



TraumaLink: Providing Trauma First Aid Services in Bangladesh Using Trained Volunteers

“A self-sustaining model to reduce the burden of traffic injuries in Bangladesh and beyond”

By July 2017, Dr. Jon Moussally, co-founder and CEO of TraumaLink, felt like his four-year-old social venture was finally on its way. Jon, a practicing emergency room physician in Boston, and his three partners—two Americans and a Bangladeshi—had conceived of TraumaLink as a way to bring pre-hospital emergency care¹ to victims of traffic injuries in Bangladesh, a country that had some of the most dangerous highways in the world but no formal emergency response system. Their approach was three-pronged: they trained community-based volunteers who lived or worked close to the highway to provide free basic trauma first aid; they developed an easy-to-use 911-type software system to deploy volunteers quickly to a crash scene; and they planned to raise operating funds by selling advertising or subscriptions to the many companies in Bangladesh whose workers travelled the dangerous highways daily.

After completing a successful six-month pilot phase that began in November 2014, the fledgling company had been awarded US\$142,500 by the U.S. Agency for International Development under its Development Innovation Ventures program (USAID DIV²) in March 2015. The funds would support operations for about 18 months, allowing the company to train more volunteers and expand the number of kilometers along which they could provide services from 19 to 100. But more than a year later, by July 2016, the money had still not been released as the U.S. Congress struggled with political concerns and other obstacles. Jon faced a crisis. The private revenue from advertising or subscriptions that the partners had counted on had proven difficult to raise and Jon had exhausted the personal funds he had been using to keep the enterprise afloat. Rather than abandon the effort altogether, the partners decided to keep TraumaLink going on a limited basis; they let most of the paid central office and field level staff go, and cut back the hours of volunteer operations.

Then, finally, seven months later in February 2017, the first installment of funds finally reached TraumaLink’s bank account in Bangladesh. Jon flew back to Dhaka and was met, to his great relief and joy, with cheers and applause from his TraumaLink volunteers and remaining staff. By

¹ In the field of emergency medicine, the term pre-hospital emergency services refers to the care a patient receives before arriving at the hospital, usually provided by emergency medical technicians or paramedics. It can also be provided by trained laypersons.

² See <https://www.usaid.gov/div> for more information.

July 2017, he had re-hired the staff he had laid off and had been able to hire additional staff; he trained more volunteers and expanded the number of kilometers of highway that they could cover.

However, Jon and his partners still faced a daunting challenge—their funding would run out by the end of 2018, and they had not yet found sustainable, long-term sources of revenue, despite almost four years of trying. They had proven that they could deliver emergency services and save lives, but could they figure out how to become financially sustainable so that they could continue to support and expand their services within Bangladesh and possibly beyond?

The Epidemic of Road Traffic Injuries: A Public Health Priority

Over 1.25 million people die annually from road traffic injuries (RTIs) in developing countries, more than twice the number of deaths caused by wars and murders. For every recorded death on the roads, there were 20-50 injuries, many resulting in long-term disabilities. The seriousness of the RTI problem was reflected in the United Nations Sustainable Development Goal 3, which set a goal of reducing the number of deaths and injuries from RTIs by 50% by the year 2020. Road traffic injuries disproportionately affected low- and middle-income countries like Bangladesh, with these countries making up more than 90% of all road-related fatalities even though they accounted for only 50% of vehicles. See **Exhibit 1**.

TraumaLink was first launched on a major highway leading into Dhaka, the capital city of Bangladesh. The greater Dhaka area was home to more than 18 million people living in an area of 300 square kilometers, creating a density of more than 23,000 people per square kilometer and making it “arguably the most congested city in the world.”³ Dhaka was growing rapidly as the international textile industry in Bangladesh, with its factories and export operations, expanded. Young people and others from around the country moved to the city to get a university education or to work, and most remained so that Dhaka served as the country’s primary business, academic, and entertainment hub. Throughout the city, poorly constructed high-rise apartment and office buildings proliferated to meet the demands for housing and work space. And as the city grew, so did the traffic, with the roads into and within the city becoming legendary for being incredibly congested and dangerous.

Road traffic injuries had become the leading cause of death and disability in Bangladesh. Recent data from the WHO indicated that there were an estimated 20,000 deaths and over 400,000 injuries related to road accidents in the country, resulting in an economic loss equaling 2% of Bangladesh’s GDP. The loss was equal to the average annual foreign aid received by the country. In addition, in Bangladesh, 50% of victims were 15–44 years old, often men who were family breadwinners and the sole supporters of a family of 5–6 people. Crash injuries and deaths caused many families to fall into poverty, which often had a multi-generational impact.

As is typical in low- and middle-income countries, there was no formal national pre-hospital emergency response system in the country, which further compounded the problem of RTIs. Instead, sympathizers and concerned community members gathered at crash sites and attempted to provide care but, because they were usually untrained, sometimes inadvertently

³ <http://www.bbc.com/news/magazine-19716687>

created further injuries to victims through improper handling and transport. Less than 11% of seriously-injured trauma victims were transported by ambulances, with most transported by three-wheeled vehicles known as CNGs or driven by concerned passers-by or victims' relatives. This led to delays in care, or transport to clinics or other health providers that were unable to provide the needed trauma care.

As described by Jon, “due to the enormous scope of the problem, [people] felt helpless and hopeless to do anything about it as individuals.”

The Birth of an Idea

Jon Moussally, Eric Dunipace, and Ryan Fu—all students at the Harvard T.H. Chan School of Public Health—travelled to Dhaka, Bangladesh, in January 2013 for a winter-session field trip on issues in global health. All three were shocked by the chaotic traffic and, independently of each other, began to think about the implications and possible solutions. Serendipitously, at a dinner in Dhaka for local Harvard alumni, the three met Mridul Chowdhury, the CEO of mPower,⁴ a highly regarded social venture organization within Bangladesh.

As Mridul recalled:

I had made a documentary film on road crashes in Bangladesh and their adverse effects and, by chance, got to meet Jon, Eric and Ryan on their study trip to Dhaka. I showed them the documentary and got to talking about what can be done about road crashes. And before we knew it, over a dinner conversation, the concept of TraumaLink was born and then later crystallized.

The three students brought different backgrounds and skills to the problem. Jon, an experienced emergency physician, was interested in working on disaster preparedness. In an earlier project for the Harvard Humanitarian Initiative, he and a colleague had developed a first aid training curriculum that could be used to teach basic skills in emergency care to anyone, regardless of education or experience. He had also worked with the United Nations Development Program training community health workers in Uganda on trauma management. For Jon, witnessing the carnage on the roads in Bangladesh was particularly harrowing. He had lost his own father to injuries sustained in a car accident, and he dealt with trauma in his daily life as an ED doc. He knew that providing care within the first hour of injury, known as the “Golden Hour,” significantly improved outcomes.

Eric Dunipace had come to public health looking for a career where he could use his technical expertise in statistics and mapping to improve systems of health delivery directly as a change from his previous laboratory-based research. Ryan Fu, a former McKinsey & Co. consultant, had worked in finance and business development. He had no prior background in medicine or research but hoped to develop a career in global health work that would have a positive impact on people's lives. He travelled to Bangladesh with “no intention of starting a social enterprise,” he recalled, but he saw a glaring need in the number of crashes he witnessed and the inefficiency of emergency services.

⁴ <https://www.mpower-social.com/>

Jon described the partners' initial vision:

We wanted to help save people who were dying for unnecessary reasons. A leg or arm laceration that would be treated immediately in the U.S. can be fatal in Bangladesh; no one knows to apply direct pressure to the wound and the accident victim exsanguinates on the way to the hospital. Patients are being paralyzed by not being handled correctly—pulled by brute force from a wreck and carried by their wrists and ankles. They show up at the hospital already paralyzed, something that could be easily prevented if people knew how to stabilize their necks and spines. In Bangladesh, you see people with grossly deformed extremities because a limb was broken and never set correctly. We were not going for miraculous saves—basic, basic, basic care has an incredible impact. The lowest-hanging fruit is getting to people at crash scenes.

As the head of a well-known social enterprise in Bangladesh, Mridul provided access to a wide network of contacts that would facilitate future discussions with key stakeholders in the country, and was critical in “giving the concept a practical shape that would suit the context of Bangladesh,” as he described.

Developing the Model

Jon, Eric, and Ryan returned to school to complete their studies. During the spring of 2013, they competed in the Harvard Deans' Health and Life Sciences Challenge, a competition that helped them hone their ideas for TraumaLink through an exhausting series of pitches, presentations, and interviews. What emerged was a three-part vision of a “social enterprise that will harness the power of communities to provide pre-hospital trauma care to victims of traffic injuries, with a hotline that connects trained volunteers to traffic injury victims and transportation, [funded by] attractive advertising opportunities for private companies.”

The team finished as a finalist in the competition and, with their award money, returned to Dhaka in the summer of 2013 to begin the process of turning their ideas into a practical, operational model. With help from Mridul, who provided operational support and office space for the fledgling company in central Dhaka, the TraumaLink team set up meetings with community leaders, the police, the Road Safety Council, researchers from the Accident Research Institute (ARI), and NGOs within the community working in related fields. As Jon recalled:

We had innumerable conversations involving gallons of tea where we asked, “How can we help?” We let them know that although we had certain skill sets, we knew very little about how things worked in Bangladesh and would need their assistance in creating a program that would be viable within this context. Basically, we were attacking an acknowledged problem and were asking for advice on how to tackle it. 90% of the ideas we are now using came from the Bangladeshis themselves; by approaching them so early on, in a respectful manner, and working with them so closely, we built a strong foundation of communication, trust and shared mutual purpose.

One of the largest problems that the team identified was that of police interference at crash scenes, which were often viewed as crime scenes. The primary role of the police in these situations was to create a legal case, a practice traceable to the colonial era, rather than helping injured victims. Anyone involved in the accident scene, even those trying to help the victims, was at risk of being detained as a suspect. As Jon explained,

The police were a potential fatal flaw in our model, and were one of our biggest priorities in the beginning. We approached them in a non-adversarial manner, explained the importance of early treatment for injured patients, and asked, “How can we do our important work while still allowing you to do yours?” We started with the second-highest-ranking police officer in the country, got her support, and then worked our way down each step in the chain of command to the local police.

Some ideas, such as improving transportation of crash victims, were quickly discarded since purchasing, maintaining, and operating an ambulance system was prohibitively expensive, and traffic congestion created enormous delays in getting vehicles to crash scenes as well as transporting victims to hospitals. Their meetings with the other organizations working in road safety in Bangladesh revealed that there was little coordination among them and no unified front for creating national advocacy, policy change, or research.

Identifying and Training Community Volunteers

The key to the TraumaLink model was to build a group of community-based volunteers trained in basic trauma first aid. As a first step, TraumaLink asked community leaders to identify potential volunteers and help with recruitment. This ensured that the volunteers were vetted by and accepted by the community, and that they would be recognized as they provided aid along the highway.

Jon and the team wanted to include women as TraumaLink volunteers. Traditionally, in Bangladesh, physical contact between men and women who were not related by blood or marriage was forbidden. In a series of meetings in the community that included religious leaders, Jon and his team explained the intent and activities of TraumaLink and were able to secure the community’s agreement that women would be allowed physical contact with men if it were a situation where they were saving a life.

First Aid Training

The TraumaLink volunteers were trained in trauma first aid by a Bangladeshi physician trainer using a Bengali language curriculum. The curriculum was based on materials and methods refined by Jon over a number of years and designed to be accessible to individuals with any level of education. Training initially lasted two days with basic first aid taught on the first day and broader volunteer training, including mass casualty triage and mock crash responses, on the second day.

The volunteers received a comprehensive pocket-sized first aid manual in Bengali and had access to training videos that could be easily uploaded to a mobile device. After they completed their training, volunteers got a certificate, an ID badge, and a reflective vest with the TraumaLink logo that they were encouraged to keep with them at all times. These served to identify them in the community and gave them legitimacy and visibility at a crash scene. In order to remain active in the program, volunteers were required to undergo retraining to refresh their skills every 6–12 months. See **Exhibit 2** for a sample of topics covered in the training curriculum.

Developing the Emergency Call Center Software

Being able to link volunteers with crash victims required that TraumaLink operate a call center with the basic characteristics of a standard EMS system including a simple phone number. They decided to design a simple text message (SMS) based platform that could operate on any phone and could handle the volume of calls that would be generated if TraumaLink expanded to serve all of Bangladesh.

Mridul played a critical role, helping Jon find and hire programmers and providing space for the workers and for the call center at the mPower offices in Dhaka. Eric and Jon designed the system:

It had to be perfect before launch since getting fast volunteer response was paramount. There was also no way for us to shut the service down to fix problems after we went live. It was an iterative process, designing a graphic user interface that met our requirements. We needed key information on where the crash was (we ended up using an interactive Google map with geotags for landmarks) and how many people were injured. We developed an algorithm embedded in the software that translated the number of injured patients into the number of volunteers needed. Every location on the stretch of highway we cover has landmarks, so someone who isn't familiar with the area can talk to the operator and she will be able to locate the crash based on whatever landmarks the person can find (a gas station, store, etc.).

When someone saw an accident, they called the emergency number that connected them to an operator in the call center. The operator collected information on the location of the crash and number of victims, and the software then determined how many volunteers to alert and automatically sent out text messages to the volunteers closest to the crash scene. Upon receiving the text message, the volunteers replied whether or not they were available to respond to the incident, and the software recorded the volunteer's availability. If a volunteer was unable to respond, the software moved down to contact a different volunteer from a rotating list of first responders for this location. This cycle was repeated until the appropriate number of volunteers was recruited for a crash.

The service area was divided into different zones, with volunteers assigned to zones based on their usual location to enable easy mobilization. The software was also able to recruit volunteers from adjacent zones in the event of a large mass-casualty event. All the zones had first aid supplies like stretchers, cervical collars, and wound dressing materials strategically located in prominent businesses, fuel stations, local police stations, and fire service centers where they could be accessed 24 hours a day.

Once they accepted a dispatch, the volunteers quickly retrieved the box of first aid supplies and headed to the crash scene. A paid staff member from the nearby field office also joined the volunteers at the crash site. The volunteers made a quick assessment of the severity of injuries, offered first aid as appropriate, and reported to the call center. The software contained a registry of nearby hospitals and their capacity to treat injured patients that allowed operators to guide the transportation of victims to the nearest appropriate medical facility, if necessary. Most victims were already being taken to local hospitals by concerned bystanders. To augment this,

the president of the local CNG Owner's Association offered free transport for TraumaLink patients, and police and fire brigade vehicles were also made available as needed.

As a last step in the process, the call center operator followed up with the volunteers and/or field staff after successful evacuation of the victims to collect additional data on the patient and crash.

Data Collection

The data collection system, designed by Eric, stored information on operations in real time. Data collected include crash characteristics—the types of vehicles involved, time of day, day of the week, and location, as well as patient information including age, sex, type of injury, and severity of injury. Operational activities were recorded, including response times, type of treatment offered, type of transportation, and receiving facility.

The data collected by the service was highly valuable as there was no reliable collection system in the country. As Jon described:

Official data collection in Bangladesh is very poor. The police are only required to report deaths. The Accident Research Institute (ARI)—a big name in academics and engineering within the Bangladesh University of Engineering and Technology system—tracks traffic incident data. They created a form the police are supposed to fill out but it often doesn't get filled out because it's too long and complicated, resulting in inaccurate data.

Funding TraumaLink

From the beginning, Jon and his partners wanted TraumaLink to be a self-sustaining social enterprise, and ultimately hoped to turn it over to the Bangladeshis to run. They decided to set up TraumaLink initially as a for-profit company and envisioned that after setting up operations the company would be able to generate enough revenue to fund its own growth and expansion. Ryan Fu, TraumaLink's Vice President of Finance, explained:

Setting up a for-profit was easier, quicker, and less stressful, and with our busy part-time schedules, it was a more feasible option. NGOs do not have the best reputation in Bangladesh;⁵ we wanted to engage with the private sector on a transactional basis rather than receiving CSR [Corporate Social Responsibility] handouts and charity donations.

The team debated whether to charge patients for the service, with some members of the team arguing that since patients and families were willing to pay for medical services from doctors and hospitals, they might be willing to pay for pre-hospital services. A sliding fee scale was

⁵ Bangladesh was rife with non-profits working on a wide range of problems from diarrhea to development banking. One such NGO was BRAC (Bangladesh Rural Advancement Committee), which since its founding in 1972 had grown to become the world's largest development organization, working on multiple fronts including disaster management, health, agriculture, microfinance, education, human rights, urban development, and community empowerment, to name a few. It operated almost as a parallel government because of its immense resources and overwhelming influence, and despite its good work, BRAC was viewed with a certain level of resentment by many within the development world for its outsize power and influence. Jon knew from his discussions with Mridul and other local partners that people in Bangladesh tended to react with suspicion and mild distrust whenever they heard that an organization was non-profit, feeling that these organizations had an unfair advantage since they paid no taxes.

considered but means testing would have been very difficult to implement. “Ultimately, we decided not to charge patients because we didn’t want to introduce additional barriers to care,” explained Jon.

Instead, the team focused on raising operating funds from private companies and NGOs in a number of different ways: by having companies advertise as sponsors or place their logos on TraumaLink volunteers’ vests, first aid boxes, or other materials; by selling first aid training courses on a contract basis to companies and NGOs; and by offering “insurance package” subscriptions to companies whose workers travelled the dangerous highways in and around Dhaka. Any revenue raised through these activities would be channeled back into operations and expansion.

The partners also sought donations from governments and foundations, but struggled with the knowledge that organizations that relied solely on external funds from donors were sometimes forced to compromise on their mission and values to accommodate their donors’ ideologies and goals.

The Pilot: First Six Months

In November 2014, almost two years after Jon, Eric, and Ryan had first travelled to Bangladesh, TraumaLink was officially launched along a stretch of the Dhaka-Chittagong Highway in Daudkandi, an area about 40 km east of Dhaka. The event was well-attended by local community leaders, the police, the fire department, and the new volunteers, and marked the beginning of a six-month pilot during which TraumaLink volunteers provided first aid services along 14 km of the highway that had been identified by ARI as a hot spot for crashes.

In the areas where TraumaLink operated, they publicized their emergency number by leafletting the neighborhood, by using stickers and banners around the community, with local cable television notices, and through word of mouth. Volunteers who worked in or owned stores also posted the number in their shops.

By June 2015, TraumaLink had completed its six-month pilot phase successfully and added an additional 5 km to their coverage area for a total of 19 km of the Dhaka-Chittagong Highway. Jon reported:

We responded to 100% of the calls we received, and in 80% of these calls, we had someone at the scene in under 5 minutes, a feat even for advanced EMS systems in developed countries. Our volunteers are heroes in the community.

In addition, in analyzing the data collected at every crash scene, it was clear that the volunteers were accurately assessing the severity of injuries they encountered. Their assessments closely matched hospital dispositions, with 99% of the victims who ended up being admitted to the hospital having been assessed by the volunteers as having moderate to severe injuries.

Mridul added:

It really made me believe in the power of volunteerism—the fact that these young volunteers respond to calls at any time of the day without any expectations of returns gives me hope about Bangladesh and the world in general. It gives me faith that the good in us will eventually override any potential bad in us.

See **Exhibit 3** for statistics on TraumaLink’s crash responses, injuries, etc.

The Impact of TraumaLink

Volunteer Retention

Jon was acutely aware of the key role that the volunteers played in the successful execution of the model, and several experts had told him how unlikely it was for people to remain engaged without remuneration. However, Jon’s faith in the TraumaLink approach came from observing the daily communal life of Bangladeshis. There was a strong sense of shared responsibility, and members of the community took pride in helping each other.

In the first three years of operations, even during the seven months of reduced operations, TraumaLink had retained all but a few volunteers, and had only lost those because they had moved from the area or had taken jobs that made it impossible to continue with their volunteer commitment. One volunteer had gone on to further medical training, and another who was illiterate had become one of the most skilled of their volunteers. To Jon, this further supported his sense that, “In development work, we often grossly underestimate the human resources and capabilities in these communities.”

Jon made it a condition of involvement that the volunteers accept no payment or reward for their services, and had a policy of “once and out.” As it turned out, TraumaLink never had a volunteer break this rule, despite multiple offers from grateful patients and their families.

Women Volunteers

Eight women, actively recruited and trained as equals with men, were included in the first group of volunteers. As one female volunteer explained:

I live by the road and I have witnessed countless crashes happen and most of the time I would rush to the scene just like I would now as a TraumaLink volunteer. The difference now is that instead of being part of the confusion and chaos, I know what to do. I am no longer scared of blood. I know how to stop a bleed, how to splint a fracture, and how to organize other members of my community to quickly transport the victim to the hospital. This is a very empowering experience and although I am a woman, my community respects me because they trust that I have been well trained and they follow my lead in these situations.

The women volunteers were looked up to for direction during an emergency and enjoyed the trust and cooperation of other community members who followed their instructions after a crash. Jon expanded on this:

The fact that you have a housewife in Bangladesh taking the lead on first response and having the community listen to her, I’m incredibly proud of that. We wanted women

involved from the beginning and seeing them getting this type of respect in the community has made us incredibly proud. It's exactly what we had hoped for.

Relationship with Police

Another surprising consequence of TraumaLink's activities was to change the relationship between the community and the local police, who became allies, creating a safe scene and providing support for the volunteers. "The police have historically provided only lackadaisical enforcement of traffic laws and we've even seen some impact on that. Providing a safe scene for volunteers to work is step one, then perhaps we can move on to creating a safer environment for driving," explained Jon. The local government even took some of TraumaLink's data and built pedestrian overpasses over particularly dangerous stretches of road and intersections—places where there are markets, bus stops, etc. Although people are not using them as much as hoped, "it's a start," Jon felt.

Awards and Recognition

TraumaLink won the 2015 Manthan Award for eHealth in South Asia and Asia Pacific, a coveted award among eHealth interventions in South Asia, and was also recognized multiple times by the local and national police, road safety associations, and local and national press.

Staffing and Costs

By the summer of 2017, TraumaLink had 13 full-time staff and 240 trained volunteers, had expanded their coverage from 19 to 35 km of the Dhaka-Chittagong Highway in Daudkandi, and had added a 20 km stretch of the Dhaka-Aricha Highway in Manikganj, another notoriously dangerous stretch of road. See **Exhibit 4** for a map of Bangladesh and the areas covered by TraumaLink.

At that point, TraumaLink had built an all-Bangladeshi program staff in office space and with operational support provided by Mridul in his mPower offices. This included a new Director of Operations, Esha Chowdhury, as well as a communications assistant manager and a program manager. Esha had been head of Corporate Social Responsibility at BanglaLink, a telecommunications giant in Bangladesh, and a company Jon had approached as a potential client for sponsorship or training contracts. Esha was able to bring her CSR experience and perspective to TraumaLink.

The call center was also located in the central office, staffed by rotating shifts of operators who provided 24 hours/day, 7-day/week coverage. Recent enhancements in the call center software allowed calls to be transferred to the operators' mobile phones so they were able to take breaks but still be connected. This would allow the call center to handle an increase in call volume without the need to hire additional operators; they expected that the five operators currently employed would be able to handle the call volume generated as they expanded to 100 or even 120 km.

By August 2017, TraumaLink had two local field offices, one in Daudkandi, 52 km east of Dhaka, and one in Manikganj, 60 km west of the city. These field offices provided a community-level presence for TraumaLink since the central office and call center were in downtown Dhaka,

which was up to four hours away in traffic. These offices served as places to store medical supplies and equipment to re-stock first aid kits, and as meeting and training locations. Each field office had two field officers who worked out rotating schedules with each other; field officers oversaw local operations and volunteers and attended each crash along with a volunteer. As the organization expanded, Jon calculated that they needed about one field officer position for each 20–30 km of highway they were covering; rent for the field offices themselves was minimal.

In the beginning of their operations, TraumaLink had started out with five volunteers per kilometer, but “based on feedback from our field staff we found that we were able to use four volunteers instead of five, which gave volunteers more experience but was still manageable for them. It cut our recruitment and training costs by 20%. At the request of our volunteers, we shortened the training classes, and are now training 15 students in one day instead of in one and a half or two days,” explained Jon. “We like to move people up the organization as they gain skills; we hope that in the future talented responders can become trainers so the organization doesn’t always have to use physicians for retraining sessions.”

They calculated that these efficiencies would help them stretch the USAID funds to last until the end of 2018.⁶ See **Exhibit 5** for information on operating costs for TraumaLink.

Long-Term Sustainability

Visibility

TraumaLink had struggled with visibility from the start. As they were setting up TraumaLink, the partners debated whether to provide services in Dhaka, where traffic congestion was the worst, or along the highways where most high-speed crashes occurred. Using data from ARI, they decided to focus first on sections of the roadways with the most accidents, which were on the major highways into and out of Dhaka. But because these stretches were outside the city itself, TraumaLink’s visibility and recognition were limited. A similar company, CriticalLink, had started services within Dhaka and gained recognition much more quickly. At one point TraumaLink considered partnering with them, but their model turned out not to be as sustainable and quickly turned to education and training on first aid, rather than service.

As TraumaLink planned its expansion, it struggled with whether to move into Dhaka itself and cover several dangerous intersections there, or remain along the more dangerous highways outside the city. They worried that it was very hard to cover enough of the highways to achieve a meaningful level of visibility, but finally decided that they could do more good by remaining where their services were more acutely needed.

Esha and her assistant began to focus on increasing TraumaLink’s visibility through other means, using the local papers, press releases, building an online presence on social media (Twitter, Facebook, LinkedIn, and Instagram), and a re-vamped website.

⁶ The USAID funds are dispersed as TraumaLink hits specific milestones, including numbers of volunteers recruited and trained, catchment areas being covered, etc.

Becoming Self-Supporting

The partners had originally set up TraumaLink as a for-profit company, partly because it was faster and easier, and partly because Bangladeshis were suspicious of non-profits. The partners also felt that by being a for-profit company, they could attract private sector “clients” to whom they could sell training packages or sponsorships. Since Dhaka was the hub of the international garment trade that had thousands of workers on the roads, they felt that providing first aid to injured workers would be compelling.

In 2015, TraumaLink was able to close a deal with Kemiko Pharmaceuticals Limited to sponsor 100 reflective volunteer vests and 1000 t-shirts for distribution in Daudkandi, and had partnered with another organization—the Centre for Rehabilitation of the Paralysed—to develop, refine, and produce first aid supplies including cervical collars and stretchers. But other attempts to sell sponsorships or contracts had not yet succeeded.

Ironically, the partners had found that other potential donors or sponsors were skeptical of the company’s for-profit status, assuming that they were trying to profit from others’ suffering. Their marketing attempts were additionally hampered by the fact that unemployment was extremely high in Bangladesh, particularly in lower-skill industries like transportation and garment manufacturing; if a worker was lost due to injury or death, he/she was easily replaced. As Jon explained, there was a pervasive attitude that “life is cheap in Bangladesh.”

One of our biggest challenges is putting a human face on our services, who we help and how. Crashes are so common that people become somewhat inured to them and it can feel like an overwhelming problem. Also, this is not a sexy business—it’s just basic first aid... so TraumaLink is working to put a human face on the problem by profiling patients and volunteers. We are also trying to change attitudes so that people think this is a problem that they can have some control over. For example, because these are often predictable and preventable events, we always use the word crash instead of accident.

See **Exhibit 6** for stories from TraumaLink patients.

By March 2017, the TraumaLink team began to pursue a hybrid model of setting up both for-profit and non-profit arms of the company. They established a TraumaLink Trust with an all-Bangladeshi board as required by Bangladeshi law. They registered with the Department of Social Service, and once that approval came through, would register as an NGO with the NGO Registration Board. At that point, they would be able to bring in money tax-free from both inside and outside the country. “Operationally, this won’t change anything,” explained Jon. “But a tax-free status is more appealing for people and businesses who want to donate, and should make it easier for us to raise money.” They were creating plans that did not rely on a second round of USAID funding, but they remained hopeful this would be available. They had also submitted a proposal for an additional \$100K from a different organization.

Under Esha’s leadership, they were restructuring their sponsorship and partnership packages to make them more attractive as well as to improve TraumaLink’s visibility. In addition to continuing to market their first aid courses, they were exploring other ways of generating revenue, including looking for companies to sponsor events; offering monthly membership

subscription packages; and looking for partners who could supply first aid goods in return for TraumaLink displaying their logos on vests, first aid boxes, etc. They were considering a new program in which local volunteers and field staff could seek out financial support from local businesses in return for a bonus based on the amount of funding they brought in. See **Exhibit 7** for a description of the business sectors and a sample of companies and organizations that TraumaLink was exploring for support.

Scaling Up

“The necessity and importance of the work TraumaLink is doing was reinforced recently when we had our biggest crash response,” Jon explained.

On September 1, 2017, at 2:40 am on the Dhaka-Chittagong Highway in Daudkandi, a bus went off the road while trying to overtake another bus. The force of the impact was so great that the entire roof was torn off and the driver was killed instantly. The bus also wound up half-submerged in a pond. Thankfully, bystanders knew to immediately notify one of our volunteers who worked in a nearby CNG station. He notified the call center and ran to the scene with two of his coworkers. Working with the police, fire brigade, and other responding volunteers they were able to rescue everybody from the bus and treated over 50 injured patients, about a dozen of whom had severe injuries. They made multiple trips back and forth to the hospital until everyone had received the care they needed. As tragic as this was, it certainly could have been much worse and I’m enormously proud of our volunteers.

“But our biggest challenge right now is being able to bridge the gap between being a small pilot company and a bigger company that can get the attention of larger national and multinational corporations and NGOs,” summarized Jon in the fall of 2017. “And how do we monetize something that is basically a charity?”

With the support of the funds from USAID, Jon and his partners had about fourteen months left to figure this out. Some of the questions they were pondering were: where should they expand next—along highways,⁷ in urban areas, into treating different types of accidents/injuries, like near-drownings⁸? Should they partner with other organizations? How could they boost their revenue-generating activities? What type of planning should they make to ultimately transition the company to all-Bangladeshi control? And was there a need for the TraumaLink approach in other developing nations?

See **Exhibit 8** for information on crashes, injuries, and fatalities on the most dangerous stretches of the national highway system in Bangladesh.

With all of the challenges and the uncertainty TraumaLink still faced, Jon remained optimistic: “Peoples’ lives have been saved, families, communities affected... I am incredibly lucky to be able to do this with my life.”

⁷ Bangladesh has approximately 3,800 km of national highways, 4,200 km of regional highways, and 13,100 km of zilla (district) roads.

⁸ Bangladesh is a low-lying country of rivers, lakes, and monsoons. Drowning is the leading cause of death among children in Bangladesh. Among adults, approximately 71% occur among men, with 90% of drownings occurring in rural areas. See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5428487/>

Questions for Discussion

Please come to the session on August 30 prepared to discuss the following questions:

1. What factors are likely to contribute to the high prevalence of deaths from Road Traffic Injuries (RTI) in Bangladesh?
2. What types of interventions would you initiate to achieve the greatest reduction in RTI incidence in the shortest possible time and with the lowest possible cost?
3. How would you measure the impact of TraumaLink? What variables would you use to define outcomes, and how would you measure them?
4. What stakeholders most likely to be interested in these outcomes? How might Jon approach them to gain their political and/or financial support?

Exhibit 1: WHO Infographic

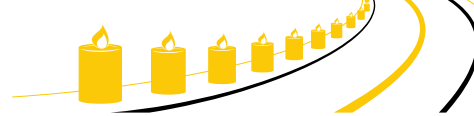
ROAD TRAFFIC INJURIES: THE FACTS

1.25 million

road traffic deaths occur every year

#1

cause of death among those aged 15-29 years

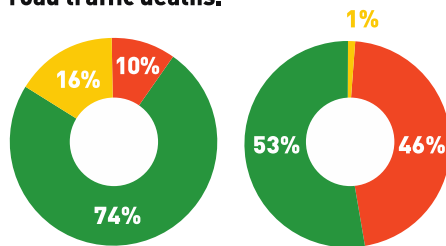


3 out of 4

road deaths are among men



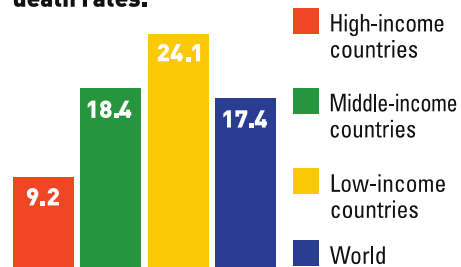
Although low- and middle-income countries have only half of the world's vehicles, they have 90% of the world's road traffic deaths.



DEATHS

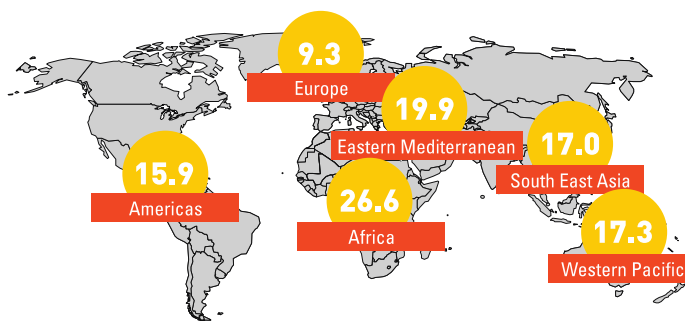
VEHICLES

Low-income countries have the highest road traffic death rates.



Road traffic fatalities per 100 000 population

The chance of dying in a road traffic crash depends on where you live



Road traffic fatalities per 100 000 population



49%

of all road traffic deaths are among pedestrians, cyclists and motorcycles.



World Health Organization

Global status report on road safety 2015

www.who.int/violence_injury_prevention/road_safety_status/2015/en/



Exhibit 2: TraumaLink First Aid Curriculum

Sample of Topics Covered

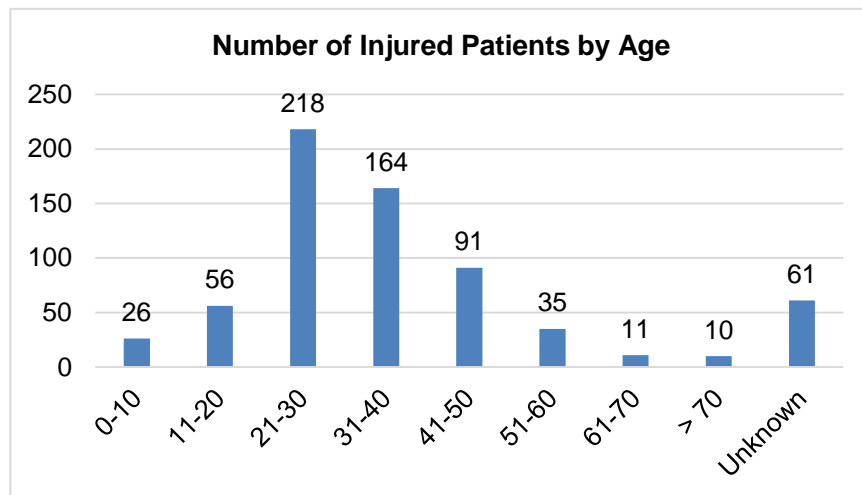
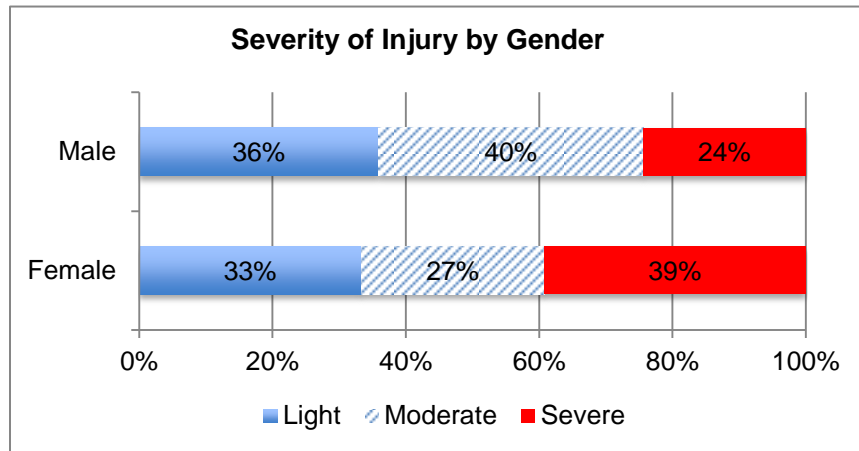
- Overview of first aid, personal safety, and scene management: insures that providers keep themselves safe and patients receive high quality care
- Introduction to the ABC's (Airway, Breathing, Circulation): the essential elements of keeping a patient alive in any type of medical emergency, including trauma
- Airway assessment and management: recognizing and treating blocked airways, a leading cause of death in injured patients
- Breathing assessment and management: recognizing breathing problems and their potential for causing death in injured patients
- Circulation assessment and management including recognition of shock: overview of bleeding management and recognition of life-threatening bleeding
- Training on external bleeding control using direct pressure: simple but effective methods for stopping bleeding from most wounds
- Training on application of tourniquets: treating life-threatening bleeding from injured limbs
- Training on splint application: stabilizing broken bones to decrease pain and protect against further injury
- Burn management: guidance on initial care and avoiding some potentially harmful local practices
- Cervical spine protection and immobilization: emphasizes the importance of protecting the neck to avoid paralyzing spinal cord injuries
- Patient transport and handling: methods for safely moving patients that avoid the risk of creating further injuries
- Training on recovery position: a technique that protects the patient from both suffocation and paralysis
- Safe extrication of patients: education on how to safely remove an injured patient trapped in a vehicle
- Training on stretcher transportation: methods for safely placing and moving a patient on a stretcher
- Mass casualty triage: methods for prioritizing patients for treatment and transportation when medical resources are limited

Source: TraumaLink website: <http://traumalink.net/emergency-first-aid-training/>. Accessed 11.6.2017.

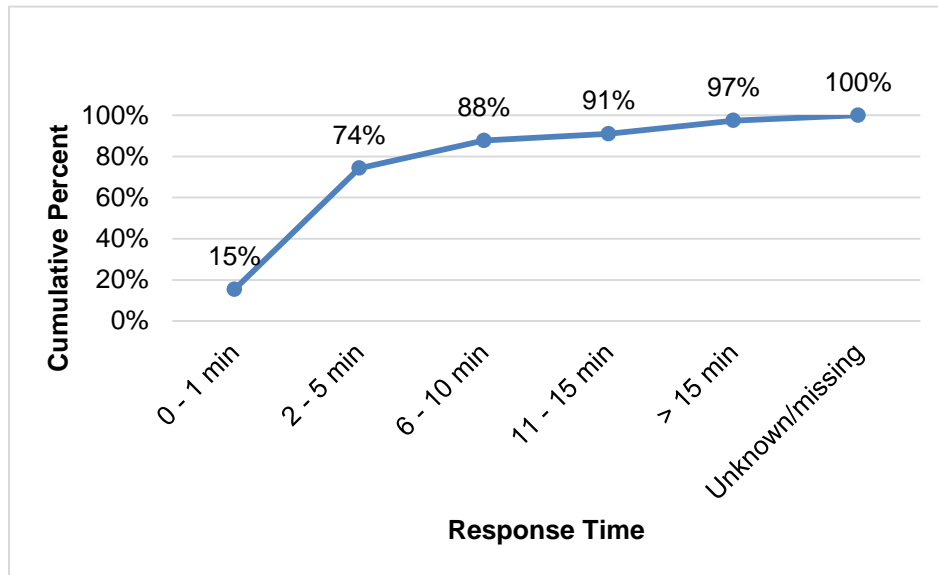
Exhibit 3: TraumaLink Crash Response Data:
November 23, 2014 through September 30, 2017

A: Crash Statistics

Number of Crash Responses	<i>Number of Female Patients Treated</i>	<i>Number of Male Patients Treated</i>	Total Number of Patients Treated
349	102 (15%)	570 (85%)	672



B: Response Time of TraumaLink Volunteers to Scene of Crash



Note: Response Time = Number of minutes from the time the call center receives a call to the time the volunteer arrives on the scene of the crash. In many cases, the volunteer is the person who witnesses the crash and reports it to the call center.

C: Accuracy of Triage Assessments by Volunteers

Data Table: Severity Assessments					
Clinical Outcome	Volunteer Assessment of Injury				
	<i>Light</i>	<i>Moderate</i>	<i>Severe</i>	Total	<i>% of Total</i>
Mild injuries without need for further treatment	1	0	0	1	0%
Mild injuries with first aid care provided at scene	160	27	1	188	28%
Injuries requiring a visit to a clinic or hospital	127	125	10	262	39%
Injuries requiring hospital admission	1	65	155	221	33%
Totals	289	217	166	672	100%
Percent of Total	43%	32%	25%	100%	

Percent of Time Volunteer Assessment Matched Clinical Outcome			
Clinical Outcome	Volunteer Assessment of Injury		
	<i>Light</i>	<i>Moderate</i>	<i>Severe</i>
Mild injuries without need for further treatment	100%	0%	0%
Mild injuries with first aid care provided at scene but without need for transportation to a clinic or hospital	85%	14%	1%
Injuries requiring a visit to a clinic or hospital	48%	48%	4%
Injuries requiring hospital admission	0%	29%	70%

D: Number of Crash Victims Treated by Month

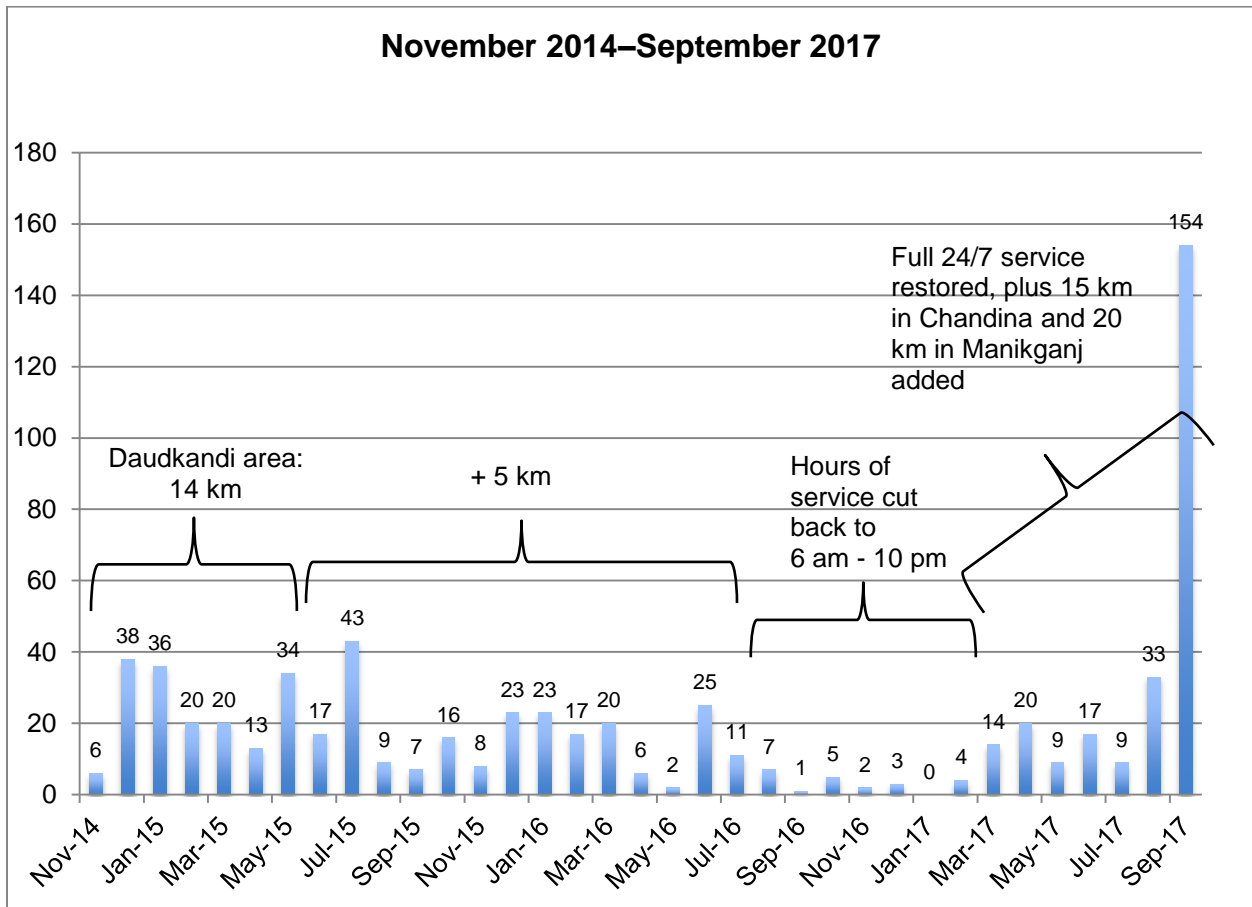
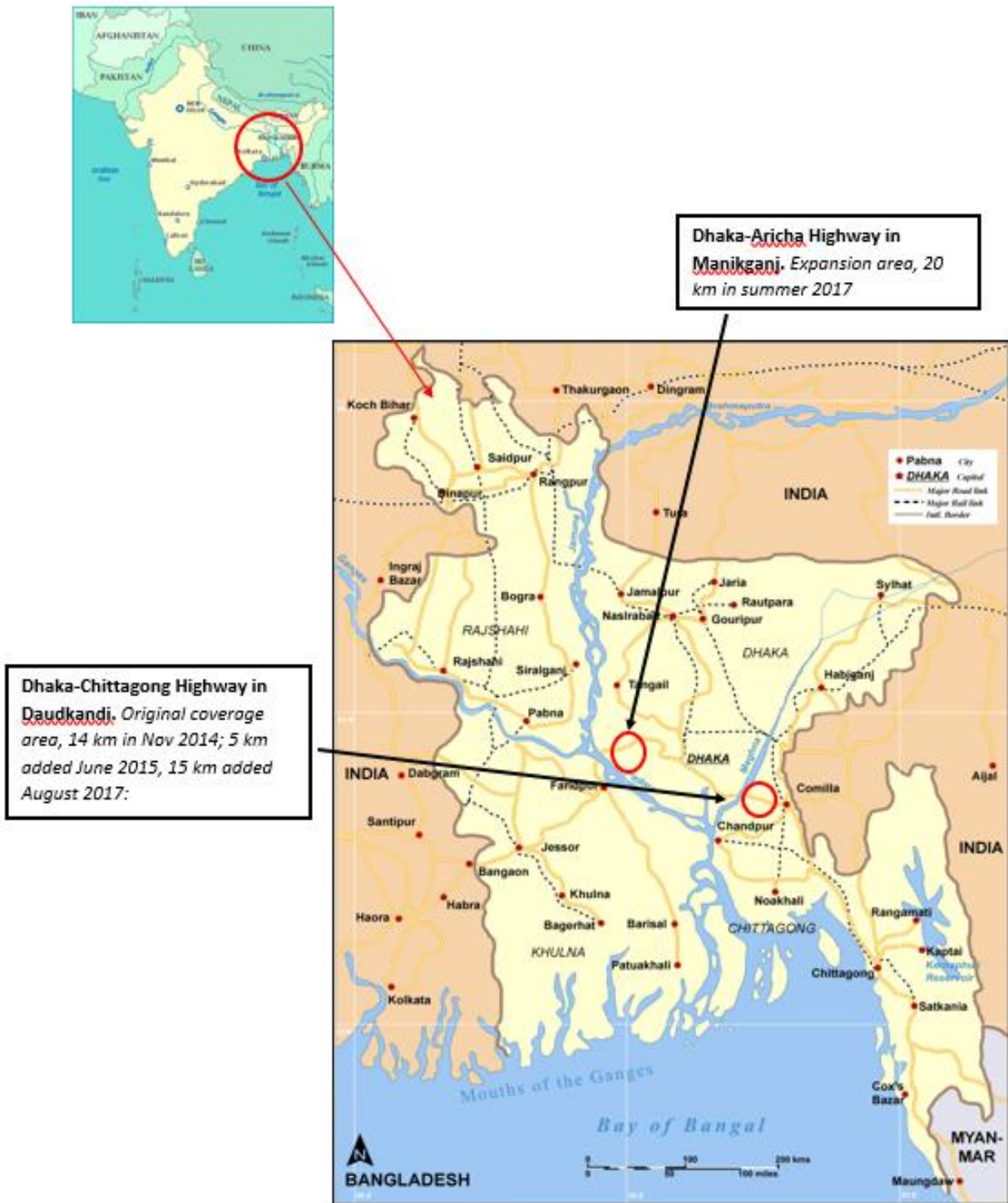


Exhibit 4: Maps of Bangladesh and TraumaLink Coverage Areas



Crash Locations Responded to on Dhaka-Chittagong Highway, November 2014 thru September 2017



Crash Locations Responded to on Dhaka-Aricha Highway, November 2014 thru September 2017



Source: Used with permission from TraumaLink

**Exhibit 5: Estimated Operating Costs in US Dollars
at full capacity of 200 km* (see Notes below)**

Monthly Operating Costs

Central Office - monthly operating costs, fixed for 0 - 200 km highways covered	
	<i>Per month</i>
Salaries: head office staff**; call center staff (5 operators)	\$4,500
Digital marketing	\$70
Total	\$4,570

Field Costs – monthly operating costs, per each 20 km of highway covered	
	<i>Per month</i>
1 field officer salary/transportation costs	\$400
Allocated portion of rent for area office	\$40
Total	\$440

Volunteer Recruitment and Training Costs

Volunteer Costs – per each 20 km of highway covered (80 volunteers) per year	
Starting and Refresher training (15 volunteers per training; \$350/session, including trainer's costs, venue cost, logistics) every six months	\$3500

Notes:

* Beyond 200km, additional costs would be incurred at the Central office for additional operations, finance, and HR, as well as call center operators. The call center infrastructure was designed to handle the call volume for all of Bangladesh.

** Includes salaries for Director of Operations, Communication Manager, and Sr. Program Manager.

Excluded are one-time start-up costs of software, phone codes, telephone service at central office/call center of \$6700. Also excluded are one-time inventory of first aid boxes, ID cards and vests for each field office, and volunteer recruitment costs, totaling \$4350 for each 20 km segment; for 200KM, this one-time cost would be \$43,250. Every 20 km segment beyond 200km would add \$4350 in one-time costs.

mPower made a number of important in-kind contributions, including space for the call center and access to mPower staff, which reduced start-up and operating costs. These contributions have not been factored into the reported costs.

Exhibit 6: Stories from TraumaLink Patients

“We were on the highway travelling and our car brakes failed and it fell in a ditch. We were 10-12 people and myself was most badly injured. Everyone around said if TraumaLink was not there then it would not have been possible for us to survive. The ditch we fell in was pretty deep and it was not possible for us to get out from there, TraumaLink helped us all to get out from there. They first provided the first aid service on me and put on some bandages and stopped my bleeding immediately. Then they took my address and facilitated me to be taken to the nearby health care center. TraumaLink is our



“On my way to Dhaka from Daudkandi, I got into road crash injury and TraumaLink provided the first aid service on me. They immediately stopped my bleeding and bandaged my injured part. Later, when I went to Dhaka’s Medical Hospital for treatment, then the doctors asked me who provided the first aid service. I told them about TraumaLink’s service and the doctors told me that TraumaLink did a very good job. If I didn’t receive that first aid and if they did not stop the bleeding, the injury would have got extremely severe otherwise. Thus, I am very much thankful to TraumaLink”

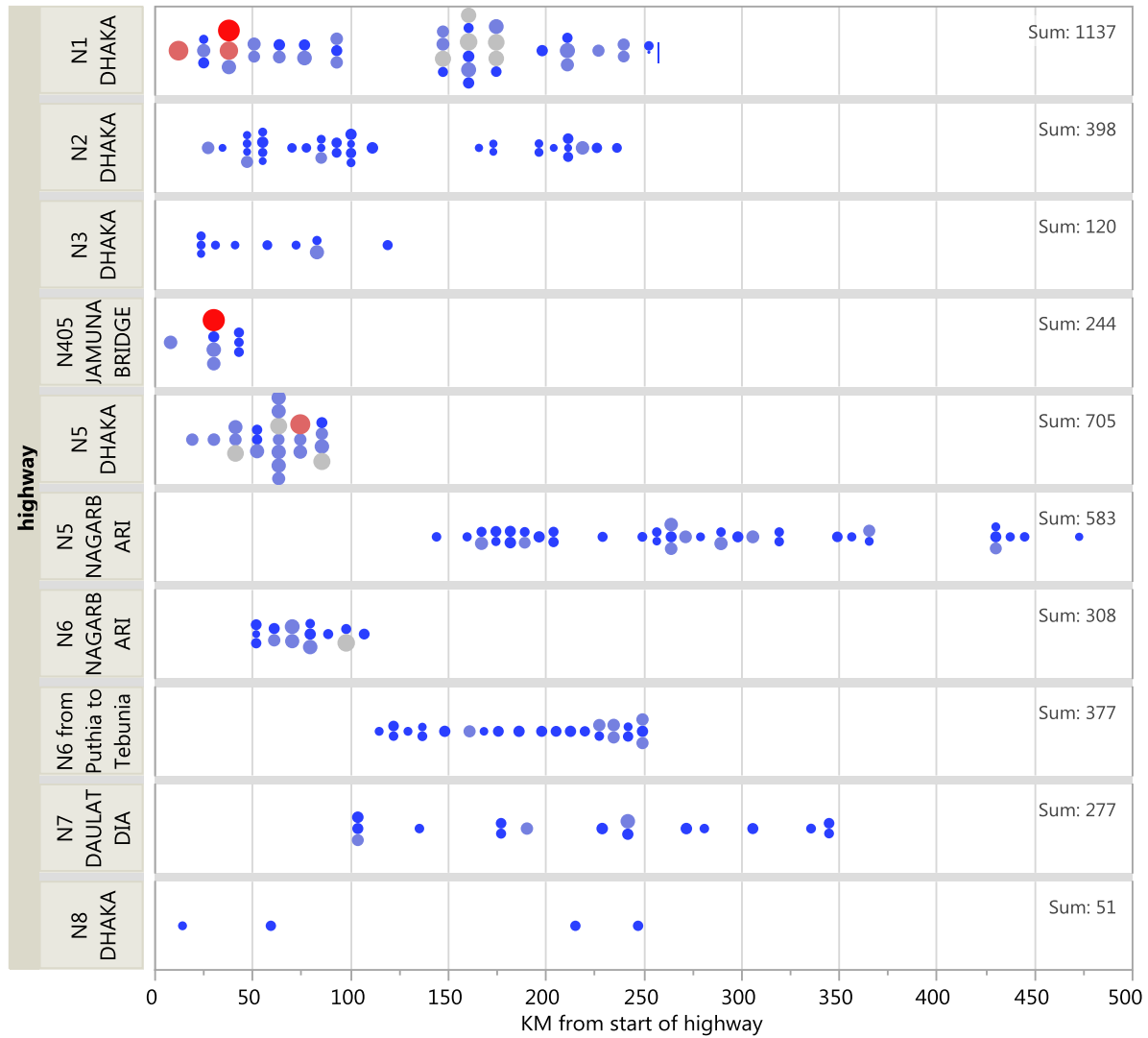


“My son went out to play with his father and while crossing the road, he was hit by a microbus and fractured his leg. Then immediately TraumaLink’s volunteer Mr. Matin came to the crash scene and provided primary first aid on my little boy and arranged our transportation to the nearest hospital. I would have lost my boy if I did not have TraumaLink at that time.”

Exhibit 7: Industry Sectors, Sample of Companies and Organizations in Bangladesh Targeted by TraumaLink

Industry Sector	Examples
Chambers	Dhaka Chamber of Commerce
	Federation of Bangladesh Chambers of Commerce and Industry
	Dhaka Stock Exchange
Pharma	Renata Pharma
	ACME Pharma
	ACI Pharma
	Square Pharma
	Aristopharma
International Organization	German Development Cooperation
	SWISS Contact
	The International Rice Research Institute (IRRI)
Consumer Products and FMCG	Unilever Bangladesh
	Rangs Motors, Suzuki Bikes
Telecommunication	BanglaLink Telecommunication
Field Area's Companies	ACI, Milkvita, Akij, Monno Ceramic, BRAC, Max Industries, Grameen Shakti, Anwar Cement

Exhibit 8: The Most Dangerous Highway Segments in Bangladesh, 1998–2007: Patterns of Crashes on Highways, by Highway Number and Distance (km) along the Highway



Source: Accident Research Institute (ARI): <http://ari.buet.ac.bd/index.php>

* The most dangerous segments range from .2 km to 1 km in length, and usually involve an intersection, bazaar, bus stand, school or pedestrian crossing.

Sum = total casualties (deaths + injuries)

