

# Prevalence of Accidents in Smaller Amish Settlements: 2015–2022

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**Abstract:** Many Amish people engage in manual labor tasks at work, on the farm, and at home. As such, the daily risk for injury is high. The primary mode of transportation, horses and buggies, also creates opportunities for accidents and injuries. Much of the research on injuries among the Amish focuses on hospital reports, capturing only the most severe injuries. Research is also limited by a focus on injuries to children. Many safety programs are tailored toward people living in large Amish settlements, as more people can be reached. We use accident reports submitted to *The Diary*, a monthly newspaper, to determine the type and prevalence of accidents in small Amish communities. Accidents related to falls, manual labor, and buggy and/or vehicle crashes are the most prevalent forms of injury across age groups. Most accidents do not involve serious injuries and are likely to escape the purview of mainstream medicine. The prevalence of accidents at the house or on the property involving young children suggests that culturally appropriate prevention measures tailored to daily activities would be helpful to lower the incidence of injury.

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The agrarian lifestyle of the Amish leads to a host of opportunities for accidents. Research shows that many accidents experienced by people in Amish communities occur at home or on their property, while most non-Amish experience accidents away from home, primarily on roadways (Forward et al., 2010; Morgan et al., 2022; Strotmeyer et al., 2019; Whitney et al., 2022). Most research on accidents in the Amish community focuses on hospital records (Aaland & Hlaing, 2004; Engbrecht et al., 2016; Forward et al., 2010; Jones, 1990; Morgan et al., 2022; Rogers et al., 2013; Smith et al., 2004; Strotmeyer et al., 2019; Vitale et al., 2006; Whitney et al., 2022). While these trauma reports provide valuable information about severe injuries and deaths in the Amish community, many Amish people do not utilize mainstream emergency medical care unless necessary or unavoidable (Adams & Leverland, 1986; Brewer & Bonalumi, 1995; Buccalo, 1997; Donnermeyer & Friedrich, 2002; Garrett-Wright et al., 2016; Gerdner et al., 2002; McCollum, 1996; Schoessow, 2014; Wenger, 1995). As such, hospital trauma reports only tell part of the story, representing only the most severe injuries resulting from accidents.



Accounts of accidents in Amish periodicals provide a more complete picture of the nature and scope of accidents in the Amish community; however, the most recent research using data from these sources is over a decade old (Gilliam et al., 2008; Hubler & Hupcey, 2002). Moreover, as the Amish population grows, research might consider how accidents and injuries vary across settlements. Research indicates that the Amish population will double approximately every 20 years (Donnermeyer, 2015, 2021). As the population grows, people move out of established settlements to establish new settlements. Historically, the move to develop new settlements was focused westward, but in recent decades, new settlements are likely to be founded closer to already established settlements (Donnermeyer & Cooksey, 2010). Even so, researchers note that some settlements started in relative physical isolation from other Amish communities (Donnermeyer & Anderson, 2014, 2015). New communities with strong connections to existing communities are more likely to survive long-term, while those in isolation might fail. This suggests that access to larger communities' social support, including family networks, is integral to community survival. Moreover, settlements established with families from multiple-origin communities are more likely to fail as differences in practices and beliefs become insurmountable (Anderson & Kenda, 2015; Donnermeyer & Anderson, 2014). People who live in these small, more fractured Amish communities likely experience less social support than those in more cohesive settlements.

We use *The Diary*, a monthly news journal primarily serving the Amish population across the U.S. and Canada, to examine accidents reported in Amish settlements with a population of less than 5,000 from January 2015 to December 2022. We present a descriptive analysis of the type of accident, the location of the accident, the level of injury that resulted from the incident, and the demographic characteristics of the victim as reported to *The Diary*. This analysis provides a view of accidents in small Amish settlements that have been previously unexplored. The results have important implications for expanding safety and education programs to smaller Amish settlements.

### **Accidents and Injuries**

Amish people experience severe injuries as part of their daily lives. Researchers note that the agrarian lifestyle of the Amish provides ample opportunities for injuries (Beaudreault et al., 2009; Dewalt, 2022; Engbrecht et al., 2016; Fisher et al., 2001; Jones, 1990; Jones & Field, 2002; Morgan et al., 2022; Whitney et al., 2022). The link between injuries and farming is evident in the reports that indicate most injuries for which Amish seek mainstream medical care take place on the property or in the home (Engbrecht et al., 2016; Forward et al., 2010; Gilliam et al., 2008; Hubler & Hupcey, 2002; Strotmeyer et al., 2019; Vitale et al., 2006; Weller, 2017; Whitney et al., 2022). In a study using *The Diary*, Dewalt (2022) notes that accidents account for a small proportion of deaths among the Amish; however, farm accidents are the most prevalent, representing over 3% of deaths in eight years.

Much research on accidents and injuries uses hospital records to assess injuries occurring in Amish populations. The most common trauma admissions are for falls and injuries caused by animals (Fisher et al., 2001; Forward et al., 2010; Jones, 1990; Smith et al., 2004; Strotmeyer et al., 2019; Vitale et al., 2006). Of note, the Centers for Disease Control and Prevention indicate

falls are the most common mechanism of injury for people who seek emergency medical care in the U.S. (National Center for Health Statistics, 2023). Studies on the Amish often reference the prevalence of hay hole falls, as many of these falls are from heights over 9 feet and result in serious injuries requiring professional medical treatment (Batra et al., 2018; Engbrecht et al., 2016; Jones, 1990; Morgan et al., 2022; Smith et al., 2004; Strotmeyer et al., 2019; Vitale et al., 2006; Whitney et al., 2022). Other types of falls are also noted in the data, including from ladders, buildings, and stairs (Jones, 1990; Morgan et al., 2022; Smith et al., 2004). Interestingly, many studies that include falls focus specifically on hay hole falls, with little attention to other types of falls. Animal accidents are also commonly cited mechanisms of injury and include incidents such as kicks and pushes from animals (horses, cows) and accidents with horse-drawn farm equipment (Jones, 1990; Morgan et al., 2022; Smith et al., 2004; Strotmeyer et al., 2019; Vitale et al., 2006; Whitney et al., 2022). Hubler and Hupcey (2002) report that the prevalence of animal-related injuries among Amish children is higher than among non-Amish children. While both Amish and non-Amish children are likely to experience more machinery-related accidents as they get older, accidents involving farm machinery, primarily tractors, are more common for non-Amish children (Hubler & Hupcey, 2002; Vitale et al., 2006).

While hospital reports capture serious injuries, accident reports from Amish newspapers provide an alternative source to explore injuries in the Amish community. Studies utilizing Amish newspaper reports give a more comprehensive view of injuries and death, as a broader subset of the Amish population is represented in newspaper accounts. Moreover, newspaper accident and injury reports likely include many injuries beyond those requiring mainstream emergency medical care. However, studies utilizing newspaper accident reports are dated, with the most recent study done over 15 years ago. Findings from newspaper reports generally support the results of research based on hospital records. Indeed, studies using injury reports from Amish newspapers report falls are the most common type of injury (Gilliam et al., 2008; Hubler & Hupcey, 2002). Gilliam et al. (2008) note that many falls are related to handling and storing hay and other crops. Hubler and Hupcey (2002) report various falls, including falls by children climbing objects and in barns (not explicitly related to hay hole falls) while working or playing. Research also notes that incidents with machinery, tools, and livestock are common types of accidents reported in Amish newspapers (Gilliam et al., 2008; Hubler & Hupcey, 2002). These reports are based on dated newspapers, and the researchers primarily focus on children injured in farm-related accidents. As a result, little is known from newspaper reports about the scope of accidents and injuries sustained by adults in the Amish community in more recent decades.

Newspaper reports and hospital records consistently indicate that young children are at high risk of severe injuries, with children younger than 5 being at the most considerable risk (Forward et al., 2010; Gilliam et al., 2008; Hubler & Hupcey, 2002; Jones & Field, 2002; Morgan et al., 2022; Strotmeyer et al., 2019; Whitney et al., 2022). Hubler and Hupcey (2002) suggest the high rates of injuries to young children in the home or on the farm may be linked to levels of supervision. Moreover, research regularly identifies that boys are seriously injured more often than girls, suggesting different roles and responsibilities of children on the home farm or property (Gilliam

et al., 2008; Jones, 1990; Jones & Field, 2002; Strotmeyer et al., 2019; Vitale et al., 2006). Males, for instance, are expected to help with physical labor on the farm or in a shop, while females primarily help in the home.

Hospital records note a common mechanism of injuries across males and females of all ages involve horses and buggies and motor vehicles (Aaland & Hlaing, 2004; Brewer & Bonalumi, 1995; Dewalt & Bradley, 2013; Eicher et al., 1997; Forward et al., 2010; Jones, 1990; Kinzenbaw, 2008; Vitale et al., 2006; Whitney et al., 2022). Accidents between a buggy and motor vehicle most often include severe injury to the buggy passengers and result in transportation to a hospital via ambulance or helicopter (Aaland & Hlaing, 2004; Gorucu et al., 2017). Indeed, news and media reports of accidents often indicate serious injuries for buggy passengers (Wesner, n.d.) In their study of newspaper reports, Gilliam et al. (2008) support this contention and indicate accidents involving buggies and motor vehicles on roadways often involve transport to hospitals via emergency vehicles.

### **Health and Health Services**

The definition of health among the Amish is generally linked to the work role. If a person can work (manual labor) and, perhaps more importantly, wants to work and enjoys work, they are considered to be in good health (Adams & Leverland, 1986; Blair & Hurst, 1997; Buccalo, 1997; Fisher, 2002; Garrett-Wright et al., 2016; Palmer, 1992; Wenger, 1995; Weyer et al., 2003; Wiggins, 1983). Manual labor, including farm work, requires physical fitness to perform the job functions. The prevalence of manual labor jobs within the Amish community suggests that this population is routinely exposed to health risks. The results of accidents for manual laborers are more likely to disrupt job performance than those with white collar jobs.

Amish people are not likely to seek health care services unless they have a severe injury or have exhausted other health care options with limited success (Adams & Leverland, 1986; Brewer & Bonalumi, 1995; Buccalo, 1997; Donnermeyer & Friedrich, 2002; Garrett-Wright et al., 2016; Gerdner et al., 2002; McCollum, 1996; Schoessow, 2014; Wenger, 1995). Instead, many Amish people use home and folk remedies, which keep the locus of control in the family and are tied to faith, parallel with core Amish values (Donnermeyer & Friedrich, 2002; Hoover & Lehman, 2004). The use of natural products to heal, in effect, recognizes the elements God provides to care for oneself (Adams & Leverland, 1986; Sharpnack et al., 2010) rather than the unknown ingredients often used in mainstream medications (Schoessow, 2014; Wiggins, 1983).

In a study of Old Order Amish in an Iowa community, Gerdner et al. (2002) found that Amish people likely treated minor trauma resulting from farming accidents with home remedies. Similarly, Schoessow (2014) notes that Amish people seek care from mainstream medicine only when home remedies have failed or in the case of emergencies (see also Brewer & Bonalumi, 1995; Garrett-Wright et al., 2016; Gilliam et al., 2008). Hoover and Lehman (2004) demonstrate that Amish patients visit the local doctor with serious injuries, including many farming-related accidents. One example details a young boy who injured his hand on a hay hook and soaked the wound in kerosene on the way to the local doctor's office. While such an injury is severe, the

family did not seek care through the hospital emergency room and immediately employed a home remedy of kerosene, which is believed to keep infection at bay (Hoover & Lehman, 2004). While home remedies, essential oils, and herbal products are commonly used to treat ailments, many Amish people will also utilize the services of alternative health care providers, including chiropractors and reflexologists (Gerdner et al., 2002; Graham & Cates, 2002; Sharpnack et al., 2010; Weller, 2017; Wenger, 1995).

The reliance on home remedies and natural products reflects the barrier of costly services through mainstream medical care. The Amish do not generally carry health insurance, making physician care and hospitalization expensive (Buccalo, 1997; Weller, 2017; Wenger, 1995; Wiggins, 1983). As a result, mainstream medicine usage is episodic (Buccalo, 1997; Guyther, 1979; Hoover & Lehman, 2004). Sharpnack et al. (2020) indicate that while 45% of the Amish people surveyed in Geauga County visit their physician on a regular basis, over 46% of the respondents see a physician only when necessary and almost 7% report never visiting a physician. It is worth noting that this settlement is adjacent to a large urban health center, which mitigates the travel barrier, as care is readily accessible (Garrett-Wright et al., 2016). Not all Amish settlements, however, are in close proximity to health care services.

### **Settlement Patterns and Communication**

The rapid Amish population growth and the rise in land prices drive groups to form new settlements (Anderson & Kenda, 2015; Cooksey & Donnermeyer, 2013). Studies indicate that groups who form new settlements often look for locations near small towns, where they have access to amenities, including health care options, but not near large urban centers (Anderson & Kenda, 2015; Donnermeyer & Anderson, 2014; Donnermeyer & Cooksey, 2010). New settlement growth is typically in proximity to existing settlements (Donnermeyer & Anderson, 2015); however, new settlements have also begun in regions isolated from other Amish communities (Donnermeyer & Cooksey, 2010).

Regardless of where new settlements are formed, many families are eager to remain in contact with other family members, not only in the parent settlement but across settlements. The bonds of family and community are essential to Amish society (Kraybill, 2001), and maintaining links across people is an integral part of the community. Donnermeyer and Cooksey (2010) highlight that the Amish share news of the new settlement, including community events, church services, births, weddings, and accidents, through newspapers such as *The Budget*, *The Diary*, and *Die Botschaft*. Thus, newspapers have become a crucial part of bonding the larger group of Amish together (Anderson & Kenda, 2015; Donnermeyer & Cooksey, 2010).

The rapid growth of the Amish population and communication via newspapers suggests that studying accident reports in Amish newspapers may help researchers understand the scope of injuries across the community (Gilliam et al., 2008). In a study of Amish newspapers, Gilliam et al. (2008) note that most of the accidents reported were from Pennsylvania, Indiana, and Ohio, which coincidentally are the states that contain the largest Amish settlements. The authors also note that Wisconsin had a significant proportion of accident reports. The study, however, is dated, and

settlements have expanded significantly over the past 16 years. Moreover, the research is limited to injuries suffered by children.

We use accident reports in *The Diary* to determine the type and prevalence of accidents in smaller Amish communities. While much of the research on accidents in Amish communities uses hospital reports on injuries, the reliance of Amish people on natural products or home remedies for treatment, cost barriers, and limited access to mainstream medical care suggest hospital data capture few injuries. The accident reports in *The Diary* provide information on a broader range of injuries and accidents than hospital reports. While safety and prevention programs are tailored mainly to larger settlements, the accident patterns in smaller settlements suggest similar programs would also be effective in these communities.

### Data and Methods

We collected data from the accidents section of *The Diary*, a monthly news journal serving the Amish population. The accidents section is usually two to three pages long and includes reports from primarily Amish scribes across the U.S. and Canada. All issues from February 2015 to January 2023 were analyzed, and information was coded into an SPSS file. Thus, the data includes eight years of accident reports from 2015 to 2022. This study included accident reports from Old and New Order Amish communities. The data includes the month and year of the accident, place of accident, type of accident, result of accident, location of accident, and number of people injured. We use an age range of those injured because many reports do not give the specific age of the person involved. For example, the report might state, “Joe and Mary Yoder and two children were hit from behind by a car on State Route 24 last evening coming home from the school picnic.”

We define small settlements as those with fewer than 5,000 in the population. These settlements also consistently have fewer than 40 church districts. In contrast, larger settlements have a population of more than 5,000. The Young Center for Anabaptist and Pietist Studies (2023c) identifies the seven largest Amish settlements, all of which are in Pennsylvania, Ohio, and Indiana.<sup>1</sup> Most larger settlements are located in counties where the Amish population comprises over 10% of the county’s population (Donnermeyer et al., 2013). The notable exception is Lancaster County, which has the highest estimated population of Amish (over 44,300), but the Amish population accounts for only 5% of the county’s total population.

The Young Center (2023a) identified 637 Amish settlements in the U.S. and Canada in 2023. Six hundred and thirty of these settlements have populations of fewer than 5,000 people (Young Center 2023b). The accident reports in *The Diary* from 2015–2022 included submissions from 351 of these smaller settlements, representing over 55% of the total small settlements identified by the Young Center. The data includes small settlements such as Edgewood, Riceville, and Lamoni, Iowa; Pleasant Hill and Oblong, Illinois; Paoli, Hamilton, and Vevay, Indiana; Thayer, Kansas; Glasgow, Hawesville, and Tollesboro, Kentucky; Athens, Blanchard, and Harrison, Michigan;

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<sup>1</sup> The seven largest settlements are Lancaster County, Pennsylvania; Greater Holmes County, Ohio; Elkhart/LaGrange Counties, Indiana; Geauga County, Ohio; Adams County, Indiana; Nappanee area, Indiana; and Daviess County, Indiana.

Canton and Frazee, Minnesota; Bethany, Lamar, and LaPlata, Missouri; Clyde, Lyndonville, and Woodhull, New York; Ellenboro, North Carolina; Barnesville, Freeport, and Williamsfield, Ohio; Powasson, Aylmer, and Stirling, Ontario; Canton, Hazen, Linesville, Sligo, and Tionesta, Pennsylvania; Etheridge and Huntingdon, Tennessee; Arpin, Boscobel, Coloma, and Fennimore, Wisconsin, and Beeville, Texas.

Of note, six of the seven larger settlements are represented in *The Diary* accident data; however, accident reports from the larger communities are rare. The Young Center (2023c) indicates approximately 155,895 people live in the seven largest Amish settlements. This suggests about 40% of the Amish population resides in these larger settlements, while 60% live in smaller settlements. As such, we would expect the accident reports in *The Diary* to reflect these proportions. Instead, we find that over 95% of the accident reports are from scribes in smaller settlements. We surmise the lower reports in large communities might be related to other avenues of information dissemination by residents in larger communities. The three largest settlements—Lancaster County area, Greater Holmes County area, and Elkhart/LaGrange Counties area—have biweekly newsletters distributed in the community. These newsletters contain information about church services, births, deaths, and weddings, and include a section on illnesses and accidents.<sup>2</sup> Moreover, people residing in larger settlements have more opportunities to spread information by word of mouth through gatherings such as livestock auctions, produce auctions, and fundraising events. As such, we focus on the smaller settlements and make limited reference to the accident reports from larger settlements.<sup>3</sup>

Scribes have discretion on whether they submit information about accidents, and there is variation across large and small settlements. While scribes from some communities report many accidents, others—including scribes from large and small settlements—do not report or report few incidents. As such, the data represent the accidents reported by scribes in Amish communities, not the actual number of accidents. The scribe data, however, provides a more complete report of accidents in Amish communities than is contained in hospital injury reports.

## Results

While this study focuses on settlements with a population of 5,000 or fewer, many of the accident reports in *The Diary* come from Pennsylvania (17.3%) and Ohio (13.7%), the states that house two of the largest Amish settlements as well as numerous smaller settlements (see Table 1). The current study includes accident reports from scribes in smaller settlements that include but are not limited to Hazen, Linesville, and Tionesta, Pennsylvania, and Barnesville and Williamsfield, Ohio. Of note, accident reports from Missouri represent 11% of the reports in *The Diary*, while Missouri represents only 4% of the Amish population (Young Center, 2023a). Accident reports from Wisconsin are also prominent. About 10% of the reports in *The Diary* are from Wisconsin, while

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<sup>2</sup> Personal communication with staff at the Young Center for Anabaptist and Pietist Studies and the Ohio Amish Library, March 2024.

<sup>3</sup> The corresponding tables on accidents from the larger settlements are available upon request from the authors.

Amish population statistics indicate that almost 7% of the Amish population resides in this state (Young Center, 2023b). Previous studies also note the prevalence of accident reports from the Wisconsin Amish population (Dewalt & Bradley, 2013; Gilliam et al., 2008). Other states with large Amish populations are also represented in the data. Over 8% of accident reports are from New York, about 7% from Kentucky, and approximately 7% from Michigan. The data do not necessarily represent more accidents in these states but reflect a high rate of reporting accidents from the smaller settlements in *The Diary*. We make notes throughout the results section about data reported by larger settlements but do not make direct comparisons, as the scribe reports from larger settlements only represent a small proportion of the accident data.<sup>4</sup>

**Table 1***State or Province of Accident*

State/Province	<i>f</i>	%
Pennsylvania	469	17.3
Ohio	371	13.7
Missouri	303	11.2
Wisconsin	281	10.4
New York	231	8.5
Kentucky	182	6.7
Michigan	178	6.6
Tennessee	96	3.5
Ontario	93	3.4
Indiana	88	3.3
Iowa	79	2.9
Minnesota	77	2.8
Kansas	52	1.9
Illinois	51	1.9
Delaware	31	1.1
Maryland	19	0.7
Maine	15	0.6
Virginia	14	0.5
Other <sup>a</sup>	55	2.0
Not stated	20	0.7
Total	2,705	

<sup>a</sup> Other = Arkansas, Mississippi, Montana, Nebraska, North Carolina, Oklahoma, Prince Edward Island, South Dakota, Texas, West Virginia, and Wyoming.

The frequencies of the type of accident are displayed in Table 2. The most common accidents reported in *The Diary* were falls or fall-related incidents (29.6%). The most common types of falls

<sup>4</sup> Reports from larger settlements represent 5% of the accident data in *The Diary*. Data from large settlements is available upon request.



included falling from a roof, ladder, or similar structure (11.9%).<sup>5</sup> For example, in December 2015, a man from Tionesta, Pennsylvania, fell 8 feet while building a garage wall. In March 2019, a Maryland man plummeted 16 feet from a barn loft, breaking a shoulder, back, and ribs. Falls while playing were also reported (6.7%), as were general slips and falls without further context (6.5%). For instance, a February 2018 accident report stated that a Pennsylvania teen fell and broke her leg in two places. And, in July 2018, a Smicksburg, Pennsylvania, senior citizen tumbled on wet grass and broke her hip. While hay hole falls garner much attention from the literature on severe injuries among the Amish population, only 1% of the accident reports in *The Diary* indicate a fall through a hay hole. Nonetheless, hay hole falls often result in severe injuries to children. For example, in August 2018, a girl fell through a hay hole and suffered head injuries requiring hospitalization.

**Table 2***Type of Accident*

Type	<i>f</i>	%
Falls or fall-related		
Fall off roof, ladder, etc. (F, M)	322	11.9
Fall or crash playing (F)	182	6.7
Slip/fall (F)	175	6.5
Fall off buggy etc. (F)	61	2.3
Hay hole fall (F)	28	1.0
Scooter or bike crash (F)	17	0.6
Hunting, tree stand fall (f)	15	0.6
Total falls	800	29.6
Manual labor or manual labor-related		
Farm machinery, sawmill, chain saw incident (M)	257	9.5
Tool or shop machine incident (M)	176	6.5
Hit by construction materials (M)	60	2.2
Hit by tree or limb (M)	104	3.8
Cooking or butcher cut, etc. (M)	16	0.6
Fire, hot liquid, etc. (m)	115	4.3
Object (not tree) falls on person (m)	67	2.5
Total manual labor	795	29.4
Animal-related		
Kick, fall—horse, cow (f)	318	11.8
Buggy and/or vehicle-related		
Buggy v. motor vehicle	403	14.9
Buggy, etc., crash	152	5.6
Traffic accident (in a van, etc.)	54	2.0
Person hit by car (walking, scooting, or biking)	27	1.0
Total buggy and/or vehicle-related	636	23.5

<sup>5</sup> Falls were similarly reported in the larger settlements; the most common types were falls off a roof, ladder, etc.

Type	<i>f</i>	%
Other types		
Sledding	25	0.9
Rough play	16	0.6
Hit by ball or bat	15	0.6
Water incident	14	0.5
Step on sharp object	7	0.3
Gun accident	9	0.3
Drink dangerous liquid	8	0.3
Other	45	1.6
Total other	131	5.1
Not stated	17	0.6
Total accidents	2,705	

*Note.* F = fall-related incident; f = some are fall-related. M = manual labor incident; m = some are manual labor-related.

The nature of many falls suggests that accidents happened at home or on the farm. The location report confirms this supposition (see Table 3). Almost 48% of the accidents reported occurred at the house or on the property. We classify home and property together, recognizing that there is overlap in home and work for those Amish families who farm for a living. This study is focused on the location of the accident rather than the occupation of the head of household. Indeed, the content of the accident reports does not generally allow for the detail needed to clarify whether farming is the income-generating source for the family. Most accidents reported were in the house or yard (16.7%) or the barn or stable (15.1%). The location also highlights the frequency of animal-related accidents, with almost 12% of the accidents linked to kicks, falls, or other incidents with an animal (see Table 2). For example, in August 2018, a Minnesota teen died from a horse kick while harnessing horses to a hay rake in the barn.

Injuries resulting from manual labor were also commonly reported, with almost 30% of the accident reports involving some manual work<sup>6</sup> (see Table 2). Accidents involving farm machinery, sawmills, or chain saws were the most common reports, with almost 10% of all accident reports indicating these types of machinery. For instance, a young adult in New York hurt his arm while adjusting a hay baler. Other accident reports list tool or shop machine incidents (6.5%), incidents with construction materials (2.2%), or accidents involving fire or hot liquid (4.3%). Table 3 displays a work-related location in 20% of the accident reports. Almost 10% of the reported accidents happened at construction sites, while another 10% happened in a sawmill or a shop.

<sup>6</sup> Fewer overall reports from larger settlements were classified as manual labor-related (22.4%); however, farm machinery, sawmills, and chainsaw incidents were the most common.

**Table 3**  
*Place of Accident*

Place	<i>f</i>	%
Home/property		
House/yard	451	16.7
Barn/stable	409	15.1
Field	228	8.4
Woods <sup>a b</sup>	162	6.0
Lake/pond <sup>a</sup>	35	1.3
Total home/property	1,285	47.5
Work-related		
Shop <sup>c</sup>	143	5.3
Sawmill	135	5.0
Construction site	262	9.7
Total work-related	540	20.0
Road		
Road	679	25.1
Other		
School	55	2.0
Other	23	0.9
Not stated	123	4.5
Total accidents	2,705	

<sup>a</sup> May be on the homestead but not always. <sup>b</sup> Accidents in woods are usually related to cutting trees, but a few are related to hunting.

<sup>c</sup> Could also be on the homestead or property.

Almost a quarter of the accidents reported in *The Diary* were motor vehicle-related or involved buggies (23.5%). For example, in January 2015, a truck hit a buggy, and both young male passengers suffered severe injuries requiring hospitalization. About 15% of the reports indicated an accident between a buggy and a motor vehicle, while almost 6% of the accidents involved only buggies. Aligned with buggy and motor vehicle accidents, about 25% of the accidents reported in *The Diary* happened on the road<sup>7</sup> (see Table 3). Other types of accidents were reported less often, including sledding (0.9%), water incidents (0.5%), and gun accidents (0.3%) (see Table 2).

Table 4 presents the level of injury sustained due to the accident. Slightly less than 6% of the accidents resulted in death. About 25% of the accident reports indicate serious injuries, which may include a severe concussion, loss of limb(s), severe eye injury, extensive burn(s), compound fracture(s), or other related injuries. Most serious injuries would require mainstream medical care, often through emergency services. For example, a block wall collapse in Kentucky resulted in severe injuries for two males and, thus, a helicopter ride to a hospital in March 2022. Slightly more than 43% of the accident reports indicate an injury such as a deep cut/gash, a broken limb, mild

<sup>7</sup> About one-third of the accident types in larger settlements were buggy-related. One-third of accident locations were reported as on the road.

concussion, or extensive road rash. While some of these injuries may require medical care, even emergency care, some injured people may have sought the care of local doctors, the services of alternative providers, or home remedy solutions. Nearly 21% of the accident reports indicate minor injuries with scrapes, bruises, or limps. These accidents did not likely require mainstream medical care. Approximately 5% of the accident reports stated that the victim did not sustain injuries.<sup>8</sup>

**Table 4**

*Result of the Accident for the Victims*

Outcome	<i>f</i>	%
Death	191	5.6
Serious injuries	853	24.9
Injuries	1,476	43.1
Minor injuries	713	20.8
No injuries	175	5.1
Not stated	13	0.4
Total	3,421	

We examine the demographic characteristics of accident victims. We classify those aged two and younger as toddlers, aged 3–12 as children, aged 13–19 as teenagers, aged 20–25 as young adults, aged 26–64 as adults, and aged 65 and older as seniors. Many accident reports do not include the numerical age as part of the report, but we can classify the victims into age groups based on context in most cases. The age categories are associated with behaviors and activities across the life course. The daily activities of toddlers are likely to be close to the mother in the home, while children are more likely to be involved in activities around the property, including farm work where applicable. Teens are exiting their school years, and many males enter the workforce. Young females may also work away from home, commonly as teachers or mothers' helpers (Johnson-Weiner, 2020). Young adults are of marriage age, and this age group represents the start of family life for many Amish people.

Teens and children were commonly injured in accidents, as reported in *The Diary*. Table 5 reports the information for accident victims' age and sex where known. Almost half of the accident victims were 19 or younger. Approximately 40% of the accident victims were adult men and women. Females aged 2 and under were victims in 7% of the cases, while females aged 3–12 were reported as victims in almost 25% of the cases, and teen girls were reported in about 16% of the cases. The pattern for male victims differs slightly, with teen boys reported as victims in 22% of the cases, male children reported in 20% of the cases, and boys aged 2 and younger in only 3% of the cases. While teen boys may be at more risk in the workforce or doing manual labor, girls may be at more risk in the home and, therefore, more at risk as young children.

<sup>8</sup> The pattern of injuries in larger settlements varies drastically from those reported in smaller settlements. Scribes in larger settlements report deaths in almost 25% of the cases, serious injury in 32% of the cases, and injuries in 30% of the cases. Less than 15% of the reports indicate minor or no injuries.

**Table 5**  
*Demographic Characteristics of the Injured (N = 3,256)*

Age range	Male		Female	
	<i>f</i>	%	<i>f</i>	%
Toddler: 0–2	76	3.2	61	7.2
Child: 3–12	476	19.8	211	24.9
Teen: 13–19	541	22.4	134	15.8
Young adult: 20–25	265	11.0	65	7.7
Adult: 26–64	1,010	41.9	344	40.7
Senior: 65 and up	42	1.7	31	3.7
Total	2,410		846	

Consistent with previous studies, reports in *The Diary* indicate that falls or fall-related accidents are most common for children and older people (see Table 6). Almost 30% of accident reports of children aged 0–2 were fall/fall-related accidents, while 37% of the accident reports for those aged 65 or older indicated a fall/fall-related accident. Falls/fall-related accidents were also common for children aged 3–12 (33.5%). Buggy and motor vehicle accidents were responsible for over 30% of the accident reports for young children aged 0–2 (30.7%), minors aged 3–12 (31.8%), and older adults aged 65+ (34.2%). Of note, accident reports for children younger than 12 often include manual labor as the type of accident. These accidents likely include spills of hot liquids, touching a hot wood stove, or being present in work-related areas, including shops, barns, or fields. For example, in November of 2022, a toddler was burned by steam when a nearby pressure cooker exploded. While many previous studies focus on young children who experienced animal-related incidents, the frequency of these accidents was relatively low in our sample. About 6% of the accidents for very young children (aged 0–2) and 12% for children aged 3–12 were reported as animal-related.

**Table 6**  
*Age Range by Type of Accident*

Age range	Fall-related		Animal-related		Manual labor		Buggy/vehicle-related		Other		Total <i>N</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
0–2	45	29.4	9	5.9	36	23.5	47	30.7	16	10.5	153
3–12	257	33.5	89	11.6	110	14.3	244	31.8	67	8.7	767
13–19	146	21.4	73	10.7	212	31.1	215	31.5	36	5.3	682
20–25	64	19.3	31	9.3	88	26.5	134	40.4	15	4.5	332
26–64	286	21.0	117	8.6	356	26.2	564	41.5	37	2.7	1,360
65+	27	37.0	6	8.2	13	17.8	25	34.2	2	2.7	73

*Note.* This table includes the first three victims in an accident. Most accidents involve only one person. Some transport wrecks involve more than three people if a family is in a buggy or a group travels by van with a driver; however, accidents with more than three victims represent the exception rather than the norm. We limit the information to the first three victims to best represent the modal accident.

Buggy and motor vehicle-related accidents are the most common type of injury for teens aged 13–19 (31.5%), young adults aged 20–25 (40.4%), and adults aged 26–64 (41.5%). The second most common accident type across these age categories is manual labor. Just over 31% of teens, almost 27% of young adults, and about 26% of adults aged 26–64 were reported in manual labor accidents. Manual labor accidents often produce severe injuries. For example, in October of 2022, a Missouri man was hit while harvesting trees—the severely broken ankle required surgery.

## Discussion

While buggy-related wrecks with motor vehicles receive mainstream media attention because of the severe injuries or loss of life, numerous other types of accidents dramatically affect small Amish communities. The focus of previous research on farm-related accidents and serious injuries potentially inflates the occurrence of animal-related incidents and hay hole falls in the Amish community. While injuries resulting from animal-related incidents are certainly more common among the Amish population than in the larger U.S., other types of accidents are more prevalent. Our results indicate that accident patterns reported in *The Diary* in the smaller settlements are relatively consistent with overall accident patterns reported in Amish newspapers in the early 2000s (Gilliam et al., 2008; Hubler & Hupcey, 2002). While one might expect consistent patterns based on lifestyle, these findings suggest safety and prevention programs need to be revised or implemented more broadly across settlements. Almost half of the injuries reported occurred on the home or farm, emphasizing the need for safety focus at the house, barn, and surrounding properties.

Falls and fall-related mishaps are prevalent and can cause severe and sometimes life-altering results. Previous research highlights the seriousness and prevalence of hay hole falls. Indeed, many safety programs within Amish communities focus on hay hole fall prevention measures (Batra et al., 2018; Engbrecht et al., 2016; Morgan et al., 2022; Strotmeyer et al., 2019). While we certainly do not minimize the seriousness of these falls, other fall types are more commonly reported in *The Diary*. Many falls are work-related; however, consistent with previous research, children and older adults experience many falls. Many of these falls happen while playing or are simply slips or tumbles as part of daily routines. Hubler and Hupcey (2002) note that the most common injuries for young children are fall-related, many of which are attributed to playing. In the current study, we find falls are a common accident for children younger than 12. Injuries from these falls may not be severe enough to seek care from mainstream medicine; however, they raise concern about everyday safety practices in the home and property.

Accident reports in *The Diary* also indicate that children are at high risk for manual labor accidents. Accidents in the home, on the property, or in the barn are also common. These findings suggest that children might be exposed to high-risk situations daily. Indeed, the results suggest implications for safety and supervision for families who work at home and even home-based activities such as cooking and canning. These findings are significant, as cooking, canning, and farming with young children nearby is a way of life for many Amish families. Safety recommendations to exclude children from these activities are not likely to gain compliance in

Amish communities. Instead, it might be more productive to recommend safety measures that consider the crucial role of family involvement in everyday activities (Kraybill & Gilliam, 2012).

In a study on farm safety curricula, Amish focus group participants indicated strong feelings about letting their children be involved in the routines of daily life even if risk was involved (Jepsen et al., 2012). Rhodes and Hupcey (2000) note that while families recognize the potential dangers of a rural lifestyle and living on a farm, they are not inclined to limit children's involvement in routine chores. Including children in the daily routines of family life from an early age is important within Amish communities to instill a strong work ethic (Rhodes & Hupcey, 2000). Therefore, suggestions that prohibit this involvement are often met with resistance. Research indicates that some Amish parents are unsure when children might be ready for specific tasks or can manage certain activities independently. This provides an avenue for education, where information might be provided to parents with guidelines on age-appropriate task recommendations (Jepsen et al., 2012; Rhodes & Hupcey, 2000). Kraybill and Gilliam (2012) also note that age-specific programming offering parents clear guidelines on creating safe play environments for young children would be helpful.

Safety programs in Amish communities often focus on farm-related accidents and injuries (Batra et al., 2018; Beaudreault et al., 2009; Burgus & Rademaker, 2008; Jepsen et al., 2012; Jones & Field, 2002; Rhodes & Hupcey, 2000). Kraybill and Gilliam (2012) emphasize the utility of face-to-face contact, Amish safety committees, experience-oriented outreach programs, and culturally specific materials as effective safety prevention measures. We see examples of these recommendations come to fruition in programs such as the Agricultural Safety Day Camps in Ohio (Beaudreault et al., 2009), educational displays adapted from Farm Safety 4 Just Kids in Illinois (Burgus & Rademaker, 2008), and the development of the Northern Indiana Family Safety Committee to sponsor farm safety workshops (Jones & Field, 2002). Each of these programs emphasizes non-Amish (often University Extension educators) working with the Amish community (Amish leaders or those on safety committees) to establish safety programs that match the community needs and are culturally appropriate for the community members.

While these programs report successful collaborations, they are primarily established and offered in large settlements. Of importance, the time and effort of planning such events are most fruitful when there is an opportunity to reach a large audience. Indeed, Beaudreault et al. (2009) report over 575 youth participated in the farm safety day camps, Burgus and Rademaker (2008) indicate over 100 children participated in the educational display pilot program on safety, and Jones and Field (2002) note over 2,000 members of the Amish community were involved across 11 safety events. The current study indicates these programs would also address a need for safety and prevention education in smaller Amish settlements; however, University Extension agents are less likely to be in geographical proximity to minor settlements. The collaboration between Amish and non-Amish community members would provide additional resources on safety to smaller communities that may help them thrive, especially those communities in relative isolation from other Amish settlements.

The current study's findings also highlight the importance of injuries linked to manual labor. Because health among the Amish population is often synonymous with the ability to work (Adams & Leverland, 1986; Blair & Hurst, 1997; Buccalo, 1997; Fisher, 2002; Garrett-Wright et al., 2016; Palmer, 1992; Wenger, 1995; Weyer et al., 2003; Wiggins, 1983), it is important to note that almost one-third of the accidents reported in *The Diary* are linked to work. The type of work many Amish people are engaged in exposes them to risk. Accident reports related to manual labor are among the most common forms of injury for teens and young adults. Working-age adults also experience high rates of accidents resulting from manual labor. While some of these injuries may be serious, not all injuries come to the attention of mainstream medicine. In addition to farm safety, the safety programs offered through collaborative efforts might also include workplace safety. Practitioners should consider how information from safety programs might be distributed more broadly to smaller communities, perhaps through publications such as booklets printed and distributed by Amish publishers (Kraybill & Gilliam, 2012).

Daily activities linked to accident risk include the Amish mode of transportation. The primary mode of transportation for many Amish groups is horse and buggy. Accident reports in *The Diary* indicate that children and adolescents experience a high rate of accidents from buggy/vehicle accidents. Our findings support previous research that shows adolescents are likely victims of buggy/motor vehicle incidents (Hubler & Hupcey, 2002). Notably, the prevalence of buggy-related accidents has remained problematic over the past decade, suggesting that proactive safety measures are needed. The results of the current study indicate that buggy/vehicle accidents are the most common type of accident reported for adults younger than 65. The prevalence of buggy/motor vehicle-related accidents across age groups points to the importance of buggy safety.

University Extension educators have worked with Amish communities to improve buggy safety (Eicher et al., 1997; James, 2001; Jepsen & Mann, 2016). The success of these programs has been due to the collaborative efforts of non-Amish educators and leaders within the Amish communities. Indeed, Jepsen and Mann (2016) note that the plan development for pony cart safety mechanisms was a two-year process involving Extension agents, Amish Safety Committee members, and an engineering society's representatives. Of note, safety markers on buggies vary across Amish affiliations, with more conservative groups using fewer visibility markers, such as lights and slow-moving-vehicle signs. Resistance grounded in collective values of modesty should be recognized when considering how to increase buggy safety (Anderson, 2014b).

Much of the collaborative work on buggy safety has occurred in larger settlements. Buggy safety mechanisms might differ in smaller settlements, perhaps in areas where motor vehicle drivers are less accustomed to sharing the road with horses and buggies (Anderson, 2014a). While not affecting the same number of people as in the larger settlements, collaborative efforts across Amish and non-Amish community members in minor settlements can promote buggy safety and lessen the prevalence of accidents. The number of buggy-related accidents and resulting injuries caused concern in a small settlement in Farmville, Virginia. As a result, the county chief of emergency services headed the Amish Safety Improvement Committee, which brought together representatives from the state police, the sheriff's office, the Amish community, and the Virginia



Department of Transportation to discuss education efforts, raising awareness of buggy traffic, and increasing signage in areas with high buggy traffic (Redd, 2022). These community efforts bring social support networks to the Amish and non-Amish communities, providing important connections across county residents.

### **Limitations**

There are several limitations inherent in this research. First, *The Diary* is a publication that depends on scribes or reporters in Amish settlements to submit information each month. The scribes may have inaccurate information in some instances because, most times, the scribe was not an eyewitness to the accident. While scribes from Amish communities across the U.S. and Canada contribute to *The Diary*, not all Amish communities are represented. The periodical was started in Lancaster County, Pennsylvania, and as such, may be more representative of those communities in the Lancaster area or daughter settlements from the Lancaster area. As with all periodicals, not all Amish affiliations contribute as scribes. The most conservative Amish groups are not likely to contribute to the newspapers (Kraybill et al., 2013). Moreover, we note that fewer accident reports are submitted relative to the population in larger settlements, perhaps due to other mechanisms of information sharing. Second, the information in *The Diary* is not based on hospital or emergency responders' reports, so the extent of the injury is subject to interpretation. Third, some scribes may not know about an accident or choose not to write about the accident. Lastly, the researchers did not review the community reports in *The Diary*, which may include descriptions of other accidents not listed in the accidents section. Nonetheless, the results broaden the research about the prevalence and scope of accidents in Amish communities and provide valuable data to health professionals, concerned citizens, and policymakers.

### **Conclusions**

Using newspapers allows for a more complete assessment of the type of accidents and resulting injuries. Most accident studies use hospital reports; however, these reports only include the most severe injuries. Many Amish families are only willing to use emergency care if no other options are available. Only a quarter of the accidents in our study included severe injuries, which suggests the prevalence of accidents is higher than reported in studies that utilize hospital records. Over half of the accidents result in injuries not deemed serious or classified as minor. Most of these instances are likely never referred to mainstream medical care. Amish newspapers offer a source of accident reports that more fully represent the scope of accidents experienced in the Amish community.

The range of accidents and injuries suggests many safety considerations to be made within the Amish community. Perhaps the most relevant is the supervision and exposure of young children to situations with a high risk of injury. The Amish know of accidents, so safety committees meet in various locales to address concerns. One such committee met in Aylmer, Ontario, in March 2023 with people from New York, Pennsylvania, Ohio, Virginia, North Carolina, and Ontario attending. Topics included safety on the farm and at home (“Aylmer, Ontario,” 2023). Successful safety strategies can also involve collaborative efforts from non-Amish and Amish community

members (Batra et al., 2018; Beaudreault et al., 2009; Burgus & Rademaker, 2008; Eicher et al., 1997; Gilliam et al., 2008; James, 2001; Jepsen et al., 2012; Jepsen & Mann, 2016; Jones & Field, 2002; Kraybill & Gilliam, 2012; Redd, 2022; Rhodes & Hupcey, 2000). While many collaborative safety and prevention programs are based in larger settlements, these strategies can also be effective in smaller communities (Redd, 2022).

Moreover, our results indicate the potential for accidents in recreational activities. Hunting accidents, while rare, usually involve a fall from a tree stand. Also rare, water incidents are usually severe and might be reduced by simple measures such as having a flotation device at hand or wearing a life vest. Some playground injuries might be avoided by moving those waiting to bat during a softball game a reasonable distance away. So, while health care providers and safety committees both seek ways to reduce the incidence of accidents, the focus should be on casting a wide net to improve safety in shops, sawmills, construction sites (especially those that involve work above ground), on the farm, in and around the barn, in the home, and at school. Importantly, these efforts should extend across large and small settlements.

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