



Social Reconstruction of the Lac-Mégantic Community Following the Tragedy: Assessment of the First Six Years

INTRODUCTION

On July 6, 2013, in the middle of the night, a train carrying 72 cars of crude oil derailed in the heart of Lac-Mégantic (Quebec, Canada). The derailment caused a major fire and a series of explosions. This technological disaster resulted in 47 deaths, 44 homes and businesses destroyed, 2,000 evacuees (one third of the local population) and 6,000,000 litres of crude oil spilled into the environment. This event has therefore generated significant impacts, both on the human level and on the environmental and economic levels (Généreux & al., 2015).

It is now well understood that the recovery period can take many months, if not years, following such an event. Disasters cause considerable stress and loss, affecting both direct victims and entire communities. Numerous studies indicate that physical and psychological health problems following disasters are substantial in affected communities and can persist over time in the absence of adequate support (Goldmann & Galea, 2014; Galea, 2007). Significant changes can also occur in the personal, marital, family, social and professional lives of those exposed to this type of event.

Despite the tragic event and the many impacts that have resulted, the recovery period following this event offers the opportunity to develop a shared vision of a healthy and resilient community. The disaster then becomes an opportunity to implement innovative and synergistic strategies to *Build Back Better* (United Nations, 2015). In the long recovery process, there are many opportunities to support community development. We must take advantage of these opportunities to enable cooperative and collaborative work to expand and take root in communities in a sustainable way for the benefit of all, both for individuals and for organizations.

Each disaster also becomes an opportunity to acquire and share valuable learning for the communities that will be affected by a future disaster, whether natural, technological or intentional.

The objectives of this bulletin are to:

1. Document the long-term psychosocial impacts of the Lac-Mégantic tragedy;
2. Describe the role of different partners in the recovery of individuals and the social reconstruction of the community;
3. Identify the strategies to promote resilience that were implemented and lessons learned.

Figure 1
Stages of a disaster



Source: Adapted from Zunin & Myers as quoted by DeWolfe, 2000.

1. LONG-TERM PSYCHOSOCIAL IMPACTS

During the first three years following the event, the Direction de santé publique (DSPublique) de l'Estrie implemented several actions to support the Lac-Mégantic community and surrounding areas (corresponding to the territory of MRC du Granit). It monitored the consequences of the tragedy over time on the physical and mental health of the local population, in close collaboration with researchers from the Université du Québec à Chicoutimi (UQAC).

Three studies, entitled "Enquête de santé populationnelle estrienne" (ESPE), were conducted by the DSPublique (by telephone and web) with randomly recruited adults in the MRC du Granit and the rest of the Estrie region, in 2014, 2015 and 2018. These three studies were supplemented by a fourth study conducted solely with adults from MRC du Granit in 2016 by UQAC (Maltais & al., 2018). The methodology and results of this study were described in another report ([Généreux & Maltais, 2017](#)). In addition, a fifth study was conducted in 2017 by UQAC among young people aged 10 to 25 attending a school located in the Lac-Mégantic community.

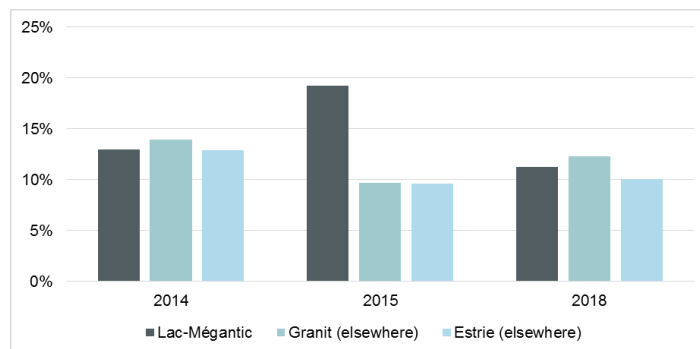
As part of the ESPE 2014, 2015 and 2018, 800 adults, residing in the MRC du Granit and a similar or greater number of adults residing elsewhere in Estrie, were recruited at random. Adults who agreed to participate in the study were asked to answer an anonymous questionnaire, which lasted an average of approximately 30 minutes. Each of the three studies is composed of a separate sample of adults residing in MRC du Granit or elsewhere in Estrie. In other words, the participants were not monitored in time.

Several physical and psychological health issues potentially associated with the tragedy were examined through previous ESPE questionnaires, ranging from perception of overall health status to signs of post-traumatic stress. More details on the measurement tools used are available elsewhere ([Généreux & Maltais, 2017](#); [Généreux & al., 2019](#); [Maltais & al., 2019](#)). In this bulletin, the frequency of the main issues observed is presented according to the place of residence, namely in Lac-Mégantic, elsewhere in the MRC du Granit and in the rest of Estrie, for each of the three studies (2014, 2015, 2018). This approach makes it possible to appreciate the evolution of health issues over time in Lac-Mégantic as well as on its outskirts. It facilitates the interpretation of the results in the global and evolving context of the Estrie region.

Individual-related health issues

In general, the perception of health status improves in Lac-Mégantic as time passes. While in 2015, 19.3% of Méganticois reported poor or fair health, only 11.3% did so in 2018. The proportion of people reporting poor or fair health in Lac-Mégantic in 2018 is similar to that observed elsewhere in Granit and Estrie (see Figure 2).

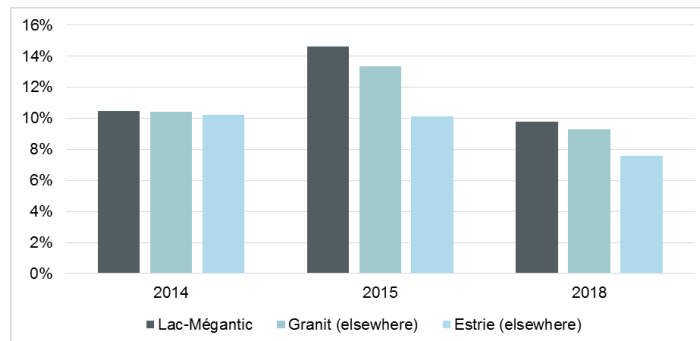
Figure 2
Health status perceived as poor or fair by place of residence, 2014 to 2018



Source: ESPE 2014, 2015 and 2018.

In regard to excessive drinking (at least five drinks on one occasion), on a weekly basis (at least once a week), there is no significant difference between 2015 and 2018 among the citizens of Lac-Mégantic, or between the citizens of Lac-Mégantic and those living elsewhere in Estrie (see Figure 3).

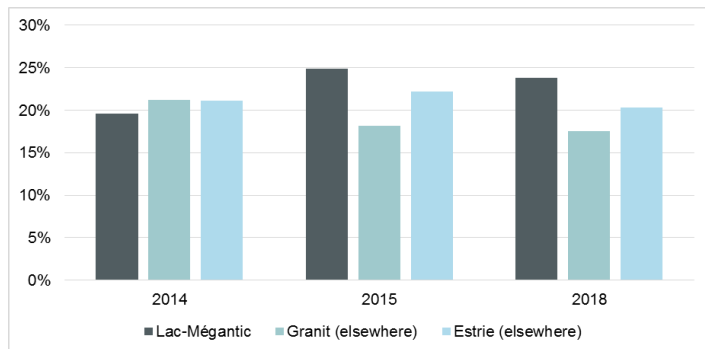
Figure 3
Excessive weekly alcohol consumption by place of residence, 2014 to 2018



Source: ESPE 2014, 2015 and 2018.

As elsewhere in Estrie (20.3%), Méganticois report a high level of stress in 2018 (23.8%). This phenomenon is relatively stable over time in statistical terms, regardless of where you are in Estrie (see Figure 4).

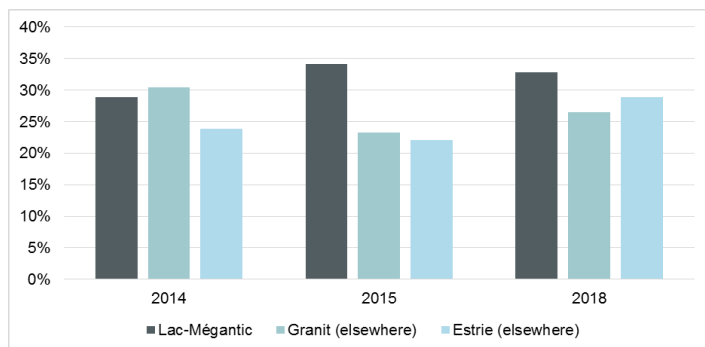
Figure 4
High level of daily stress by place of residence, 2014 to 2018



Source: ESPE 2014, 2015 and 2018.

The level of psychological distress is stable in Lac-Mégantic (32.9% in 2018) but is on the rise elsewhere in Estrie. Moreover, while it was higher in Lac-Mégantic in 2014 and 2015, the level of psychological distress reported in Lac-Mégantic is now similar to that of the rest of Estrie (see Figure 5).

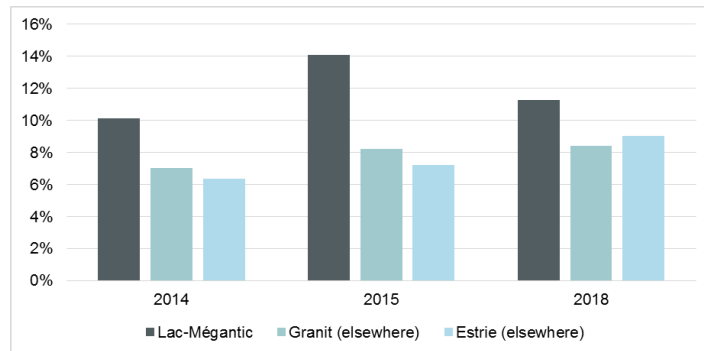
Figure 5
Psychological distress by place of residence, 2014 to 2018



Source: ESPE 2014, 2015 and 2018.

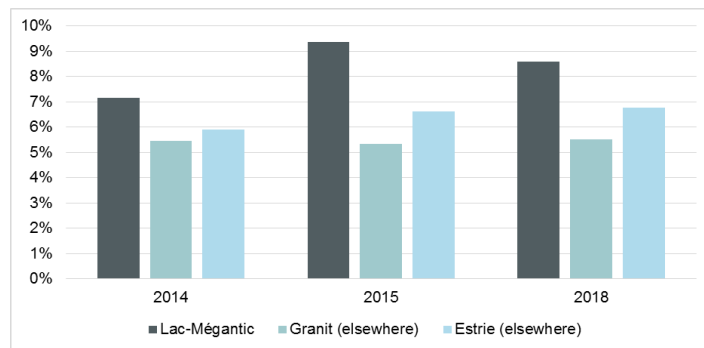
After reaching a peak in 2015, the proportions of adults reporting an anxiety disorder, or a mood disorder diagnosed by a doctor, stabilized in 2018 in Lac-Mégantic (11.3% and 8.6% respectively). On the other hand, these proportions increased significantly elsewhere in Estrie from 2014 to 2018 (see Figures 6 and 7).

Figure 6
Anxiety disorders diagnosed by place of residence, 2014 to 2018



Source: ESPE 2014, 2015 and 2018.

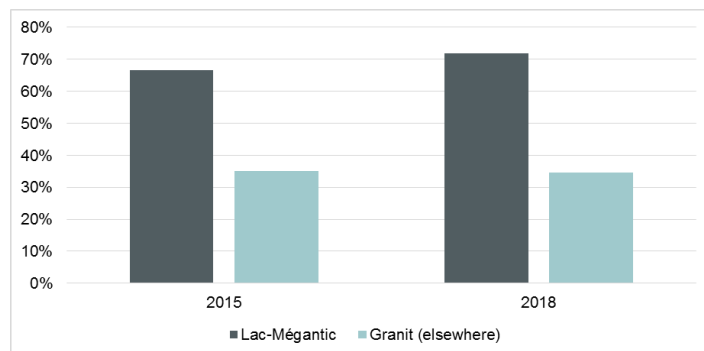
Figure 7
Mood disorders diagnosed by place of residence, 2014 to 2018



Source: ESPE 2014, 2015 and 2018.

As in 2015, moderate to severe signs of post-traumatic stress are still present in 2018, reported by 71.9% of adults living in Lac-Mégantic, and by 34.7% of adults residing elsewhere in Granit (see Figure 8). It should be noted that this measure was not available during the survey conducted in 2014.

Figure 8
Moderate to severe signs of post-traumatic stress by place of residence, 2015 to 2018

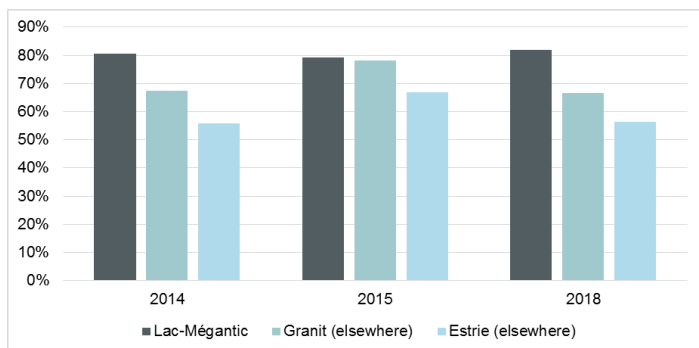


Source: ESPE 2015 and 2018.

Community-related health issues

The Granitois, including the Méganticois, had and still have a strong sense of belonging to their community. In Lac-Mégantic, 81.8% of surveyed adults reported such a feeling, compared to 56.4% of adults surveyed elsewhere in Estrie.

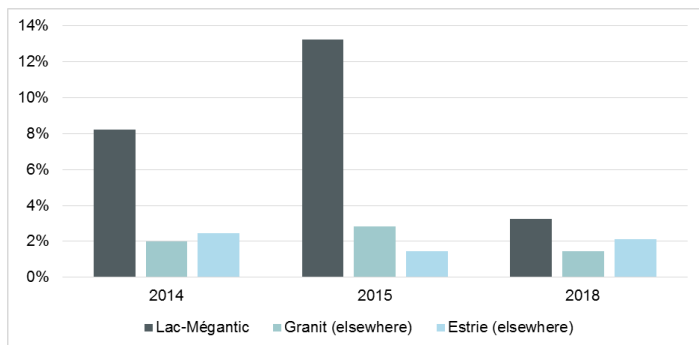
Figure 9
Strong sense of belonging by place of residence, 2014 to 2018



Source: ESPE 2014, 2015 and 2018.

While in 2015, one in five adults did not feel safe in their neighbourhood in Lac-Mégantic, we find that this proportion dropped significantly in 2018 (3.2%), now being similar to the Estrie proportion (2.1%) (see Figure 10).

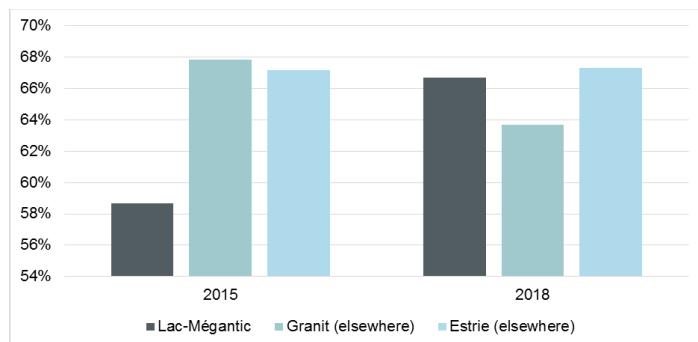
Figure 10
Neighbourhood insecurity by place of residence, 2014 to 2018



Source: ESPE 2014, 2015 and 2018.

Finally, the perception of having access to a high level of social support seems to be increasing in Lac-Mégantic (from 58.7% in 2015 to 66.7% in 2018), although this increase cannot be qualified statistically significant at a confidence level of 5% ($p=0.06$). It is also interesting to note that the percentage of adults with a high level of social support was lower in 2015 in Lac-Mégantic than elsewhere in Estrie, whereas this is no longer the case in 2018 (see Figure 11). As with signs of post-traumatic stress, this measure was not available during the 2014 survey.

Figure 11
High social support by place of residence, 2015 and 2018



Source: ESPE 2015 and 2018.

With regards to all the data collected in 2014, 2015 and 2018, major findings emerge from a considerable number of adults representative of the MRC du Granit and elsewhere in Estrie.

First, the psychosocial impacts observed in the years following the Lac-Mégantic rail tragedy in 2013 seem to be receding. Stabilization or even a slight improvement is observed for several mental health indicators, while some of these indicators seem to be deteriorating elsewhere in the Estrie region (e.g.: psychological distress, anxiety disorders, mood disorders). In other words, the gap that had developed between Lac-Mégantic and the rest of Estrie in the first two years after the tragedy is no longer, in many respects. In addition, there is still a high prevalence of signs of post-traumatic stress. Despite a gradual adaptation of citizens to the losses and stressors experienced during and after the 2013 tragedy, the local community seems to have been deeply affected by the traumatic event and its aftermath. These marks could persist for many years, without preventing the proper functioning of individuals and their community. Finally, protective factors are also observed in Lac-Mégantic, particularly high social support and a strong sense of belonging to the community.

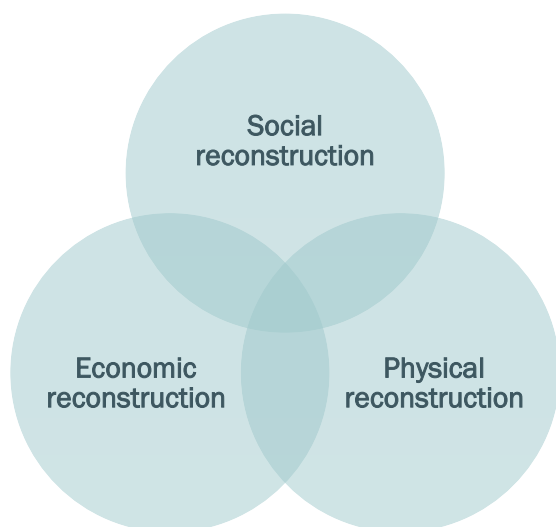
2. ROLE OF PUBLIC HEALTH AND OTHER PARTNERS

In the years following a disaster, the recovery of individuals and the social reconstruction of their community are just as important as the physical and economic reconstruction. One cannot go without the other. By being placed at the heart of the various considerations, citizens can make sense of what is happening to them while contributing to the search for solutions. Citizen participation is therefore a major lever here both in the social dimension and in the physical and economic dimension of reconstruction.

The following systems, all involved in a post-disaster context, influence each other ([American Planning Association, 2014](#)):

- Reconstruction and land-use planning standards;
- Infrastructure and transportation rehabilitation;
- Housing reconstruction;
- Economic redevelopment;
- Environmental rehabilitation;
- Psychosocial recovery.

Figure 12
Interrelation between social, physical and economic reconstruction



Source: Direction de santé publique de l'Estrie, CIUSSS de l'Estrie – CHUS

The release of the ESPE 2015 data (in February 2016) stimulated the emergence of health promotion and advocacy interventions for the local population. In March 2016, the DSPublique therefore intensified its work with community partners, first by organizing a day of collective reflection. During this day, where no fewer than fifty key actors (decision makers, stakeholders, citizens and experts) were gathered, an intersectoral action plan was developed to promote community resilience, health and well-being of the local population. This plan has the following objectives:

- Maintain and adapt psychosocial services to the needs of individuals and the community (outreach services);
- Stay connected with the community;
- Promote community involvement.

In June 2016, the “ministère de la Santé et des Services sociaux” (MSSS) and the Red Cross announced substantial investments that would serve as financial levers to implement the adopted action plan. It is worth mentioning the contribution of the ESPE data, which helped support the making of an informed decision, based on a fair understanding of the long-term psychosocial impacts of the 2013 tragedy.

One of the components of the action plan was the creation of a permanent outreach team in Lac-Mégantic in the summer of 2016. Located outside formal clinical settings (i.e., at the downtown station), this multidisciplinary team aims to bring psychosocial services closer to the population. It is composed of four full-time professionals, including two social workers, an outreach worker and a community organizer, and two part-time professionals (a kinesiologist and a nutritionist).

The following principles guide the entire Lac-Mégantic outreach approach: global health, prevention, scientific rigour, a strengths-based approach, empowerment, inter-organizational and intersectoral collaboration, and inclusion. Citizen participation and community development are at the heart of this approach. A wide range of services are offered, ranging from daily interactions with citizens and local organizations (in the form of psychosocial support, response to service requests, rapid detection and response to emerging needs, collaboration with the organization of activities, etc.), to involvement in various projects emerging from the action plan.

3. STRATEGIES TO PROMOTE RESILIENCE AND LESSONS LEARNED

The *EnRiCH community resilience framework for high-risk populations* (O’Sullivan & al., 2014) has greatly inspired the strategies developed within this community to promote community resilience, health and well-being (Généreux & al., 2018a). Based on qualitative research conducted in five Canadian communities and a review of scientific literature, this framework aims to support an integrated upstream and downstream approach to disaster risk. With the development and use of adaptive capacities as a central element, it advocates three pillars and four areas of intervention, as described in Table 1, all in a cultural context and complexity specific to disasters.

In line with this reference framework, several promising initiatives have been implemented in recent years within the Lac-Mégantic community to mobilize the local community in a recovery context. Twelve of these initiatives were described in a separate report (Généreux & al., 2018b). These initiatives (e.g.: social animation, Photovoix, Greeters, walking club) all contributed significantly to empowering citizens and mobilizing the community of Lac-Mégantic and surrounding areas. These initiatives also appear to have had a positive impact on the mental health and well-being of the citizens of this community.

Table 1
EnRiCH Framework components

COMPONENTS	DESCRIPTION
Adaptation capacity	Flexibility in changing environments
Mainstay	
Empowerment	Power to activate forces
Collaboration	Relationship with a common vision
Innovation	Emerging new practices
Fields of intervention	
Awareness and information	Collective sharing and learning
Strength-based management	Mapping and linking forces
Upstream leadership	Proactive resource investing
Social connectivity	People and group networking
Complexity	Dynamic, non-linear context
Culture	Local community context

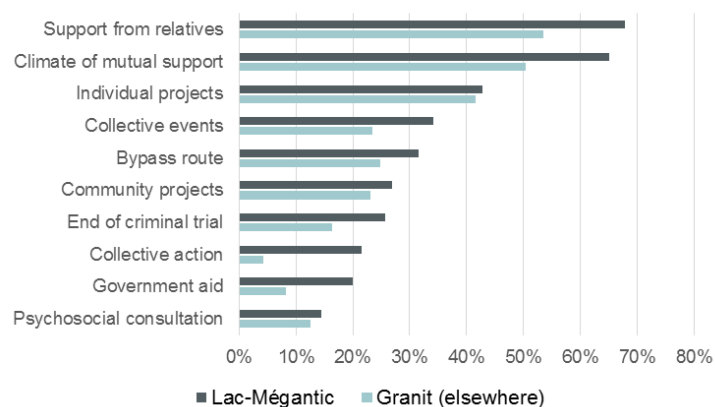
Source: O’Sullivan, 2014.

Place éphémère : a model of promising initiatives

The population is struggling to reclaim the downtown area of Lac-Mégantic, which was largely destroyed during the railway tragedy of 2013. Being under reconstruction, this new place, full of meaning and memories, constantly recalls the loss of landmarks, but also the loss of gathering places. At the same time, there is a desire among citizens to get involved and to revitalize their living environment. In 2018, the concept of Place éphémère in the heart of the city raised from this desire, a space promoting social activities, networking and gatherings. This outdoor venue, under the responsibility of the Outreach Team, allows the involvement of citizens of all ages and all horizons, as well as their participation in various activities aimed at bringing people together and developing meaningful links. Since these are temporary installations, it is an opportunity to experiment with concepts or ideas, while creating positive experiences. Through its free and varied leisure activities offered to citizens (5 to 7 with musicians, barbecues, outdoor film screening with popcorn, laughter yoga, intergenerational karaoke, etc.) and its unique approach, Place éphémère undeniably supports the long-term recovery of the Lac-Mégantic community (Généreux & al., 2018b).

In fact, organizing community projects or collective events, increasing opportunities to become involved as citizens, as well as other elements that strengthen social capital, contribute to building resilience in a post-disaster context. The data collected in this regard from 800 adults in MRC du Granit in the framework of ESPE 2018 speak for themselves (see Figure 13).

Figure 13
Elements that have significantly improved personal well-being over the past 12 months



Source: ESPE 2018.

Lessons learned

Of all the lessons learned, the most important is that **the long-term health impacts of a disaster, particularly on mental health and psychological well-being, should not be underestimated**. Other lessons have also been drawn over the past six years in Lac-Mégantic.

1. Monitoring long-term physical and psychosocial consequences through health surveys is relevant, if not essential.
2. The voices of diverse groups, including the highest-risk groups, must be heard in order to promote concrete social measures and psychosocial support tailored to their needs.
3. The search for a balance between a problem-centred approach and a community-centred approach must be prioritized.
4. Professionals, researchers and public health decision makers need to work closely with local organizations and citizen groups.
5. Lessons from past experiences should inspire the actors involved in the recovery of individuals and their communities, to implement effective strategies and interventions that are effective, while avoiding reinventing the wheel.

CONCLUSION

Our various population studies indicate that the psychosocial impacts resulting from the 2013 Lac-Mégantic rail tragedy decrease over time. Although this tragedy has left its mark, the local community is gradually adapting to its new reality.

This rich experience in Granit over the last six years has identified three key ingredients for success in supporting the recovery of citizens and the social reconstruction of their community following a disaster:

1. Acknowledging the strengths of the community and promoting citizen participation;
2. A strong political commitment to support the community through preventive actions, upstream of problems;
3. A public health team able to support the development and implementation of these actions.

To conclude, let us recall the importance of understanding, preventing and reducing psychosocial risks in the months and years following a disaster, whether natural, technological or intentional. In any case, concerted action to promote community resilience is required during, after, and ideally before the occurrence of such an event. As advocated by the United Nations, we must move from a disaster management logic to a risk management logic associated with these events, in partnership rather than silos for the good of the community ([United Nations, 2015](#)). The positive development of the psychosocial situation in Lac-Mégantic demonstrates the importance of developing a common understanding of risks and working together in finding solutions.

Climate change, urbanization and the aging of the population are here to remind us that the frequency and intensity of disasters, as well as the exposure and vulnerability of the Quebec population to this type of event, are called to increase in the years to come. Therefore, it is best to prepare for it now.

REFERENCES FOR FURTHER READING

- AMERICAN PLANNING ASSOCIATION (2014). *Planning for post-disaster recovery: next generation*. [Online]
https://www.fema.gov/media-library-data/1425503479190-22edb246b925ba41104b7d38eddc207f/APA_PAS_576.pdf
- DEWOLFE D. J. (2000). *Training manual for mental health and human service workers in major disasters*. (2nd ed., HHS Publication N° ADM 90-538). Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- GALEA S. *The long-term health consequences of disasters and mass traumas*. CMAJ. 2007; 176:1293-1294.
- GÉNÉREUX M., G. PETIT, D. MALTAIS et al. *The Public Health Response During and After the Lac-Mégantic Train Derailment Tragedy: A Case Study*. Disaster Health. 2015;2(3-4):1-8.
- GÉNÉREUX M., D. MALTAIS. *Plus de trois ans après la tragédie : comment la communauté du Granit se porte-t-elle?* Bulletin Vision Santé publique n° 34, janvier 2017. Centre intégré universitaire de santé et de services sociaux de l'Estrie – Centre hospitalier universitaire de Sherbrooke. [Online]
https://www.santeestrie.qc.ca/clients/SanteEstrie/Publications/Sante-publique/Bulletin-vision/2017/34_Vision_sante_publique_Lac-Megantic_enquete_3.pdf
- GÉNÉREUX M., G. PETIT, M. ROY, D. MALTAIS, T. O'SULLIVAN. *The "Lac-Mégantic tragedy" seen through the lens of The EnRiCH Community Resilience Framework for High-Risk Population*. Canadian Journal of Public Health, 2018a. [Online]
<https://link.springer.com/content/pdf/10.17269%2F41997-018-0068-z.pdf>
- GÉNÉREUX M., C. BOUFFARD, C. CLUSIAULT, J. GOSSELIN, G. LALONDE, M-C. MAILLET, E. NAULT-HORVATH, C. STEWART. *Des initiatives prometteuses pour mobiliser la communauté locale en contexte de rétablissement / Promising initiatives to mobilize the local community in a post-disaster landscape*. Centre intégré universitaire de santé et de services sociaux de l'Estrie – Centre hospitalier universitaire de Sherbrooke. 2018b. [Online]
https://www.santeestrie.qc.ca/clients/SanteEstrie/Publications/Sante-publique/Initiatives_prometteuses_DSPublique_octobre_2018.pdf
https://www.santeestrie.qc.ca/clients/SanteEstrie/Publications/Sante-publique/Promising_Initiatives_DSPublique_October_2018.pdf
- GÉNÉREUX M., D. MALTAIS, G. PETIT, M. ROY. *Monitoring adverse psychosocial outcomes one and two years after the Lac-Mégantic train derailment tragedy* (Eastern Townships, Quebec, Canada). Prehospital & Disaster Medicine Journal. 2019. 1-9.
- GOLDMANN E, S. GALEA. *Mental Health Consequences of Disasters*. Annu Rev Public Health. 2014;35:169-183.
- LANSARD ANNE-JULIE, sous la direction de Danielle Maltais (2019). *Croissance post-traumatique chez les citoyens de Lac-Mégantic trois ans après la catastrophe ferroviaire de juillet 2013*. Mémoire de maîtrise, Université du Québec à Chicoutimi. [Online]
<https://constellation.uqac.ca/5030/>
- LAVOIE-TRUDEAU ÉTIENNE (2019) sous la direction de Danielle Maltais et Eve Pouliot. *Stratégies adaptatives utilisées par les hommes au mitan de la vie à la suite de la catastrophe ferroviaire de Lac-Mégantic*. Mémoire de maîtrise, Université du Québec à Chicoutimi. [Online]
<https://constellation.uqac.ca/5059/>
- MALTAIS D., A-J. TREMBLAY, O. LABRA, G. FORTIN, M. GÉNÉREUX, M. ROY. *Seniors' who experienced the Lac-Mégantic train derailment tragedy: What are the consequences on physical and mental health?* Gerontology and Geriatric Medicine. 2019. 5 :1-8.
- MALTAIS D., E. POULIOT, G. PETIT en collaboration avec A-L Lansard, G. Paradis, L-P. Morasse, L. Tremblay, G. Fortin, M. Fortin (2018). *Être jeune et exposé à un désastre technologique : le vécu des jeunes de la communauté de Lac-Mégantic*. Québec : Presses de l'Université du Québec : PUQ.
- MALTAIS D., E. POULIOT, G. PETIT et collaborateurs. *Le portrait des jeunes de la communauté de Lac-Mégantic*. Bulletin Vision Santé publique n° 40, octobre 2017. Centre intégré universitaire de santé et de services sociaux de l'Estrie – Centre hospitalier universitaire de Sherbrooke. [Online]
http://www.santeestrie.qc.ca/clients/CIUSSSE-CHUS/medias-publications/publication/bulletin/vision-sante-publique/2017/40_Vision_sante_publique_Portrait_Jeunes_Lac-Megantic.pdf
- O'SULLIVAN T. L., C. E. KUZIEWSKY, W. CORNEIL, L. LEMYRE, Z. FRANCO (2014). *The EnRiCH community resilience framework for high-risk populations*. PLOS Currents Disasters; Edition 1. [Online]
<https://doi.org/10.1371/currents.dis.11381147bd5e89e38e78434a732f17db>
- UNITED NATIONS (2015). *Sendai Framework for Disaster Risk Reduction. 2015-2030*; [Online]
<https://www.unisdr.org/we/inform/publications/43291>

Authors

Mélissa Généreux, M.D., M.Sc.

Direction de santé publique | CIUSSS de l'Estrie – CHUS

Danielle Maltais, Ph.D.

Université du Québec à Chicoutimi (UQAC)

Collaborators

Brigitte Martin and the Outreach team of Lac-Mégantic

Direction de santé publique | CIUSSS de l'Estrie – CHUS

ISSN 2369-5625