Evaluation of the Public Health Agency of Canada’s Travel Health and Border Health Security Activities 2009-2010 to 2014-2015

Prepared by
Office of Evaluation
Health Canada and the Public Health Agency of Canada

July 2015
# List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Name</th>
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</thead>
<tbody>
<tr>
<td>CATMAT</td>
<td>Committee to Advise on Tropical Medicine and Travel</td>
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<tr>
<td>CBSA</td>
<td>Canada Border Services Agency</td>
</tr>
<tr>
<td>CDC</td>
<td>(United States) Centers for Disease Control and Prevention</td>
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<tr>
<td>CEPR</td>
<td>Centre for Emergency Preparedness and Response</td>
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<tr>
<td>CFEZID</td>
<td>Centre for Food-borne, Environmental and Zoonotic Infectious Diseases</td>
</tr>
<tr>
<td>CIIRD</td>
<td>Centre for Immunization and Respiratory Infectious Diseases</td>
</tr>
<tr>
<td>DFATD</td>
<td>Department of Foreign Affairs, Trade and Development Canada</td>
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<tr>
<td>DND</td>
<td>Department of National Defence</td>
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<tr>
<td>EHO</td>
<td>Environmental Health Officer</td>
</tr>
<tr>
<td>FTEs</td>
<td>Full-time equivalents</td>
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<tr>
<td>HECS</td>
<td>Healthy Environments and Consumer Safety Branch (Health Canada)</td>
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<tr>
<td>HSIB</td>
<td>Health Security Infrastructure Branch</td>
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<tr>
<td>HC</td>
<td>Health Canada</td>
</tr>
<tr>
<td>IHR</td>
<td><em>International Health Regulations</em></td>
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<tr>
<td>MERS-CoV</td>
<td>Middle East Respiratory Syndrome Coronavirus</td>
</tr>
<tr>
<td>NACI</td>
<td>National Advisory Committee on Immunization</td>
</tr>
<tr>
<td>OBHS</td>
<td>Office of Border Health Services</td>
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<tr>
<td>PAA</td>
<td>Program Alignment Architecture</td>
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<tr>
<td>PAHO</td>
<td>Pan American Health Organization</td>
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<td>PHAC</td>
<td>Public Health Agency of Canada</td>
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<tr>
<td>PHITS</td>
<td>Public Health Information Tracking System</td>
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<tr>
<td>PWRCC</td>
<td>Potable Water Regulations for Common Carriers</td>
</tr>
<tr>
<td>QO</td>
<td>Quarantine Officer</td>
</tr>
<tr>
<td>SARS</td>
<td>Severe Acute Respiratory Syndrome</td>
</tr>
<tr>
<td>SO</td>
<td>Screening Officer</td>
</tr>
<tr>
<td>SSI</td>
<td>Ship Sanitation Inspection</td>
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<tr>
<td>TC</td>
<td>Transport Canada</td>
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<tr>
<td>THAD</td>
<td>Travel Health Assessment Database</td>
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<tr>
<td>THOSSS</td>
<td>Traveler Health Operational and Strategic Support System</td>
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<tr>
<td>TMHD</td>
<td>Travel and Migration Health Division</td>
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<tr>
<td>TPP</td>
<td>Travelling Public Program</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>YFVC</td>
<td>Yellow Fever Vaccination Centre</td>
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Executive Summary

This evaluation covered the period from April 1, 2009 to August 31, 2014 and included all the activities undertaken by the Travel and Migration Health Division (TMHD) and those undertaken by the Office of Border Health Services (OBHS). The evaluation was undertaken in fulfillment of the Treasury Board of Canada’s Policy on Evaluation (2009).

Evaluation Purpose and Scope

The purpose of the evaluation was to assess the relevance and performance of the activities undertaken by the Travel and Migration Health Division and the Office of Border Health Services. This includes their activities in the areas of prevention, protection and response such as surveillance/situational analysis, dissemination of information, stakeholder outreach and collaboration, education and training, screening of travellers, inspections, sampling and audits on conveyances and ancillary service including necessary follow-up, completing health assessments, investigations of complaints/outbreaks, and implementation of the relevant provisions of the International Health Regulations.

Program Description

For the safety of people at home and travelling abroad, there is an ongoing requirement that countries be prepared to prevent, identify and address communicable disease in the context of travel health and border health security. At the Public Health Agency of Canada, the Travel and Migration Health Division and the Office of Border Health Services are tasked to address these issues. The Travel and Migration Health Division assesses the risks and communicates steps Canadians can take to protect their health before, during and after international travel. In the Office of Border Health Services, Quarantine Services administers the Quarantine Act and protects public health by helping prevent the introduction and spread of communicable diseases into and from Canada, while the Travelling Public Program protects the travelling public through the reduction of potential risks from water, food or sanitary conditions on passenger conveyances.

CONCLUSIONS - RELEVANCE

Continued Need

Our analysis indicates that there continues to be a need for activities such as those delivered through the Travel and Migration Health Division and the Office of Border Health Services to address the risks related to increased international travel, the emergence of infectious diseases with global health risks, and the elevated potential for the transmission of communicable diseases during travel.
Alignment with Government Priorities

Program activities are aligned with the federal government’s priority to ensure the health and security of Canadians and their communities. They are also aligned more specifically with the government’s commitment to strengthen border health security partnerships and cooperation. These commitments are reflected in a variety of Government of Canada and Public Health Agency of Canada documents and agreements.

Alignment with Federal Roles and Responsibilities

A clear federal role pertaining to travel health and border health security has been established in a variety of acts and legislation such as the Department of Health Act, the Quarantine Act and the Potable Water Regulations for Common Carriers. Another basis for this role can be found in the International Health Regulations, a treaty to which Canada is a State Party. This evaluation found only minimal or minor cases of overlap, duplication and/or gaps in the area of roles and responsibilities with other players and those that were identified tended to be areas of low risk.

CONCLUSIONS – PERFORMANCE

Achievement of Expected Outcomes (Effectiveness)

In terms of effectiveness, the three program areas have excelled in a number of areas and are working to address ongoing challenges.

The program areas are actively engaged in a series of activities aimed at travellers and other key stakeholders to help raise awareness and understanding of travel health risks. Further awareness raising could be conducted, including primarily with the public, largely based on the realization that most travellers do not actively seek out travel health information before they travel.

There is a lot of evidence that strong collaborations have been established with key external partners and stakeholders. At the same time it is clear that, given their common target audience of international travellers, further opportunities exist for enhancing internal collaboration among the Travel and Migration Health Division and Quarantine Services within the Office of Border Health Services.

The program areas have implemented various protection measures which are aimed at identifying and mitigating public health risks associated with cross-border travel and there is strong evidence of compliance with relevant legislation and treaty obligations, such as those set out in the Potable Water Regulations for Common Carriers and the International Health Regulations. However, challenges still exist that limit the program areas’ actions, including: a lack of authority in the areas of food and sanitation practices on conveyances; the nature of the risks (e.g., diseases with long incubation periods); and reliance on others to self-report or screen and identify potential risks before action can be taken by the program areas. Of note, the Agency is exploring with the CFIA the possibility of appointing Environmental Health Officers (EHOs) as inspectors under the Food and Drugs Act to allow them to conduct food inspections on passengers conveyances.

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Demonstration of Economy and Efficiency

A number of efficiencies have been demonstrated by the various program areas with respect to program design and delivery (e.g., risk-based analysis to determine program design and delivery, website lessons learned, and streamlining tools and processes). Measures have been implemented to lead to more cost-effective program delivery (e.g., partnerships resulting in “no cost advertising” to direct traffic to key websites, online training modules being developed which should see decreases in training related expenses).

Further efficiencies could be achieved through greater use of technology and increased leveraging of partnerships to expand the program areas’ reach and increase awareness and understanding of travel health risks amongst key audiences. With respect to performance measurement, while work has started in this area, more work needs to be done including a greater focus on outcomes rather than outputs.

RECOMMENDATIONS

Recommendation 1

Explore opportunities for greater collaboration between the Travel and Migration Health Division and the Office of Border Health Services (particularly Quarantine Services).

Current collaboration efforts are often ad-hoc and only during times of increased levels of risk. Specific suggestions featured in this report, with regards to collaboration, focus on activities during periods of normal operation, and include:

- Travel and Migration Health Division and Quarantine Services could partner in educating travellers during periods where public health risks are not as elevated.
- Travel and Migration Health Division and the Travelling Public Program may benefit from a better understanding of each program’s respective role, thereby identifying future areas for collaboration.

Recommendation 2

Consider building on promotional and educational efforts (e.g., public/private partnerships) to increase Canadians’ awareness and understanding of the program areas and travel health risks.

Health practitioners surveyed for this evaluation found the Agency’s travel health related information to be very timely, useful and relevant. In contrast, a low level of travel health awareness exists among Canadian travellers. Proactive approaches that direct Canadians to resources that promote travel health practices were advocated by key informants. It is important to note that the evaluation found that in times of high public health risk, program areas are very active in educating the public. During the same periods, the Canadian public demonstrates an increased interest in travel health issues. As such, a focus on proactive approaches exists in times...
of crisis, but would also benefit from being implemented in other periods with less imminent health threats. Program areas should explore public/private partnerships to create additional opportunities to expand the dissemination of information targeted at Canadian travellers.

**Recommendation 3**

*Continue work in the area of performance measurement, including finalizing performance measurement strategies and key indicators (especially outcome indicators), and ensuring consistent collection of performance data.*

The program areas have taken steps to develop components of their performance measurement activities. While data collection is taking place in all three program areas, gaps exist in relation to outcome measures. The further finalization of the performance measurement strategies, and the subsequent alignment of indicators to the program logic models, will help to bridge the outcome data gap. Certain program data presented reliability issues due to the inconsistent collection of performance data across regions. It was noted that reporting tools currently in development may aid in resolving some of these challenges.
## Management Response and Action Plan

#### Evaluation of the Public Health Agency of Canada’s Travel Health and Border Health Security Activities

**2009-2010 to 2014-2015**

### Management Response and Action Plan Table

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Response</th>
<th>Action Plan</th>
<th>Deliverables</th>
<th>Expected Completion Date</th>
<th>Accountability</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explore opportunities for greater collaboration between the Travel and Migration Health Division and the Office of Border Health Services (particularly Quarantine Services).</td>
<td>Management agrees with this recommendation.</td>
<td>Develop a joint strategy for integration of travel and border health activities</td>
<td>Integration strategy will be presented to HSIB Branch Head and ADM-IDPC</td>
<td>June 2015</td>
<td>HSIB Branch Head CEPR ED ADM-IDPCB CFEZID DG</td>
<td>Existing resources to be applied to support this work.</td>
</tr>
<tr>
<td>Consider building on promotional and educational efforts (e.g. public/private partnerships) to increase Canadians’ awareness and understanding of the programs and travel health risks.</td>
<td>Management agrees with this recommendation.</td>
<td>Outline current outreach activities, promotional and educational efforts in order to identify areas for mutual collaboration between Travel Health and Border Health.</td>
<td>Summary document</td>
<td>March 2015</td>
<td>HSIB Branch Head CEPR ED ADM-IDPCB CFEZID DG</td>
<td>Existing resources to be applied to support this work.</td>
</tr>
<tr>
<td>Develop and implement a joint stakeholder engagement plan which will identify key internal and external stakeholders that can support programs.</td>
<td></td>
<td>Comprehensive stakeholder engagement plan</td>
<td>Plan (including implementation schedule) developed: August 2015</td>
<td>HSIB Branch Head CEPR ED ADM-IDPCB CFEZID DG</td>
<td>Existing resources to be applied to support this work.</td>
<td></td>
</tr>
<tr>
<td>Opportunities for public/private partnerships to be identified following stakeholder engagement.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Propose marketing options that analyses gaps, builds on strategic partnerships and integrates in-person, web and digital elements taking into account activities already in place.</td>
<td></td>
<td>Marketing options paper</td>
<td>Marketing options paper that includes options for budget, resources and timing (implementation schedule for each option) to be developed by September 2015. Exercise would be accounted for within the CPAB planning process.</td>
<td>HSIB Branch Head CEPR ED ADM-IDPCB CFEZID DG ADM CPAB</td>
<td>Existing resources to be applied to support this work.</td>
<td></td>
</tr>
<tr>
<td>Recommendations</td>
<td>Response</td>
<td>Action Plan</td>
<td>Deliverables</td>
<td>Expected Completion Date</td>
<td>Accountability</td>
<td>Resources</td>
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<tr>
<td>Integrate and migrate up-to-date information on border health services from website to the Canada.ca website.</td>
<td></td>
<td>Up-to-date web content</td>
<td>Ongoing</td>
<td></td>
<td>HSIB Branch Head CEPR ED</td>
<td>Existing resources to be applied to support this work.</td>
</tr>
<tr>
<td>Continue work in the area of performance measurement – finalize performance measurement strategies and key indicators (especially outcome indicators), and ensure consistent collection of performance data.</td>
<td>Management agrees with this recommendation.</td>
<td>Finalize performance measurement strategy for border health.</td>
<td>OBHS Performance Measurement Strategy</td>
<td></td>
<td>HSIB Branch Head CEPR ED</td>
<td>Existing resources to be applied to support this work.</td>
</tr>
<tr>
<td>Develop performance measurement strategy for travel health</td>
<td></td>
<td>TMH Performance Measurement Strategy</td>
<td>Travel health performance measurement strategy (part of PAA 1.2.1.3) to be developed and aligned with timing and approach for IDPCB and CFEZID. December 2015</td>
<td>ADM-IDPCB ED-IMSD-IDPCB-PHAC CFEZID DG</td>
<td>HSIB Branch Head CEPR ED</td>
<td>Existing resources to be applied to support this work.</td>
</tr>
<tr>
<td>Update the existing Public Health Information Tracking System (PHITS) to adequately track, analyze and monitor performance outcomes and indicators for inspection and audit information and implement mobile computing solutions for regional service delivery.</td>
<td></td>
<td>Updated Data Collection System for TPP (software)</td>
<td>March 2015</td>
<td></td>
<td>HSIB Branch Head CEPR ED</td>
<td>Existing resources to be applied to support this work.</td>
</tr>
<tr>
<td>Implement the Traveller Health Operational Strategy Support System (THOSSS) to adequately track, analyze and monitor performance outcomes and indicators for traveller health assessment data and implement mobile computing solutions for regional service delivery.</td>
<td></td>
<td>Updated Data Collection System for QS (software)</td>
<td>June 2016</td>
<td></td>
<td>HSIB Branch Head CEPR ED</td>
<td>Existing resources to be applied to support this work ($18K estimated cost)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tablet computers (19)</td>
<td>December 2015</td>
<td></td>
<td>HSIB Branch Head CEPR ED</td>
<td>Existing resources to be applied to support this work ($23K estimated cost)</td>
</tr>
</tbody>
</table>
1.0 Evaluation Purpose

This evaluation covered the period from April 1, 2009 to August 31, 2014 and included all of the activities undertaken by the Travel and Migration Health Division (TMHD) and those undertaken by the Office of Border Health Services (OBHS). The evaluation was undertaken in fulfillment of the Treasury Board of Canada’s Policy on Evaluation (2009).

2.0 Program Description

2.1 Program Context

The global movement of people and goods is increasing and expected to continue. The World Tourism Organization indicates that international arrivals have grown from 50 million in 1950 to 924 million in 2008, with estimates that it will reach 1.6 billion by 2020. Twelve million international travellers passed through Pearson International Airport in 2012, and there were 28.8 million overnight visits by Canadians to countries other than the US in 2010.1

Travel presents ideal environments and opportunities for the transmission of communicable disease as it brings large numbers of people together in close quarters for extended periods of time. The emergence of new and potentially more serious communicable diseases such as Severe Acute Respiratory Syndrome (SARS) and novel influenza strains (H1N1, H5N1 and H7N9) has demonstrated the relevance of travel and borders to the spread of communicable disease. For the safety of people at home and travelling abroad, there is an ongoing requirement that countries be prepared to prevent, identify and address communicable disease in the context of travel health and border health security.

One challenge is a hesitancy to identify and report communicable disease and environmental health concerns at borders and on conveyances due to the potential for delays, restriction on travellers and lost revenue for businesses. These issues are situated within the post-9/11 environment of ongoing heightened security concerns, especially at border crossings.2

Three Program Areas

This evaluation includes the activities of the Travel and Migration Health Division (TMHD) within the Centre for Foodborne Environmental and Zoonotic Infectious Diseases (CFEZID) and those undertaken by the Office of Border Health Services (OBHS) within the Centre for Emergency Preparedness and Response (CEPR) including Quarantine Services and the Travelling Public Program. None of these activities have been previously corporately evaluated by the Office of Evaluation.

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1 The Office of Border Health Services was created in April 2013 and amalgamated PHAC’s Quarantine Services and Health Canada’s Travelling Public Program (TPP).

2 Evaluation of the Public Health Agency of Canada’s Travel Health and Border Health Security Activities – 2009-2010 to 2014-2015

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• **Travel and Migration Health Division:** This program provides evidence-based travel information to travellers, and those who care for them, prior to, during, and post travel. Since its creation in 2007, the Travel and Migration Health Program has resided within a number of Centres within the Infectious Disease Prevention and Control Branch.

• **Quarantine Services:** In response to SARS, Parliament adopted a new *Quarantine Act* in 2005 to prevent the importation and exportation of communicable diseases into, and out of, Canada. The Act, which repealed the former *Quarantine Act*, came into force on December 12, 2006. The Quarantine Services administers the new legislation.

• **Travelling Public Program:** The *Department of Health Act* states that the Minister of Health is responsible for the protection of the public on various modes of transportation, including: railways, ships and aircraft. In the 1970s, the Government of Canada established a program to inspect potable water, food, general sanitation on conveyances and ancillary services. The current Travelling Public Program has evolved from a cost recovery model (1995-2011) to a risk-based model, removing fees for public health inspections and engaging in outreach services and targeting activities based on risk. The *Potable Water Regulations for Common Carriers* (1954) are currently being renewed. The Travelling Public Program was transferred from Health Canada to the Public Health Agency of Canada in April 2013.

All three program areas address different obligations assumed by Canada under the *International Health Regulations*.

### 2.2 Program Profile

The **Travel and Migration Health Division** assesses the health-related risks associated with international travel and provides recommendations to reduce risks to the Canadian population. Through surveillance/situational analysis, assessment and dissemination of information, it supports health care professionals who care for the mobile population. It supports the Canadian Malaria Network, which helps ensure the continued collection of data on severe and complicated malaria. It also designates yellow fever vaccination centers in Canada so that this country can comply with its obligations under the *International Health Regulations*.

The **Office of Border Health Services** builds and maintains the health security of the Canadian population by implementing public health measures across borders. It undertakes communicable disease control and environmental health services activities to help maintain public health and provide information to international travellers. It was created in April 2013 and is comprised of the Quarantine Services and the Travelling Public Program.

• It administers and enforces the *Quarantine Act* and elements of the *Department of Health Act*, to reduce or delay the introduction of communicable diseases into or from Canada. It supports Canada’s commitments under the *International Health Regulations* at points of entry to mitigate the exportation of communicable diseases.
• It gives effect to Canada's obligations under the *International Health Regulations* to implement various measures at points of exit to mitigate the exportation of communicable diseases. The issuance of Ship Sanitation Certificates to international vessels, the implementation of passenger terminal and passenger transportation inspection programs (conveyances), and responding to disease outbreaks associated with passenger conveyances, helps to prevent the introduction and spread of communicable diseases.3

All three program areas engage a variety of external stakeholders, some of whom are also regulated parties. Key players in the field of travel health and border health security include:

• **international partners:** collaborate to support consistent and cohesive border health policy with key multinational organizations (e.g., World Health Organization) and other countries (e.g., Centers for Disease Control and Prevention in the United States)

• **federal government departments:** coordinate information dissemination and border health measures by creating linkages between key federal departments and agencies, including: the Canadian Border Services Agency (which provides Screening Officers under the *Quarantine Act*), Department of Foreign Affairs, Trade and Development (which assists Canadians abroad, and hosts the travel.gc.ca website), Royal Canadian Mounted Police, the Canadian Food Inspection Agency (CFIA), Transport Canada, and Citizenship and Immigration Canada

• **Health Portfolio colleagues:** work with the National Advisory Committee on Immunization (NACI) on immunization recommendations through the Immunization Program Division of the Centre for Immunization and Respiratory Infectious Diseases (CIRID); work with CIRID’s Surveillance and Outbreak Response Division on development of travel health related products related to respiratory infections and/or vaccine preventable diseases; work with Canadian diplomatic missions abroad to assist with the provision of information on public health issues that may be of interest to Canadian government employees through the Occupational Health and Safety section of Health Canada

• **other public sector stakeholders:** maintain strong partnerships and coordination among various levels of government including provinces, territories and local public health authorities, in particular when cases are identified and referred to other public health authorities

• **industry (and industry associations):** regulate conveyance operators under federal jurisdiction including: operators of aircraft, passenger trains, passenger ferries, cruise ships and motor coaches that cross international or interprovincial borders, and operators of ancillary services including flight kitchens, food caterers, supply depots and passenger terminals

• **service providers:** engage and disseminate information to travel health care professionals (travel medicine clinics, doctors and nurses) and local health care authorities, administration of the Committee to Advise on Tropical Medicine and Travel (CATMAT)

• **general and travelling public:** provide information to both Canadians and non-Canadians who are crossing the Canadian border and entering or leaving Canada.
2.3 Program Logic Model and Narrative

According to the Public Health Agency of Canada’s 2014-15 Performance Measurement Framework, the expected result of the Public Health Agency of Canada’s travel health and border health security program areas are: (1) there is public access to information on travel health via social media and (2) risks associated with import and export of communicable diseases into and out of Canada are mitigated and/or controlled.

These two expected results are depicted in the two program logic models, including one for each of the two organizations that manage this program area: Travel and Migration Health Division and Office of Border Health Services. The evaluation assessed the degree to which the defined outputs and outcomes were being achieved over the evaluation timeframe.

The intended reach for the combined travel health and border health security program areas was: the travelling public and health care professionals who support them, conveyance operators, and other border health partners.

Travel and Migration Health Division

The long term expected outcomes for the program were that (1) travel health information and recommendations protect the health of the Canadian population and (2) support is provided to health professionals who care for them.

The intermediate outcomes are: (1) travel health information is consulted by stakeholders to prevent and mitigate disease and injury related to international travel; and (2) IHR requirements related to the designation of Yellow Fever Vaccination Centres are met. Immediate outcomes leading to the two intermediate outcomes are: there is an increased awareness of travel health information and recommendations among key stakeholders; recommendation and capacity building opportunities are available for health care practitioners providing travel health services; and the designation of health care sites as Yellow Fever Vaccination Centres (YFVCs).

There are a number of activities/outputs that are intended to contribute to the achievement of program outcomes, including: review of available evidence and data on events that may have an impact on the travelling Canadian leading to the production of travel health notices, fact sheets and destination travel health pages; secretariat and technical support to the Committee to Advise on Tropical Medicine and Travel leading to recommendation statements for health care professionals; as well as other knowledge translation and capacity building activities.

To obtain a copy of the Logic Model graphic please use the following e-mail “evaluation@phac-aspc.gc.ca”.

Note that the logic model was developed by the Travel Health Division when travel and migration health were separated into distinct divisions within the Centre for International, Migration and Travel Health. The logic model being referenced only includes activities for travel health.
Office of Border Health Services

The long term expected outcome for the program is to protect Canadians from the introduction and spread of communicable diseases across borders.

The intermediate outcomes are: (1) travelling public, conveyance operators and border health partners implement sound public health practices; and (2) public health risks are mitigated. Immediate outcomes leading to the two intermediate outcomes are: travelling public and conveyance operators are knowledgeable about public health risks and how to respond to them; and public health risks are identified.

The program delivers on its border health mandate through activities and outputs in three areas:

- **prevention and preparedness**, including: providing training, building partnerships, and exercising its emergency response capabilities
- **protection**, including: undertaking communicable disease surveillance, and completing inspections and audits of conveyances and ancillary service facilities
- **response and control**, including: undertaking investigations, health assessments, medical exams, Orders under the *Quarantine Act*, and emergency response

In terms of prevention and preparedness, the theory of change is based on the assumption that the program outputs will lead to stakeholders being knowledgeable about sound public health practices. If they are knowledgeable, then there is a reasonable expectation that they will implement these practices. Finally, it is expected that this knowledge and action will make a reasonable contribution to higher level outcomes.

In terms of protection activities, as well as response and control activities, the theory of change is based upon the assumption that outputs will lead to public health risks being appropriately identified, then mitigated, contributing to Canadians being protected from the introduction and spread of communicable disease across borders.

2.4 Program Alignment and Resources

The Agency’s travel health and border health security activities are part of the Agency’s Program Alignment Architecture (PAA) 1.2.1.3, Food-borne, Environmental and Zoonotic Infectious Diseases, and 1.3.2, Border Health Security.

As described in the PAA, the Agency’s travel health and border health security activities address the risk associated with rising global population mobility through enhancing evidence-based information. Activities build and maintain the health security of the Canadian population by implementing public health measures across borders. They also include communicable disease control and environmental health services activities to help maintain public health and provide information to international travellers.

The program areas’ financial data for the fiscal years 2009-2010 through 2013-2014 are presented below (Tables 1-3). Overall, the three program areas had an overall budget of approximately $34M over the five years.
Table 1: Program Resources for Travel and Migration Health Division ($)\(^*\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Salary</th>
<th>O&amp;M</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>2009-2010</td>
<td>1,095,000</td>
<td>459,000</td>
<td>1,554,000</td>
</tr>
<tr>
<td>2010-2011</td>
<td>1,045,546</td>
<td>511,236</td>
<td>1,556,782</td>
</tr>
<tr>
<td>2011-2012</td>
<td>1,472,458</td>
<td>532,450</td>
<td>2,004,908</td>
</tr>
<tr>
<td>2012-2013</td>
<td>1,035,391</td>
<td>443,479</td>
<td>1,478,870</td>
</tr>
<tr>
<td>2013-2014</td>
<td>1,078,424</td>
<td>237,479</td>
<td>1,315,903</td>
</tr>
<tr>
<td>Total</td>
<td>5,726,819</td>
<td>2,183,644</td>
<td>7,910,463</td>
</tr>
</tbody>
</table>

\(^*\) Data Source: Financial data provided by the Office of the Chief Financial Officer

Table 2: Program Resources for Quarantine Services ($)\(^*\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Salary</th>
<th>O&amp;M</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2010</td>
<td>2,109,383</td>
<td>621,216</td>
<td>2,730,599</td>
</tr>
<tr>
<td>2010-2011</td>
<td>2,260,000</td>
<td>419,100</td>
<td>2,679,100</td>
</tr>
<tr>
<td>2011-2012</td>
<td>2,405,800</td>
<td>423,720</td>
<td>2,829,520</td>
</tr>
<tr>
<td>2012-2013</td>
<td>1,979,770</td>
<td>337,196</td>
<td>2,316,966</td>
</tr>
<tr>
<td>2013-2014</td>
<td>2,420,716</td>
<td>565,890</td>
<td>2,986,606</td>
</tr>
<tr>
<td>Total</td>
<td>11,175,669</td>
<td>2,367,122</td>
<td>13,542,791</td>
</tr>
</tbody>
</table>

\(^*\) Data Source: Financial data provided by the Office of the Chief Financial Officer

Table 3: Program Resources for Travelling Public Program ($)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Salaries</th>
<th>O&amp;M</th>
<th>Capital</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2010</td>
<td>871,429</td>
<td>719,474</td>
<td>0</td>
<td>1,590,903</td>
</tr>
<tr>
<td>2010-2011</td>
<td>871,429</td>
<td>440,247</td>
<td>0</td>
<td>1,311,676</td>
</tr>
<tr>
<td>2011-2012</td>
<td>2,577,240</td>
<td>606,781</td>
<td>0</td>
<td>3,184,021</td>
</tr>
<tr>
<td>2012-2013</td>
<td>2,577,240</td>
<td>606,781</td>
<td>0</td>
<td>3,184,021</td>
</tr>
<tr>
<td>2013-2014</td>
<td>2,513,950</td>
<td>556,781</td>
<td>50,000</td>
<td>3,120,731</td>
</tr>
<tr>
<td>Total</td>
<td>9,411,288</td>
<td>2,930,064</td>
<td>50,000</td>
<td>12,391,352</td>
</tr>
</tbody>
</table>

\(^*\) Data Source: Financial data provided by the Office of the Chief Financial Officer

The vast majority of the funding for the current Travelling Public Program comes from the *Renewed Chemicals Management Plan* which has been in place since 2011. The Chemicals Management Plan is currently scheduled to sunset in 2016 and renewal efforts are currently underway.

As of August 2014, the program staff complement consisted of a total of 71 FTEs with the following composition across the program areas: Travel and Migration Health (12), OBHS General (5), Quarantine Services (29) and Travelling Public Program (25).
Table 4: Travel Health and Border Health Program Staff Composition

<table>
<thead>
<tr>
<th>TMHD</th>
<th>Number</th>
<th>Director’s Office</th>
<th>OBHS</th>
<th>Number</th>
<th>Quaranine Services</th>
<th>Number</th>
<th>Travelling Public Program</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>1</td>
<td></td>
<td>National Manager</td>
<td>1</td>
<td></td>
<td></td>
<td>National Manager</td>
<td>1</td>
</tr>
<tr>
<td>Program Manager</td>
<td>3</td>
<td>Admin</td>
<td>Regional Manager</td>
<td>3</td>
<td></td>
<td></td>
<td>Regional Manager</td>
<td>3</td>
</tr>
<tr>
<td>Epidemiologist</td>
<td>2</td>
<td>Assistant</td>
<td>Quarantine Officer</td>
<td>21</td>
<td>Ops Coordinator</td>
<td>13</td>
<td>Environmental Health</td>
<td></td>
</tr>
<tr>
<td>Project Officer</td>
<td>2</td>
<td>Senior Advisor</td>
<td>Training Coordinator</td>
<td>1</td>
<td>Trainnig Coordinator</td>
<td>1</td>
<td>Officer</td>
<td></td>
</tr>
<tr>
<td>Travel Health</td>
<td>1</td>
<td>Advisor</td>
<td>Admin Assistant</td>
<td>2</td>
<td></td>
<td>2</td>
<td>Senior Technical Advisor</td>
<td>1</td>
</tr>
<tr>
<td>Nurse</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>Research Analyst</td>
<td>1</td>
</tr>
<tr>
<td>Policy Analyst</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>Program Officer</td>
<td>1</td>
</tr>
<tr>
<td>Program Assistant</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>Finance Officer</td>
<td>1</td>
</tr>
<tr>
<td>Executive</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>Admin Assistant</td>
<td>1</td>
</tr>
<tr>
<td>Assistant</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>Admin Assistant</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>Total</td>
<td>5 Total</td>
<td>29</td>
<td>Total</td>
<td>25</td>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

3.0 Evaluation Description

3.1 Evaluation Scope, Approach and Design

The scope of the evaluation covered the period from April 1, 2009 to August 31, 2014 and included all of the activities undertaken by the Travel and Migration Health Division (TMHD) within the Centre for Foodborne Environmental and Zoonotic Infectious Diseases (CFEZID) and those undertaken by the Office of Border Health Services (OBHS) within the Centre for Emergency Preparedness and Response (CEPR) including Quarantine Services and the Travelling Public Program. This includes their activities in the areas of prevention, protection and response such as surveillance/situational analysis, dissemination of information, stakeholder outreach and collaboration, education and training, screening of travellers, inspections, sampling and audits on conveyances and ancillary service including necessary follow-up, completing health assessments, investigations of complaints/outbreaks and implementation of relevant International Health Regulations.

The evaluation issues were aligned with the Treasury Board of Canada’s Policy on Evaluation (2009) and considered the five core issues under the two themes of relevance and performance, as shown in Appendix 3. Corresponding to each of the core issues, specific questions were developed based on program considerations and these guided the evaluation process.

An outcome-based evaluation approach was used for the conduct of the evaluation to assess the progress made towards the achievement of the expected outcomes, whether there were any unintended consequences and what lessons were learned.

The Treasury Board’s Policy on Evaluation (2009) also guided the identification and calibration of the evaluation design and data collection methods so that the evaluation would meet the objectives and requirements of the policy.
Data for the evaluation was collected using various methods, which were a literature review, document review, performance data, key informant interviews (both internal and external), an international scan of travel health websites and quarantine and environmental health-related legislation and programs, and surveys with 177 representatives of Yellow Fever Vaccination Centres (response rate of 19%) and 113 subscribers to travel health e-mail updates. More specific detail on the data collection and analysis methods is provided in Appendix 3. In addition, data were analyzed by triangulating information gathered from the different methods listed above. The use of multiple lines of evidence and triangulation were intended to increase the reliability and credibility of the evaluation findings and conclusions.

### 3.2 Limitations and Mitigation Strategies

Most evaluations face constraints that may have implications for the validity and reliability of evaluation findings and conclusions. The following table outlines the limitations encountered during the implementation of the selected methods for this evaluation. Also noted are the mitigation strategies put in place to ensure that the evaluation findings can be used with confidence to guide program planning and decision making.

<table>
<thead>
<tr>
<th>Limitation</th>
<th>Impact</th>
<th>Mitigation Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key informant interviews</strong></td>
<td>Interviews retrospective in nature, providing recent perspective on past events. Can impact validity of assessing activities or results relating to improvements in the various program areas.</td>
<td>Wherever possible, triangulation of other lines of evidence to substantiate or provide further information on data received in interviews.</td>
</tr>
<tr>
<td><strong>Limited quality and/or availability of detailed financial data</strong></td>
<td>Limited ability to assess efficiency and economy</td>
<td>Use of other data collection methods assisted in assessing economy and efficiency.</td>
</tr>
<tr>
<td><strong>Limitations in performance data:</strong></td>
<td>While there was some performance measurement information available, in many cases the assessment of outcome achievement was difficult. Outcome measures were less available than output and activity measures, resulting in limited ability at times to assess evidence of achievement of outcomes.</td>
<td>Performance data was used to the fullest extent and provided indications of success in achieving some outcomes. Where information was lacking, triangulation of evidence from literature, document review, surveys, and key informants helped to validate findings and, where possible, provide additional evidence of outcome achievement.</td>
</tr>
</tbody>
</table>
| **Surveys**  | Both surveys consisted of narrow and unique audiences (e.g., representatives from Yellow Fever Vaccination Centres and subscribers to travel health e-mail updates) which given their interest and involvement in travel health | Survey findings were put in context to accurately describe respondents and not overstate their representativeness of the wider audiences (e.g., health professionals). Lines of questioning in survey were broad and included examining issues best suited for the audience and allowed them to
### Limitation

<table>
<thead>
<tr>
<th>Limitation</th>
<th>Impact</th>
<th>Mitigation Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>issues may bias their responses in certain areas (i.e. overstate their awareness of travel health information materials)</td>
<td></td>
<td>provide an unbiased view (e.g., perceptions of information received).</td>
</tr>
<tr>
<td>• Inability to obtain statistically significant results</td>
<td></td>
<td>• Other data collection methods were triangulated to also address issues that were also addressed with data from the surveys.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Representativeness of the data collection methods noted.</td>
</tr>
</tbody>
</table>

## 4.0 Findings

### 4.1 Relevance: Issue #1 – Continued Need for the Program

There continues to be a demonstrated need to address the health risks related to increased travel, the emergence of infectious diseases, and the elevated potential for the transmission of communicable diseases during travel.

Today’s extensive global movement of people and goods via air, land and sea is unprecedented, increasing in volume and speed, and expanding in reach. The increased rate of travel is accompanied by an increased potential for rapid worldwide transmission and spread of disease.

This trend is predicted to continue:

- In 2012, the number of global travellers exceeded 1 billion\(^4\) and global travel is projected to grow by 5.4% per annum over the next 10 years.\(^5\)
- The International Air Transport Association, which represents 240 airlines (84% of global air traffic), projects that airlines will see a 31% increase in passenger numbers between 2012 and 2017.\(^6\)
- The passenger shipping industry (ferries and cruise ships) has expanded during the past several decades and this trend is expected to continue. The Cruise Lines International Association estimates that a total of 21.3 million passengers travelled on cruise ships in 2013, and forecasts that this will increase to approximately 21.7 million cruise ship passengers in 2014. North America is the world’s biggest cruise market, with a 55.1% passenger source share.\(^7\)

Canadians are also travelling in greater numbers and further afield. Euromonitor International estimates that Canadian outbound travel will reach 40 million trips by 2018.\(^8\) In 2012, according to the Canadian Tourism Commission, Canadians took 9.6 million overnight trips to non-US destinations, which is an increase of 5% compared with 2011.\(^9\)

While abroad, Canadian travellers are exposed to a variety of health risks, most of which can be mitigated by suitable precautions taken before, during, and after travel.\(^10\) Pre-travel consultation and provision of travel health advice has been shown to decrease the rate of illness during
Visits by Canadians to travel clinics prior to travel have been linked to their awareness of the health risks in the destination country; those who are more aware of the risks are more likely to seek further travel health preparation. In two surveys of travel health professionals conducted by the Office of Evaluation for this evaluation, approximately two-thirds of respondents reported an increase in the frequency of the travel health advice they have provided over the last five years. However, less than 15% of Canadians travelling abroad actually visit a travel clinic before departure. Travellers with the highest risk of illness – migrants who return to their countries of origin and students – are the least likely to seek pre-travel health advice.

Travel on a variety of conveyances (passenger ferries, cruise ships, motor coaches, passenger trains, and aircraft) poses a potential risk for illness as passengers stay in enclosed spaces for relatively prolonged periods of time while consuming water and/or food.

Conveyances have been linked to both food and waterborne illness and person-to-person transmission of disease:

- A review conducted by the World Health Organization (WHO) identified more than 100 disease outbreaks and incidents of infectious disease, particularly gastrointestinal disease, associated with travel on ships between 1970 and 2000. Most gastrointestinal disease outbreaks were linked to food or water consumed onboard the ship.
- Although improved environmental sanitation performance by industry since the 1970s has been linked to a decline in foodborne outbreaks and gastroenteritis outbreaks, noroviruses have emerged over the last decade as the most common causes of outbreaks of acute gastrointestinal illness on cruise ships.
- Food and waterborne illnesses associated with travel also remain a risk associated with air travel. The most commonly reported outbreaks associated with aircraft flights have been attributed to salmonella contaminated foods.

The increase in international travel and commerce, in particular the expansion of commercial air travel over the last decades, has been credited with driving the rapid spread of pathogens and contributing to the emergence of new infectious diseases. Air travel contributes to the spread of infectious disease by expanding the opportunities for local infectious disease outbreaks to transform into epidemics.

To illustrate:

- In 2003, the role of air travel in the spread of infectious disease was demonstrated with the export of the SARS virus from Guangdong (China) to Toronto and elsewhere, causing 44 deaths in Canada and thousands of cases globally.
In 2009, a month after the declaration of a Public Health Emergency of International Concern (PHEIC) by the WHO for H1N1 virus, 16 of the 20 countries with the highest volumes of international passengers arriving from Mexico by air had confirmed importations of H1N1 associated with travel to Mexico.\(^\text{23}\)

Formalized international cooperative efforts to reduce the travel-related spread of infectious diseases began in the early 20\(^{th}\) century. More recently, in response to concerns regarding containment protocols that emerged post-SARS, the WHO’s *International Health Regulations* were updated in 2005. The IHR became binding international law in 2007, establishing a global alert and response network for outbreaks of infectious disease and other public health threats with the potential for international spread, including a National Focal Point for communication directly with the WHO within the Public Health Agency of Canada and five designated points of entry across Canada.\(^\text{24}\)

In addition to health consequences, there are economic consequences to travel health and border health security. For example, outbreaks onboard conveyances can pose high costs to industry service providers in terms of lost revenue and reputation.\(^\text{25}\) In addition, the spread of infectious disease can significantly impact the economies of affected countries. As a result of SARS in 2003, the Conference Board of Canada estimated that Canada’s real GDP was lowered by approximately $1.5 billion, or 0.15 percent, in 2003.\(^\text{26}\) Given the high volume of travel and trade crossing Canadian borders, and the inter-dependence of global economies, there is a risk of negative social and economic impacts of highly restrictive protective measures. The IHR explicitly mention this risk, calling for the mitigation of the spread of infectious diseases in a manner that would avoid “unnecessary interference with international traffic and trade.”\(^\text{27}\)

### 4.2 Relevance: Issue #2 – Alignment with Government Priorities

Travel health and border health security are priorities of the Government of Canada and the Public Health Agency of Canada as reflected in a variety of planning and corporate documents and agreements.

Over the past five years, travel health and border health security have been identified as priorities for the Government of Canada and the Public Health Agency of Canada.

Program activities are aligned with the broader Government of Canada priority to ensure the health and security of Canadians and their communities. This priority was highlighted in the 2010 and 2013 Speeches from the Throne and the 2012 Federal Budget. The Canada-US Beyond the Border Initiative (2013 Federal Budget) and the North American Plan for Animal and Pandemic Influenza have been implemented to strengthen border health security partnerships and cooperation in travel and border health security preparedness and response efforts.

The *International Health Regulations* (IHRs) established international requirements for preparedness, response, points of entry, and surveillance for all signatories. The strengthening of emergency preparedness response capacity through a coordinated, all-hazard, risk-based approach is supported through the Government of Canada’s signatory status on the IHRs. In
December 2013, the Minister of Health attended the Ministerial Meeting of the Global Health Security Initiative and reaffirmed Canada’s commitment to an international collective approach to communicable disease surveillance and response.28

The program activities also align well with the Agency’s priorities. Over the last five years, through various corporate planning and reporting documents (e.g., Report on Plans and Priorities, Departmental Performance Report, Management Resources and Results Structure), the Public Health Agency of Canada has acknowledged the significant public health risk posed by infectious diseases. The activities of the program align with three of the Agency’s strategic priorities listed in the Agency’s Strategic Horizons 2013-18 report29 including: prevent and control persistent and emerging infectious diseases through targeted prevention initiatives; strengthen emergency preparedness response capacity through a coordinated, all-hazard, risk-based approach; and enhance border security through a more integrated approach to reduce risk of communicable disease transmission.

The Agency’s Corporate Risk Profile highlights the importance of preventing and controlling persistent and emerging infectious diseases through targeted prevention initiatives. The Profile states, “domestic and international jurisdictions face a continued risk that infectious diseases, such as influenza, tuberculosis and food-borne illness, will create the potential for outbreaks, epidemics and pandemics.”30 The importance of continued efforts in emergency preparedness are also highlighted: “…in order to fulfill its role in responding to public health emergencies, the Agency must also carefully manage its risks in this area to ensure it can respond effectively to new or unanticipated emergencies of high impact or high complexity.”

Within the Agency, recent steps have been taken to enhance border health security through a more integrated approach to reduce the risk of communicable disease transmission. On April 1, 2013, the Office of Border Health Services was established by bringing together the Agency’s Quarantine Services and Health Canada’s Travelling Public Program - formerly administered within the Healthy Environments and Consumer Safety Branch (HECS) of Health Canada. The rationale for the new organizational structure was to “enhance capacity at the border to detect and respond to health risks, improve surge capacity should a public health emergency occur at the border, and provide improved and streamlined services for stakeholders.”31

Of note, travel health and border health security issues remain particularly relevant in light of rising rates of Ebola abroad and the recent presentation of the disease within North America. The Government of Canada has stated its commitment to screening measures to help identify the presentation of the virus and mitigate the further spread of the disease. An October 1, 2014 press release, highlighting the federal government’s commitment to reducing the risk of communicable disease transmission, detailed Quarantine Services’ most recent activities. The program’s practices aimed at minimizing the risk of Ebola’s entry into Canada includes the around-the-clock monitoring of Canadian points of entry as required by the Quarantine Act, and the screening of individuals arriving from African countries with exposure to the Ebola virus.32
4.3 Relevance: Issue #3 – Alignment with Federal Roles and Responsibilities

Various acts and legislation establish a clear federal role for the Agency’s Travel Health and Border Health Security activities. The Agency has a responsibility to promote health as well as prevent and control infectious diseases within Canada.

There are four key pieces of legislation that establish the foundational authorities of a federal role for its travel health and border health security activities.

These include:

- **The Department of Health Act** outlines the federal responsibility for the protection of public health on conveyances. Section 4 (2) (e) states, “the Minister’s powers, duties and functions relating to health include the following matters: the protection of public health on railways, ships, aircraft and all other methods of transportation, and their ancillary services”.  

- **The Quarantine Act** and regulations, originally enacted in 1985 and most recently updated in 2005, are currently administered and enforced by the Agency with help from the Canada Border Services Agency. The Quarantine Act outlines powers available to the Government of Canada at international points of entry to support the prevention of entry of communicable diseases deemed to be of significant harm to public health. As mentioned in Section 15 (3) of the Act, “every traveller shall comply with any reasonable measure ordered by a screening officer or quarantine officer for the purpose of preventing the introduction and spread of a communicable disease”.

- **The Potable Water Regulations for Common Carriers**, established in 1954, are currently being revised to reflect the industry’s latest scientific standards in water disinfection, water quality and vessel construction. Current regulations set requirements for water quality, potable water system upkeep and authority to inspect conveyances.

- **The International Health Regulations** came in force in 2007 and States Parties to this treaty committed themselves to full implementation by 2012. They seek to “better manage collective defences to detect disease events and to respond to public health risks and emergencies”. The Agency’s travel health and border health security program areas each contribute to IHR compliance through their respective program activities. These activities include: Ship Sanitation Inspections and certificate issuance, the designation of Yellow Fever Vaccination Centres, as well as the establishment of Quarantine Service’s core capacity requirements for municipal, provincial/territorial, and federal governments. Travel Health Notices also use a risk classification system outlined in the IHR’s decision instrument for the assessment and notification of events that may constitute a public health emergency of international concern.

Public health security is a priority under other international initiatives. The *Canada-US Beyond the Border Initiative* addresses border health security within the context of the economy. The joint agreement announced in February 2011, “articulates a shared approach to security in which both countries work together to address threats within, at, and away from our borders, while
expediting lawful trade and travel”.

Canada also contributes to the North American Plan for Animal and Pandemic Influenza which aims to enhance trilateral collaboration, increasing preparedness to respond in the event of an outbreak or pandemic. The plan addresses border health security by outlining “containment measures for air and maritime travel along with land border crossings”. 

A 2008 survey of Canadian travellers conducted by Ekos Research found that the majority of Canadian travellers believed there is a federal role for travel health. The Surveys of Travellers on Key Issues Relating to Travel Health illustrates the importance of raising awareness among travellers, as vocalized by the target audience itself. The following results from the survey highlight the particular travel health related activities Canadians believe should be encompassed in the federal role.

At least seven in ten Canadian travellers believed the federal government should:

• play a larger role in informing Canadian travellers about outbreaks of illness in specific regions through public service announcements (76%);
• play a larger role in increasing awareness of travellers about increased risks of illness in specific regions (73%);
• has a role in increasing travellers’ awareness of necessary precautions (such as vaccines) when travelling to specific regions (72%); and
• has a role in increasing awareness about government websites providing information about travel risks and precautions (72%)

Furthermore, when travellers were asked about where responsibility lies for disseminating travel health information in Canada, a plurality (45%) attributed responsibility to the federal government, the Public Health Agency of Canada, or Health Canada.

Canada’s travel health and border health security initiatives are consistent with other countries’ attempts at mitigating communicable disease transmission associated with travel. The United States, United Kingdom, Australia and New Zealand all have travel health websites. Canada’s Quarantine Services and Travelling Public Program offer a comparable degree of coverage as the countries listed above. Australia and New Zealand deliver their quarantine services and conveyance inspection within the same department. The United Kingdom’s program delivery is concentrated within the health field but responsible parties range from the local public health authorities to the national Health Protection Agency. In the case of the United States and the United Kingdom, additional stakeholders are involved in their version of the Travelling Public Program's implementation.

Other federal departments play an important role in helping the Agency achieve its travel health and border health security mandates. The travel.gc.ca website, one of the program’s key mediums for distributing travel health information, is hosted by the Department of Foreign

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Additional stakeholders, among others, include: In the US, the Office of Regulatory Affairs delivers the Interstate Travel Program portion of their TPP type of programming. In the UK, the Association of Port Authorities directs the local health authorities in program implementation.
Affairs, Trade and Development Canada (DFATD) with content from twelve federal partners.\textsuperscript{vi}

In the case of Quarantine Services, the program model “relies heavily on the involvement of key partners at point of entry such as the Canadian Border Services Agency…who screen for ill passengers and notify Quarantine Officers.”\textsuperscript{41} Also, as part of the government’s commitment under Health Canada’s \textit{Chemicals Management Plan}, the Travelling Public Program receives funding to implement a risk-based framework to ensure public health on federally regulated modes of transport.

\textbf{There are minimal and minor cases of overlap, duplication and/or gaps in the area of roles and responsibilities}

Stakeholders perceived a clear and distinct federal role in the area of travel health and border health security. Key informant interviews and the document review only found minor areas of overlap/duplication with other jurisdictions and stakeholders when it comes to roles and responsibilities. Cases of overlap typically resulted from jurisdictional interplay as illustrated in the delivery of the Travelling Public Program:

- For example, flight kitchens may provide food for conveyances that is under federal oversight, and also food destined for other institutions such as hospitals and long-term care homes that are provincially regulated. As a result, the same facility can be inspected more than once by different parties.

- Despite the lack of regulatory oversight for food safety on passenger conveyances, the Travelling Public Program’s EHOs (environmental health officers) will often still inspect on-board food preparation facilities. In collaboration with the CFIA, opportunities are currently being explored for assigning EHOs authority under the \textit{Food and Drugs Act} for the conducting of food inspections on passenger conveyances, including ancillary services.

- Inspecting the same ship can also occur when vessels pass through the United States and Canada. Both countries have Cruise Ship Inspection programs that are harmonized with each other. Key informants explained that attempts to reduce the burden on industry were explored by trying to coordinate inspection schedules.

A lack of clarity in terms of inspection responsibilities in overlapping jurisdictions, as seen in the small passenger vessels industry (i.e., tour boats/ dinner cruises), has resulted in some minor program coverage gaps. The Travelling Public Program designates these vessels as outside the scope of federal jurisdiction since they do not cross international or interprovincial borders, and provinces do not view them as part of their own jurisdiction either.

\textsuperscript{vi} Travel.gc.ca’s contributing federal partners include: Canada Border Services Agency, Canada Revenue Agency, Health Canada, Public Health Agency of Canada, Public Safety, Transport Canada, Passport Canada, Citizen and Immigration Canada, Environment Canada, Canadian Food Inspection Agency, Canadian Heritage, and Air Transportation Security Authority.
Despite the lack of regulatory oversight, the Travelling Public Program’s EHO will often still inspect on-board food preparation facilities. Furthermore, the Agency is exploring with the CFIA the possibility of appointing EHOs as inspectors under the Food and Drugs Act to allow them to conduct food inspections on passengers conveyances, including ancillary services.

4.4 Performance: Issue #4 – Achievement of Expected Outcomes (Effectiveness)

4.4.1 To what extent do stakeholders (Canadian public, health professionals, border health partners, industry) have an awareness and understanding of public health risks to the Canadian public associated with travel?

Canadian travellers are not well informed about travel health risks and recommended precautions. In a 2011-12 Airport Survey of 600 Canadian travellers going to developing countries, 55% of travellers sought travel health advice prior to departure. Internationally, Europeans’ rate of seeking travel health advice was on par with Canadian rates\textsuperscript{vii}, while American travellers exhibited lower levels of travel health consultation prior to departure than Canadian travellers.\textsuperscript{viii} Among those Canadians who did not seek travel health advice, approximately 21% stated not knowing they should do so.

Canada does not have an established “travel health” field of medicine for health professionals. Key informant interviewees indicated that interest in the field exists but, without dedicated medical programming, travel health remains “more of a passion than a specialty” in Canada. There are certificate programs available through the International Society of Travel Medicine (ISTM), although the organization acknowledges the lack of Canadian specific content.\textsuperscript{iv} The absence of formal training programs further highlights the importance of information networks that contribute to knowledge and levels of awareness among practicing travel health professionals and travellers.

The program areas are contributing to awareness and understanding of travel health risks through both the dissemination of information by way of various channels tailored to target audiences, and outreach activities with a variety of stakeholders.

\textsuperscript{vii} “Between September 2002 and September 2003, 5,465 passengers residing in Europe and boarding an intercontinental flight to a developing country were surveyed at the departure gates of nine major airports in Europe. Although the majority of travelers (73.3%) had sought general information about their destination prior to departure, only just over half of the responders (52.1%) had sought travel health advice”. Van Herck et al. (2004). Knowledge, attitudes and practices in travel-related infectious diseases: the European airport survey. Journal of Travel Medicine, 11(1), 3-8

\textsuperscript{viii} “Only 36% of travelers sought travel health advice, despite the fact that more than half prepared their trip at least a month in advance.” Hamer et al. (2004) Travel health knowledge, attitudes and practices among United States travelers. J Travel Medicine, 11 (1), 23-6.
Dissemination of Information

The travel health and border health security program areas have raised awareness and understanding of public health risks to the Canadian public through prevention-focused information, including precautionary measures for travellers, risk identification and guidelines for risk mitigation. Information was disseminated through websites, social media, posters, print material, networking, training sessions, booths at travel conferences and shows, and for limited periods of time, travel health kiosks in airports.

The Public Health Agency of Canada disseminates travel health information through two key websites: travel.gc.ca and the travel health section of the Agency’s website. The travel.gc.ca website received 1,003,245 health-related page views during the period of September 11, 2013 and October 5, 2014. The travel health section of the Agency’s website has been the second most visited page on the Agency’s website between January 1, 2010 and July 31, 2014 with 8,009,905 page views.

It was also noted that the travel health section’s substantial number of website hits accounts for 11% of total Public Health Agency of Canada website page views. Travel Health Notices are the largest draw to the travel health website content, accounting for 7% of total traffic to the section. The site posts approximately 20 new Travel Health Notices and 40 updates each year. It also features 30 disease specific travel health fact sheets and learning resources for health professionals (i.e. CATMAT statements, online learning modules and conference listings). It was also noted by internal key informants that there is almost no web presence for the Travelling Public Program.

The CATMAT statements (and the Canadian Immunization Guide) provide health care professionals with prevention and treatment recommendations for diseases, and other health hazards that may be commonly encountered by Canadian travellers. They are available through the travel health section of the Agency’s website. CATMAT statements, and up-to-date travel health information, are also available through the 1,300 iMD Health point of care terminals in clinics across Canada. They have also been made available through webinars in 2014. A survey of 177 representatives of Public Health Agency of Canada (PHAC) Yellow Fever Vaccination Designated Centres found high levels of awareness about Travel Health Notices (96%), CATMAT Statements (91%) and Travel Health Fact Sheets (85%). As well, the Travel and Migration Health Division’s yellow fever online training module was completed by 2,000 health care professionals in its first year alone (2011).

Currently, the Travel and Migration Health Division disseminates messaging through a variety of online and social media products, including: Facebook, Twitter, Foursquare, YouTube, email updates, RSS feeds and a Travel Smart App. A greater number of social media messages were posted from April 2013 to March 2014 (323 messages) in comparison to the same timeframe the previous year (68 messages). Traffic to the travel.gc.ca website via travel health’s Facebook and Twitter postings account for 1.4% of web traffic to the site.
In 2013-14, Quarantine Services piloted information kiosks in the Vancouver, Toronto and Montreal airports. Quarantine Officers interacted with 4,726 travellers over a six month period. They provided information on travel health risks and directed people to the travel.gc.ca website for more information. Survey results from the kiosk program found that approximately 84% of travellers were not aware of the travel.gc.ca website prior to visiting the kiosk.49

With low levels of travel health awareness among Canadians, key informants agreed that more proactive approaches aimed at informing the public and promoting travel health resources need to continue to be explored.

The Travel and Migration Health Division’s resources have been recognised as valuable sources of information by health practitioners.

To illustrate:

- 85% of Canadian medical professionals, who were representatives of Yellow Fever Vaccination Centres (YFVC) and completed the YFVC survey, listed Government of Canada websites (e.g., travel.gc.ca or the Agency’s Travel Health section of its website) as the information source they consult most frequently for travel health issues. 98% indicated they found the information disseminated by the Agency’s Travel and Migration Health Division to be useful, 96% indicated it was relevant, and 90% thought it was timely. Eighty-five percent of respondents indicated that they felt better informed and 83% shared the information with others.

- Similar levels of interest and appreciation for the Travel and Migration Health Division’s information was reported among members of the PHAC email listserv who completed a survey as part of this evaluation (over 75% of whom identified themselves as a health professional). Respondents found information from the Travel and Migration Health Division to be: useful (99%), relevant (98%), clear (94%) and timely (90%). Ninety-three percent of the Agency’s Travel and Migration Health Division’s email recipients felt better informed about the risks associated with travel, while 85% shared the information with others.

**Outreach and Networking with Stakeholders**

The Office of Border Health Services has prioritized outreach activities which have resulted in substantial opportunities for risk mitigation training of partners and industry stakeholders. It has recognized that the success of their program areas rely on networking with key stakeholders. Building these relationships has provided the program opportunities for both formal and informal education/training sessions with key stakeholders.

The draft OBHS Compliance Enforcement Policy lists a variety of compliance promotion activities that result in the dissemination of health information to partners and Canadian travellers. Training activities are offered across all program sectors with information on food, potable water, sanitation, emergency response and communicable disease outbreak prevention and control. Activities include: training, presentations at national symposiums, meetings, webinars, as well as the development of guidance documents, advisories and notifications of
emerging public health risks. For example, in 2012-13 the Travelling Public Program completed 80 presentations, courses and other training activities for conveyances and facility operators, exceeding the 66 outreach activities that were planned.\textsuperscript{50}

Key informant interviews highlighted that within the last five years there have been notable changes in the Quarantine Services program activities, including an enhanced focus on networking activities with partners. Interviewees indicated that this change has included outreach to airport authorities, airlines, public health authorities and other stakeholders, with the goal of educating parties on infectious disease risk and mitigation, while highlighting Quarantine Services as a resource in identifying public health risks. A couple of internal key informants expressed an interest in having a Quarantine Officer dedicated to the task of networking.

To illustrate, the Canadian Border Services Agency (CBSA) is responsible for flagging travellers that require follow-up from Quarantine Officers. Without a base level of awareness among frontline CBSA officers about risk and symptomology, Quarantine Services would rarely be consulted, resulting in a less than optimal implementation of the program. Quarantine Services offers both ad-hoc and formal training sessions to CBSA officers to maintain their knowledge levels. Symptomology cue cards which aid in identifying travellers that may pose a health risk are also provided to frontline CBSA officers by the program.

The 2011 \textit{Quarantine Program Risk Assessment} found that: “...education sessions with service delivery partners have already been shown to increase the Quarantine Services consultation rate. It is reasonable to assume that these types of outcomes will also serve to reduce the number of undetected ill travellers entering Canada.”\textsuperscript{51}

Another key stakeholder group for outreach and networking is industry partners. Due to the voluntary nature of particular components of the Travelling Public Program, building relationships with industry is imperative for the successful delivery of the program.

This is highlighted in the following examples:

- The transition to a risk-based approach included an increase in outreach programming to supplement the inspection and audit protocols that were already in place. (The OBHS risk-based approach is detailed further in section 4.4.5.)

- The Travelling Public Program actively works with industry members to help them to develop public health management plans for their conveyances. This process: “...educates and empowers operators, and ensures that they have the correct systems, processes, tools and resources in place to provide a safe and healthy travelling environment for travellers.”\textsuperscript{52}

- This type of capacity building is supported in the draft 2014 \textit{Border Health Security Performance Measurement Strategy}. The Strategy emphasizes that future efforts will be focused on building the capacity of individual travellers and industry alike, therefore ensuring public health preventative actions are taken.

- The Travelling Public Program has also provided cruise ships with guidelines and recommendations for dealing with passengers presenting influenza-like symptoms on-board vessels.\textsuperscript{53}
Travel Health and Border Health Security programs’ awareness-raising initiatives are elevated during times of higher risk.

Multiple lines of evidence, including the document review and key informant interviews, confirmed that Travel Health and Border Health Security program areas’ ability to address travel health awareness needs is most evident in times of higher risk.

A variety of targeted initiatives have been developed in response to emerging health threats:

- Ten Ebola Travel Health Notices were issued between August 29, 2014 to November 7, 2014. The Agency’s website homepage has a link to further information on causes, symptoms, risks, treatment, prevention, surveillance, and a special section for health care professionals.
- During the Hajj and Umrah, tailored posters and scheduling of a travel health kiosk initiative were designed to raise awareness among travellers to Middle Eastern counties about MERS-CoV (Middle East Respiratory Syndrome Coronavirus).
- Health alert posters were developed as a means to inform travellers of approaches to limit the risk of spreading H1N1.
- During H1N1, Quarantine Officers provided public health information directly to travellers entering and exiting the country. Staff outlined precautions, symptoms to watch for, and next steps should the need arise.
- In higher risk times, Quarantine Services has provided CBSA officers with additional health screening questions at Points of Entry for a more disease-specific approach to screening.
- At select times, Quarantine Services has connected with Transport Canada and airlines to implement onboard messaging to inform passengers of timely health risks and screening requirements (i.e. H1N1).
- In preparation for the 2010 Olympics, both Quarantine Officers and Environmental Health Officers from across the country relocated to Vancouver for four weeks for scheduled visits with key stakeholders. This approach served to increase program visibility during a time with higher volumes of inbound travel.

4.4.2 To what extent have collaboration and partnerships with key stakeholders (health professionals, border health partners, and industry) supported prevention of public health risks to the travelling public?

There is evidence that strong collaboration has been established with key external partners and stakeholders. These collaborations have helped develop positive working relationships, clarify roles and responsibilities and expand the program areas’ reach. These outcomes have supported the prevention of public health risks to the travelling public.

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ix While outside the scope of this evaluation (April 1, 2009 to August 31, 2014), this is a relevant recent example of addressing health awareness needs in times of higher risk.
Overall the TMHD and the OBHS have established strong working relationships with health professionals, other government departments including border health partners, industry and other private sector stakeholders, and international partners.

**Travel and Migration Health Division**

Building on previous experiences and lessons learned, the TMHD and DFATD agreed on standing operating procedures which define roles and responsibilities for the maintenance of travel health information on the government-wide website travel.gc.ca (managed by DFATD). Launched in November 2012, the redesign of the site won a Government of Canada technology award in 2013 and involved the integration of regularly updated content and resources from 12 government partners “to help Canadians easily and efficiently find the information they need to make informed decisions about international travel.”

The TMHD works closely with, and in support of, health care practitioners through the CATMAT. It provides secretariat support to CATMAT – an external expert advisory board – in the development of evidence-based statements which the Division primarily disseminates to medical practitioners. These statements provide travel health-related advice for travellers and health care professionals. Members of CATMAT are issue experts in the fields of tropical medicine, travel medicine, travel health, infectious disease and epidemiology.

The TMHD has also expanded collaborative opportunities with key industry stakeholders. Web links to TMHD travel health pages have been added by Aeroplan, Expedia, the Association of Canadian Travel Agencies (ACTA) and others. In a partnership with iMD Health, terminals which feed travel health related information to health care practitioners have been set up in 1,300 medical offices. This partnership allows health practitioners to have direct access to the *At The Point of Care* terminals which have travel health information produced by the TMHD.

The TMHD links with international groups and counterparts like the Centers for Disease Control and Prevention (CDC) in the United States and the World Health Organization to enrich its surveillance activities. It is able to access data on travel-related diseases in Canada through its connection with the International Society of Travel Medicine (ISTM), GeoSentinel Network and CanTravNet. The ISTM is a members-only online community with access to special travel medicine alerts, links to important resources, members only discussion groups, publications and educational products. GeoSentinel is a worldwide communication and data collection network for the surveillance of travel related morbidity. It was initiated in 1995 by the ISTM and the CDC as an international network of member travel/tropical medicine clinics. CanTravNet - the Canadian Travel Medicine Network - is a network of clinical experts in travel and tropical medicine from across Canada.

Internal program documentation and key informants have highlighted a number of key collaborations with internal Health Portfolio colleagues. These collaborations have helped improve networking, ensure consistent messaging and avoid overlap, and ensure the provision of timely advice and information to key audiences.
Examples include:

- Within the Agency, TMHD has a lead role for travel health information, working with the e-communications team to post material to the website, distribute social media messaging, and serving as liaison between DFATD and the Health Portfolio communications branch.

- There has been a longstanding working relationship between TMHD and the NACI. The Committee reports to the Assistant Deputy Minister of Infectious Disease Prevention and Control, and works with staff of the Centre for Immunization and Respiratory Infectious Diseases of the Public Health Agency of Canada to provide ongoing and timely medical, scientific and public health advice. An example of the impacts of the outputs of this collaboration is the contribution of travel-related content from CATMAT during the development of the *Canadian Immunization Guide*. Representatives of the two groups often participate in the other’s meetings, and the two groups consult on annual work plans to align research and publications. Further, the NACI and CATMAT secretariats also consult and collaborate regularly.

- TMHD also works closely with CIRID’s Surveillance and Outbreak Response Division on travel related issues that are either a respiratory infection and/or vaccine preventable disease. It supports the development of products for the public including Travel Health Notices, travel-related fact sheets and country travel recommendations.

- Through the Occupational Health and Safety section of Health Canada, the TMHD works with Canadian diplomatic missions abroad to assist with the provision of information on public health issues that may be of interest to Canadian government employees, as well keeping informed about public health issues that may be of concern for Canadian travellers. Similarly, TMHD produces and disseminates travel health notices to the Registration of Canadians Abroad (ROCA) program, which in turn channels the information directly to the missions located in the countries identified in the notice and finally distributes it to Canadians registered in those countries at that time.

**Quarantine Services**

Interviews with both internal and external key informants, as well as site visits to the Vancouver and Toronto international airports, illustrated that Quarantine Services have established solid working relationships and cooperation with partners such as the CBSA, ambulance services, airlines, cruise ship industry, airport authorities and local health authorities.

To continue to build these relationships and collaborations with its many partners, Quarantine Services undertakes a number of information sharing and planning activities such as:

- both formal training courses (i.e. classroom type training) and informal training opportunities (i.e. rounds in airports where Quarantine Officers respond to questions and provide clarifications)
- table top exercises where various scenarios are presented and potential action plans are discussed
- open houses where partners are invited to attend and the Quarantine Services is promoted including, how they can assist partners
These activities aim to clarify border health security roles and requirements under the *Quarantine Act*. This clarity helps to ensure that incidents with sick travellers can be dealt with as effectively and efficiently as possible.

Quarantine Services have also engaged with other partners across the Government of Canada on ad hoc projects aimed at reaching out and informing the public on travel health related information. For example, in collaboration with DFATD and the TMHD, Quarantine Services established travel health kiosks in select airports for a six month pilot project in 2013-14. Similarly, a survey to assess the knowledge, practices and attitudes related to the prevention of travel-related illness among Canadian citizens and permanent residents was carried out by Quarantine Services in collaboration with the TMHD at Toronto Pearson and Vancouver International Airports in the summer of 2011 and at the Montreal Pierre Elliott Trudeau International Airport in the winter of 2012.

**Travelling Public Program**

Both internal and external key informants highlighted the Travelling Public Program’s positive working relationship with industry stakeholders, including conveyance operators.

Examples of collaboration and partnership are illustrated through:

- the joint development of voluntary food and sanitation guidelines with airline companies (for example with WestJet and Air Canada)
- as per occupational health and safety regulations made pursuant to the *Canada Labour Code*, the adoption of potable water management plans by all major domestic air carriers (Air Canada, WestJet, Jazz, Porter, Air North, Air Transat) and other conveyances (Via Rail, Rocky Mountaineer, BC Ferries, and Newfoundland Ferries)
- consultation with key stakeholders from industry, government, and international partners for the proposed renewal of the *Potable Water Regulations for Common Carriers*
- health and sanitation training and workshops provided to industry representatives to assist them in the observance of sound public health practices.

Internationally, the Travelling Public Program has worked closely with its United States counterparts in harmonizing their Vessel Sanitation Program and participated in joint training. An industry key informant considered the collaboration with the Centers for Disease Control and Prevention in the United States a “…poster child for cross-border collaboration.”

**Further opportunities for enhancing internal collaboration should be explored, in particular among the Travel and Migration Health Division and the Office of Border Health Services sections.**

Key informant interviews and the document review highlighted that collaboration between the TMHD and Quarantine Services tended to be ad hoc or increased only during times of heightened alertness. Several internal key informants indicated that further opportunities for collaboration could be explored and suggested that their activities could be more closely aligned.
There may be opportunities for engaging in joint planning on approaches to transmit health information and advice to Canadian travellers. For example, in the wake of increasing reports of infectious diseases related to international travellers (measles and MERS-CoV), the TMHD, Quarantine Services and the Canadian Border Services Agency engaged in a Public Health Outreach at Point of Entries project. This education campaign, which included the development and display of posters at major and minor airports across Canada, urged travellers to inform border officers if they felt ill at the time of arrival or to seek medical attention should they become ill after arrival. Key informants suggested that additional opportunities could be sought among these partners during “peace times” to proactively reach out and educate travellers which would further enhance the distribution of key messages to a wider audience.

Exploring opportunities for collaboration between the TMHD and the Travelling Public Program were cited less frequently by key informants. However, there were some suggestions that these two groups could develop a better understanding of their respective roles and the key players within each organization to better assess what types of collaboration might be warranted.

In terms of collaboration in the field between the Quarantine Services and the Travelling Public Program, the level of interaction and communication between quarantine officers (QOs) and environmental health officers (EHOs) varies across the country. In some regions, interactions demonstrate a closer degree of cooperation, both in terms of keeping one another aware of issues of mutual concern and supporting each other on the ground when necessary. In other regions the level of engagement and cooperation is not as prominent, or tends to happen rather infrequently and typically only when an issue arises. There may be opportunities for more consistent engagement and cooperation between these two groups in the future.

In terms of collaboration with other federal government organizations, the revival of mechanisms to support regular communication among the main government partners (DFATD, DND, CBSA, TC, PHAC, and HC) with a stake in travel health could be further explored. The Travel Health Communications Plan 2011-2012 indicated that there was an ongoing partnership with other federal government departments through the federal Travel Health Network. The purpose of this network, created in June 2011, was to ensure that travel-related information was consistent across the Government of Canada during times of crisis. The network met on December 2011 and May 2012, but was put on hold pending discussions about its governance at a senior management level. Based on documentation and key internal informants, network meetings have not continued. Key informants suggested that such mechanisms would be of value in providing a venue for the exchange of information and leveraging potential opportunities for collaboration at the strategic and operational levels.
4.4.3 To what extent have protection measures supported the identification and mitigation of public health risks to travelling Canadians?

The program has protection measures in place aimed at identifying and mitigating public health risks associated with cross-border travel.

According to its most recent logic model, the Travel and Migration Health Division monitors, verifies, produces and disseminates travel health information and recommendations related to international travel in order to protect the health of the Canadian population and to support the health professionals who care for them, while the ultimate goal of the Office of Border Health Services is to protect Canadians from the introduction and spread of communicable disease across borders. To this end, they employ an evidence-based approach to guide the assessment of travel-health risks.

The following activities, along with education and information sharing activities (covered in more detail in section 4.4.1), help the Agency identify and mitigate risks associated with international travel.

**Surveillance/Situational Analysis**

The Travel and Migration Health Division and the Office of Border Health Services monitor, assess and validate information to identify travel health risks. The TMHD conducts routine situational analysis of potential health events that may be of interest to Canadian travellers.

For example, they:
- gather daily information on international health events from various sources like the WHO, the CDC, and the Global Public Health Intelligence Network (GPHIN)
- consult other disease-specific groups within the Agency
- access and extract information from the database of the CanTravNet, a network of travel health clinics which monitors and gathers pertinent information on Canadian travellers.

The resulting intelligence obtained from these sources undergoes an evidence-based scrutiny before public *Travel Health Notices* and other statements are developed and disseminated to the public and health care practitioners.

According to a recent OBHS planning document, the OBHS surveillance activities include routine monitoring and information collection to identify public health risks at the border.
Highlights include:

- Quarantine Services augments and informs its screening activities through risk assessments of global communicable disease outbreaks using national and international disease reporting systems to identify Points of Entry of concern based upon near real-time data.\(^{58}\)

- The Travelling Public Program has developed a process for “Issuing Conveyance Health Advisories to Industry Stakeholders” which describes the process by which the program would determine the triggers for issuing an advisory, the data sources it would employ to assess the risks, as well as the actual process to develop these advisories.

**Health Assessments and Investigations**

CBSA agents, who are identified as screening officers (SOs) under the *Quarantine Act*, use the information and knowledge provided to them through education and outreach from the Quarantine Officers (QOs). For example, Quarantine Services has developed a “Screening Officer Cue Card” which assists SOs in performing their assessments of travellers by administering a series of questions and notifying QOs when a health assessment may be required. Quarantine Officers then respond to these requests by providing health assessments and, if necessary, implementing pertinent *Quarantine Act* measures. According to program information, Quarantine Services responded to 1,024 calls in 2012 and 951 calls in 2013, resulting in 211 and 605 health assessments in 2012 and 2013, respectively.

As required, Environmental Health Officers (EHOs) with the Travelling Public Program conduct investigations into potential health risks on conveyances. In 2013-14, the program completed 14 investigations related to food, water and sanitation concerns on conveyances, related mostly to outbreaks of gastrointestinal illness on cruise ships and public food-related complaints in ancillary service facilities. The number of investigations was down from 28 investigations in 2012-13. This decline is due to a reduced incidence of gastrointestinal outbreaks onboard cruise ships and complaints related to aircraft and passenger trains in 2013-14.\(^{59}\)

In 2012-13, EHOs with the Travelling Public Program also collected 1,220 water samples, and identified 44 incidents (3.6%) of poor water quality that prompted further investigation and follow-up. Sectors investigated included: aircraft, train, ferry, charter, flight kitchens, food caterer, support depot, terminal and cargo. The largest number of samples were taken from aircraft (37%), with only 5.7% of the samples resulting in incidents of poor water quality. Other sectors, also with a larger number of samples taken, had the following low percentages of incidents of poor water quality: ferries (3.2% of samples) and terminals (3.2% of samples).
Inspections

The Travelling Public Program delivers regular risk-based public health inspections on conveyances and in ancillary service facilities. EHOs identify critical and non-critical violations pursuant to a set of guidelines and work with operators to address the deficiencies. Industry key informants commended the Travelling Public Program’s approach to working together with them to resolve violations as well as in educating and assisting them in the development of plans to mitigate future risks.

In 2013-14, the Travelling Public Program completed 92% of planned inspections (460 of 502) of conveyances and ancillary service facilities. Discrepancy between the number of planned and completed inspections is explained by staff turnover and vacancies that resulted in understaffed inspection teams. While the number of inspections completed in 2013 increased by 15% compared to 2012 (from 380 to 460), year-to-year percentages in the types of violations discovered stayed virtually unchanged. Results of these 460 public health inspections of conveyances and ancillary service facilities determined that: 45% had critical violations; 71% had at least one non-critical violation; and 22% had no violations reported. Inspections included the following conveyances and facilities: aircraft, charter vessel, cruise ship, ferry, flight kitchen, food caterer, supply depot, terminal and train. The majority of the top 10 critical violations were with the ferry sector.

Critical violations must be addressed within 10 days through a Corrective Action Response process which is monitored and tracked. Both external and internal key informants indicated that the quality of inspections has increased and that, in general, critical violations were addressed promptly. According to program data, in 2013-14, the Travelling Public Program achieved an 88% compliance rate with its inspection guidelines when critical violations were cited during an inspection. These results are seen as a success of the program’s follow-up activities with conveyance and facility operators to mitigate identified public health risks, considering the voluntary nature of some program components.

Along with inspections on board conveyances and ancillary service facilities, the Travelling Public Program is charged with fulfilling Canada’s obligations under the International Health Regulations with respect to Ship Sanitation Inspections (SSI). The purpose of the IHR is to protect against, control and respond to the international spread of diseases while avoiding unnecessary interference with international traffic. Further details on this are provided under section 4.4.4.

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A critical violation is a level of risk presented by an entity, a condition or a circumstance where there is a reasonable probability that an imminent or serious adverse health consequence may result in the exposed population. The exposed population is considered to be the travelling public who are generally healthy enough to be able to travel and may include all ages and backgrounds. When a critical violation is identified, appropriate action should be taken immediately to prevent exposure of the population to the hazard. Follow-up action should determine the cause of the problem, and determine if appropriate and timely corrective actions have been taken.
Audits

The Travelling Public Program conducted audits of conveyance and facility management plans for food, water and sanitation to ensure operators follow good public health practices. Audits ensure key elements are captured in Potable Water Management Plans including, but not limited to, disinfection and sanitization practices, and operational and documentation requirements. Incident and adverse event response plans are also reviewed, as well as training opportunities for staff, and the existence of a quality assurance program. Audit recommendations tend to focus on processes as well as consistency in the documentation and implementation of practices.

Both internal and external key informants indicated that the Travelling Public Program assisted operators in the development of audit management plans by serving as a resource and reference of expert advice to them. Once management plans were in place, the Travelling Public Program scheduled annual audits of them. Key informants indicated that, at times, these audits triggered improved or new processes/protocols. In 2013-14, the Travelling Public Program completed audits for eight of the largest airlines in Canada, including Air Canada and WestJet.

There are constraints that limit the programs’ actions, including a lack of authority or the nature of the public health risk.

Food Safety on Passenger Conveyances and Ancillary Services

While adherence to guidelines on potable water is mandatory, industry observance of food and sanitation practices is largely dependent on their good will given the lack of authority from the Travelling Public Program in this area. While operator observance and mitigation of public health risks appear to be fairly broad, resolving violations with uncooperative operators contravening public health practices in relation to food safety and sanitation conditions could be difficult. Given the cooperative relationship between the Agency and the conveyance industry, these issues do not appear to be major. That having been said, the Agency is exploring, in collaboration with the CFIA, the possibility of appointing EHOs as inspectors under the Food and Drugs Act for the conduct of food inspections on passenger conveyances, including ancillary services, to fill this current gap.

Quarantine Act Limitations

The nature of some diseases, especially those with longer incubation periods, makes them difficult to detect at the border. Some passengers may be carriers of a disease but exhibit no symptoms at the time of their arrival/departure. As we discuss in section 4.4.4, this detection challenge is compounded by the unlikely event that passengers will self-identify when they feel ill. It may be because they would rather continue to their destination than be delayed at the airport or because they are unaware of the legal requirement to do so as described in the Quarantine Act.
4.4.4 To what extent has there been compliance with the *Quarantine Act and Regulations*, the *Potable Water Regulations for Common Carriers*, and the *International Health Regulations*?

Industry, border health partners and the Public Health Agency of Canada have demonstrated strong compliance with the *Quarantine Act*, the *Potable Water Regulations for Common Carriers* and the *International Health Regulations*.

**Quarantine Act**

The OBHS promotes compliance with public health regulations through inspections, audits, education and training with conveyance operators and border security partners. It engages in outreach and education activities with key partners (border security agents, ambulance services, airport authorities, etc.) to promote knowledge of and the responsibilities assigned to different actors under the *Quarantine Act*.

Through key informant interviews, external partners (including CBSA screening officers, ambulance services, airport authorities and others) have indicated that Quarantines Services’ outreach with them has helped to ensure that each partner understands the requirements under the *Quarantine Act* and their role when situations arise.

As described in section 4.4.3, Quarantine Services employs a proactive approach to mitigate the risks associated with the movement of infectious diseases into and out of Canada by screening (through CBSA screening officers) and assessing ill travellers, cadavers or human body parts/remains through the enforcement of the *Quarantine Act* and corresponding use of border health measures.

If a CBSA screening officer has reasonable grounds to believe that a traveller is, or might have been, infected with a communicable disease, or has refused to provide answers, a Quarantine Officer (QO) must be called. The QO will conduct health assessments and medical exams for ill travellers and determine the risk of disease transmission within Canada. Upon completion of a health assessment, a QO has a suite of options available to him/her depending on the public health risk presented by the traveller. The QO may issue an Order pursuant to the *Quarantine Act* to require the traveller to, for example, undergo a medical exam to determine the extent of the illness as well as the risk of the introduction and spread of communicable disease into Canada.

As mentioned in section 4.4.3, Quarantine Services responded to 1,024 calls in 2012 and 951 calls in 2013, resulting in 211 and 605 health assessments in 2012 and 2013, respectively. From these assessments, 94 cases in 2012 and 25 cases in 2013 were sent to report to a local public health authority. While data does not exist with respect to the results of these follow-ups, anecdotal evidence from internal key informants suggests that lack of compliance with undergoing medical examinations and other related measures is very rare.

Risks associated with the spread of diseases on conveyances and cargo, which also are addressed by the *Quarantine Act*, are managed by the Travelling Public Program. For example, under the authorities of the *Quarantine Act*, environmental health officers (EHOs) conduct inspections on
conveyances suspected of being a source of a communicable disease and instruct operators to take appropriate measures, for example, to disinfect, decontaminate or fumigate the conveyance, or in general, carry out any measures reasonably necessary to prevent the introduction and spread of a communicable disease.

**Potable Water Regulations for Common Carriers**

The Travelling Public Program is charged with ensuring compliance with the application of the Potable Water Regulations for Common Carriers (PWRCC, for short).

Below are examples from the Program’s 2013-14 draft Annual Report to illustrate compliance:

- Over 96% of water samples in 2013-14 were deemed satisfactory and in compliance with the Guidelines for Canadian Drinking Water Quality (developed by the Federal-Provincial-Territorial Committee on Drinking Water), compared to just over 97% in 2012-13.
- Water violations accounted for 11% of total violations identified during inspections in 2013-14.\(^{xi}\)

In addition, all major domestic airlines have developed Potable Water Management Plans to protect passengers from risks associated with water on board and to support compliance with the regulations and guidelines. As indicated in section 4.4.2, other carriers have also emulated these actions.

**International Health Regulations (IHRs)**

The International Health Regulations (IHRs) direct and govern the World Health Organization (WHO) and State Party activities that protect the global community from public health risks and emergencies with the potential to cross international borders.

Responsibility for the compliance with some key IHRs falls directly under the purview of the TMHD and the OBHS:

- **Designation of Yellow Fever Vaccination Centres:** In support of Canada’s commitments under the International Health Regulations, the Travel and Migration Health Division undertakes the implementation of the designation process of Yellow Fever Vaccination Centres in Canada. The TMHD leads the process by which healthcare providers apply and become one of the yellow fever designated clinics in Canada.\(^{xii}\) Compliance with this requirement was demonstrated through interviews with key informants and the review of program documentation which indicated that approximately 600 facilities have received their yellow fever designation.

\(^{xi}\) Of note, water inspections are not routinely completed on aircraft, which contribute to the lower percentage of water violations cited.

\(^{xii}\) The clinics administer the vaccine and issue certificates to individuals travelling to certain countries that require proof of vaccination.
• **Core Capacities**: According to the WHO, Canada has achieved 100% implementation with respect to the IHR “core capacities”, i.e. the capacities needed for detecting and responding to the specified human health hazards and events at Ports of Entry (PoE)xiii. These include eight core capacities, including the capacity to apply entry or exit controls for arriving and departing travellers at designated points of entry, and the capacity to respond to public health emergencies, among others.63

• **Ship Sanitation Inspections (SSIs)**: Under the *International Health Regulations* (2005), international marine vessels are required to obtain either a Ship Sanitation Control Certificate, or a Ship Sanitation Control Exemption Certificate, every six (6) months.64 SSIs form part of the Government of Canada’s overall public health mandate for Canadians and support border health security and health protection at Canada’s points of entry. The Travelling Public Program is the competent authority in Canada to complete SSIs and issue Ship Sanitation Certificates. In 2013-14, the Travelling Public Program conducted 788 SSIs, including 591 at IHR designated ports (i.e., ports authorized to issue Ship Sanitation Certificates)65. According to the Travelling Public Program’s 2013-14 draft Annual Report, the number of SSIs completed continues to increase year-over-year, with a 13% increase since 2011.

**Challenges still exist with respect to self-reporting and screening of potential cases.**

Challenges continue to exist with respect to both voluntary compliance with public health food safety and sanitation conditions on conveyances, and individuals’ self-reporting at the points of entry/exit when feeling ill.

As indicated in section 4.4.3, while there is currently no legal mechanism for the Agency to compel the application of proper control measures to protect against public health risks associated with food and general sanitary conditions on board conveyances and ancillary services, the OBHS is currently investigating options to increase its authority, and its compliance and enforcement abilities, in these areas. EHOs and managers within the Travelling Public Program work collaboratively and constructively with operators to address concerns, but ultimately it is not possible to force compliance from an uncooperative operator.

Under section 15(2) of the *Quarantine Act* “any traveller who has reasonable grounds to suspect that they have or might have a communicable disease or are infested with vectors, or that they have recently been in close proximity to a person who has, or is reasonably likely to have, a communicable disease or is infested with vectors, shall disclose that fact to a screening officer or quarantine officer.” Key informants have expressed concern about the reliance on individuals, operators and other partners to report suspected health issues which fall outside program control. Effective application of the *Quarantine Act* is challenged by a hesitancy to identify and report

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xiii The WHO assessment is based on state parties’ answers to the IHR “Questionnaire for Monitoring Progress in the Implementation of IHR Core Capacities” which are based on core capacity assessments that were conducted in 2009. Each year, Canada’s IHR National Focal Point (within the Office of Situational Awareness and Operations, Centre for Emergency Preparedness and Response) receives the monitoring tool framework questionnaire from PAHO/WHO, compares the questions and answers with the previous year’s results, and verifies/validates the answers with the responsible programme leads for each core capacity. The programme then validates their responses based on their own experiences and internal processes.
communicable disease and environmental health concerns at borders and on conveyances due to the potential for delays, restriction on travellers, and lost revenue for businesses. Often arriving passengers who might have a communicable disease or are infested with vectors do not present with any symptoms (asymptomatic) at point of screening. Therefore they would not be easily detected by screening officers.

The Quarantine Act also allows exit screening be conducted on travellers leaving Canada. A 2012 follow-up Audit Report of a 2010 audit called on Quarantine Services to finalize a strategy regarding the Agency’s obligations under the Act for departing travellers. While it appears that substantial progress has been achieved in the development of a strategy, it has not as of yet been fully realized. Key internal informants have commented that, given limited resources and the higher level of risk, program efforts remain primarily focused on the screening of arriving passengers.

4.4.5 To what extent has the program adapted to any changing needs in the context of travel health and border health security in Canada?

The environment in which all three program areas are operating is becoming more complex. Program regulations and approaches to reaching key audiences have been updated to reflect evolving contextual factors.

The literature review and key informant interviews confirmed that the environment in which all three program areas are operating has been changing over time. It is becoming increasingly more complex.

For example:

- As mentioned in section 4.1, the international movement of people and goods is increasing at previously unheard of rates. The character of this movement is also dynamic: travel patterns are continually shifting and the number, and nature, of the stakeholders and audiences for advisories about travel-related health risks are continuously in flux.
- While some destinations have become safer for travellers, other areas have seen the emergence or re-emergence of infectious diseases. The risks of emerging and re-emerging infections are also felt at home, as the potential for rapid worldwide transmission and spread of disease is increased by travel.

Although travel-related health risks are ever changing, and their contextual factors are continuously evolving, the need to address them through prevention, protection and awareness efforts remains a constant. In this context, all three areas have responded by updating their program approaches to reaching key audiences - and in the case of the Travelling Public Program, program regulations - to reflect evolving contextual factors.
Travel and Migration Health Division

The Travel and Migration Health Division has continued to work to expand and deepen its network to broaden the reach of its activities. During 2012, the Travel and Migration Health Division obtained the cooperation of a number of travel industry stakeholders (e.g., Expedia, Aeroplan, travel health insurance companies) to help direct traffic to the Agency’s website. The generation of travel health information that is “easy to share with family/friends/social networks” is a goal of the Travel and Migration Health Division’s approach to information dissemination on the Internet. The establishment of a broad range of partnerships with stakeholders, including the travel industry, other federal government departments, P/T governments and health care professionals, remains an over-arching goal of the travel health communications planning.

In addition to emphasizing partnerships, the Travel and Migration Health Division has recognized the importance of new web-based approaches to reaching key audiences. A 2012 survey of visitors to travel.gc.ca found that the Internet and the travel.gc.ca site are the first medium for contacting the government for travel information. Travel health has consistently been one of the top 10 sections of the Agency’s website since 2006. In light of the importance of the web for travel health awareness activities, the TMHD has made use of innovative web-based and social media tools to contribute to expanding the reach of the program.

It was noted that:

- Since 2011, the Travel and Migration Health Division’s Web approach has consisted of ‘traditional’ web components and social media tactics, in recognition that innovative online approaches are crucial for reaching and continually engaging a wide audience.
- In 2012-2013, social media drove approximately 12,000 visits (now a performance indicator/target for TMHD) to the travel health section of the Agency’s website.
- Furthermore, the number of travel health social media messages published by TMHD on Twitter and Facebook has increased since 2012: 68 messages were published in 2012-13, vs. 323 in 2013-14. With 172 published messages for the first five and a half months of 2014-15, TMHD is on track to continue this trend of increased volume of messaging in 2014-15.
- The site content, format and tone reflect current web analytics research and recommendations from stakeholders.

Quarantine Services

Quarantine Services have also placed an increased emphasis on networking with key partners, in large part as a result of the increased emphasis the program has placed on awareness-raising activities.
Examples of specific activities include:

- It has prioritized the enhancement of the awareness of federal, provincial, territorial and private sector stakeholders regarding the shared administration of the *Quarantine Act*. It developed an “Office of Quarantine Services Networking Plan” to standardize the practice of informal networking. Partnership-based operations remain a key principle of the Quarantine Services’ planning for the future as well as current operations.

- It engaged in open house events and regular roundtables with key partners in the lead up to and during the 2010 Vancouver Olympics. At the time, the program developed several strategies aimed at incorporating Quarantine Services into the daily operations of key partners and familiarizing partners with the roles and responsibilities of Quarantine Officers under the *Quarantine Act*. Post-Olympics, Quarantine Officers have been encouraged to continue to engage in informal networking, particularly with CBSA Agents. The program has reported that closer relationships with key partners has allowed for “more efficient and effective response to emergency calls.”

**Travelling Public Program**

Networking and relationship building are the cornerstones of the Travelling Public Program. The replacement of its cost-recovery program (in which organizations used to pay to be inspected) with a risk-based approach (in which risk level now guides inspection activity) has resulted in partnerships with new industry partners, particularly airlines. The decision to move the program to a risk-based approach was based, in part, on a 2011 pilot study of sectors that did not participate in the fee for service program. The study identified deficiencies in food, water and sanitation practices in all conveyance sectors. In the report, Health Canada noted that “it had very little information on conditions related to food and sanitation for airlines.” As a result of the move to a risk-based approach, the resources of the Travelling Public Program are now targeted based on the public health risk to travellers, rather than the willingness of conveyance operators to pay. Examples of successful partnerships and collaborations between the Travelling Public Program and industry were addressed in section 4.4.2.

The proposed regulations to modernize the *Potable Water Regulations for Common Carriers* (1954) will replace out-of-date provisions in the current regulations, thereby improving their applicability to regulated industries. The need for new regulations has been expressed by industry and Agency partners for several years. Some conveyances have had significant difficulty complying with current regulations. For example, airlines and vessels have been seeking exemptions to regulatory disinfection requirements, and shipping industry stakeholders have requested relief from ship construction requirements and plan review. The proposed new regulations will require operators to ensure water served meets latest public health standards, allow flexibility for operators to choose water disinfectant technology, remove vessel construction plan review requirements and ensure public health requirements are respected through water sampling and record keeping. The new regulations will provide flexibility for conveyance operators to choose appropriate water systems and disinfection practices, while requiring them to ensure that the water provided to passengers is free from E. coli. The effectiveness of the Travelling Public Program activities is expected to increase through these new regulations.
4.5 Performance: Issue #5 – Demonstration of Economy and Efficiency

The Treasury Board of Canada’s *Policy on Evaluation* (2009) and guidance document, *Assessing Program Resource Utilization When Evaluating Federal Programs* (2013), defines the demonstration of economy and efficiency as an assessment of resource utilization in relation to the production of outputs and progress toward expected outcomes. This assessment is based on the assumption that departments have standardized performance measurement systems and that financial systems link information about program costs to specific inputs, activities, outputs and expected results.

The data structure of the detailed financial information provided for the program did not facilitate the assessment of whether program outputs were produced efficiently, or whether expected outcomes were produced economically. Specifically, the lack of output/outcome-specific costing data limited the ability to use cost-comparative approaches. Considering these issues, the evaluation provided observations on economy and efficiency based on findings from the literature review, key informant interviews and available relevant financial data.

In addition, the findings below provide observations on the adequacy and use of performance measurement information to support economical and efficient program delivery and evaluation.

4.5.1 Observations on program budgets and actual expenditures

Overall program spending for the three components over the last five years has been in line with allocations.

As detailed in the tables below, the collective budget for the three program areas was $33.8 million, the collective expenditure was $34.7 million, and there was a collective overage of less than 3% ($1.8M). There were fluctuations in budget lapses across the five years related to a variety of internal and external factors, including internal realignment of budget allocations and the frequency and severity of public health events.

It was also noted that:

- At times there have been reductions in the amount of funds available to program areas because of internal reallocations and Government-wide budgetary reductions due to broader reviews. Travel and Migration Health Division’s budget and actual expenditures have declined for each of the last two years. Budgets and actual expenditures for Quarantine Services fluctuated, although minimally, during this time.

- Taking into account the amount of planned funding received for their respective travel health and border health security activities, the differences between planned and actual spending are minimal for the Travel and Migration Health Division and Quarantine Services. Over the past five years, the two areas have spent the majority of their planned spending, i.e. Travel and Migration Health Division – 86.9% and Quarantine Services – 98%.
As mentioned in section 4.2, the Travelling Public Program was administered by the HECS Branch of Health Canada until April 1, 2013. Significant differences between planned budgets and actual expenditures are reflected in the financial data for the Travelling Public Program in both 2009-10 (207.5%) and 2010-11 (248%) where they exceeded planned spending by over 200%. The TPP was a cost recovery program for both these years. At this time it was a pressure program, with the deficit internally funded within the HECS Branch of Health Canada from surplus funds in other environmental programs. In the fiscal year 2012-13, they only spent 74.7% of their planned spending. This surplus is attributed to salary dollars for five staff vacancies that the program was not able to fill and the O&M costs associated with these positions. The program also over-budgeted on the use of casual employees during 2012-2013.

Table 6: Travel and Migration Health Division - Variance between Planned Spending vs Expenditures ($)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Planned Spending ($)</th>
<th>Expenditures ($)</th>
<th>Variance ($)</th>
<th>% planned budget spending</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salary</td>
<td>O&amp;M</td>
<td>Total</td>
<td>Salary</td>
</tr>
<tr>
<td>2009-2010</td>
<td>1,095,000</td>
<td>459,000</td>
<td>1,554,000</td>
<td>916,532</td>
</tr>
<tr>
<td>2010-2011</td>
<td>1,045,546</td>
<td>511,236</td>
<td>1,556,782</td>
<td>1,036,635</td>
</tr>
<tr>
<td>2011-2012</td>
<td>1,472,458</td>
<td>532,450</td>
<td>2,004,908</td>
<td>1,450,487</td>
</tr>
<tr>
<td>2012-2013</td>
<td>1,035,391</td>
<td>443,479</td>
<td>1,478,870</td>
<td>956,504</td>
</tr>
<tr>
<td>2013-2014</td>
<td>1,078,424</td>
<td>237,479</td>
<td>1,315,903</td>
<td>925,706</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5,726,819</td>
<td>2,183,644</td>
<td>7,910,463</td>
<td>5,285,864</td>
</tr>
</tbody>
</table>

* Data Source: Financial data provided by the Office of the Chief Financial Officer

Table 7: Quarantine Services - Variance between Planned Spending vs Expenditures ($)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Planned Spending ($)</th>
<th>Expenditures ($)</th>
<th>Variance ($)</th>
<th>% planned budget spending</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salary</td>
<td>O&amp;M</td>
<td>Total</td>
<td>Salary</td>
</tr>
<tr>
<td>2009-2010</td>
<td>2,109,383</td>
<td>621,216</td>
<td>2,730,599</td>
<td>2,183,079</td>
</tr>
<tr>
<td>2010-2011</td>
<td>2,260,000</td>
<td>419,100</td>
<td>2,679,100</td>
<td>2,280,553</td>
</tr>
<tr>
<td>2011-2012</td>
<td>2,405,800</td>
<td>423,720</td>
<td>2,829,520</td>
<td>2,146,921</td>
</tr>
<tr>
<td>2012-2013</td>
<td>1,979,770</td>
<td>337,196</td>
<td>2,316,966</td>
<td>2,169,945</td>
</tr>
<tr>
<td>2013-2014</td>
<td>2,420,716</td>
<td>565,890</td>
<td>2,986,606</td>
<td>2,267,812</td>
</tr>
<tr>
<td>TOTAL</td>
<td>11,175,669</td>
<td>2,367,122</td>
<td>13,542,791</td>
<td>11,048,311</td>
</tr>
</tbody>
</table>

* Data Source: Financial data provided by the Office of the Chief Financial Officer
### Table 8: Travelling Public Program - Variance between Planned Spending vs Expenditures ($)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Planned Spending ($)</th>
<th>Expenditures ($)</th>
<th>Variance ($)</th>
<th>% planned budget spending</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salary</td>
<td>O&amp;M</td>
<td>Capital</td>
<td>Total</td>
</tr>
<tr>
<td>2009-2010</td>
<td>871,429</td>
<td>719,474</td>
<td>0</td>
<td>1,590,903</td>
</tr>
<tr>
<td>2010-2011</td>
<td>871,429</td>
<td>440,247</td>
<td>0</td>
<td>1,311,676</td>
</tr>
<tr>
<td>2011-2012</td>
<td>2,577,240</td>
<td>606,781</td>
<td>0</td>
<td>3,184,021</td>
</tr>
<tr>
<td>2012-2013</td>
<td>2,577,240</td>
<td>606,781</td>
<td>0</td>
<td>3,184,021</td>
</tr>
<tr>
<td>2013-2014</td>
<td>2,513,950</td>
<td>556,781</td>
<td>50,000</td>
<td>3,120,731</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9,411,288</td>
<td>2,930,064</td>
<td>50,000</td>
<td>12,391,352</td>
</tr>
</tbody>
</table>

* Data Source: Financial data provided by the Office of the Chief Financial Officer

### 4.5.2 Observations on recent initiatives linked to efficiency and economy

A number of efficiencies have been demonstrated by the various program areas with respect to both program design and delivery.

**Risk-based Analyses**

An integrated risk-based approach to the allocation of resources has been taken by the Office of Border Health Services to maximize the impact and efficiency of program delivery. Adopting a risk-based approach enables the program to target public health activities on areas that are deemed to be the highest potential public health risk.

As noted in the document review and through key informant interviews, within the Office of Border Health Services, both Quarantine Services and the Travelling Public Program have developed risk assessment tools to help inform their planning processes. These tools facilitate the analysis of key risk determinants related to border health to identify how program resources could be allocated to most efficiently protect border health.

The allocation of regional resources for the Travelling Public Program is based on risk. The greatest resources are spent on active prevention and targeted oversight. If prevention and oversight are successful, fewer resources will be required to respond to emergencies and outbreak. For example, as detailed in section 4.5.4, the Travelling Public Program’s risk-based approach includes an annual assessment of risks between and within conveyance sectors. The risk assessments inform resource allocations to ensure activities target areas of highest risk.

**Website Lessons Learned**

Key internal informants involved in Communications indicated that lessons learned from the Public Health Agency of Canada’s travel health section of their website helped to inform the development of the government-wide travel site travel.gc.ca prior to its launch in 2012. The Travel and Migration Health Division had proactively reached out to e-communications experts...
to ensure that the design of the website benefited from leading information architecture. Many audiences were coming to the Agency as a trusted source for travel health information. They realized the importance of a reliable platform that would provide current and accessible information. Their efforts led to the smooth transition to the travel.gc.ca platform as they were able to share what they had learned with their federal partners.

**Streamlining Tools and Processes**

According to both internal and external key informants, the recent adoption of a standardized approach/mechanism to develop *Travel Health Notices* has improved their clarity, consistency and timeliness. The adoption of a standardized approach includes, for example, using previous content developed on a specific notice or fact sheet and editing it with new updated content when new information becomes available as well as sending it for technical review and documenting the approval process required prior to releasing the notice. These changes have meant that the notices can be produced more quickly and that end users are more easily able to access critical evidence-based information. As highlighted in section 4.4.1, in a recent survey of health care professionals affiliated with the Yellow Fever Vaccination Centres, the large majority (85%-95%) found the Agency’s travel health information (in particular *Travel Health Notices*, *Travel Health Fact Sheets* and CATMAT statements) to be useful, timely, relevant, clear and in an appropriate format.

In January 2014, a *Standard Operating Procedure (SOP) for Travel Health Information* was finalized. It articulates the roles and responsibilities, processes and service standards for the integration of the Agency’s travel health information into travel.gc.ca.

The Travel and Migration Health Division has also modernized the process for the designation of Yellow Fever Vaccination Centres, including providing easier access to forms and prompt responses to telephone and email inquiries. In 2010, the Division consulted the Council of Chief Medical Officers of Health (CCMOH) to request input on the finalization of the process. The finalized process was implemented in 2012, with endorsement of the CCMOH. Some of the main revisions included a shift from designating specific health care providers to designating health care sites, providing each health care site with a site-specific stamp that included a unique identification number, and redesignating sites every two years.

The Division also made improvements to the administrative process by engaging IT in the creation of a database that is used to manage the designated centres. It allows the program to store information related to the centres, track supply inventory, populate form letters and populate statistics. Until then, the division had been managing the over 500 YFVC on an Excel spreadsheet. In a recent survey of health care professionals affiliated with the Yellow Fever Vaccination Centres, 93% of respondents were either very satisfied or somewhat satisfied with the designation and/or re-designation process for the Yellow Fever Vaccination Centres.
Similarly, an October 2012 Follow-up Audit of Quarantine, Migration and Travel Health and International Health Regulations indicated that “improvements have been noted in the clarification of the mandate, the development of strategic and operational plans, the maintenance of the travel health website, and the modernization of the designation process of yellow fever vaccination centres.”

Office of Border Health Services Merger

In 2013, with a view to enhancing efficiencies across program areas that reduce the risk of communicable disease importation and exportation, two programs merged to form the new Office of Border Health Services - Quarantine Services (PHAC) and the Travelling Public Program (Health Canada). The goal was to provide more coordinated and consistent services as well as reduce administrative costs. More specifically in terms of services, this merger was designed to enhance capacity at the border to detect and respond to health risks, improve surge capacity should a public health emergency occur at the border, and provide improved and streamlined services for stakeholders.

Key informant interviews and the document review indicate that, during the first year of implementation, Quarantine Services and the Travelling Public Program have developed coordinated work plans and a joint performance measurement strategy.

Cost-Effective Program Delivery

Several approaches that have been taken to program implementation have led to more cost-effective program delivery:

- At times, various external partnerships have resulted in “no cost advertising” to direct traffic to key websites, including travel.gc.ca. These external partnerships have included: the Weather Network, Services Canada – Digital Display Network and iMD Health terminals in the offices of 1,300 health care professionals.
- It was noted by internal key informants that, once finalized, the current development of online training modules by Quarantine Services should see decreases in training related expenses.

4.5.3 Observations on operational challenges linked to efficiency and economy

Further efficiencies could be achieved through greater use of technology and increased leveraging of external partnerships to reach key audiences.

Greater Use of Technology

There may be opportunities to increase the use of mobile technology. Currently frontline Quarantine Officers and Travelling Public Program EHOs collect case management information using a paper system, often in a time sensitive emergency response or outbreak environment.
Internal key informants suggested that the use of mobile e-tablets by all front line staff would cut down on the need to use both a paper-based and computer entry for the same information. For example, Quarantine Officers first collect travel health assessment information on paper, then manually enter it into the electronic Travel Health Assessment Database (THAD). Environmental Health Officers had similar experience with respect to completing inspections manually and then having to enter the information into the PHITS (Public Health Information Tracking System) database. Not only is this time consuming and a duplication of effort but, with data needed to support strategic operational decisions being collected manually, it can create delays in the communication process between frontline workers and upper management.

Concerns were noted by internal key informants about the efficiency of the current THAD for Quarantine Services. The stated vision was “to provide the frontline quarantine officers with an electronic application to increase efficiencies and consistencies in case management and communication in a time sensitive response environment while supporting national strategic and operational direction by enhancing program analyses and evaluation through data collection and collation.” However, as noted through the document review and internal key informant interviews, this current database does not incorporate all new practices, nor can it collate data from all the fields that are needed to support strategic risk analyses. There is a need to have a system in place to support the more efficient collection of data. A description of a newly planned database (THOSSS) that is under development is provided in section 4.5.4.

Finally, while Twitter and Facebook have been used to promote new Travel Health Notices, both internal and external key informants and key communications documents highlighted the need to continue to explore social media opportunities for the efficient and effective dissemination of information about travel health and border health security.

**Increased Leveraging of External Partnerships to Reach Key Audiences**

To further improve program efficiency, internal key informant interviewees suggested further leveraging of private sector partnerships to help expand the programs’ reach and increase awareness and understanding of travel health risks. As highlighted in section 4.4.2, opportunities for some private sector partnerships have been explored and implemented.

It was suggested that the Travel and Migration Health Division could reach more Canadians through external partnerships targeting specific groups to direct more people to the travel.gc.ca website. For example, given the disproportionate incidence/risk of travel-acquired illnesses among VFRs (visiting family and relatives), there may be opportunities to engage more with travel agencies that focus on specific ethnic communities.
4.5.4 Observations on the adequacy and use of performance measurement data

Both the Travel and Migration Health Division and the Office of Border Health Services have logic models. Other performance measurement related efforts are limited or under development.

Currently, the travel health and border health security mandate is represented through two indicators in the Agency’s 2013-14 Performance Measurement Framework under the sub-programs Infectious and Communicable Disease, and Border Health Security. Indicators pertain to Travel Health Notices and point of entry capacities conducive to supporting International Health Regulation commitments.

All three program areas have taken steps to develop components of their performance measurement activities.

This was illustrated as follows:

- All three program areas are covered by logic models, although the Travel and Migration Health Division’s logic model pre-dates their corporate reorganization.
- Although the Travel and Migration Health Division does not have a performance measurement strategy, nor is one currently in development, interest exists in discussing a possible strategy. The Travel and Migration Health Division continues to collect data such as web metrics and social media outreach data.\(^82\)
- Performance measurement strategies are relatively new, and have yet to be finalized for the Office of Border Health Services, however, there is a draft performance measurement strategy and work to ensure relevant indicators are identified has begun.

Without the benefit of approved and active performance measurement strategies, data collection remains output driven. Output driven data collection, which focuses on quantifying program activities, has left a shortage of meaningful outcome-oriented data.

To elaborate:

- The Travel and Migration Health Division tracks website visits but does not have any indicators measuring their intended outcome of increased public and stakeholder awareness and understanding of public health risks associated with travel.
- The Office of Border Health Services’ logic model outlines Quarantine Services and the Travelling Public Programs’ intended contribution to the changes in knowledge, engagement, behaviour and practices in relation to public and stakeholder awareness. Data collected by both programs focuses largely on activities (e.g., Quarantine Services – the number and nature of assessments performed on travellers; Travelling Public Program – i.e. number of presentations and inspections, assessment of violations) rather than their intended outcomes. The Travelling Public Program does collect data about public health violations and operators' responses to mitigating the risks.
Database trends, as well as risk assessment tools, inform the risk-based planning for both Quarantine Services’ and the Travelling Public Program’s design and resource allocation.

- Quarantine Services uses a risk assessment tool which accounts for volume of travel, arrivals from countries with public health concerns and the associated level of risk, along with the differing level of risk based on direct and indirect flight routes. The results of the assessments determine which international airports have on-site quarantine officers, their staffing requirements and their hours of operation.

- The Travelling Public Program uses a risk assessment tool to inform their risk-based program. The program assesses the highest risk conveyances entering and/or travelling within Canada, and concentrates program resources in those areas as a means to address the most prevalent risks.

Quarantine Services and the Travelling Public Program each use their own database to collect data on program activities.

In January 2013, Quarantine Services implemented the Travel Health Assessment Database (THAD). The following output focused information is entered into the database:

- the number of calls,
- the source of each call,
- the number of inspections/health assessments conducted,
- whether assessments were conducted remotely,
- symptomology, and
- outreach activities.

Upon the review of program data and supported by key informant interviews, it was noted that issues still exist in the consistency of approaches across regions in the collection and entering of data. This situation presents data quality issues. The document review and key informants also noted limitations with the current THAD reporting system. As detailed in section 4.5.3, the main challenge is that the data collection and analysis capabilities of the system do not meet the current needs of the program.

A new database is in development to address the reporting shortcomings of THAD. The new Traveller Health Operational and Strategic Support System (THOSSS) will be able to “manage epidemiology data, while enhancing its capability to capture, store and perform an output analysis of other operational statistical data and to incorporate standardization of operational procedures”.83 The system’s vision statement recognizes the value of data collection in long-term program design. THOSSS aims “to provide the front line quarantine officers with an electronic application to increase efficiencies and consistencies in case management and communication in a time sensitive response environment while supporting national strategic and operational direction by enhancing program analysis and evaluation through data collection and collation.”84
The Travelling Public Program’s database, the PHITS, collects information on the number of inspections completed and management plans developed, audits, critical and non-critical violations, as well as the timeliness of addressing violations. The PHITS database also sends reminders to Environmental Health Officers about the number of days that have passed since inspection in which no response from conveyance operators has been received.

The PHITS database has some challenges with respect to the information that is collected and linkages that can be made once data is entered into the system. While the program can collect rates for a variety of activities, the ability to make connections between different indicators to establish causal links is limited. For example, the Travelling Public Program can illustrate the number of inspections performed and the number of critical violations recorded. However, since detailed data on the types of assessments (i.e. water, food, or sanitation) performed during inspections is not readily available, linkages between the successes in strengthening risk reduction in each individual area cannot be drawn.

The further solidification of program performance measurement strategies for all three program areas, presents an opportunity to align indicators to program goals at the immediate, intermediate and long-term outcome levels. Achieving this alignment would result in full reporting coverage of the program areas’ logic models.

Finally, more linkages between TMHD and OBHS in terms of planning and performance measurement may lead to more efficiencies across these programs. For example, Quarantine Services may be able to plan outreach activities in line with the travel health information being produced by TMHD. As one key informant stated: “...it makes natural sense that they should be planning together and looking at their successes together.”

5.0 Conclusions

5.1 Relevance Conclusions

There continues to be a clear need to address travel health and border health security issues in Canada. The increase in international travel - facilitated by over 3,500 international departure cities, cheaper airfares, and more efficient ways of travelling - has led to a higher risk of global disease transmission. The nature of international travel, with its prolonged periods of time in enclosed spaces, creates a unique opportunity for potential risk for illness - conveyances have been linked to both food and waterborne illness and person-to-person transmission of disease. Furthermore, since the inception of the Agency, a variety of prominent global health risks have emerged including SARS, H1N1, MERS-CoV and Ebola. Continued risk of further infectious disease transmission exists. To help address these concerns, the program areas (the Travel and Migration Health Division and the Office of Border Health Services) participate in a variety of prevention, protection and response activities aimed at preventing the spread of communicable diseases.
The basis for the federal role in respect to travel health and border security can be found in the Department of Health Act, the Quarantine Act, the Potable Water Regulations for Common Carriers and the International Health Regulations and in various programs authorized by Cabinet and funded by Parliament. This evaluation found only minimal or minor cases of overlap, duplication and/or gaps in the area of roles and responsibilities with other players.

Program activities are also aligned with the federal government’s priority to ensure the health and security of Canadians and their communities - and more specifically the government’s commitment to strengthen border health security partnerships and cooperation. These commitments are reflected in documents and agreements or initiatives such as the Canada-US Beyond the Border Initiative (2013 Federal Budget), the International Health Regulations (IHRs) and key Agency documents such as Strategic Horizons 2013-18 and the Corporate Risk Profile. Within the Agency, recent steps have been taken to enhance border health security through a more integrated approach to reduce risk of communicable disease transmission with the April 1, 2013 creation of the Office of Border Health Services, bringing together the Agency’s Quarantine Services and Health Canada’s Travelling Public Program.

5.2 Performance Conclusions

Through the distribution of information, and their wide and varied networks, both the Travel and Migration Health Division and the Office of Border Health Services are taking steps to develop greater awareness and understanding of travel health risks among their key target audiences (e.g., the public, health professionals, federal partners, conveyance operators). Not surprisingly, awareness-raising initiatives are most elevated during times of heightened risk and crisis. Despite all of these efforts (both in times of crisis and on a more day-to-day basis), more work needs to be done to build awareness and understanding especially among the general public.

An area of particular strength for each of the three program areas is their efforts to build strong collaborations and partnerships with key external stakeholders. These efforts have helped clarify roles and responsibilities, extended the reach of their communications efforts, and created an atmosphere of collegiality rather than confrontation. While external collaborations have been a strength, more could be done when it comes to internal collaborations within the Agency, especially between the Travel and Migration Health Division and the Office of Border Health Services, in particular Quarantine Services. These collaborations currently tend to be ad hoc, or crisis driven, and there is little to no joint forward planning with these two groups even though they share a key target audience (i.e. Canadian travellers) and share some similar messages for this audience (i.e. how to protect their health before, during and after travel).

While the program areas face some contextual challenges in implementing various protection measures and ensuring compliance with key pieces of legislation or regulations, they have been quite active and successful in these areas. Of note, they have been very proactive in conducting inspections, audits, investigations and health assessments all of which serve to help identify potential public health risk, which then can be addressed through the most appropriate mitigation strategy. The strong relationships with partners mentioned above have led to increased cooperation and joint efforts to reduce travel health risks, such as the development of joint food safety and sanitation guidelines and management plans. Furthermore, Agency travel health and
border health security activities are in compliance with key aspects of the *International Health Regulations* and industry has demonstrated compliance with the *Potable Water Regulations for Common Carriers*. Protection and response measures have been applied in accordance with the *Quarantine Act*, with the goal of detecting and managing infectious diseases. Challenges exist with respect to the voluntary nature of certain aspects of the Travelling Public Program, self-reporting and the effectiveness of screening measures for disease detection due to the longer incubation periods for certain disease but, in general, the program areas are taking steps to address these challenges (e.g., exploring greater powers for EHOs under the *Food and Drugs Act* for the conducting of food inspections on passenger conveyances, including ancillary services).

A number of efficiencies have been demonstrated by the program areas, including: risk-based analyses, application of website lessons learned, streamlining tools and processes and cost-effective program delivery. Further efficiencies would likely be achieved through greater use of technology, and increased leveraging of partnerships to reach key audiences.

While all three program areas have developed and implemented some performance measurement activities, it is clear that further work is required. The Travel and Migration Health Division and the Office of Border Health Services both have logic models and OBHS has a draft performance measurement strategy, while TMHD does not. Current performance measurement efforts lack a strong connection to reporting outcome data. Aligning performance measurement strategy indicators to the associated logic models could help in evolving measurement from simply output oriented results to outcome oriented data.

### 6.0 Recommendations

**Recommendation 1**

*Explore opportunities for greater collaboration between the Travel and Migration Health Division and the Office of Border Health Services (especially Quarantine Services).*

Current collaboration efforts seem to be ad-hoc during times of increased levels of risk. Specific suggestions featured in this report, with regards to collaboration, focus on activities during periods of normal operation, and include:

- Travel and Migration Health Division and Quarantine Services could partner in educating travellers during periods where public health risks are not as elevated.
- Travel and Migration Health Division and the Travelling Public Program may benefit from a better understanding of each program’s respective role, thereby uncovering future areas for collaboration.
**Recommendation 2**

Consider building on promotional and educational efforts (e.g., public/private partnerships) to increase Canadians’ awareness and understanding of the program areas and travel health risks.

Health practitioners surveyed for this evaluation found the Agency’s travel health related information to be very timely, useful and relevant. In contrast, a low level of travel health awareness exists among Canadian travellers. Proactive approaches that promote travel health practices, as opposed to resources that wait to be accessed, were advocated by key informants. It is important to note, the evaluation found that in times of high public health risk, program areas are very active in educating the public. During the same periods, the Canadian public demonstrates an increased interest in travel health issues. As such, a focus on proactive approaches exists in times of crisis, but would also benefit from being implemented in other periods with less imminent health threats. Program areas should further explore public/private partnerships to create additional opportunities to expand the dissemination of information targeted at Canadian travellers.

**Recommendation 3**

Continue work in the area of performance measurement, including finalizing performance measurement strategies and key indicators (especially outcome indicators), and ensuring consistent collection of performance data.

The program areas have taken steps to develop components of their performance measurement activities. While data collection is taking place by all three program areas, gaps exist in relation to outcome measures. The further finalization of the performance measurement strategies, and the subsequent alignment of indicators to the program logic models, will help to bridge the outcome data gap. Certain program data presented reliability issues due to the inconsistent collection of performance data across regions. It was noted that reporting tools currently in development may aid in resolving some of these challenges.
Appendix 1: References


McMullen et al. (2007). Food-poisoning and commercial air travel. Travel Medicine and Infectious Disease, 5(5), 276-286.

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Appendix 2: Summary of Findings

Rating of Findings

Ratings have been provided to indicate the degree to which each evaluation issue and question have been addressed.

Relevance Rating Symbols and Significance:

A summary of Relevance ratings is presented in Table 1 below. A description of the Relevance Ratings Symbols and Significance can be found in the Legend.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Indicators</th>
<th>Overall Rating</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued Need for the Program</td>
<td>Evidence of current or emerging health and safety needs related to travel health and border health security</td>
<td>High</td>
<td>There continues to be a need for activities such as those delivered through the Travel and Migration Health Division and the Office of Border Health Services to address the risks related to increased travel, the emergence of infectious diseases with global health risks, and the elevated potential for the transmission of communicable diseases during travel. The global movement of people and goods is increasing and is expected to continue to increase. As travel increases, there continues to be a need for pre-travel preparation in the form of awareness and vaccinations for travellers. High levels of international travel have sped up the spread of infectious diseases. Conveyances provide an ideal environment for person-to-person disease transmission. As well, food and waterborne illnesses occur during travel.</td>
</tr>
<tr>
<td>What are the health and safety needs of Canadians that contribute to the need for the program?</td>
<td>Program activities and reach connected to current needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the current situation in Canada with respect to travel health and border health security? How has the environment changed over time?</td>
<td>Views of stakeholders on program connection to needs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend - Relevance Rating Symbols and Significance:

High  There is a demonstrable need for program activities; there is a demonstrated link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program are clear.

Partial There is a partial need for program activities; there is some direct or indirect link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program are partially clear.

Low  There is no demonstrable need for program activities; there is no clear link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program have not clearly been articulated.
### Alignment with Government Priorities

<table>
<thead>
<tr>
<th>Questions</th>
<th>Indicators</th>
<th>Overall Rating</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the federal priorities related to travel health and border health security?</td>
<td>Program objectives correspond to recent/current federal priorities</td>
<td>High</td>
<td>Travel health and border health security are priorities of the Government of Canada and the Public Health Agency of Canada. Program activities are aligned with the broader Government of Canada priority to ensure the health and security of Canadians and their communities. This priority was highlighted in the 2010 and 2013 Speeches from the Throne and the 2012 Federal Budget. The activities reviewed all align with three of the Agency’s 2013-2018 strategic priorities including: the prevention and control of persistent and emerging infectious diseases through targeted prevention initiatives; strengthening emergency preparedness and response capacity through a coordinated, all-hazards, risk-based approach; and enhancing border health security through a more integrated approach to reduce the risk of communicable disease transmission.</td>
</tr>
<tr>
<td>What are the PHAC priorities related to travel health and border health security?</td>
<td>Program objectives aligned with and contribute to departmental strategic outcomes</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>

### Alignment with Federal Roles and Responsibilities

<table>
<thead>
<tr>
<th>Questions</th>
<th>Indicators</th>
<th>Overall Rating</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the federal public health role related to travel health and border health security?</td>
<td>Program objectives align with federal jurisdiction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the federal public health role aligned with the current environment?</td>
<td>Program objectives fit with departmental mandate and roles</td>
<td>High</td>
<td>Various acts and legislation establish a clear federal role for the Agency’s travel health and border health security activities. The Agency has a responsibility to promote health as well as prevent and control infectious diseases within Canada. The Department of Health Act, the Quarantine Act, the Potable Water Regulation for Common Carriers and the International Health Regulations identify federal authorities/roles and responsibilities. Other international initiatives, such as the Canada-US Beyond the Border Initiative and the North American Plan for Animal and Pandemic Influenza support a federal role in these areas. Other national governments have a similar role. USA, UK, Australia and New Zealand have travel health websites. The countries studied in the international scan conducted for this evaluation, with the exception of the United Kingdom and the United States, deliver their quarantine services and conveyance inspection within the same department.</td>
</tr>
</tbody>
</table>

### Legend - Relevance Rating Symbols and Significance:

- **High**: There is a demonstrable need for program activities; there is a demonstrated link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program are clear.
- **Partial**: There is a partial need for program activities; there is some direct or indirect link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program are partially clear.
- **Low**: There is no demonstrable need for program activities; there is no clear link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program have not clearly been articulated.
### Evaluation of the Public Health Agency of Canada’s Travel Health and Border Health Security Activities – 2009-2010 to 2014-2015

### July 2015

<table>
<thead>
<tr>
<th>Questions</th>
<th>Indicators</th>
<th>Overall Rating</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the role of stakeholders (i.e. other government departments,</td>
<td>Presence/absence of other programs that complement or duplicate objectives of program</td>
<td>High</td>
<td>There are minimal and minor cases of overlap, duplication and/or gaps in the area of roles and responsibilities. Key informants indicated that there is little overlap and duplication or gaps with other jurisdictions or stakeholders when it comes to roles and responsibilities. Cases of overlap typically resulted from jurisdictional interplay as illustrated in the delivery of the Travelling Public Program. For example, this program is responsible for inspecting food served on airplanes but that food can also be supplied by a flight kitchen facility which is shared federal/provincial jurisdictions. As a result, the same facility can be inspected more than once by two different parties. Inspecting the same ship can also occur when vessels pass through the United States and Canada. Both countries have Cruise Ship Inspection programs that are harmonized with each other.</td>
</tr>
<tr>
<td>provincial/territorial government, non-governmental organizations,</td>
<td>Views on programs that complement, overlap or duplicate PHAC involvement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>private sector) relating to travel health and border health security?</td>
<td>Evidence of extent to which PHAC is meeting international commitments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the federal public health role and current activities duplicate</td>
<td>Evidence of extent to which program is harmonized with international and US conventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>the role of stakeholders? Are there any gaps or overlaps?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend - Relevance Rating Symbols and Significance:**

**High**  There is a demonstrable need for program activities; there is a demonstrated link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program are clear.

**Partial** There is a partial need for program activities; there is some direct or indirect link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program are partially clear.

**Low**  There is no demonstrable need for program activities; there is no clear link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program have not clearly been articulated.
Performance Rating Symbols and Significance:

A summary of Performance Ratings is presented in Table 2 below. A description of the Performance Ratings Symbols and Significance can be found in the Legend.

### Table 2: Performance Rating Symbols and Significance

<table>
<thead>
<tr>
<th>Questions</th>
<th>Indicators</th>
<th>Overall Rating</th>
<th>Summary</th>
</tr>
</thead>
</table>
| To what extent do stakeholders (Canadian public, health professionals, border health partners, industry) have an awareness and understanding of public health risks to the Canadian public associated with travel? | • Evidence of (performance data on) education, training, and documentation to support enhanced awareness and understanding  
• Views on achievement of these outputs | Progress Made; Further Work Warranted                                                   | The program is contributing to awareness and understanding of travel health risks through both the dissemination of information and outreach activities with a variety of stakeholders. Risk identification and mitigation information has been disseminated through networking, training sessions for partners, briefing documents, guidelines, travel health kiosks, posters, social media, websites (e.g., Travel Health Notices, CATMAT statements), video monitors and print materials. Travel Health and Border Health Security program areas’ awareness raising initiatives are elevated during times of higher risk.  
Canadian travellers are not well informed about travel health risks and recommended precautions. In a 2011-12 Airport Survey of 600 Canadian travellers going to developing countries, 55% of travellers sought travel health advice prior to departure. However, less than 15% of Canadians travelling abroad actually visit a travel clinic before departure. Travellers with the highest risk of illness – migrants who return to their countries of origin and students – are the least likely to seek pre-travel health advice. Among those who did not seek travel health advice, approximately 21% stated not knowing they should do so. With low levels of travel health awareness among Canadians, key informants agreed, more proactive approaches aimed at informing the public and promoting travel health resources needs to continue to be explored. |

Legend - Performance Rating Symbols and Significance:

- **Achieved**: The intended outcomes or goals have been achieved or met.
- **Progress Made; Further Work Warranted**: Considerable progress has been made to meet the intended outcomes or goals, but attention is still needed.
- **Little Progress; Priority for Attention**: Little progress has been made to meet the intended outcomes or goals and attention is needed on a priority basis.
### Questions and Indicators

<table>
<thead>
<tr>
<th>Questions</th>
<th>Indicators</th>
<th>Overall Rating</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>To what extent have collaboration and partnerships with key stakeholders (health professionals, border health partners, and industry) supported prevention of public health risks to the travelling public?</td>
<td>• Evidence of (performance data on) collaboration and partnerships with key stakeholders including: number and nature of existing partnerships and capacity building opportunities including guidance documents&lt;br&gt;• Views on achievement of this output</td>
<td>Progress Made; Further Work Warranted</td>
<td>There is evidence that strong collaboration has been established with key external partners and stakeholders. The TMHD have standing operating procedures in place with DFATD for the maintenance of travel health information on the travel.gc.ca website. Also CATMAT statements are developed in close collaboration with health care practitioners. Quarantine Services has established solid relationships and cooperation with entities such as: CBSA, ambulance services, airport authorities and local health authorities. The Travelling Public Program has a cooperative working relationship with industry stakeholders. It has also worked closely with US counterparts to harmonize the Vessel Sanitation Program and participate in joint training. Collaboration between TMHD and the OBHS tends to be ad hoc and key informants indicated that opportunities for further collaboration could be explored, especially between TMHD and Quarantine Services. In addition, the strength of the interactions between QOs and EHOs varies across the country.</td>
</tr>
<tr>
<td>To what extent have protection measures (inspections, audits, investigations, health assessments) supported the identification and mitigation of public health risks to travelling Canadians?</td>
<td>• Evidence of (performance data on) protection measures including: risk assessment and surveillance reports, environmental scans, needs assessments, inspections, audits, investigations, health assessments, designation of yellow fever vaccination centres, etc.)&lt;br&gt;• Views on achievement of this outcome</td>
<td>Achieved</td>
<td>The program areas have protection measures in place aimed at identifying and mitigating public health risks associated with cross-border travel. The TMHD and the OBHS monitor, assess and validate information to identify travel health risks. Inspection results and corrective actions are monitored and tracked. Key informants indicated that the quality of inspections has increased and violations are addressed promptly. Management plan audits are conducted to ensure operators follow good public health practices – audits have triggered improved protocols. Investigations into potential health risks on conveyances, health assessments of travellers, and implementation of pertinent Quarantine Act measures, are completed.</td>
</tr>
<tr>
<td>To what extent has there been compliance with the Quarantine Act and Regulations, the Potable Water Regulations for Common Carriers, and the International Health Regulations?</td>
<td>• Evidence of (performance data) compliance by regulated parties with the various acts and regulations related to program mandates&lt;br&gt;• Views on achievement of this outcome</td>
<td>Achieved</td>
<td>There is evidence of compliance with the Quarantine Act and Regulations, the Potable Water Regulations for Common Carriers, and the International Health Regulations. The OBHS employs a proactive approach to achieve compliance with public health practices through screening, inspections, audits and education/training with border health partners and conveyance operators. The program areas address requirements to conduct ship sanitation inspections, designate Yellow Fever Vaccination Centres, and implement the IHR core capacities at designated points of entry. Challenges still exist with respect to self-reporting and screening of travellers that present potential public health risks. The nature of some diseases with long incubation periods make them difficult to detect at the border. In addition, industry observance of food and sanitation practices on conveyances is largely dependent on their good will, given the voluntary nature of this component of the Travelling Public Program.</td>
</tr>
</tbody>
</table>

### Legend - Performance Rating Symbols and Significance:

- **Achieved** The intended outcomes or goals have been achieved or met.
- **Progress Made; Further Work Warranted** Considerable progress has been made to meet the intended outcomes or goals, but attention is still needed.
- **Little Progress; Priority for Attention** Little progress has been made to meet the intended outcomes or goals and attention is needed on a priority basis.

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<table>
<thead>
<tr>
<th>Questions</th>
<th>Indicators</th>
<th>Overall Rating</th>
<th>Summary</th>
</tr>
</thead>
</table>
| To what extent has the program adapted to any changing needs in the context of travel health and border health security in Canada? | • Evidence of and views on activities and outcomes related to changes in the scientific, social and/or/political context in which the program operates  
• Evidence of and views on best practices and lessons learned which are applicable to current regulatory initiatives | Achieved            | The environment in which all three program areas are operating is becoming more complex. Program regulations and approaches to reaching key audiences have been updated to reflect evolving contextual factors. All program areas have extended the reach of their activities by broadening and deepening their networks of stakeholders. The proposed new regulations to modernize the Potable Water Regulations for Common Carriers will replace out of date provisions in current regulations. The use of innovative web-based and social media tools has contributed to expanded program reach. |
| Demonstration of Economy and Efficiency                                      |                                                                            |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Has the program undertaken its activities in the most efficient manner?     | • Variance between planned and actual expenditures, and implications  
• Views on if funds are appropriately targeted  
• Views on whether costs of producing outputs is as low as possible and value is being obtained | Progress Made; Further Work Warranted | Overall program spending has been in line with allocations. Over the past five years, the three program areas have had relatively small surpluses or deficits. The Travel and Migration Health Division’s budget and expenditures have declined slightly for each of the last two years. Budgets and expenditures for both Quarantine Services and the Travelling Public Program have fluctuated slightly during this time. A number of efficiencies have been demonstrated by the various program areas with respect to both program design and delivery. An integrated risk-based approach to the allocation of resources has been taken by the Office of Border Health Services to maximize the impact and efficiency of program delivery. Lessons learned from the development of the Agency’s travel health site helped shape the design of the federal travel.gc.ca site. A standardized approach to the development of Travel Health Notices has improved consistency and clarity. As well, external partnerships have been leveraged resulting in “no cost advertising”. The processes for the certification of Yellow Fever Vaccination Centres have been streamlined. The merger of Quarantine Services and the Travelling Public Program in 2013 is intended to provide more coordinated and consistent services as well as reduce administrative costs. Further efficiencies could be achieved through greater use of technology and increased leveraging of external partnerships to reach key audiences. The use of e-tablets from front-line staff (e.g., inspectors) would cut down on the use of both a paper-based and computer entry for the same information. Further leveraging of private sector partnerships will help expand the program areas’ reach and increase awareness and understanding of travel health risks. |
| Has the program undertaken its activities in the most economical manner?     | • Evidence of and views on activities and outcomes related to changes in the scientific, social and/or/political context in which the program operates  
• Evidence of and views on best practices and lessons learned which are applicable to current regulatory initiatives |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
<table>
<thead>
<tr>
<th>Questions</th>
<th>Indicators</th>
<th>Overall Rating</th>
<th>Summary</th>
</tr>
</thead>
</table>
| Is there appropriate performance measurement in place? If so, is the information being used to inform senior management decision makers? | • Existence of performance measurement framework or strategy  
• Adequate collection of performance information  
• Use of performance information in decision-making | Progress Made; Further Work Warranted | Both the Travel and Migration Health Division and the Office of Border Health Services have logic models. Other performance measurement related efforts are limited or under development. The TMHD has a limited set of performance measures. The OBHS is finalizing a performance measurement strategy. Current data collection is output driven but lacks outcome oriented data. Databases are in place for tracking program activities within the OBHS. This data is used for decision making - to support a risk-based approach to program design and resource allocation. Performance measurement activities could be improved with more consistent approaches to data collection and clearer connections to the respective logic models. |

**Legend - Performance Rating Symbols and Significance:**

- **Achieved**
  - The intended outcomes or goals have been achieved or met.

- **Progress Made; Further Work Warranted**
  - Considerable progress has been made to meet the intended outcomes or goals, but attention is still needed.

- **Little Progress; Priority for Attention**
  - Little progress has been made to meet the intended outcomes or goals and attention is needed on a priority basis.

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### Table 3: Summary of Relevance Ratings

<table>
<thead>
<tr>
<th>Evaluation Issue</th>
<th>High</th>
<th>Partial</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue: Continued need for the program</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What are the health and safety needs of Canadians that contribute to the need for the program?</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>What is the current situation in Canada with respect to travel health and border health security? How has the environment changed over time?</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Issue: Aligned to federal government priorities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What are the federal priorities related to travel health and border health security? Are PHAC’s current activities aligned with federal priorities?</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>What are the PHAC priorities related to travel health and border health security? Are current activities aligned with PHAC priorities?</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Issue: Program consistent with federal roles and responsibilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the federal public health role related to travel health and border health security? Are current activities aligned with the federal public health role?</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Is the federal public health role aligned with the current environment?</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>What is the role of stakeholders (i.e. other government departments, provincial/territorial government, non-governmental organizations, private sector) relating to travel health and border health security?</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Do the federal public health role and current activities duplicate the role of stakeholders? Are there any gaps or overlaps?</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Legend - Relevance Rating Symbols:**

- **High**: There is a demonstrable need for program activities; there is a demonstrated link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program are clear.
- **Partial**: There is a partial need for program activities; there is some direct or indirect link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program are partially clear.
- **Low**: There is no demonstrable need for program activities; there is no clear link between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes; role and responsibilities for the federal government in delivering the program have not clearly been articulated.
### Table 4: Summary of Performance Ratings

<table>
<thead>
<tr>
<th>Evaluation Issue</th>
<th>Achieved</th>
<th>Progress Made; Further Work Warranted</th>
<th>Little Progress; Priority for Attention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue: Achievement of intended outcomes (effectiveness)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To what extent do stakeholders (Canadian public, health professionals, border health partners, industry) have an awareness and understanding of public health risks to the Canadian public associated with travel?</td>
<td>N/A</td>
<td>Progress Made; Further Work Warranted</td>
<td>N/A</td>
</tr>
<tr>
<td>To what extent have collaboration and partnerships with key stakeholders (health professionals, border health partners, and industry) supported prevention of public health risks to the travelling public?</td>
<td>N/A</td>
<td>Progress Made; Further Work Warranted</td>
<td>N/A</td>
</tr>
<tr>
<td>To what extent have protection measures (inspections, audits, investigations, health assessments) supported the identification and mitigation of public health risks to travellers?</td>
<td>Achieved</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>To what extent has there been compliance with the <em>Quarantine Act</em> and Regulations, the <em>Potable Water Regulations for Common Carriers</em>, and the <em>International Health Regulations</em>?</td>
<td>Achieved</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>To what extent has the program adapted to any changing needs in the context of travel health and border health security in Canada?</td>
<td>Achieved</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Issue: Demonstrated economy and efficiency</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the program undertaken its activities in the most efficient manner? Are there alternate, more efficient ways to deliver these activities? How could efficiency of activities be improved? Are there opportunities for enhanced collaboration across internal program areas within PHAC?</td>
<td>N/A</td>
<td>Progress Made; Further Work Warranted</td>
<td>N/A</td>
</tr>
<tr>
<td>Has the program undertaken its activities in the most economical manner?</td>
<td>Achieved</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Is there appropriate performance measurement in place? If so, is the information being used to inform senior management decision makers?</td>
<td>N/A</td>
<td>Progress Made; Further Work Warranted</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Legend - Performance Rating Symbols:**

- **Achieved** The intended outcomes or goals have been achieved or met.
- **Progress Made; Further Work Warranted** Considerable progress has been made to meet the intended outcomes or goals, but attention is still needed.
- **Little Progress; Priority for Attention** Little progress has been made to meet the intended outcomes or goals and attention is needed on a priority basis.
Appendix 3: Evaluation Description

Evaluation Scope

The scope of the evaluation included an assessment of the relevance and performance of the Agency’s travel health and border health securities from April 1, 2009 to August 31, 2014 as completed by the Travel and Migration Health Division (TMHD) and the Office of Border Health Services (OBHS). It included their activities in the areas of prevention, protection and response such as surveillance/situational analysis, dissemination of information, stakeholder outreach and collaboration, education and training, screening of travellers, inspections, sampling and audits on conveyances and ancillary service including necessary follow-up, completing health assessments, investigations of complaints/outbreaks and implementation of relevant International Health Regulations.

Evaluation Issues

The specific evaluation questions used in this evaluation were based on the five core issues prescribed in the Treasury Board of Canada’s Policy on Evaluation (2009). These are noted in the table below. Corresponding to each of the core issues, evaluation questions were tailored to the program and guided the evaluation process.

Table 1: Core Evaluation Issues and Questions

<table>
<thead>
<tr>
<th>Core Issues</th>
<th>Evaluation Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevance</strong></td>
<td></td>
</tr>
<tr>
<td>Issue: Continued Need for Program</td>
<td>Assessment of the extent to which the program continues to address a demonstrable need and is responsive to the needs of Canadians.</td>
</tr>
<tr>
<td></td>
<td>• What are the health and safety needs of Canadians that contribute to the need for the program?</td>
</tr>
<tr>
<td></td>
<td>• What is the current situation in Canada with respect to travel health and border health security? How has the environment changed over time?</td>
</tr>
<tr>
<td><strong>Issue : Alignment with Government Priorities</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assessment of the linkages between program objectives and (i) federal government priorities and (ii) departmental strategic outcomes.</td>
</tr>
<tr>
<td></td>
<td>• What are the federal priorities related to travel health and border health security? Are PHAC’s current activities aligned with federal priorities?</td>
</tr>
<tr>
<td></td>
<td>• What are the PHAC priorities related to travel health and border health security? Are current activities aligned with PHAC priorities?</td>
</tr>
<tr>
<td><strong>Issue : Alignment with Federal Roles and Responsibilities</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assessment of the role and responsibilities for the federal government in delivering the program.</td>
</tr>
<tr>
<td></td>
<td>• What is the federal public health role related to travel health and border health security? Are current activities aligned with the federal public health role?</td>
</tr>
<tr>
<td></td>
<td>• Is the federal public health role aligned with the current environment?</td>
</tr>
<tr>
<td></td>
<td>• What is the role of stakeholders (i.e. other government departments, provincial/territorial government, non-governmental organizations, private sector) relating to travel health and border health security?</td>
</tr>
<tr>
<td></td>
<td>• Do the federal public health role and current activities duplicate the role of stakeholders? Are there any gaps or overlaps?</td>
</tr>
</tbody>
</table>
### Core Issues

**Evaluation Questions**

#### Performance (effectiveness, economy and efficiency)

<table>
<thead>
<tr>
<th>Issue: Achievement of Expected Outcomes (Effectiveness)</th>
<th>Evaluation Questions</th>
</tr>
</thead>
</table>
| Assessment of progress toward expected outcomes (including immediate, intermediate and ultimate outcomes) with reference to performance targets and program reach, program design, including the linkage and contribution of outputs to outcomes. | • To what extent do stakeholders (Canadian public, health professionals, border health partners, industry) have an awareness and understanding of public health risks to the Canadian public associated with travel?  
• To what extent have collaboration and partnerships with key stakeholders (health professionals, border health partners, industry) supported prevention of public health risks to the travelling public?  
• To what extent have protection measures (inspections, audits, investigations, health assessments) supported the identification and mitigation of public health risks to travellers?  
• To what extent has there been compliance with the *Quarantine Act* and Regulations, the *Potable Water Regulations for Common Carriers*, and the *International Health Regulations*?  
• To what extent has the program adapted to any changing needs in the context of travel health and border health security in Canada? |

<table>
<thead>
<tr>
<th>Issue: Demonstration of Economy and Efficiency</th>
<th>Evaluation Questions</th>
</tr>
</thead>
</table>
| Assessment of resource utilization in relation to the production of outputs and progress toward expected outcomes. | • Has the program undertaken its activities in the most efficient manner? Are there alternate, more efficient ways to deliver these activities? How could efficiency of activities be improved? Are there opportunities for enhanced collaboration across internal program areas within PHAC?  
• Has the program undertaken its activities in the most economical manner?  
• Is there appropriate performance measurement in place? If so, is the information being used to inform senior management decision makers? |
Endnotes


Evaluation of the Public Health Agency of Canada’s Travel Health and Border Health Security Activities – 2009-2010 to 2014-2015

July 2015

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