 year.
3. The FACE website was redesigned to increase ease of resource access; resources were grouped by focus area and reports were placed in a database searchable by incident type, industry, etc.
4. A new Total Worker Health website was created in August 2017 to house TWH resources.

#### **e. Activities**

1. Partnered with NIOSH-supported University of KY Central Appalachian Regional Education and Research Center (CARERC) for screening of "A Day's Work" documentary; 50 persons attended.
2. National Falls Stand-Down Campaign: 7 billboards donated from Lamar Advertising; delivered toolbox talk to 36 employees with Messer Construction on worksite; developed Safety Toolkit.
3. Project Manager attended Advisory Committee on Construction Safety & Health, Washington, DC.

### Significant Findings

Construction Sector Injuries in Kentucky, 2008-2015. Using nonfatal injury data obtained from the Bureau of Labor Statistics and fatal injury data from the Kentucky FACE database, KOSHS released a brief detailing the state of injuries and illnesses among construction sector employees for years 2008-2015. The analysis identified 102 construction-sector decedents for the study period; falls accounted for one-third of total deaths (35%); 30% of decedents were contracted for their work; those aged 45-54 accounted for the highest proportion killed (29%);

27% of decedents had not obtained a high school diploma; and 16% were from a country where English was not the primary language. Heavy and Civil Engineering Construction was the subsector with the highest nonfatal injury rate, at 3.9 deaths per 100,000 FTE workers, compared to the national rate of 2.8 deaths per 100,000 FTE workers.

**Level 3 Driver Inspection Online Training.** Partnering with the Kentucky Trucking Association, KOSHS developed a series of 6 modules communicating the complex regulations governing a roadside Driver Inspection. Employers were provided the option to request a personalized e-learning portal to be established by KOSHS through Moodle.com, allowing managers to track the progress and scores of their individual commercial truck drivers. Four employers have requested personalized e-learning portals, with a combined total of 122 drivers registered. Not included in this total are e-learners taking the training directly from the KOSHS website without registering.

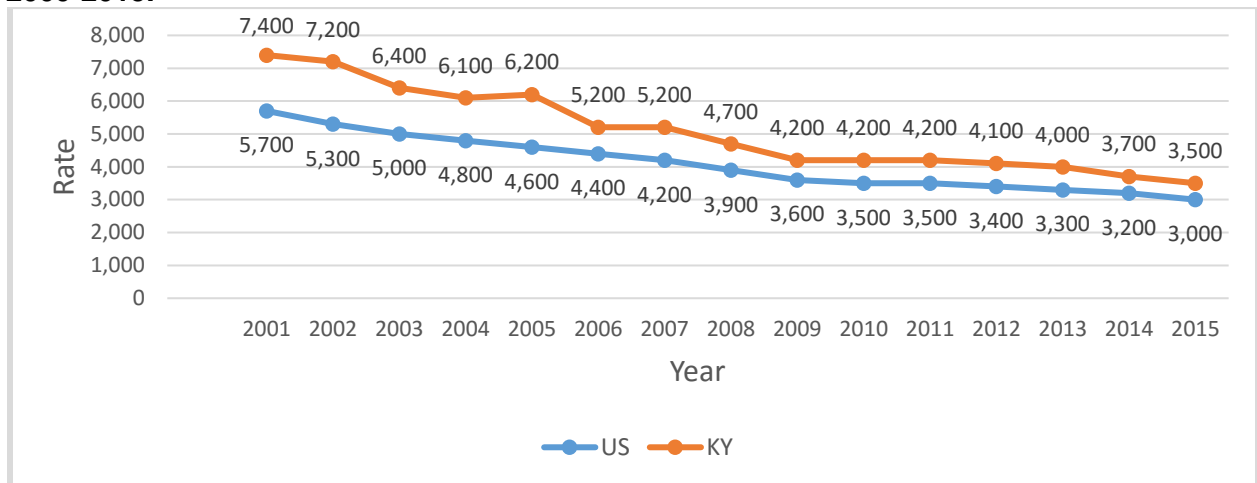
**Translation of Findings**

**Trucking Safety Videos.** KOSHS partnered with Midwestern Insurance Alliance to develop 4 studio-quality training videos addressing the leading 4 causes of non-driving related injuries to truckers: truck cab egress and ingress; opening and closing the trailer door; trailer egress and ingress; and cranking the trailer landing gear. Leading causes were identified by current workers' compensation data and were in agreement with injury activities identified in our study, 'Narrative and Quantitative Analyses of Workers' Compensation- Covered Injuries in Short-Haul Vs. Long- Haul Trucking Industries'. The videos are currently in post-production, pending final internal review.

**End Outcomes**

In year 2015, there were 43,300 non-fatal work-related injuries and illnesses in Kentucky with an incidence rate of 3,500/100,000 full-time equivalents, down 58% from 1999 (Figure 1).

**Figure 1. Non-fatal Work-Related Injury and Illness Incidence Rates, Private Industry, 2000-2015.**



Produced by the Kentucky Occupational Safety and Health Surveillance Program, Kentucky Injury Prevention and Research Center.

Data Source: Bureau of Labor Statistics, U.S. Department of Labor.

In year 2016, there were 84 fatal occupational injuries in Kentucky, a decrease from the reported 90 fatal work-related injuries for year 2015. The 2015 Kentucky rate was 4.3/100,000 or 21% above the preliminary 2012 national rate of 3.4/100,000.

## Annual Report- Occupational Safety and Health Surveillance (7/1/16- 6/30/17)

State: Kentucky Principal Investigator: Terry Bunn

Program Type: Occupational Health Indicator (OHI) program

### Major Outputs and Products.

#### a. Peer-reviewed Publications

1. **Bunn, T.L., Slavova, S.,** Rock, P.J. (2017). Association between Commercial Vehicle Driver At-fault Crashes Involving Sleepiness/Fatigue and Proximity to Rest Areas and Truck Stops. (Submitted to *Accid Anal Prev.*)

#### b. Non-peer-reviewed publications.

1. Slavova, S. Analysis and Reporting of Injury-Related Inpatient Hospitalizations Using ICD-10-CM-coded Administrative Billing Data. 2017 CSTE Annual Conference, Boise, Idaho, June 3-8, 2017. [\[Download PDF\]](#)
2. Annual OHI Report.

#### c. Data production and outputs.

1. 2014 OHI Data submitted to NIOSH
2. Ky data submitted to NIOSH for the SouthON multi-state analysis of ambient heat, air quality and occupational emergency department visits
3. Ky provided 2010-2013 mortality and hospitalization data to NIOSH for the CSTE/NIOSH multi-state study on silicosis.
4. Ky is responsible for updates to OHI #19- WC Awards, for the CSTE OHI Guide. The Ky OHI epidemiologist submitted the *OHI Guide* annual update for OHI#19 and participated in the CSTE discussion on methodological OHI issues in the recent OHI data collection.

### Activities

- a. Thirty new lead exposure assessments were mailed in 2016 to Ky adults identified as having elevated blood lead level (BLL) test results ( $\geq 10\mu\text{g/dL}$ ). Challenges were faced with similar caseloads in 2015, including DPH staff turnover in reporting cases to the OHI program, and with technical issues in the DPH system that captures cases. DPH IT is working on the issue and a new DPH staff member is being tasked with reporting cases to the OHI program. Assessment responses revealed that 1 case was not due to personal job exposure, since the individual did not work; 1 likely stemmed from a gunshot wound in a workplace violence incident; 2 were employed/recently employed as safety officers at a gun shooting range; and 2 were environmental contractor abatement workers working with aged lead paint and dust. Follow-up letters were sent to these individuals with prevention reading materials relative to their self-reported working duties and environmental factors. The individual who was not employed was sent information regarding potential sources of lead in the home and common hobbies that lead to lead exposure. Due to the low number of cases received, no referrals for on-site employer investigations were made to KY Labor Cabinet.
- b. Survey among Kentucky medical coders was administered to understand issues related to the ICD-10-CM transition, effect on medical coders' productivity, need for additional training, and continuing education, including questions specific to coding of work-related injuries.
- c. Ky OHI team member participates in national efforts to evaluate transition to ICD-10-CM on state and national data quality and reporting definitions, contributing data and methodology expertise to the newly formed Council of State and Territorial Epidemiologists (CSTE) Injury ICD-10-CM Transition Workgroup, a collaboration between CSTE and CDC National Center for Injury Prevention and Control (<https://cste.site-ym.com/page/INJURYICD10CM>).
- d. Leveraging resources between Ky OHI and the CDC-funded Ky Surveillance Quality Improvement grant, the KIPRC team established a focus group of medical coders that are consulting and informing the work on transitioning the OHI definitions from ICD-9-CM to ICD-10-CM-based data. Per conversation with NIOSH (Tristan Victoroff), NIOSH is considering using the KY medical coder focus group to consult with NIOSH on questions and issues related to transition to ICD-10-CM-coded data.
- e. Assessment of Kentucky ICD-10-CM-coded data with payer source of Workers' Compensation was performed. Results showed that all principal diagnoses in the injury range were specific and billable codes were not truncated; encounter type was listed for 100% of the principal diagnoses in injury records. There was a significant drop in the completeness of external cause of injury codes in first quarter of 2015 after transition to ICD-10-CM coding but bounced back to pre-ICD-10-CM coding levels by first quarter 2016.

### Major Findings.

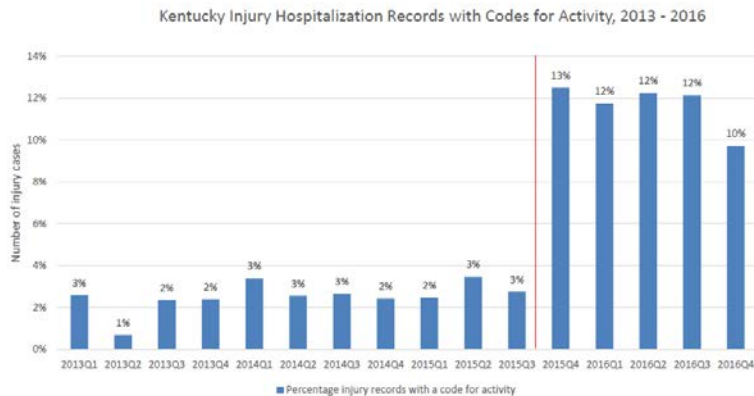
#### Potential Outcomes.

- a. Leveraging resources with a BJA grant, KIPRC signed an MOU with the Ky Office of Vital Statistics and the Ky Office of Inspector General to monthly link death certificates

with controlled substance prescription records, starting in Sept 2017. The linkage could inform OHI research studies and FACE case surveillance, identifying involvement of legally prescribed controlled substances in work-related fatalities.

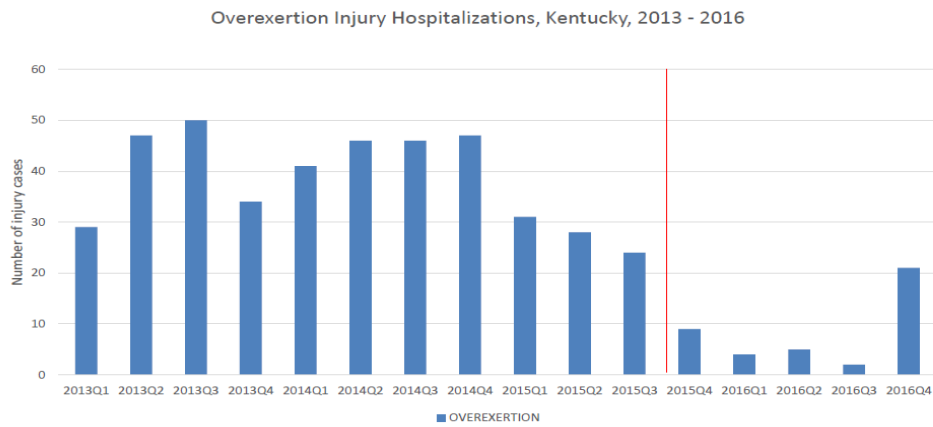
- b. Leveraging resources with the KY SQL grant, Kentucky is conducting a medical record case confirmation study of traumatic brain injuries (TBI) using ICD-10-CM-based TBI definitions proposed by NCHS (<https://www.ncbi.nlm.nih.gov/pubmed/26828779>). The study will inform the transition to ICD-10-CM –coded data on the Ky-specific indicator for work-related TBI using inpatient hospitalization data.
- c. Some major findings from the medical coder survey on the ICD-10-CM coding transition: 1) 61% of respondents did not receive training specific to ICD-10-CM external cause of injury coding; 2) the majority of coders expressed concern that physicians do not document injuries with the level of detail and specificity required by the ICD-10-CM coding system; 3) 86% reported that they do not receive training on the coding of cases where the expected payer is workers' compensation; 4) more than 1/3 of coders said that insufficient information in the medical record is an obstacle for coding the activity and place of injury; 5) 79% of coders said that if a case is coded with WC as expected payer they routinely assign codes for place and activity of injury. The following question was asked "Codes Y92, Y93, Y99 are used by epidemiologists to identify work-related injuries. Please, discuss how you use these codes". These two responses are representative for the general tone in the coders' answers:
  - "These are coded on all encounters per our hospital policy. The issue is provider documentation. It may not always be there and, if so, it is very vague and not documented to the highest level of specificity. The provider should be documenting this information. This is where it begins so we can code it."
  - "Used every time. Always use Y99.9 since that is never documented. Y92.9 and Y93.3 are used most often as this info is rarely given"

The analysis of year 2013-2016 inpatient hospitalization injury records showed a significant increase in activity codes (potential source for identifying work-related injuries when the payer source is not WC), but more than 50% of the ICD-10-CM-based activity codes were unspecified or of undetermined activity.



Produced by the Kentucky Injury Prevention and Research Center, a bona fide agent for the Kentucky Department for Public Health, May 2017. Data source: Kentucky Inpatient Claims, 2013-2016, Office of Health Policy, Cabinet for Health and Family Services. Data are provisional and subject to change.

- d. The analysis of Ky inpatient hospitalizations for years 2013-2016 showed that there were some significant changes in trends of specific causes of injuries related to methodological and conceptual changes in ICD-10-Cm codes that need to be explained to practitioners since they do not represent outbreaks or health conditions. For example, due to missing codes for overexertion in the 2016 version of ICD-10-CM, there will be significant drop in overexertion cases treated in hospitals and emergency departments between Oct 1, 2015 and Sept 30, 2016. These codes were added in the 2017 ICD-10-CM version, effective Oct 1, 2016, and the Kentucky data immediately reflected the updates in the coding system:



Produced by the Kentucky Injury Prevention and Research Center, a bona fide agent for the Kentucky Department for Public Health, May 2017. Data source: Kentucky Inpatient Claims, 2013-2016, Office of Health Policy, Cabinet for Health and Family Services. Data are provisional and subject to change.

### **Intermediate Outcomes**

- a. Strengthened accuracy of work-relatedness identification on death certificates at the county level: OHI received 10 death certificates for which the 'injury at work' indicator was erroneously marked 'yes'. OHI notified the corresponding county coroners and discussed ways in which the 'injury at work' indicator can be better captured. The Office of Vital Statistics was also notified.
- b. Based on data quality review, new variables were created within the FACE database to link Vital Statistics data (death certificates) to Crash data for fatal work-related motor vehicle crashes.
- c. A systematic review and validation of OHI definitions based on ICD-10-CM-coded data will begin in Kentucky in collaboration with the CSTE Injury ICD-10-CM transition workgroup and in consultation with certified medical coders to understand what changes in the KOSHS injury and health condition trends are to be expected because of the conceptual changes in ICD-10-CM coding, what changes would likely result from inadequate specificity of medical documentation resulting in increased percentages of unspecified and undetermined cases regardless of the increased specificity of ICD-10-CM codes, and what changes represent a real increase or decrease in conditions under occupational health surveillance.
- d. In collaboration with the CSTE OHI workgroup, ICD-10-CM-based OHI definitions will be developed and tested for the calculation of the 2015 OHI data.

## **Annual Report- Occupational Safety and Health Surveillance (7/1/16- 6/30/17)**

**State:** Kentucky

**Principal Investigator:** Terry Bunn

**Program Type:** Fatality Assessment and Control Evaluation (FACE) program

### **Major Outputs/Significant Findings.**

- a. **FACE Reports-** 7 KY FACE reports were released in FY 2016-2017: 1) 15KY078; 2) 16KY013; 3) 16KY055; 4) 16KY052; 5) 15KY063; 6) 16KY017; 7) 15KY041.
- b. **Hazard Alerts-** 3 KY FACE Hazard Alerts were developed: 1) Convenience Store Robberies; 2) Fatal Falls in Construction; 3) Pedestrian Tow Drivers Struck and Killed.
- c. **Peer-Review Publications**
  1. Cruz, Y., **Bunn, T.L., Hanner, N., Slavova, S.** (2017). Characterization of Foreign-Born vs. Native-Born Worker Fatalities in Kentucky, 2001–2014. J Immigrant Minority Health.
- d. **Presentations**
  1. **Chandler, M.** Characterization of Foreign-Born vs. Native-Born Worker Fatalities in Kentucky, 2001–2014. SouthON Annual Meeting. Nashville, TN. April 7, 2017.
  2. **Chandler, M.** Construction Injuries in Kentucky, 2008-2015. SouthON Annual Meeting. Nashville, TN. April 7, 2017.

### **Potential Outcomes**

- a. The American Society of Safety Engineers (ASSE) posted two reports to their various member safety blogs: 15KY041 'Seasonal Lawn Mower Operator Crushed and Dies After Lawn Mower Rolls Over on a 30 Degree Slope'; and 15KY067 'Teen Laborer Rides on Side of Forklift, Falls While Jumping, and is Run Over by Rear Tire'.
- b. **Newsletters:** JJ Keller published Hazard Alert 'Workers Killed while Unloading Cargo from Flatbed Trailers' in their October 2016 Motor Carrier Safety newsletter (reaching 9,000 subscribers), and FACE Case Report 16KY017 'Construction Laborer Killed in Trench Collapse while Taking Grade Measurements' in their April 2017 Newsletter (reaching 4,100 subscribers); KTA featured the Hazard Alert "Truck Rear-End Fatalities" in their 3Q 2016 Newsletter.
- c. **Magazine Publications**
  1. EHS Today featured KY Face Case 15KY032 in their July 2016 print issue and on their online home page, which reaches approximately 400,000 viewers per month.
  2. National Safety Council's Safety & Health Magazine featured 5 Kentucky FACE Investigation Reports in various monthly issues: 15KY011, 15KY032, 14KY048, 14KY049, and 13KY041.
  3. Kentucky Trucking Association (KTA) Magazine published Hazard Alert 'Workers Killed while Unloading Cargo from Flatbed Trailers' in their August 2016 issue. KTA Magazine reaches 2,000 print subscribers and 1,000 digital subscribers.
  4. Accident Reconstruction Journal featured KY FACE Case 15KY030 in their July/August, 2016 issue.

### **Intermediate Outcomes**

- a. KY FACE provided report 15KY067 'Teen Laborer Rides on Side of Forklift, Falls While Jumping, and is Run Over by Rear Tire' to the victim's employer and discussed recommendations. Per recommendation #2, the employer hired a forklift trainer to provide on-site training to all 8 of their employees.
- b. Report 15KY031 '19-Year-Old Construction Laborer Crushed in Trench Collapse While Laying Sewage Pipe' was provided to the victim's employer. The recommendations aided in the development of several key policy changes, including: hiring an external safety service to evaluate company policies for OSHA compliance; training policy inclusion of excavation and confined space entry safety; requirement for all employees performing trench work to receive competent person training; and increased enforcement of PPE usage. Additionally, a full-time safety manager was hired and confined space entry/rescue equipment was purchased.
- c. Jim Fischer, Safety and Environmental Team Leader with Asten Johnson in Appleton, Wisconsin, used report 12KY037 for a toolbox talk to 175 employees called "Gambling with safety".
- d. Flavorman, a beverage development company located in Louisville, Kentucky used report 15KY019 'Apprentice Distiller Fatally Burned by Overpressurized Pot Still' as the basis for safety training to 20 individuals preparing to establish businesses.
- e. Granite America, located in Lexington, Kentucky, used report 15KY020 'Granite Installation Company Owner Struck by Falling Granite Slab' for safety training pertaining to safe granite transport/handling for 6 employees. The former owner of the company was the victim in this case.

- f. FACE fulfilled a data request from the University of Kentucky Department of Agriculture regarding agriculture deaths in Kentucky between years 1994 and 2000.
- g. To allow for more timely data entry and robust data analyses, The Kentucky FACE Database was converted from Epi Info 7 to Microsoft Access. Several new variables were included:
  - 1. New variables for Cause and Intent, using existing ICD-10 code matrix;
  - 2. 6 new Highway Incident Management (HIM) variables;
  - 3. 4 new death certificate variables to link DC data to individual cases;
  - 4. 3 new CRASH data variables for data linkage;
  - 5. New variable for time interval between injury and onset of death;
  - 6. New NAICS group and SOC group variables.