

The First Step in Emergency Food Planning:
Hazard Identification & Risk Assessment (HIRA)
Modified Tools & Resources for Emergency Food Planning

Created by the Thunder Bay + Area Food Strategy (2022)

Adapted from Emergency Management Ontario's
Hazard Identification & Risk Assessment Scoring Tool (2019)

For EMO's tool see <https://www.ontario.ca/page/emergency-management-program-resources#section-5>

Introducing the HIRA Process 1
HIRA Risk Scoring Tool – Food Access Template..... 4

Introducing the HIRA Process

What is a HIRA?

The Hazard Identification and Risk Assessment (HIRA) is a structured process for identifying hazards that exist in a selected area and defining their causes, characteristics, and potential impacts. The purpose of a HIRA is to assess the potential risk of hazards with the capacity to cause a disaster to inform emergency planning. The first step to reducing risks in a community is to identify the hazards and assess their associated risks to determine which hazards are most likely to result in an emergency.

A systematic risk assessment process like a HIRA can be used to identify the top risks for concern and to use those to create a base emergency plan framework. A strong emergency plan is one that identifies key roles and responsibilities that need to be considered in any major emergency response and has thought about how those roles can be activated, quickly. A HIRA process can also assist in shifting the focus of emergency management away from being reactive to also being pro-active. The pro-active nature comes about through a stronger focus on prevention, preparedness, and mitigation, in addition to response and recovery. This focus can result in a more disaster resilient community.

A HIRA is conducted by using a risk scoring tool to individually score identified hazards in a community according to their risk. Each hazard is then displayed on a graph that depicts both the likelihood of the hazard and the severity of its impact. This helps to identify what are the top risks that a plan needs to be able to respond to. Effective HIRA processes are conducted with a group of people who offer different perspectives and resources when it comes to planning for and responding to emergency situations.

Why is it important to start an emergency planning process with risk assessment?

Best practices in emergency planning demonstrate that beginning with a HIRA to assess risk helps to:

- Establish a focus for emergency management providers (knowing the severity of the risks helps to determine where to focus planning energy)
- Allocate resources effectively
- Plan appropriately for the most common and most catastrophic occurrences

How must the HIRA process be modified for use with emergency food planning?

When it comes to using a HIRA process to plan for emergency food, the tool must be adapted to consider the context of food access during emergencies. Not all hazards that may be identified in a community's general emergency plan will apply to the context of food access (Ex. substance abuse overdose, high wind, medical supply shortage, etc.). When selecting hazards to focus on for emergency food planning, they must carry a high degree of potential to impact food access at a mass scale.

In using this process for emergency food planning, what hazards could be used?

This tool uses an adapted version of Emergency Management Ontario’s 2019 HIRA risk scoring tool to conduct a food-specific HIRA. The EMO’s tool lists over 60 different types of hazards that could be planned for, listed below. While one could argue that many of these hazards could or do have a food component, time and capacity can limit the ability to address all of them in a base-level assessment.

Hazards highlighted in yellow were used by the Thunder Bay EFP group in their baseline HIRA to assess their impact on food access. These hazards were selected based on the likelihood of such an event to occur in Thunder Bay and/or the severe level of impact such a hazard could pose for community-wide food access; the group also added “economic crisis” to their list of hazards.

Agriculture and Food

Farm Animal Disease

Food Contamination

Plant Disease or infestation

Environmental

Avalanche

Drought or Low Water

Earthquake

Erosion

Extreme Cold

Extreme Heat

Flood

Fog

Hurricane

Landslide

Land Subsidence

Lightning

Thunderstorm

Storm Surge

Tornado

Wildland Fire

High Wind

Winter Weather

Extraterrestrial

Space Object Crash (any)

Space Weather

Hazardous Materials

Chemical

Nuclear (Facility)

Oil or Natural Gas

Radiological

Health

Water Quality

Infectious Disease

Substance Abuse Overdose

Public Safety

Active Threat

CBRNE

Civil Disorder

Crowd Disaster

Cyber Attack

Electromagnetic Pulse

Geopolitical Pressures

Sabotage

Structural

Dam Failure

Fire Explosion

Mine

Structural Failure

Supply and Distribution

Communications

Electrical Energy

Food Shortage

Medical Drug, Blood, Supplies

Petroleum Product Shortage

Water or Wastewater

Disruption

Transportation

Aviation

Marine

Public Transit Systems

Rail, Light Rail, or Subway

Road and Highway

Other

Extra Sheet 1

Extra Sheet 2

Extra Sheet 3

Figure 1: Hazard Checklist, EMO HIRA Risk Scoring Tool (2019)

What is a Risk Scoring Tool and how is it used?

A risk scoring tool is used to assess the risks of individual hazards. For example, if one wanted to assess the risk of an infectious disease on food access in their community, they would follow the prompting questions in the tool to arrive at a risk score. A risk score is comprised of:

- Likelihood—determining how likely (from rare to certain) a particular hazard is to occur, scored across a 100 year time span.
- Community Overview of Consequence—assessing the exposure, vulnerability, and capacity of populations and community assets to the hazard.
- Consequence Scoring—lays out a series of consequences that a hazard could create in relation to food access. For each potential consequence, one determines whether it would have no, low, medium, or high impacts (each of which have an associated value).
- SWOT Analysis—one way to record or summarize information discussed about various risks among key stakeholders.

For an emergency food planning process, the TBAFS adapted the consequences being used in Emergency Management Ontario’s Risk Scoring Tool. The following potential consequences were assessed for every identified hazard:

- | | |
|---|---|
| ▪ Household-level barriers to accessing food | ▪ Barriers to local food production |
| ▪ Household-level barriers to food preparation | ▪ Barriers to transporting food into the city |
| ▪ Ability to digitally purchase food from retailers | ▪ Barriers to distributing food locally |
| ▪ Safe food storage for distributors & retailers | ▪ Community-wide food shortage |
| | ▪ ... any others that emerge |

After all hazards have been scored, they are displayed on a graph that depicts both the likelihood of the hazard and the severity of its impact, also called a risk graph. This helps narrow down the focus of initial emergency food planning to preparing for the impacts that are most likely to occur.

Below is an adapted template for a HIRA Risk Scoring Tool specifically for emergency food planning.

Note: The consequence scoring template (p. 7 – 10) is intended to be used for each determined hazard independently. If there are four hazards to be scored, then there will be four consequence scoring templates in use. The remaining pieces of the template are to be used for the overall community assessment.

HIRA Risk Scoring Tool – Food Access Template

Adapted from the Emergency Management of Ontario’s Risk Scoring Tool (2019)

HIRA Summary	
Hazard:	Risk Total: (Likelihood x Consequence Score)
Likelihood Score:	Level of Risk:
Consequence Score:	Other Notes: (i.e. who or what were data sources)
Date Completed:	
Hazard Definition:	

Likelihood			
Likelihood Total: <i>Write the corresponding number →</i>			
Likelihood	Category	% Chance	Description
1	Rare	Occurs every 100 years or more	
2	Very Unlikely	Occurs every 50 – 99 years.	
3	Unlikely	Occurs every 20 – 49 years.	
4	Probable	Occurs every 5 – 19 years.	
5	Likely	Occurs <5 years.	
6	Certain	The hazard will occur annually.	
Notes:			

Consequence: Community Overview

Consequence is the result of the interaction between **exposure, vulnerability, and capacity** in a community. The potential consequence of a hazard is highest when people or assets are exposed to the hazard, already vulnerable to its impacts, and/or have low-capacity to address the impacts of the hazard.

Exposure

People, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone zones.

Exposed Populations: Who is located in areas prone to this hazard? Consider the location as well as the density, distribution, number of people.

Exposed community assets: What is located in areas prone to this hazard? Consider the location as well as density, distribution, size, number, replacement value (financial, cultural, or social).

Vulnerability

Where vulnerabilities exist in the community in relation to the hazard. This helps to inform the potential consequence.

Vulnerable Populations: Who is particularly susceptible to this hazard and its effects?

Vulnerable community assets: What is particularly susceptible to this hazard and its effects?

Capacity
The planned or inherent level of available resources (financial, social, physical, etc.) to address prevention, mitigation, preparedness, response and recovery.
Low-capacity Populations: Who in the community has low capacity to prevent, mitigate, prepare, response or recover from this hazard?
Exposed community assets: What (physical, environmental, or digital assets) in the community have low capacity to prevent, mitigate, prepare, respond or recover from this hazard?

Consequence Scoring
<p>Below are specific consequences that could affect access to food because of this hazard. For each consequence, determine the category of severeness that may be anticipated. In the top right corner of the table, record the severeness level and its corresponding score. None = 0, Low = 1, Med = 2, High = 3</p>

1. Household-level barriers to accessing food (i.e. mobility, money, health risks, etc.)		
Category	Description	Notes
0-None	Not likely to result in barriers to household-level access to food.	
1-Low	Causes barriers to access within the scope of those experienced by chronic food insecurity.	
2-Med	Causes barriers to access for significant portion of the population, requiring extra emergency operations support.	
3-High	Barriers to food access severe enough for mass food insecurity procedures to be activated.	

2. Household-level barriers to food preparation (i.e. evacuation situations, contamination of potable city water, etc.)		
Category	Description	Notes
0-None	Not likely to result in barriers to household-level food preparation.	
1-Low	Causes barriers to food preparation in an isolated neighbourhood or area.	
2-Med	Causes barriers to food preparation for a significant portion of the population, requiring extra emergency operations support.	
3-High	Barriers to food preparation severe enough to impact the health of a significant portion of the population.	

3. Ability to digitally purchase food from retailers (i.e. electronic forms of payment cannot be used)		
Category	Description	Notes
0-None	Not likely to result in barriers to digital food purchasing.	
1-Low	Causes barriers to digital food purchasing in less than a quarter of the community's food retail capacity.	
2-Med	Causes barriers to digital food purchasing for half of the community's food retail capacity, requiring extra emergency operations support.	
3-High	Barriers to food access severe enough for mass food insecurity procedures to be activated.	

4. Safe food storage for distributors and retailers (i.e. not having a generator or emergency plan that allow for safe food storage when power is affected)		
Category	Description	Notes
0-None	Not likely to result in challenges to safe food storage for distributors and retailers	
1-Low	Causes challenges to storing food for small or local stores or organizations.	
2-Med	Causes challenges in storing food for half of the food supply chain, requiring extra emergency operations support.	
3-High	Could result in challenges severe enough to impact the ability to store fresh food at a community level.	

5. Barriers to local food production (i.e. drought, contamination, plant or animal disease)		
Category	Description	Notes
0-None	Not likely to result in barriers to local food production.	
1-Low	Causes barriers to local food production that affect an isolated area or producer.	
2-Med	Causes barriers to local food production for a significant portion of food producers, requiring extra emergency operations support.	
3-High	Disruption severe enough to impact the ability of the local food economy to produce food.	

6. Barriers to transporting food into the city (i.e. barriers in access points for food shipments like road, rail, ship)		
Category	Description	Notes
0-None	Not likely to result in barriers to food arriving in the city.	
1-Low	Causes barriers in transporting food via one access point of the city, allowing for food to arrive by other channels.	
2-Med	Causes barriers in transporting food via multiple access points, requiring extra emergency operations support.	
3-High	Barriers to food access severe enough for mass food insecurity procedures to be activated.	

7. Community-wide food shortage (i.e. not enough food to feed the population; mass food insecurity)		
Category	Description	Notes
0-None	Not likely to result in a community-wide food shortage.	
1-Low	Causes food shortages for those not able to have a 72-hour supply of food on hand.	
2-Med	Causes food shortages for a significant portion of the population beyond 72-hours, requiring extra emergency operations support.	
3-High	Barriers to food access severe enough for mass food insecurity procedures to be activated.	

Any other consequences...?

8.		
Category	Description	Notes
0-None		
1-Low		
2-Med		
3-High		

9.		
Category	Description	Notes
0-None		
1-Low		
2-Med		
3-High		

Consequence Score Summary

This section will summarize the consequence information you determined above.
 For each consequence, **record the corresponding score** that it was given in the below boxes.
Total up all the scores for each category to give you the total consequence score for this hazard.
 As we currently have seven consequences, the **highest score that could be achieved is 21.**
 (# of consequences x max value of 3)

Access Barriers	Food Preparation	Safe storage	Contamination
Food shipments	Food shortage	Digital purchase	?
Category	# of occurrences x value	Total Consequence Score:	
High			
Med			
Low			

SWOT (Strengths, Weaknesses, Opportunities, & Threats)		
This area is designed to catch any high-level feedback related to the hazard. This can consist of themes or thoughts with a larger scope than the individual parts of the risk assessment process. This can capture a SWOT related to current capacity to prevent, prepare for mitigate against, respond to or recover from this hazard. In other words, important take-aways or specific realizations.		
	Helpful	Harmful
	STRENGTHS	WEAKNESSES
Internal Origin: <i>Attributes of the organization(s) or group(s)</i>		
	OPPORTUNITIES	THREATS
External Origin: <i>Attributes of the environment</i>		