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Field Notes

Emerging Patterns of ERW Injuries in Laos

by Stacey Pizzino [University of Queensland], Colette McInerney [World Education Laos], and Jo Durham, Ph.D. [University of Queensland]

The year 2016 marks the beginning of a new era for international development, with the adoption of seventeen Sustainable Development Goals (SDG) that will drive global development efforts until 2030. In post-conflict countries, humanitarian mine action will be an important enabler in achieving a number of SDGs, including goal 3: "ensure healthy lives and promote well-being for all at all ages." Of particular relevance is target 3.9 of the SDGs, which specifies the need to reduce the number of deaths and illnesses from soil pollution and contamination.[1] At present this relates primarily to indoor and outdoor air pollution. However, since explosive remnants of war (ERW) contamination can be directly attributed to a significant number of deaths and injuries in post-conflict countries, the inclusion of ERW is relevant. Demonstrating mine action's contribution to target 3.9 requires accurate, reliable, and readily available ERW injury data, which will also allow for the appropriate allocation of resources to both ERW injury prevention and adequate access to emergency medical and rehabilitation services. As progress on goal 3 will be reported on through the health sector, SDGs provide an opportunity for mine action injury databases to link with national health information systems based on standardized, minimum reporting requirements for injuries using international standards, statistical principles, and global measurement methods.
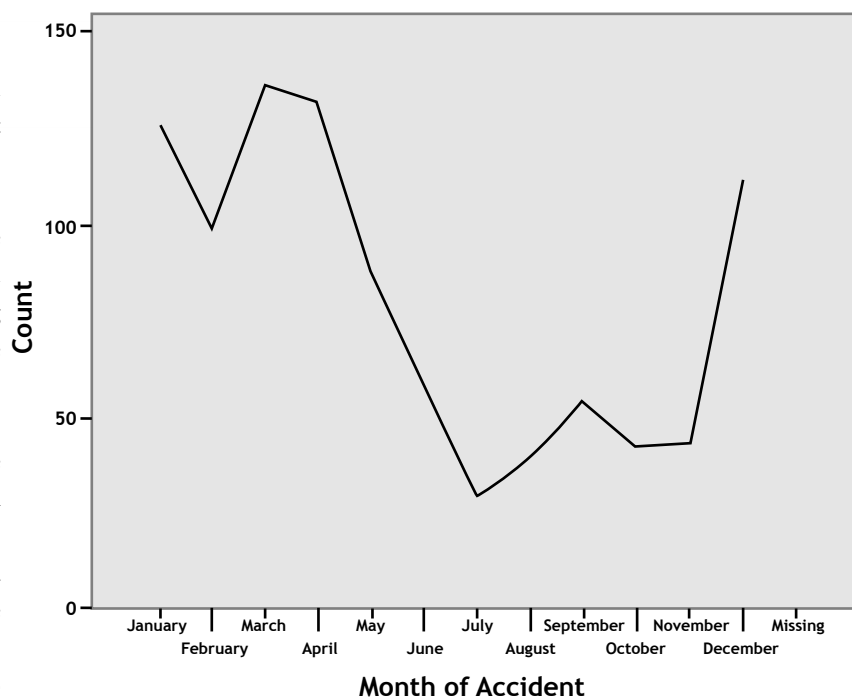

Figure 1. Month of accident.
All graphics courtesy of authors.

Laos is the most heavily bombed country in the world per capita, contending with extensive unexploded ordnance (UXO) contamination resulting from a heavy campaign of cluster munition bombings during the second Indo-China War.[2] World Education, a nonprofit organization operating in Laos since 1992, works in nine of the most heavily contaminated provinces, particularly Xieng Khouang Province in northern Laos, to reduce the socioeconomic impact of ERW. Recognizing the need to enhance its analysis and use of ERW-injury data, World Education Laos recently undertook an
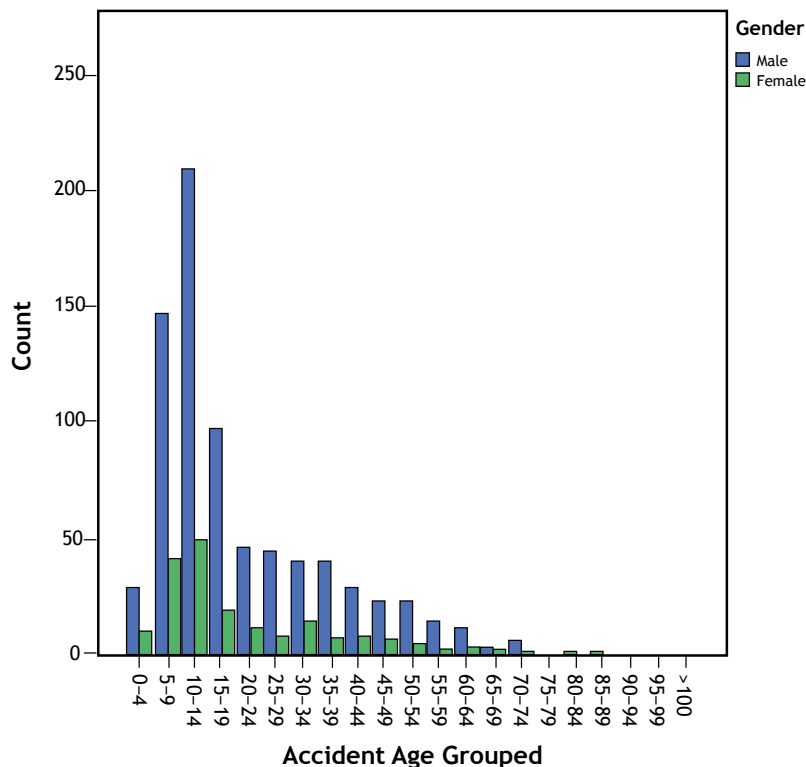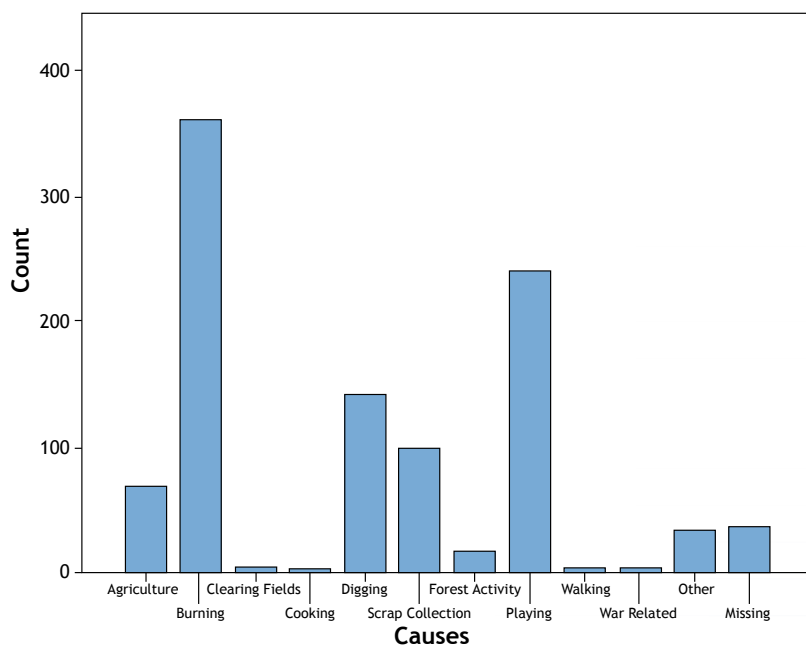
Figure 2. Age at time of accident.

Figure 3. Causes of UXO injuries.

analysis of its ERW database and identified gaps for improvement.

World Education Laos and the Laos provincial Departments of Health co-implement the War Victims Medical Fund (WVMF) project, which supports the cost of complex treatments for ERW casualties. This article presents the demographic and epidemiological patterns of ERW injuries in the WVMF project database and provides recommendations, which although specific to World Education's victims database, are pertinent for other organizations' work in the victims' assistance sector. These recommendations analyze the demographics of ERW victims in Laos and target responses to their needs.

As part of the project, World Education maintains an Excel database that extracts patient data from the medical registries of ERW patients. For this study, researchers processed the data for analysis by first identifying missing data, translating, and coding qualitative variables (i.e., variables including: short explanation of cause of injury, diagnosis/injuries, and disabilities) from Lao to English, and giving each patient a unique identification code. The data from the Excel database was then imported into the Statistical Package for the Social Science version 22 (SPSS) and statistical analyses were conducted. Notably, while World Education's database provides a rich source of information, the findings of this study cannot be generalized beyond the areas in which World Education provides assistance to UXO survivors. Additionally, the data was only obtained from medical facilities and may exclude patients who died before reaching care, whose injuries were too minor to seek medical care, or who used health services outside of World Education's area of work.
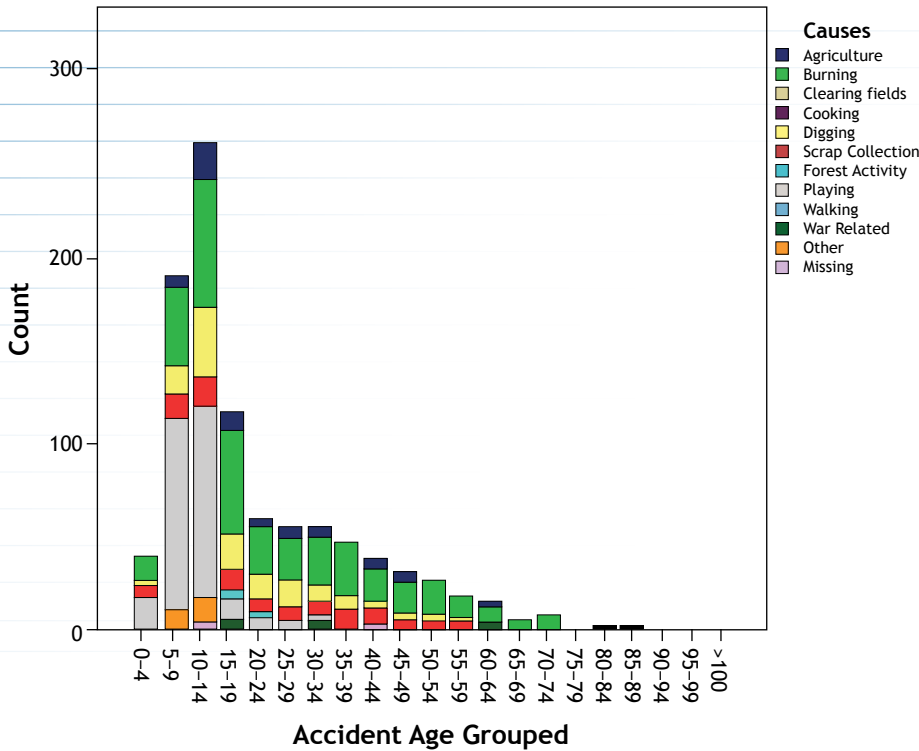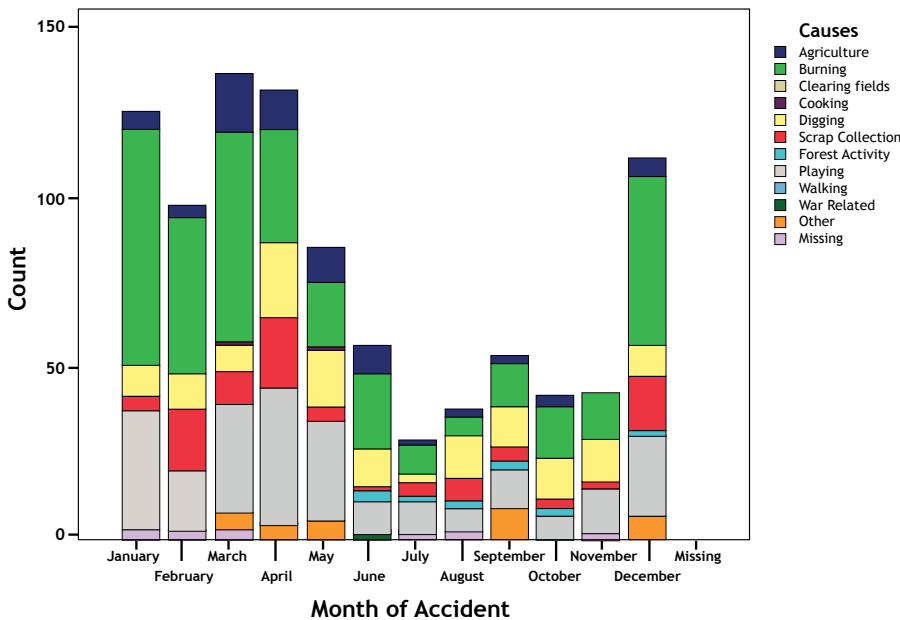
Figure 4. Causes of injury by age group.

Figure 5. Causes of injury by month.

Results

World Education has operated in Laos since 1992. Collection began in 1996 when World Education commenced working with UXO survivors in Laos. The analysis included data from 1996 through March 2015. The database contained information on 1,013 UXO survivors from 12 different Lao provinces. Most of the survivors were from Xieng Khouang Province (N=706). Of the 307 survivors originating from the 11 other provinces within the dataset (i.e., the northern provinces of Houaphan, Luang Prabang, Vientiane, and Xaisomboun; and the southern provinces of Attapeu, Bolikhamxay, Champasak, Khammoune, Saravane, Savannakhet, and Sekong), most originated from Savannakhet Province (N=142).

Of all the UXO survivors included in the database, most UXO injuries occurred between December and April, and resulted from burning fires to cook or keep warm in the colder months or from slash and burn agricultural practices. The least number of injuries were observed in July (Figure 1, page 54).

Age and Survival. Most of the injured persons were male (79.3 percent) with 45.2 percent 15 years old or younger (Figure 2, page 55). These findings are similar to those reported in the 2008 National Regulatory Authority of Lao PDR study and those conducted elsewhere (e.g., Afghanistan, Chechnya).[3,4,5] Although exposure to and injury from UXO may be less frequent for females, the 15-years-or-younger-age group is still at an increased risk of injury, with the distribution of injuries across the lifespan highest for females in this age group.

The young adult and mature-age group (i.e., males and females over 15 years old) represents the largest percentage of survivors. This age group is

particularly important as these years are potentially the most economically productive. Injuries and any consequent disabilities may have substantial negative impact on social and economic factors for the individual, family, and community.

Causes of Injury. As shown in Figure 3 (page 55), primary causes of UXO injury within the World Education database include burning (35.7 percent), playing (23.9 percent), digging (14.2 percent), and indirect injury associated with scrap collection (9.7 percent).

Burning accounted for 354 injuries, occurring more frequently between the months of December through April (Figure 5, page 56). Coinciding with cooler periods of the year when people light fires to keep warm, this period is also the typical season for agricultural burning. Playing as a cause of injury (N=239) occurred across the year, regardless of season, predominately in children younger than 15 years old. Digging (N=137), which may be reflected in activities related to agriculture and digging in the surrounding fields, had the greatest impact on those between five and 29 years old, while five-to-19-year-olds were the age group most vulnerable to injury as bystanders during scrap collection (N=95). Injuries directly related to agriculture (N=66) were most prominent in the 10-to-19-year-age group.

Discussion

Data collection, analysis, and reporting are fundamental to ensure accountable, efficient, and targeted programs that comprehensively meet the beneficiaries' needs. The WVMF UXO survivor data provides a baseline for demographic and population health patterns within the operational provinces of World Education Laos, and establishes a context to improve the accuracy of health information at the organizational level. While the data findings cannot be generalized to the broader population, the patterns of injuries parallel findings from the National Regulatory Authority of the Lao PDR study. These findings also mirror those of other regions and conflicts (e.g., Afghanistan, Chechnya), indicating a reasonable level of confidence in the credibility of the data.[3,4]

Future collection, analysis, and dissemination of health data relevant to mine action are required to meet the objectives of the SDGs and the obligations of signatories of the *Convention on Cluster Munitions* (i.e., Article 5), which calls for accurate data collection to assist victims.[5] The most cost-effective method to increase health data accuracy and meet SDG obligations would involve integration with other injury surveillance systems. As momentum builds within the international development community to meet the agenda of the SDGs, injury surveillance systems will likely be strengthened to meet specific injury-related goals (e.g., road traffic accidents). This provides mine action players with the opportunity to standardize surveillance methods that can be linked to other injury surveillance systems. As the lead United Nations agency for mine action, the United Nations Mine Action Service (UNMAS) within the United Nations Development Programme (UNDP) should use this opportunity to enhance collaboration with other U.N. agencies such as the World Health Organization (WHO) to support countries reporting against SDG 3, leveraging these opportunities to ensure appropriate recognition of mine action's contribution to SDG 3.9. This is important in both demonstrating the contribution of ERW injuries to the overall injury burden both globally and within individual countries, and in allowing the appropriate allocation of resources to ERW injury prevention, treatment, and rehabilitation. Finally, longitudinal studies are needed to fully understand the impact of ERW injuries.

Stacey Pizzino

Stacey Pizzino recently completed a Master of International Public Health at the University of Queensland with her dissertation evaluating the epidemiological patterns of explosive remnants of war. Her research involved field work in Laos with both government and nongovernmental organizations. Pizzino has a Bachelor of Health Science from Queensland University of Technology and has worked as a paramedic in Australia.

Colette McInerney

Colette McInerney has a Bachelor of Arts in community development from Monash University and has over 35 years of experience in community development specializing in microfinance, economic empowerment, and sustainable livelihoods across Australia and various countries in the Asia Pacific region.

Jo Durham, Ph.D.

Jo Durham has a long-standing interest in mine action including mine risk education, victim assistance, and finding information that will improve access to appropriate healthcare services for populations. She currently lectures at the University of Queensland in health and development and health aspects of disasters.