

# **Linking Datasets to Characterize Occupational Falls**

Terry Bunn, Svetla Slavova,  
Arne Bathke, Medearis  
Robertson

# Occupational Falls

- 815 fatal occupational falls in 2004, ↑ 17% from 2003
- 4400 Kentucky nonfatal worker falls involving days away from work; 10 fatal
- 3,631 work-related hospitalizations in 2004 in Kentucky (↓ from 3858 in 2002 with an annual crude rate of 208/100,000 FTE)
- Primary external cause of injury was due to falls (n=289)

# Workers' Claims Data

- 36,986 first reports of injury in 2004 (35,016 in 2002)
- Annual crude injury rate of 1887/100,000 FTE
- 6,008 first reports of injury were due to falls in 2004

# Data Linkage

- Years 2000-2004 hospitalization UB-92 and Workers' Claims data sets linked
- Probabilistic data linkage- LinkSolv software (Strategic Matching Inc.) in Access format
- Common data variables matched: date of birth, gender, date of injury, date of hospital admission, cause of injury (falls)

# Linked Cases

<b>Year</b>	<b>Number</b>	<b>Percentage Linked</b>
<b>2004</b>	168	52%
<b>2003</b>	137	45%
<b>2002</b>	172	53%
<b>2001</b>	189	54%
<b>2000</b>	156	55%
<b>Total</b>	822	52%

# Industries Where Falls Occurred

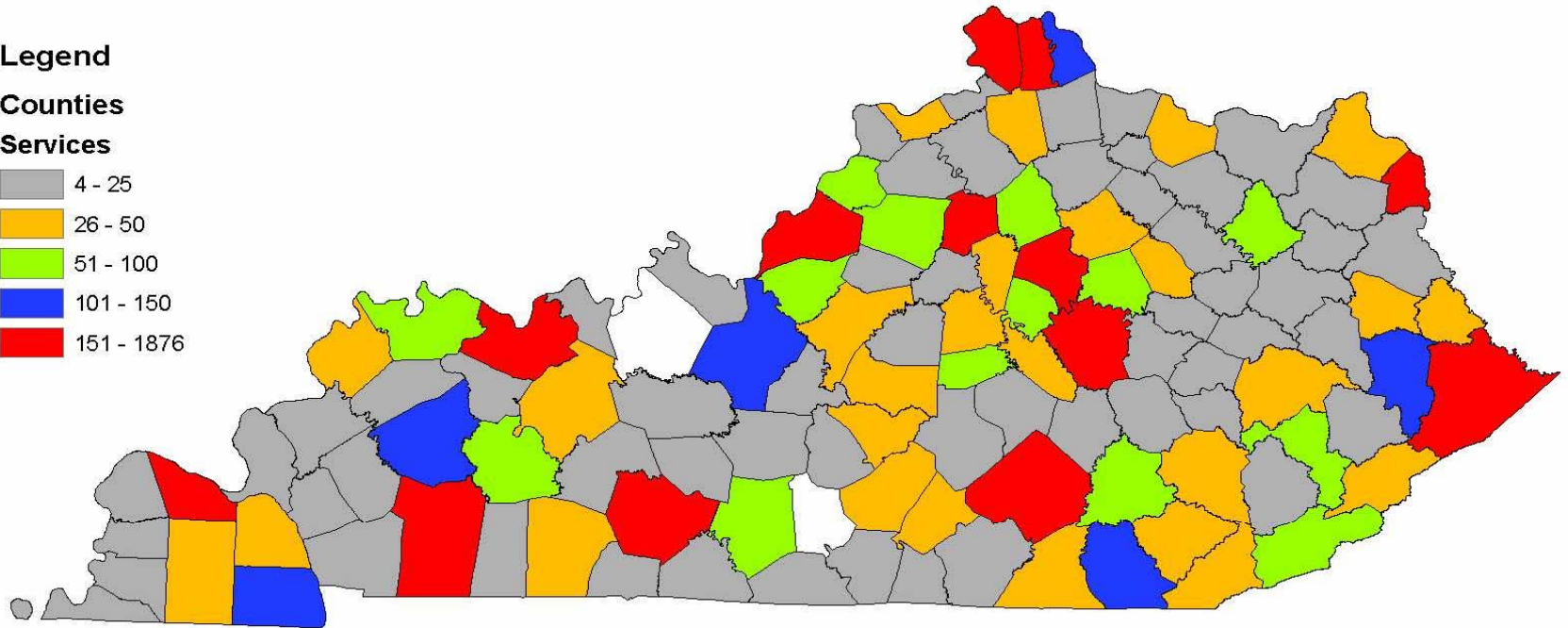
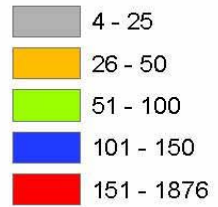
<b>Males</b>	Construction (n=254) (43%)	Manufacturing (n=79) (13%)	Services (n=68) (12%)
<b>Females</b>	Services (n=107) (46%)	Retail Trade (n=61) (26%)	Manufacturing (n=31) (13%)



## Legend

### Counties

### Services



# Primary Diagnosis

<b>Males</b>	Lower leg & ankle injuries  (n=99)	Forearm/elbow injuries  (n=72)	Hip injuries  (n=62)
<b>Females</b>	Lower leg & ankle injuries  (n=63)	Hip injuries  (n=49)	Forearm/elbow injuries  (n=21)

# External Cause of Injury

<b>Males</b>	Fall or Slip from different level  (n=265) (44%)	Fall or slip from ladder or scaffold  (n=199) (33%)	Fall, Slip, Trip NOC  (n=59) (10%)
<b>Females</b>	Fall or slip on same level  (n=86) (36%)	Fall, Slip, Trip, NOC  (n=83) (34%)	Fall or slip from liquid or grease  (n=40) (17%)

# Statistical Analysis of Male Construction Worker Falls

- 244 linked cases
- 56% due to fall or slip from different level

<b>Hospitalization Variables</b>	<b>Fall- diff level ( n=136)</b>	<b>Fall- ladder/ scaffold (n=108)</b>	<b>Significance<sup>a</sup></b>
<b>Length of stay</b>	Median= 4 days Mean= 6.6±6.4	Median= 3.8 days Mean= 3±4.1	<b>p&lt;0.05</b>
<b>Long Stays (≥ 7 days)</b>	31%	8%	<b>p&lt;0.05</b>
<b>Total Charges (p&lt;0.05)</b>	Median= \$17,900 Mean= \$34,200±\$45,100	Median= \$13,100 Mean= \$19,500±\$24,800	<b>p&lt;0.05</b>

<sup>a</sup> Wilcoxon Mann Whitney two sample test, two-sided

<b>Workers' Claims Variables</b>	<b>Fall- diff level (n=64)</b>	<b>Fall- ladder/ Scaffold (n=45)</b>	<b>Significance<sup>a</sup></b>
<b>Disability</b>	Median= 8.5% Mean= 18.8%	Median= 6% Mean= 13.1%	p=0.32
<b>Impairment</b>	Median= 0% Mean= 10.3%	Median= 0% Mean=3.6%	p=0.25
<b>Award Amount</b>	Median= \$27,316 Mean= \$106,820	Median= \$24,000 Mean= \$52,493	p=0.51

<sup>a</sup> Wilcoxon Mann Whitney two sample test, two-sided

<b>Hospitalization Variables</b>	<b>Carpenters &amp; Apprentices (n=53)</b>	<b>Laborers &amp; Helpers (n=63)</b>	<b>Roofers (n=29)</b>	<b>Other Construction Workers (n=98)</b>	<b>P-value<sup>a</sup></b>
<b>Length of stay</b>	Median= 4 Mean= 6.7	Median= 4 Mean= 5.3	Median= 3 Mean= 6.1	Median= 3 Mean= 4.4	p=0.24
<b>Total Charges (p&lt;0.05)</b>	Median= \$19,104 Mean=\$34,670	Median= \$17,068 Mean=\$28,887	Median= \$15,591 Mean= \$31,527	Median= \$13,039 Mean= \$21,896	p= 0.15
<b>Cause of injury</b>	Diff level-58%	Diff level-56%	Diff level-83%	Diff level-47%	<b>p&lt;0.05</b>

<sup>a</sup> Kruskal Wallis test

<b>Workers' Claims Variables</b>	<b>Carpenters &amp; Apprentices (n=28)</b>	<b>Laborers &amp; Helpers (n=25)</b>	<b>Roofers (n=16)</b>	<b>Other Construction Workers (n=40)</b>	<b>P-value<sup>a</sup></b>
<b>Disability</b>	Median= 5.9% Mean= 14.4%	Median= 7% Median= 17.1%	Median= 6.5% Mean= 16.5%	Median= 8.3% Mean= 17.4%	p=0.91
<b>Impairment</b>	Median= 0.3% Mean= 5.7%	Median= 0% Mean=8.4%	Median= 0% Mean= 6.9%	Median= 0% Mean=8.5%	p=0.76
<b>Award Amount</b>	Median= \$22,933 Mean= \$74,748	Median= \$32,000 Mean= \$75,970	Median= \$14,000 Mean= \$111,769	Median= \$38,717 Mean= \$85,466	p=0.42

<sup>a</sup> Kruskal Wallis test

Hospitalization Variables	Carpenters & apprentices (n=53)		P-value	Laborers, Helpers (n=63)		P-value
	Fall- diff level (n=31)	Fall-ladder/scaffold (n=22)		Fall- diff level (n=35)	Fall-ladder/scaffold (n=28)	
<b>Length of stay</b>	Median= 6 days Mean= 8 days	Median= 2.5 days Mean= 4.7 days	<b>p&lt;0.05</b>	Median= 5 days Mean= 6.7 days	Median= 3 days Mean= 3.5 days	<b>p&lt;0.05</b>
<b>Total Charges</b>	Median= \$24,400 Mean= \$39,800	Median= \$13,200 Mean= \$27,400	p=0.10	Median= \$28,700 Mean= \$38,400	Median= \$14,000 Mean= \$17,100	<b>p&lt;0.05</b>

Hospitalization Variables	Roofers (n=29)		P-value	Other construction workers (n=98)		P-value
	Fall-diff level (n=24)	Fall-ladder/scaffold (n=5)		Fall-diff level (n=46)	Fall-ladder/scaffold (n=52)	
<b>Length of stay</b>	Median= 3.5 Mean= 6.8	Median= 3 Mean= 3	p=0.30	Median= 3 Mean= 5.4	Median= 3 days Mean= 3.6 days	<b>p&lt;0.05</b>
<b>Total Charges</b>	Median= \$17,900 Mean= \$35,800	Median= \$9,200 Mean= \$13,000	p=0.28	Median= \$13,400 Mean= \$26,500	Median= \$12,400 Mean= \$17,800	p= 0.45

# Summary

- Construction work is associated with the highest hospitalization and workers' claims costs in males who fall, whereas most female worker falls occurred in the services industry.
- The largest percentage of male worker falls was from one level to another, while the largest percentage of females experienced a fall, slip, or trip.

- Male construction laborers & helpers had longer hospital stays as well as higher total costs when the worker fell from one level to another.

# Conclusions

- Data linkage of hospitalization and workers claims falls data provides additional information on industry and occupation, and costs that are not available when examining either data set alone.
- This data linkage identified male construction workers as the worker population most at risk for an occupational fall.