



# Intervention Strategies to Reduce Injuries to Older Farmers

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# What happens with aging?

## ► What is aging?

- To “show the effects or the characteristics of increasing age” (Merriam-Webster)
- Old age is generally considered 65 years and older
  - When geriatric medicine begins (Sieber, 2007)
  - General age of retirement
- Who’s an older worker depends on who you ask
  - 55 years and older is a common definition (Myers, Marsh, 2009)

## ► Aging is not chronological

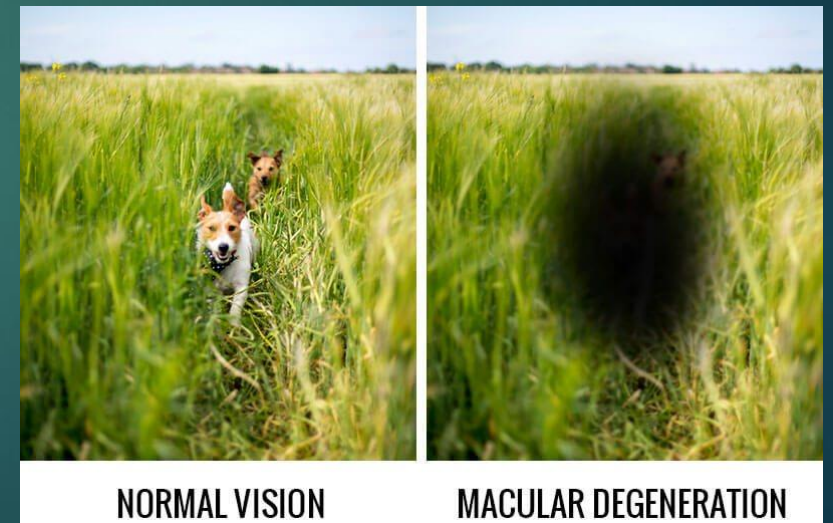
- Everyone does not grow old in the same way (Cavanaugh & Blanchard-Fields, 2018)



<https://www.kansasagnetwork.com/wp-content/uploads/2015/12/Aging-farmers.jpg>

# Vision

- ▶ Visual acuity decreases with age (Owsley et al, 1983)
- ▶ Changes in the eyes reduce the amount of light received by the retina
  - ▶ 2/3 amount of light captured by the retina is lost from age 20 to age 60 (LRC, 2017)
- ▶ Increase in risk of developing age-related diseases (National Eye Institute, n.d.)
  - ▶ Glaucoma
  - ▶ Macular degeneration
- ▶ As age increases the risk of eye injury increases (Iftikhar et al, 2019)





# Hearing

- ▶ Hearing loss is common with aging (NIHCD, 2017)
- ▶ Farm-related activities expose workers to hazardous sound levels
  - ▶ Farming increases loss of hearing sensitivity (Engdahl & Tambs, 2010)
- ▶ Hearing loss increases the risk of sustaining farm related injuries (Choi et al, 2005)



# Mobility

- ▶ Decrease in hand function (Ranganathan et al, 2001)
  - ▶ Hand and finger strength
- ▶ Arthritis increases in risk starting at 45-54 years and up (Lawrence et al, 2008)
- ▶ Farmers have an increased risk of osteoarthritis of the hip and knee (Walker-Bone & Palmer, 2002; Davis & Kotowkis, 2007)
- ▶ Older farmers with mobility issues are twice as likely to experience farm work injuries (Heaton et al., 2012)



<https://betterhealthwhileaging.net/qa-possible-elderly-incompetence-what-you-can-do/>



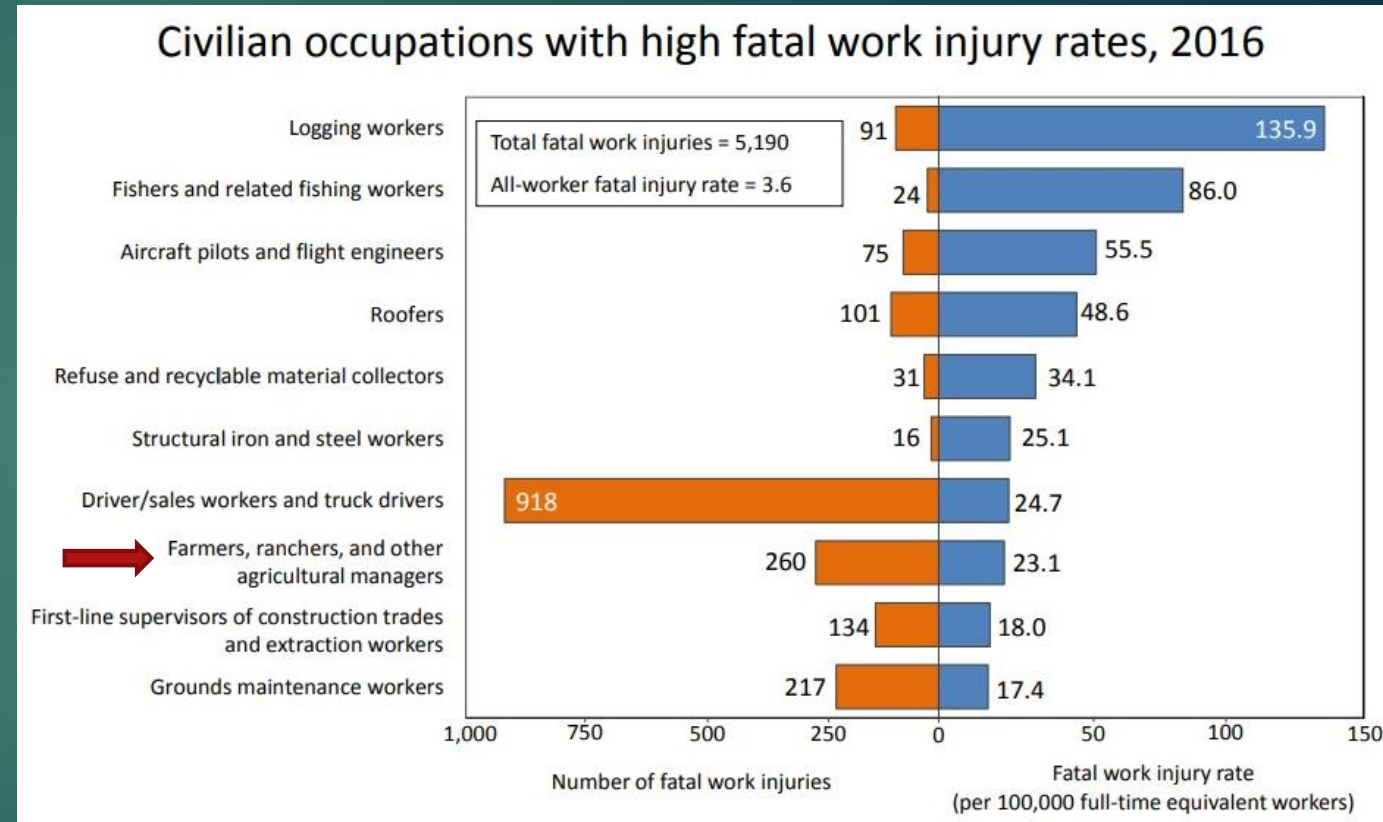
# Mental/Cognitive

- ▶ Aging leads to slower reflexes and reaction times (Kenney, 1982; Fozard et al, 1994)
- ▶ Decrease in episodic memory with age
  - ▶ Memory that enables people to remember personal happenings from the past (Tulving, 1987)
  - ▶ Slower to access stored information (Glisky, 2007)
- ▶ Harder to divide attention (Brouwer et al, 1991)
  - ▶ Older adults perform less well than younger adults in dual-task conditions
- ▶ Emergency response time for older adults is greater (Rogers et al, 2005)



# Farming Poses Higher Risk of Injury to Older Workers

- ▶ Farming is dangerous
  - ▶ In 2016 farmers had a fatal work injury rate of 23.1 versus 3.1 for all workers (CFOI, 2016)
  - ▶ From 1992 to 2004 farmers 55 years and older had a fatality rate of 45.8 (Myers et al, 2009)
    - ▶ Twice the rate of all farmers
- ▶ About half of deaths of US farmers from 1992 to 2004 were over 55 years (Myers et al, 2009)
- ▶ Half of reported fatality cases in Indiana since 2012 were farmers 60 years or older (Cheng & Field, 2018)
- ▶ In 2012 there were 449,300 principal operators 70 years and older (USDA, 2012)



Census of Fatal Occupational Injuries, 2016

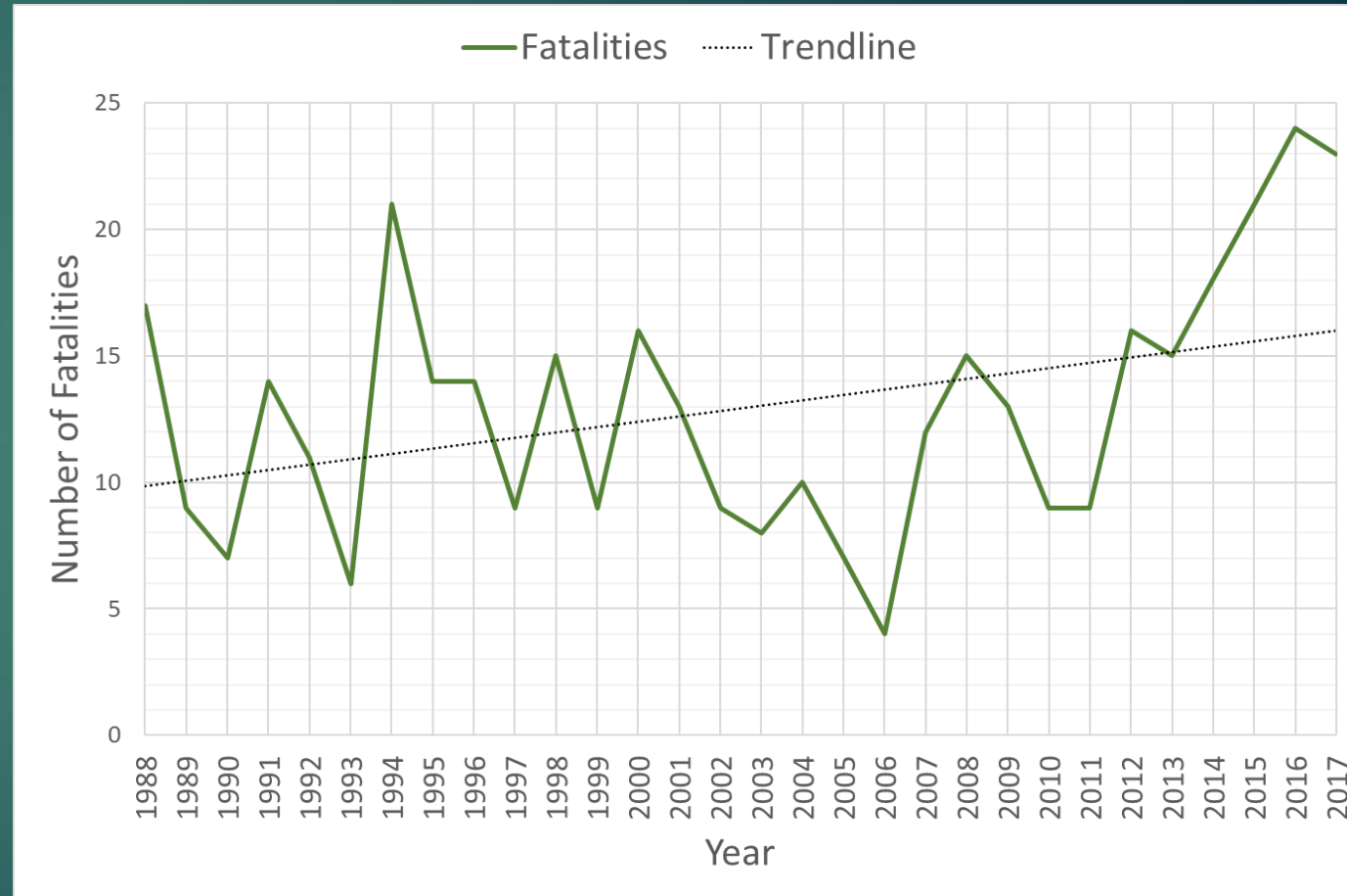
# Agents of Fatal Injury

- ▶ Tractors are the most common type of contributing agent for fatal injuries for older farmers
  - ▶ 46% of U.S. cases of farmers 55 years and older from 1992 to 2004 (Myers et al, 2009)
- ▶ Other top contributing agents include (Myers et al, 2009)
  - ▶ Farm machinery
  - ▶ Roadway
- ▶ Falls are the most common cause of deaths in older adults within the general public (CDC, 2016)



# Breakdown of Indiana Senior Farmer Fatalities

- ▶ A total of 388 cases
- ▶ Average age was 69.3 years old
- ▶ Mostly involved males
  - ▶ 373 male vs 15 female
- ▶ Tractors were the most common cause of fatality
  - ▶ 40.5% of all cases involved tractors
- ▶ There is an increasing trend in the frequency of fatalities for those 55 and over



Number of fatalities per year for farmers 55 years and older - 1988-2017

# Why does this matter to AgrAbility?

- ▶ The Vision of AgrAbility is *“to enhance quality of life for all farmers, ranchers, and other agricultural workers with disabilities.”*
  - ▶ Aging is included in the scope of AgrAbility’s mission
- ▶ 41.8% of AgrAbility clients during the 2016-2017 period were 60 years or older

# Perceptions of Farm Safety Among Older Farmers

- ▶ Strong feelings
  - ▶ Farmers define health as the “ability to work” (Reed et al, 2012)
  - ▶ 27% of 418 farmers said, “they intended never to retire” (Duffy et al, 2000)
- ▶ Education methods
  - ▶ Important to understand each unique situation (Ambe & Murphy, 1995)
  - ▶ Stories are an effective model for teaching beliefs and attitudes (Cole, 2002)
  - ▶ Family, friends, and neighbors are important in senior-farmer safety related beliefs (Whitman & Field, 1995)





# Communicating with Clients

- ▶ How do you pass on safety practices to clients?
  - ▶ Many farmers have strong feelings about farming
- ▶ Have conversations with clients
  - ▶ Personal contacts are more likely to change old safety practices (Ambe & Murphy, 1995)
  - ▶ Talk about safety concerns with clients
- ▶ Have conversations with client's family and friends
  - ▶ Interventions
  - ▶ Mediate compromises
- ▶ Creating nontraditional safety material
  - ▶ Findings suggested nontraditional methods or formats such as a sign with a picture of a young kid telling their granddad to buckle-up to be effective (Whitman & Field, 1995)

# Case Study #1

- ▶ “84-year-old Farmer Died When Tractor Overturned while Feeding Cattle on Hillside” (Iowa FACE, 2010)
  - ▶ The farmer was an 84-year-old male farmer owned a 900-acre farm with cattle
    - ▶ Terrain was hilly
  - ▶ Began to feed his cattle at sunset
    - ▶ Friends and family said that he preferred to work at night
    - ▶ No artificial lighting
  - ▶ Family got worried when he did not return after four hours
  - ▶ Found the victim pinned underneath an overturned tractor
  - ▶ Investigations suggested that the tractor was going fast downhill as it ran over a hay bale and overturned 1.5 times



(Iowa FACE, 2010)

# Case Study #1

- ▶ Potential preventative measures
  - ▶ Addition of ROPS
    - ▶ 1966 tractor that had never been fitted
  - ▶ Making sure lighting is sufficient
    - ▶ Know that vision decreases with age
    - ▶ There was no artificial lighting on that part of the property
    - ▶ Unsure how effective the headlights were prior to the incident
    - ▶ Operating during daylight hours
  - ▶ Understanding what factors can help contribute to an overturn
    - ▶ Steep surfaces can upset the balance of a tractor
    - ▶ Wetness reduces the speed of braking
  - ▶ Carry a communication device (cellphone, two-way radio, etc)



# Case Study #2

- ▶ “Elderly Part-Time Farmer Dies during Fall and Subsequent Runover by Tractor and Attached Brush-hog” (New York FACE, 2003)
  - ▶ The farmer was an 84-year-old male who had 50 acres
    - ▶ Lived by himself
    - ▶ Had a history of fainting spells
  - ▶ He was cutting hay to prepare for winter
  - ▶ Driving a 1945 Ford 8N tractor with a five-foot bush hog mower
    - ▶ Both in excellent condition
  - ▶ While he was traveling down the slope the victim fell forwards to the left of the tractor and was struck by the mower
  - ▶ A neighbor found the victim after noticing the tractor had ran into the victim’s pickup truck
  - ▶ The victim was declared dead on the scene



(New York FACE, 2003)

# Case Study #2

- ▶ Potential preventative measures
  - ▶ Understand how medical conditions can increase injury risk
    - ▶ Medical conditions, such as fainting or blackouts, can increase the risk of injury while using farm machinery
    - ▶ Refrain from the activity until medical conditions are diagnosed and treated
  - ▶ Choose jobs based on the farmer's skill
    - ▶ Know that age can decrease mobility and reaction time
      - ▶ Increasing the risk of falling
    - ▶ If it is unsafe to perform actions, such as tractor driving, then get help from others
  - ▶ Do not work alone
  - ▶ Operate a cab equipped tractor that would keep the driver within the zone of protection

# Case Study #3

- ▶ “Tractor avoids oncoming car but rolls in a ditch killing the operator.” (Iowa FACE, 1996)
  - ▶ The farmhand was a 67-year-old male who worked weekends for a small 250-acre farm
  - ▶ The victim was transporting hay from the field on an older narrow-front tractor with rear mount bale hooks
  - ▶ He was waiting on the right side of a state highway to turn left into the farm
    - ▶ The highway had a steep slope with the top 200 ft north of the farm entrance
  - ▶ As the victim began to turn a car came over the crest of the hill
  - ▶ The car was able to brake before the driveway, but the tractor driver focused on getting out of the road and ran into a ditch
    - ▶ Missed the driveway by a few feet
  - ▶ The tractor rolled over completely and killed the victim



(Iowa FACE, 1996)



# Case Study #3

- ▶ Potential preventative measures
  - ▶ Addition of ROPS
    - ▶ Tricycle-type tractors are especially prone to overturns
    - ▶ Could have saved the victim by preventing a complete rollover
- ▶ Rerouting the farm entrance
  - ▶ Limited visibility due to steep slope
    - ▶ The farm knew it was a safety risk
  - ▶ Older adults have slower reaction times and not as effective at multi-tasking



(Iowa FACE, 1996)



Questions?

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