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# **Occupational Injuries on Thoroughbred Horse Farms: A Description of Latino and Non-Latino Workers' Experiences**

**Jennifer E. Swanberg, PhD**  
University of Maryland

**Jessica Miller Clouser, MPH; Susan C. Westneat, MS;  
Mary Webster Marsh, MPH; Deborah B. Reed, PhD**  
University of Kentucky

**Thoroughbred Worker Health and Safety Study**

# Disclosure

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- 32 Thoroughbred Farm Representatives
- Industry Advisory Council
- Community Advisory Council
- Research Team



# Background

- Animal production workers have high nonfatal injury incidence rates across all industries<sup>1</sup>
  - Horse breeding -threats of kicks, falls, and tramplings<sup>2,3</sup>
- Latinos experience poorer occupational health outcomes than all other worker in US across all industries<sup>4,5</sup>
  - Fatality and injury rates 7 times US average<sup>6</sup>
- Scant research on equine industry worker health
  - Thoroughbred racing and breeding operations prominent in the US and increasing globally<sup>7,8</sup>

# Purpose

- Describe the frontline workforce
- Identify the type and nature of injuries on thoroughbred horse farms
- Determine differences in injury type by ethnicity



# Thoroughbred Worker Health & Safety Study

## Research Goals

Identify job/workplace characteristics & hazards

- Describe Latino workers and occupational health
- Determine job/workplace factors associated with ill health and hazard exposure
- Develop & disseminate educational materials

## Research Methodology

Thoroughbred Farm Interview

- Phone Interview (20-min)
- Farm Interview (1-3 hr.)
- Injury Logs & Other documents
- Thoroughbred Worker Survey

Community  
Advisory Board

&

Industry Advisory  
Board

## Community & Industry Benefits

- Increase understanding of job hazards & work stressors
- Reduce occupational illness & injury
- Reduce individual & organizational costs

## Educational Materials

- Manager Safety Checklist
- Graphic Safety Chart
- Best Practices Report



# Data Collection: Thoroughbred Farm Review

- 20-minute phone interview
  - 73 questions farm/workforce demographics, organizational practice and worker safety
- 2-hour in-depth semi-structured face-to-face interview
  - Digitally recorded and transcribed verbatim
- De-identified injury logs
  - OSHA, worker compensation, informal tracking sheets

# Eligibility, Sampling, & Recruitment

- Farm Eligibility
  - Bred and/or board thoroughbred horses
  - Employed at least one Latino worker
  - Located in SE US
- Sampling Frame 82 farms
  - 62 eligible farms
  - 32 farms completed at least one part the interview (51%)
  - 28 farms completed phone and face-to-face interview (41%)
  - Final sample 22 farms provided detailed injury data (36%)



# Measures

- **Worker injuries** - in the last 5 years
  - Diagnosis - type of injury
  - Distribution - location of the injury
  - Mechanism - action that led to the injury
  - Horse-related vs. non-horse related
  - Demographics



# Analysis

- Transcripts analyzed by 3 coders via Atlas-ti (V6)
- Farm logs and qualitative interviews cross-referenced
- Univariate descriptive statistics for worker demographics and injury profile
- Bivariate analysis, chi-square, and Fisher's exact test to explore relationships between injury distribution, mechanism, diagnosis, ethnicity, and gender

# Farm and Employment Characteristics (N=22)

Characteristics	Mean	SD	Range	Median
Acres	875	1294.8	30-6000	387
No. of thoroughbreds	153.1	132.5	6-516	100.5
No. of all workers on farm	34	52.6	1-230	13
No. year round farmworkers (frontline)	25.8	40.6	1-180	11
	N	%		
Farm size by No. year round employees				
Small (1-10 workers)	8	36.4		
Medium (11-25 workers)	8	36.4		
Large (>25 workers)	6	27.3		
No. farms with PT yr. rnd, employees <sup>1</sup>	10	45.5		
No. farms with season employees	14	63.6		
No. farms with contract employees	16	72.7		

<sup>1</sup> Percentages do not equal 100 because responses are not mutually exclusive

# Farm and Employment Characteristics (cont.)

<b>Most common jobs on the farm <sup>1,2</sup> (N=22)</b>	<b>N</b>	<b>%</b>
Grooms	22	100.0
Maintenance worker	17	77.3
Night watch	16	72.7
Landscapers	11	50.0
Exercise Rider	8	36.4
General Farm Hand	4	18.2
No. of farms where workers perform multiple-job tasks	14	63.6
<sup>1</sup> Percentages do not equal 100 because responses are not mutually exclusive		
<sup>2</sup> Farms were asked to list their top 3 jobs for number of workers employed		

# Estimated Characteristics of Farmworkers<sup>1</sup> Aggregated Across 22 Farms (N=568)

<b>Demographic Characteristics</b>	<b>N</b>	<b>%</b>
<b>Sex</b>		
Male	476	83.8
<b>Race</b>		
Latino	283	49.8
White (non-Latino)	265	46.7
Black (non-Latino)	20	3.5
<b>Nativity</b>		
Born in country other than US	248	43.7
<b>Language</b>		
Native language not English	251	44.2

<sup>1</sup> Frontline workers

# Documented Injuries

- 284 injuries were documented.
  - 81.4% experienced by men
  - 57.6% experienced by non-Latinos



# Mechanisms of Injury Overall (N=278)

Injury Mechanism <sup>1</sup>	Number of mechanisms (%)
Kick	55 (19.8)
Struck by	32 (11.5)
Trampling/stepped on	24 (8.6)
Horse jerked or pulled	19 (6.8)
Horse-related Overexertion/bend/twist	8 (2.9)
Fall from horse	7 (2.5)
Contact with horse related equipment/tools	6 (2.2)
Bite	5 (1.8)
Other horse related	2 (0.7)
<b>Total Horse related</b>	<b>158 (56.8)</b>
Contact with equipment or tool	23 (8.3)
Lifting	19 (6.8)
Slip/trip/fall on ground	19 (6.8)
Fall from equipment or structure	15 (5.4)
Struck by non-horse object	11(4.0)
Insect/plants	11(4.0)
Overexertion	8 (2.9)
Contact with foreign object	10 (3.6)
Other non-horse related	7 (2.5)
<b>Total Non-horse related</b>	<b>120 (43.2)</b>

<sup>1</sup> 6 cases had missing data for mechanism.

# Mechanisms of Injury by Latino and Non-Latino Demographic (N=262<sup>1</sup>)

Injury Mechanism	Number mechanisms, Latino (%)	Number mechanisms, Non-Latino (%)
<b>Kick</b>	24 (48.9)	25 (51.2)
Struck by	20 (66.7)	10 (33.3)**
Trampling/stepped on	16 (72.7)	6 (27.3)**
Horse jerked or pulled	8 (42.1)	11 (57.9)
Horse-related Overexertion/bend/twist	4 (50.0)	4 (50.0)
Fall from horse	1 (16.7)	5 (83.3)
Contact with horse related equipment/tools	1 (20.0)	4 (80.0)
Bite	1 (20.0)	4(80.0)
Other horse related	0 (0.0)	2 (100.0)
<b>Total Horse related</b>	<b>75 (51.4)</b>	<b>71 (48.6)</b>
Contact with equipment or tool	6 (28.6)	15 (71.4)
Lifting	6 (33.3)	12 (66.7)
Slip/trip/fall on ground	4 (26.7)	11 (73.3)
Fall from equipment or structure	5 (38.5)	8 (61.5)
Struck by non-horse object	3 (27.3)	8 (72.7)
Insect/plants	1 (9.1)	10 (90.9)*
Overexertion	2 (25.0)	6 (75.0)
Contact with foreign object	4 (44.4)	5 (55.6)
Other non-horse related	2 (28.6)	5 (71.4)
<b>Total Non-horse related</b>	<b>32 (29.1)</b>	<b>78 (70.9)</b>

\*p≤.05, \*\*p≤.01, <sup>1</sup>22 cases had missing data for ethnicity.



# Diagnosis of Injury in Cases: Total Injuries and Designation as Horse and Non-horse related<sup>1</sup>

Diagnosis of Injury	Number of diagnoses (%) (N=287) <sup>1</sup>	Number diagnoses, Horse-related (%) (N=278) <sup>2</sup>	Number diagnoses, Non-horse related (%)
General injuries	83 (29.3)	60 (73.4)	21 (26.6)***
Strains, sprains or tears	80 (28.2)	33 (41.8)	46 (58.2)***
Contusions	38 (13.4)	27 (73.0)	10 (27.0)*
Broken/crushed bones	31 (10.9)	22 (69.0)	9 (31.0)
Cuts	26 (9.2)	10 (40.0)	15 (60.0) <sup>^</sup>
Irritation <sup>3</sup>	10 (3.5)	2 (22.2)	7 (77.8)*
Stings	7 (2.5)	0 (0.0)	7 (100.0)**
Inflammation	5 (1.8)	4 (80.0)	1 (20.0)
Joint dislocation	4 (1.4)	1 (25.0)	3 (75.0)
Other diagnoses	3 (1.1)	1 (33.3)	2 (66.7)

\*p≤.05, \*\*p≤.01, \*\*\*p≤.001;<sup>^</sup>p<.08, approaching significance regarding horse vs. non-horse related incident.

<sup>1</sup>Events with multiple diagnoses were coded for each diagnosis obtained.

<sup>2</sup>6 cases did not include information about horse/non-horse related.

<sup>3</sup> Irritation chiefly comprised of skin or eye irritation.

# Diagnosis of Injury in Cases: Latino and Non-Latino Demographic<sup>1</sup>(N=262)

Diagnosis of Injury	Number diagnoses, Latino (%)	Number diagnoses, Non-Latino (%)
General injuries	35 (43.2)	46 (56.8)
Strains, sprains or tears	31 (40.8)	45 (59.2)
Contusions	14 (50.0)	14 (50.0)
Broken/crushed bones	15 (53.6)	13 (46.4)
Cuts	9 (36.0)	16 (64.0)
Irritation <sup>2</sup>	3 (33.3)	6 (66.7)
Stings	1 (14.3)	6 (85.7)
Inflammation	3 (60.0)	2 (40.0)
Joint dislocation	2 (66.7)	1 (33.3)
Other diagnoses	1 (33.3)	2 (66.7)

<sup>1</sup>22 cases had missing data for ethnicity.  
<sup>2</sup> Irritation chiefly comprised of skin or eye irritation.

# Distribution of Injury in Cases: Total Injuries and Designation as Horse and Non-horse related<sup>1</sup>

Site of Injury	Number of sites (%) (N=271) <sup>2</sup>	Number sites, Horse-related (%)	Number sites, Non-horse related (%) (N=265) <sup>3</sup>
Wrist, fingers or hands	49 (17.8)	26 (55.6)	20 (44.4)
Arms and shoulder	46 (17.0)	31 (67.4)	15 (32.6)
Ankles, foot or toes	39 (14.4)	22 (57.9)	16 (42.1)
Back or spine	36 (13.3)	12 (33.3)	24 (66.7)***
Face	27 (10.0)	18 (72.0)	7 (28.0)
Head	22 (8.2)	18 (81.8)	4 (18.2)**
Knee	20 (7.4)	7 (35.0)	13 (65.0)*
Chest	14 (5.2)	13 (92.9)	1 (7.1)**
Leg	12 (4.4)	8 (66.7)	4 (33.3)
Abdomen	9 (3.3)	5 (62.5)	3 (37.5)
Groin	8 (3.0)	4 (50.0)	4 (50.0)
Hip or pelvis	6 (2.2)	2 (33.3)	4 (66.7)
Neck	5 (1.1)	0(0.0)	5 (100.0)**

\*p<.05, \*\*p<.01, \*\*\*p<.001 regarding horse vs. non-horse related incident.<sup>1</sup>Events involving multiple body parts were coded for each effected part. <sup>2</sup>13 cases did not include information about location of injury. <sup>3</sup>6 cases additional cases did not have information about horse/non-horse related.

# Distribution of Injury in Cases: Designation by Latino and Non-Latino Demographic (N=252)<sup>2</sup>

Site of Injury	Number sites, Latino (%)	Number sites, Non-Latino (%)
Wrist, fingers or hands	16 (35.6)	29 (64.4)
Arms and shoulder	17 (38.6)	27 (61.4)
Ankles, foot or toes	19 (51.4)	18 (48.6)
Back or spine	12 (33.3)	24 (66.7)
Face	13 (52.0)	12 (48.0)
Head	9 (45.0)	11 (55.5)
Knee	7 (43.8)	9 (56.3)
Chest	5 (35.7)	9 (64.3)
Leg	5 (55.6)	4 (44.4)
Abdomen	3 (37.5)	5 (62.5)
Groin	4 (57.1)	3 (42.9)
Hip or pelvis	3 (50.0)	3 (50.0)
Neck	3 (60.0)	2(40.0)

<sup>1</sup>Events involving multiple body parts were coded for each effected part.<sup>2</sup>33 cases had missing data for ethnicity and/or site.

# Key Findings

- Goal One: Describe the Frontline Workforce
  - Latinos comprised half of frontline workforce
  - Men comprised large majority of frontline workers
  - Workers involved in horse and non-related tasks

# Key Findings

- Goal Two: Identify the type and nature of injuries
  - General injury category - 1/3 of injuries
  - Upper body, ankles, feet, and toes most frequently injured
  - Horse was greatest source of injury on the farm
    - Kicks were the most common mechanism of injury
  - Horse-related tasks
    - General injuries, contusions
    - Injuries to the head and chest
  - Non-Horse related tasks
    - Injuries to the back, spine, knee, and neck
    - Musculoskeletal sprains, strains and tears, irritation; and stings

# Findings

- Goal Three: Determine if differences in injury type by ethnicity
  - Higher proportion of injuries were reported by non-Latinos
  - No significant differences in diagnosis, distribution of injuries due to ethnicity
  - Differences in mechanism by ethnicity
    - Latinos more often reported being struck by or trampled/stepped on by a horse
    - Non-Latinos more often reported insect/plant related injuries

# Limitations

- Using injury log data
  - Only injuries reported to manager/supervisor included
  - Limited data on demographics (i.e., age, ethnicity not standardized fields)
    - Mixed methods approach helped, but not always
- Limited generalizability, nonrandom farm sample may not be representative of all horse farms
- Manager injuries included in injury logs, but not demographic data
- Exposure of different worker groups not assessed



# Future Research and Implications

- Implications
  - Workers are at risk of both acute and chronic injury
  - Latino workers comprise large part of frontline labor force
- Future Research Needed
  - Identify injuries experienced from a workers' perspective
  - Reporting patterns of Latinos/non-Latinos
  - Organizational factors that may increase risk of injury

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