



**URBAN AND REGIONAL  
EMERGENCY DEPARTMENT  
PATIENT EXPERIENCE  
REPORT (2010-2013)**

December 2014



Promoting and improving patient safety and health service quality across Alberta

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**SECTION A: BACKGROUND,  
METHODS, AND RESULTS**



## 1.0 EXECUTIVE SUMMARY

### Overview

In 2010, the HQCA made a significant change to its process for conducting emergency department patient experience surveys. In consultation with Alberta Health Services (AHS), the HQCA shifted to sampling emergency department patients every two weeks beginning in June 2010. This bi-weekly surveying continued until July 2013. The previous HQCA emergency department patient experience surveys were each conducted over a single two-week period: once in 2007 and once in 2009.

The purpose of the change to more frequent sampling in 2010 was to monitor variation and detect changes in emergency department patient experience over time at the provincial aggregate level and at the 13 urban or regional emergency departments, chosen by the HQCA and AHS. This enabled the HQCA to provide emergency department stakeholders (particularly those at the site level) with relevant information that they can use to inform their patient experience, quality of care, and patient safety improvement efforts.

As a result of the change in survey methodology, a valid comparison of the patient experience results for 2010-2013 with the 2007 and 2009 point-in-time results is not possible because of the broader time frame and different sampling frequency employed for this survey.

As in 2007 and 2009, the questionnaire used in the 2010-2013 survey was based on the British Emergency Department Patient Experience Survey tool, which was validated in both Britain and Alberta prior to use. A rigorous survey protocol was followed, resulting in an overall response rate of 44.8 per cent. Response rates for individual sites ranged from 32.8 per cent to 54.4 per cent.

The HQCA's new sampling strategy necessitated the adoption of two different analytical methods to report patient experience data: run charts and control charts. These charts are used to graphically display patient experience data over time as well as to identify instances of non-random variation (which represent operationally meaningful changes) in patient experience. Provincial aggregate and site-specific results are presented together to allow for comparison.

### Context of the patient visit

About four in 10 respondents (42%) reported they went to the emergency department because they perceived it to be the only choice available at the time. Almost five in 10 respondents (48%) visited the emergency department because they believed it was the best place to go to deal with their medical problem.

- Almost 6 in 10 respondents (58%) stated that the medical problem that brought them to the emergency department was for new symptoms, either a *new illness or condition* (33%) or a *new injury or accident* (25%).
- Almost 1 in 4 respondents (24%) said that the medical problem that brought them to the emergency department was related to a chronic illness, either for a worsening of their condition (22%) or for routine care of that condition (2%).
- About 1 in 3 respondents (34%) were advised to go to the emergency department by a healthcare professional, most often by their personal family doctor (13%) or a Health Link nurse (9%).

## Patient experience in the context of site-level volumes, length of stay, and CTAS

The HQCA highlights three factors that have an impact on emergency department patient experience: patient volumes, length of stay (LOS), and patient acuity (CTAS – Canadian Triage and Acuity Scale). In this report, emergency department volumes, average LOS, and CTAS counts are presented monthly via run charts, and are displayed by site.<sup>i</sup> These factors are reported for the entire population of patients presenting to an emergency department, rather than for the sample of patients surveyed on their experience of care. This provides an overall sense of how these three factors change over time and illustrates the relative magnitude of these pressures on emergency departments over time.

Results revealed that patient volumes have consistently increased for most of the 13 sites since June 2010. Conversely, average LOS tends to vary between sites over the study period. This means that at some sites average LOS consistently increased over the study period, while at other sites, average LOS consistently decreased over the study period. Still at other sites, average LOS initially consistently decreased before moving to a consistent increase toward the end of the study period. Most sites exhibit consistent increases in patient volumes in at least one CTAS level;<sup>ii</sup> while many of these sites exhibit volume increases in at least three CTAS levels.<sup>iii</sup> This often includes patients designated by emergency department staff as CTAS 1 or CTAS 2 (the two most urgent assignments) or both. Despite a general trend indicating increasing volumes in some CTAS levels, sites differ regarding which CTAS levels increased and which did not. Overall, results for patient volumes, average LOS, and CTAS counts indicate that the pressures emergency departments are subjected to are diverse.

Emergency departments are also diverse with respect to the variety of programs and initiatives implemented to improve patient care and experience. The HQCA captured this diversity by consulting with emergency department stakeholders at the site, zone, and provincial levels to construct timelines of the implementation of these various initiatives. Timelines at both the provincial aggregate and site levels revealed that patient care and patient experience are often influenced by multiple and sometimes simultaneously occurring events and initiatives. As a result, many events and initiatives are being implemented and administered concurrently, which makes it difficult to accurately assess the effect of any one of them on patient experience.

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<sup>i</sup> This is administrative data, routinely collected by Alberta Health Services (AHS). Administrative data is data collected for “administrative” purposes such as accounting, billing, tracking of diagnoses, etc. Administrative data was not designed to measure the quality of health care; however, secondary use of administrative data can often produce useful measures of quality. The decision to use AHS’ data was made to ensure the HQCA was reporting volumes and LOS that matched AHS’ records.

<sup>ii</sup> Consistent volume increases in at least one CTAS level observed at 11 of 13 sites.

<sup>iii</sup> Consistent volume increases in at least three CTAS levels observed at nine sites.

## Key Findings

### Overall rating of care

Results for the overall (global) rating of care, reported as the percentage of patients who rated their emergency department care as either excellent or very good, were examined over time at the provincial aggregate and site levels. Over the course of the study period, the provincial aggregate data exhibited random variation around a median of 68 per cent of patients who rated their overall care as excellent or very good. There was no evidence of either unsustained or sustained changes at the provincial aggregate level. Similarly, most sites exhibited either random variation or identified some unsustained or temporary changes over the study period. The exception to this was the Sturgeon Community Hospital emergency department, which exhibited a sustained, or lasting, improvement in the percentage of patients who rated their emergency department care as excellent or very good. These results suggest that starting in March 2012, the Sturgeon Community Hospital produced a more positive overall patient experience relative to historical norms.

### Factors influencing the overall rating of care

In addition to the overall rating of care, the HQCA monitored specific factors that have been shown to influence the overall rating of care over time.<sup>iv</sup> A synthesis of the different multivariate analyses that were conducted in the 2007 and 2009 emergency department reports determined that staff care and communication is undoubtedly the most important patient experience factor affecting the overall rating of care. The synthesis also revealed the following order of importance for factors influencing the overall rating of care (most influential to least influential):

1. Staff care and communication
2. Wait time and crowding
3. Pain management
4. Respect
5. Facility cleanliness
6. Wait time communication
7. Privacy
8. Medication communication
9. Discharge communication

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<sup>iv</sup> These factors were shown to influence the overall rating of care through multivariate regression analyses in the 2007 *Emergency Department Patient Experience Survey* report and the *Urban and Regional Emergency Department Patient Experience Report 2009*, and a path analysis in the *Urban and Regional Emergency Department Patient Experience Report 2009*. These reports are available on the HQCA website [<http://hqca.ca/surveys/emergency-department-patient-experience/>].

This report monitors results for the above nine factors over time, by examining both composite variables and individual survey questions.<sup>v</sup> Overall, the provincial aggregate results and most of the site-level results exhibited either random variation or some unsustained or temporary periods of change over the study period. Out of 182 total site-level analyses of these patient experience factors, there were five depicting evidence of a sustained or lasting improvement. Of these five improvements, three sites are represented. These improvements include:

- Improvement in wait time and crowding ratings – Sturgeon Community Hospital and University of Alberta Hospital
- An improvement in facility cleanliness ratings – Queen Elizabeth II Hospital
- An improvement in the percentage of patients who self-reported waiting more than two hours to be examined by a doctor – Sturgeon Community Hospital
- An improvement in the percentage of patients who believed that emergency department staff **did not** do everything they could to help control their pain – Sturgeon Community Hospital

After examining the sites individually, patterns and distinct trends emerged at the zone level.<sup>vi</sup> On average:

- The Calgary sites (Peter Lougheed Centre, Rockyview General Hospital, and Foothills Medical Centre) exhibited slightly higher patient experience scores than sites from the other zones.
- The Edmonton sites (Sturgeon Community Hospital, Royal Alexandra Hospital, Grey Nuns Community Hospital, Misericordia Community Hospital, and University of Alberta Hospital) and Chinook Regional Hospital, Medicine Hat Regional Hospital, and Red Deer Regional Hospital exhibited slightly lower patient experience scores than the Calgary sites.
- The Northern sites (Northern Lights Regional Health Centre and Queen Elizabeth II Hospital) exhibited the lowest patient experience scores.

## Conclusion

The change in the HQCA's emergency department patient experience survey methodology, from point-in-time surveys to bi-weekly surveys over the entire calendar year, enabled the HQCA to provide emergency department stakeholders with more useful information that can be used to improve patient experience, quality of care, and patient safety.

Monitoring site-level data over time was an important step for demonstrating how emergency department patient experience changed (or did not) from 2010 to 2013. However, explaining why

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<sup>v</sup> Composite variables are the average score of responses to all questions related to a specific aspect of patient experience. They provide a summary score for that aspect of patient experience.

<sup>vi</sup> These trends describe patterns that have been discerned from inspecting all of the patient experience results. This is a summary, so there are some discrepancies when specific composite and individual question results are examined. However, overall these distinct trends emerged.

patient experience changed (or did not) proved to be challenging. The HQCA recognizes that emergency departments are diverse in terms of their size, patient population served, and the pressures they experience.<sup>vii</sup> Therefore, this report monitors patient volumes, average LOS, and CTAS counts in addition to patient experience over the study period. It was also recognized that emergency department programs and initiatives have an impact on patient experience. These programs and initiatives vary between sites. Mapping programs and initiatives onto the study timeline revealed that there are many being implemented and administered concurrently, making it difficult to accurately assess the effect of any one of them on patient experience. This underscores the importance of pursuing a systematic and highly structured approach to the implementation and evaluation of emergency department quality improvement programs and initiatives.

Despite many quality improvement efforts, there was little evidence for improvements in emergency department patient experience from June 2010 to July 2013. With the exception of the Sturgeon Community Hospital emergency department (which showed evidence for multiple improvements), patient experience ratings have neither sustained improvements or regressions over the study period.

Conclusions drawn from these patient experience results should acknowledge the effects that increasing volumes and longer average LOS have on the emergency department. Maintaining the same or similar levels of patient experience should be interpreted positively, considering that pressures related to emergency department volumes (and at specific sites, average LOS) have shown increases over the study period.<sup>viii</sup>

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<sup>vii</sup> The HQCA highlights patient volumes, average LOS, and CTAS counts as three examples of emergency department pressures that impact patient experience.

<sup>viii</sup> Volume pressures often include increases in the number of higher acuity patients presenting to the emergency department.

## 2.0 HQCA AND BACKGROUND

The Health Quality Council of Alberta (HQCA) is an independent organization legislated under the *Health Quality Council of Alberta Act*, with a mandate to survey Albertans on their experience and satisfaction with patient safety and health service quality.

The HQCA first completed an emergency department survey and report in 2007, which was the product of a collaboration between the Alberta health regions at the time, the Ministry of Health and Wellness, and other stakeholders, including a working group comprised of emergency department medical professionals, managers, and academics. The survey was repeated in 2009. The 2007 and 2009 emergency department patient experience reports are available on the HQCA website ([www.hqca.ca](http://www.hqca.ca)) and include details regarding rationale for the survey, selection and validation of the survey instrument, and survey and analysis methodology.<sup>ix</sup> The 2010-2013 survey was conducted in collaboration with Alberta Health Services and emergency department staff representing each of the participating sites.

As in the previous surveys, the 2010-2013 survey focused on patient experience of emergency department care in 13 of Alberta's large urban and regional hospital emergency departments. The 13 sites included in the 2010-2013 survey are: Chinook Regional Hospital, Foothills Medical Centre, Grey Nun's Community Hospital, Medicine Hat Regional Hospital, Misericordia Community Hospital, Northern Lights Regional Health Centre, Peter Lougheed Centre, Queen Elizabeth II Hospital, Red Deer Regional Hospital, Sturgeon Community Hospital (not surveyed in 2007 and 2009),<sup>x</sup> Rockyview General Hospital, Royal Alexandra Hospital, and University of Alberta Hospital.

### 2.1 An ongoing focus on emergency department care

In undertaking the 2007 and 2009 surveys, the HQCA recognized the following points that are equally applicable to the 2010-2013 study:

- Many of the challenges facing emergency departments in Alberta, including crowding issues, are health system issues where both causes of problems and their solutions extend beyond the emergency department itself. In this context, improving the experience of patients, and their quality of care, needs to include strategies at broader hospital, AHS zone, and health system levels.
- Emergency department facilities are diverse in terms of the services they provide to the community, their size and volume, patient population, and the causes and degree of pressures they experience. However, it is recognized that facilities may not be able to influence all of the factors that impact their performance from a patient experience perspective.

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<sup>ix</sup> These reports can be retrieved from the HQCA website, at <http://hqca.ca/surveys/emergency-department-patient-experience/>.

<sup>x</sup> The HQCA assessed the impact of adding an additional site in 2010 (Sturgeon Community Hospital) and determined that inclusion of the additional site had no significant impact on the pooled (provincial aggregate) data.

- Results at the provincial aggregate level provide an important overview of emergency department patient experience in the province's urban and regional emergency departments.

Since the release of the 2009 report, the HQCA has recognized that provincial aggregate results also have their limitations. Primarily, provincial aggregate results assume that patients presenting to different sites all enter the same provincial emergency department care delivery system, and this is not the case. As mentioned above, emergency department facilities are extremely diverse; this extends to the programs and initiatives they implement as well as to how patients rate the care they receive. By aggregating results from all sites into a provincial patient experience score, important between-site differences are masked along with valuable actionable information at the site level. Recognizing that patients presenting to different sites do not all enter an identical care delivery system led the HQCA to focus on patient experience at the site level.

## **2.2 Purpose of the 2010-2013 study**

The purpose of the 2010-2013 survey is to monitor variation and detect changes in emergency department patient experience over time at the provincial aggregate level and at the 13 sites with the greatest crowding pressures, longest wait times, and historically the poorest patient experience. Additionally, this report aims to:

- Provide actionable information about patient experience over time that will assist care providers at both the provincial and site levels to improve the quality of emergency department patient care.
- Present site-specific patient experience results in conjunction with results from other sites to encourage comparison for the purposes of shared learning.<sup>xi</sup>
- Monitor variation and detect changes in patient experience over time, relative to historical norms and in response to changes applied to the delivery of emergency department care.

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<sup>xi</sup> The HQCA urges caution given the potential for differences between sites that may influence patient experience. However, the HQCA acknowledges that comparison has the potential to aid in the identification of weak or strong aspects of emergency department care delivery. This may encourage discussion regarding practices employed by the higher-performing sites and facilitate learning from best practices.

In 2010, the HQCA made an important change to the process of conducting emergency department surveys compared with 2007 and 2009. Beginning in June 2010, the HQCA shifted to sampling emergency department patients every two weeks (presented monthly in this report) to monitor patient experience results over the entire calendar year. Monitoring results over the calendar year allows for the identification of seasonal variability, which was impossible with the point-in-time approach used in the 2007 and 2009 surveys.

**This change means that comparison of the patient experience results for 2010-2013 with the 2007 and 2009 point-in-time results is strongly discouraged; conclusions may be misleading and inappropriate because of the broader time frame and different sampling frequency employed for the 2010-2013 survey.**

## 3.0 STUDY METHODOLOGY

### 3.1 Survey methodology

The 2007 working group selected and adapted the British Emergency Department Patient Experience Survey tool for use in Alberta. This rigorously developed and validated survey tool provided the core set of questions for the HQCA's survey, and additional items were developed to capture the unique Alberta context. These new items and selected original items underwent both cognitive and psychometric testing, and field testing in Alberta emergency department patient populations prior to use.

The HQCA selected and engaged the services of Prairie Research Associates Incorporated (PRA), a national research firm, to conduct the 2007, 2009, and 2010-2013 emergency department patient experience surveys. During the 2010-2013 survey, PRA was provided with representative samples of patients who had visited each of the 13 sites every two weeks. Patients were selected randomly from the entire population of patients seen in an emergency department during the sample period.<sup>xii</sup> Sample sizes were proportionately larger for smaller facilities, requiring the calculation of cluster sample weights to adjust for the higher probability of patient selection in low volume sites.<sup>xiii</sup> Samples generated for this report exclude children aged 0 to 15,<sup>xiv</sup> patients who left before being seen or treated, and patients who died in the context of their emergency department stay.<sup>xv</sup>

A rigorous four stage survey protocol was used to maximize the response rate and quality of the final sample. Using this protocol, the HQCA was able to achieve an overall response rate of 44.8 per cent (24,181 completed out of 53,963 surveys distributed). Response rates for individual sites ranged from 32.8 per cent to 54.4 per cent. More information regarding this protocol and its outcomes, overall and at the site level, can be found in Appendix I.

In general, the 13 large urban or regional hospital emergency departments surveyed are routinely faced with some of the most severe challenges in the province, including the greatest crowding, longest wait times, and historically the poorest patient experience.

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<sup>xii</sup> Site-level sample sizes were based on predicted response rates (from previous surveys) and were set at the level required to report reliable zone-level results on a quarterly basis, and site-level results annually.

<sup>xiii</sup> Cluster weights are applied to the provincial aggregate results but not site-level results, because samples were selected to be representative at the site level.

<sup>xiv</sup> Parents of children 0 to 12 were surveyed for two sites (Alberta Children's Hospital and Stollery Children's Hospital); however results are not included in this report for this fundamentally different population. A separate pediatric report will be produced with this data following the release of this adult report.

<sup>xv</sup> Patients without contact information, and a small number of "privacy" sensitive cases such as domestic abuse, were also excluded from the sample and were randomly replaced with eligible cases.

While the primary goal of this study is to produce actionable information at the site level, results are also analyzed at a provincial aggregate level. This aggregate result should not be interpreted as an overall provincial result because the survey excludes rural emergency departments.

For more information regarding survey methodology, see Appendix I or the 2007 *Emergency Department Patient Experience Survey* technical report (<http://hqca.ca/surveys/emergency-department-patient-experience/emergency-department-patient-experience-survey/>).

### 3.2 Measurement and analytical methodology

The HQCA transitioned from collecting data cross-sectionally (at a single point-in-time) to sampling every two weeks in 2010. This decision was made in order to better monitor variation, detect meaningful changes<sup>xvi</sup> in emergency department patient experience over time (i.e., either improving or diminishing patient experience), and ultimately provide emergency department stakeholders with data to inform the improvement of patient experience, quality of care, and patient safety.

This new data collection method necessitated the adoption of different analytical methods to report this data. This report uses both descriptive statistics and statistical process control (SPC) methods to monitor variation and detect changes in emergency department patient experience over time.

The run chart is a widely accepted tool for graphically displaying simple descriptive statistics, such as means (averages), percentages (for categorical or attribute data), and standard deviations, over time. A key component of run chart evaluation involves identifying instances of non-random variation (which represent changes) in patient experience, and then determining whether these changes represent improving or declining patient experience.

Using control charts (the most common application of SPC methods) instead of run charts has an added benefit; in addition to observing variation and identifying changes in quality measures over time, control charts use historical data to determine whether the process is functioning within normally expected limits. These limits define the range of expected random variation and are identified by upper and lower control limits. The upper control limit (UCL) is the maximum acceptable variation above the centreline (an overall average) for a process that is in a state of control, and the lower control limit (LCL) is the maximum acceptable variation below the centreline for a process that is in control.<sup>1</sup> For more information on measurement and analytical methodology see Appendix II.

In this report, run charts are used to display the provincial aggregate patient experience results, but not the site-level results. In contrast, control charts are used to track emergency department performance

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<sup>xvi</sup> Used in this context, “meaningful changes” refers to instances of non-random variability in the data over time. These instances of non-random variability are termed “meaningful” because they represent periods of change that can be attributed to an unexpected cause (something that is not inherent to the system and would not normally be expected to influence results).

with respect to patient experience at the site level, but not at the provincial aggregate level. See Appendix III for more information about the reasons for this discrepancy.

For all charts, the plotted results represent pooled patient-level results, collected for a specific month. Although run charts and control charts are similar in many ways, an important difference between the two is in the rules they employ for detecting non-random variation or meaningful changes in the data. The HQCA has adopted the following rules to identify changes in run charts:<sup>2,xvii(3)</sup>

1. *A shift*: Six or more consecutive points above or below the median.
2. *A trend*: Five or more consecutive points increasing or decreasing.
3. *Too many or too few runs*: A run is a series of consecutive points that fall on one side of the median. This rule is based on a complex probability-based test for detecting non-random patterns of data; essentially it tests to see if data clusters above or below the median too often to conclude the data is behaving randomly. Refer to Appendix IV for more information on this rule and for a table depicting the minimum and maximum number of runs required to decide if run chart data is varying randomly or not.
4. *An astronomical data point*: A data point that is obviously or blatantly different than the rest of the data; sometimes referred to as an outlier.

In contrast, the HQCA uses six rules to detect non-random variability, or meaningful change, in control charts (adapted from several established control chart guidelines):<sup>2,4,5</sup>

1. A single point outside of the control limits.
2. A run of eight or more consecutive points above or below the centreline.
3. Six consecutive points increasing or decreasing.<sup>xviii(2)</sup>
4. Two out of three consecutive points near, but not outside (outer one-third) the control limits.
5. Fifteen consecutive points close to the centreline (inner one-third).
6. An unusual or non-random pattern of points.<sup>xix(2,6,7)</sup>

It is important to note that change in emergency department patient experience is directional and can be either positive or negative relative to historical norms. However, not every positive change should be deemed an improvement, nor should every negative change be deemed a regression. To differentiate

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<sup>xvii</sup> Rules one and three for run charts are violations of random patterns and are based on a probability of less than a five per cent chance ( $p < .05$ ) of occurring just by chance when there is no real change.

<sup>xviii</sup> Because the control charts in this report have variable control limits (due to varying numbers of patients surveyed per month), rule three for control charts should be interpreted with caution. According to strict theory it is not correct to use this rule; however, in practice this rule is quite useful for identifying meaningful change.

<sup>xix</sup> This rule seems to be somewhat subjective, but is included because special circumstances may warrant the use of other tests for non-random variation, such as tests from Nelson (1984) or the Western Electric Handbook (1956).

improvements from changes, the HQCA has adopted the following operational definition of improvement:<sup>8</sup>

1. Alter how the work is done...Improvement is the result of some design or redesign of the system.
2. Produce visible, positive differences in results relative to historical norms (defined by control limits).
3. Produce *lasting* or *sustained* impact.
4. The impact must be on measures *that matter* to the organization.

See the illustration in Appendix III for a visual depiction of improvement, according to this operational definition. For more information regarding interpretation and evaluation guidelines for run charts and control charts, or to view visual illustrations of example charts and their characteristics, refer to Appendix III.

**SECTION B: SURVEY  
SAMPLE DESCRIPTIVE  
INFORMATION**



## 7.0 PROFILE OF RESPONDENTS

Patients' visits to emergency departments may be influenced by a number of factors. Some of these factors include patient characteristics and the context of the patient's need (or lack of need) for emergency medical treatment. This section outlines a profile of survey respondents, including a breakdown of demographic characteristics, health characteristics, and healthcare use prior to respondents' emergency department visit. This profile of respondents includes surveyed patients presenting to all of the 13 selected urban and regional emergency department sites over the entire study period. See Appendix VI for a breakdown of the following descriptive statistics at the site level.

### 7.1 Demographic characteristics

Table 13, displays the demographic characteristics of all survey respondents during the entire study period (June 2010 to July 2013):

- Almost 6 out of 10 respondents (56%) were female.
- Approximately 1 in 2 respondents were under 50 years of age; the average respondent was 51 years old.
- Almost 1 in 2 respondents (45%) had a high school education or less and slightly more than 1 in 4 respondents (27%) reported having completed a post-secondary degree (college or university, not including post-graduate degrees).
- The vast majority, slightly more than 9 in 10 respondents (91%), reported English as their primary language.
- The majority of respondents, almost 7 in 10 (69%), owned their residence, while almost 3 in 10 (27%) rented, and a few (about 1 in 20, or 5%) reported living in a residential facility, senior's lodge, nursing home, or long-term care facility.
- Slightly more than 8 in 10 respondents (83%) were Caucasian.

**Table 13:** Respondent characteristics

<i>Male or Female (administrative data)</i>	
<i>Age (administrative data)</i>	
<i>Q69: What is the highest level of school that you have completed?</i>	
<i>Q71: What language do you mainly speak at home?</i>	
<i>Q73: Where do you presently live?</i>	
<i>Q70: Would you say you are...?</i>	
<b>June 2010-July 2013 (n=19,444)</b>	
<b>Gender</b>	
Female	56%
Male	44%
<b>Age (years)</b>	
16 to 24	11%
25 to 34	15%
35 to 44	14%
45 to 64	33%
65 to 74	12%
over 75	15%
<b>Mean Age (years)</b>	51.1
<b>Highest level of education</b>	
Less than high school	21%
Completed high school	24%
Technical school	12%
Some university or college	12%
Completed college degree	14%
Complete university degree	13%
Post-graduate degree	4%
<b>Language</b>	
English	91%
Other	9%
<b>Residence</b>	
Own residence	69%
Rents residence	27%
Residential facility/senior's lodge	4%
Nursing home/long-term care home	1%
<b>Ethnicity</b>	
White/Caucasian	83%
Other	17%
<i>Note: These results are not weighted and reflect respondents only</i>	

## 7.2 Respondents compared to those not surveyed or not included

As shown in the following tables, characteristics of patients who completed a survey are slightly different than those who either did not complete a survey or who were not included in the survey sample (no survey);<sup>lxix</sup> as described by administrative data elements for gender, age, CTAS score,<sup>lxx</sup> and discharge disposition for the entire sample frame of patients. Table 14 shows that the proportion of females in the ‘survey’ group was greater than that of the ‘no survey’ group. While the chi-squared test shows that this difference (5%) is statistically significant, the strength of this association is very weak ( $\Phi < 0.15$ ).

**Table 14:** Gender by sample category

<b>Survey compared to no survey over entire study period June 2010-July 2013 (administrative data)</b>		
<b>Gender</b>	<b>June 2010-July 2013</b>	
	<b>No Survey</b>	<b>Survey</b>
Female	51%	56%
Male	49%	44%
Count	2,170,234	19,444
	2,189,678	
p value	Chi-Squared = 0.000 $\Phi$ = 0.0095	
<i>Note: ‘No survey’ category includes non-respondents as well as those not included in the sample Data is not weighted</i>		

<sup>lxix</sup> The ‘no survey’ category includes those who were sent a survey but did not respond, as well as those who were not included in the survey sample (i.e., were not sent a survey). Individuals were not included in the survey sample either because they were not randomly selected to participate or they were excluded. Individuals could be excluded for a number of reasons. See Section 3.1 for exclusion details.

<sup>lxx</sup> Canadian Triage Assessment Score (CTAS): triage priority with 1 being the most urgent and 5 being the least urgent.

**Table 15: Mean age by sample category**

<b>Survey compared to no survey over entire study period June 2010-July 2013 (administrative data)</b>		
<b>Value</b>	<b>June 2010-July 2013</b>	
	<b>No Survey</b>	<b>Survey</b>
	46 years	51 years
Mean Age	46 years	
p value	t test = 0.000	
<i>Note: 'No survey' category includes non-respondents as well as those not included in the sample Data is not weighted</i>		

**Table 16: Age group by sample category**

<b>Survey compared to no survey over entire study period June 2010-July 2013 (administrative data)</b>		
<b>Age Group</b>	<b>June 2010-July 2013</b>	
	<b>No Survey</b>	<b>Survey</b>
16 to 24	17%	11%
25 to 34	21%	15%
35 to 44	16%	14%
45 to 64	27%	33%
65 to 74	8%	12%
over 75	11%	15%
Count	2,170,235	19,444
	2,189,679	
p value	Chi-squared = 0.000 Cramer's V = 0.0266	
<i>Note: 'No Survey' category includes non-respondents as well as those not included in the sample Data is not weighted</i>		

The proportion of older individuals is greater for survey respondents compared to those not surveyed or not included in the survey sample. As shown in Table 15 (Mean age by sample category) and Table 16 (Age group by sample category), younger patients appear less likely to respond, whereas older patients appear more likely to respond (very weak association; Cramer's V < 0.15). Those who completed a survey were, on average, five years older than those not surveyed or not included in the survey sample. This difference in average age, between those who were surveyed and those who were not surveyed or not included, is significant. Reduced participation of younger patients is often observed in healthcare surveys. When interpreting the results, readers should be aware that older patients are slightly over-represented relative to the entire population.

**Table 17: CTAS score by sample category**

<b>Survey compared to no survey over entire study period June 2010-July 2013 (administrative data)</b>		
<b>CTAS score</b>	<b>June 2010-July 2013</b>	
	<b>No Survey</b>	<b>Survey</b>
CTAS 1	1%	0.3%
CTAS 2	18%	17%
CTAS 3	46%	48%
CTAS 4	29%	30%
CTAS 5	6%	5%
Count	2,154,174	19,316
	2,173,490	
p value	Chi-squared = 0.000 Cramer's V = 0.0061	
<i>Note: 'No Survey' category includes non-respondents as well as those not included in the sample Data is not weighted</i>		

Looking at CTAS scores in Table 17, although the chi-squared test suggests that there is a significant difference in CTAS proportions between survey respondents and those not surveyed or not included in the survey sample, the difference appears to be negligible. This is supported by a Cramer's V of 0.0061, indicating a very weak association between CTAS scores and whether an individual was a respondent or not.

**Table 18:** Discharge status by sample category

<b>Survey compared to no survey over entire study period June 2010-July 2013 (administrative data)</b>		
<b>Discharge Disposition</b>	<b>June 2010-July 2013</b>	
	<b>No Survey</b>	<b>Survey</b>
Not Admitted	83%	83%
Admitted	17%	17%
Count	2,045,558	19,210
	2,064,768	
p value	Chi-squared = 0.219    Phi = 0.0009	
<i>Note: 'No Survey' category includes non-respondents as well as those not included in the sample Data is not weighted</i>		

Considering discharge disposition (Table 18), there is no significant difference in proportions of admitted patients between survey respondents and those not surveyed or not included in the survey sample (chi-squared = 0.219).<sup>lxxi</sup>

This comparison suggests that the survey sample includes slightly more females and patients of an older age<sup>lxxii</sup> than the remaining population not surveyed. Results have not been weighted or standardized according to population age and gender proportions, as results may be impacted by a number of additional factors not available in administrative data. In considering univariate results, including run and control charts, readers should be aware that females and older patients are slightly over-represented relative to the entire population. Discharge disposition and CTAS are not significantly different between the survey sample and the remainder of the population.

### 7.3 Self-reported health characteristics

It has been shown that certain patient characteristics, such as health status, can impact patient experience. Additionally, the health status of emergency department patients can impact comparability between different sites and illustrates the characteristics that should be considered when making fair comparisons between sites that might have different patient populations.<sup>lxxiii</sup>

<sup>lxxi</sup> This is supported by both the Phi and Cramer's V statistics. Both Phi and Cramer's V are 0.0009, indicating an extremely weak (essentially no relationship) association between discharge disposition and whether or not an individual was a respondent. Phi is reported because it is preferred when both variables are dichotomous.

<sup>lxxii</sup> Similar findings are frequently reported in the literature.

<sup>lxxiii</sup> See Appendix VI for site-level results of self-reported health characteristics.

Respondents were asked to rate their health during the four weeks preceding their emergency department visit and to report on any disabilities or home care needs they may have had (see Table 19).

- Overall, about 2 in 3 respondents (67%) reported that their health was at least *good* in the past four weeks, including slightly more than 1 in 10 respondents (13%) indicating it was *excellent*.
- Conversely, slightly more than 1 in 10 respondents (11%) reported that their health was *poor* or *very poor* in the past four weeks.

The EQ-5D instrument<sup>lxxiv</sup> was first added to the questionnaire in 2009 and has been retained in subsequent years, including in the 2010-2013 survey. Item specific results for the entire study period, June 2010 to July 2013, are shown in the bottom half of Table 19. In the questionnaire, each scale is comprised of three separate items indicating if patients had no problem, a moderate problem, or an extreme problem with a specific aspect of their health state at the time the survey was completed (see questionnaire in Appendix VII). This instrument is used extensively to measure health related quality of life and also provides a summary measure of health utility. EQ-5D is a more definitive measure of health status than self-rated health status.

- About 3 in 10 respondents (29%) reported having a problem (either moderate or extreme) with mobility at the time the survey was completed.
- Almost 2 in 10 respondents (16%) reported having a problem (either moderate or extreme) with self-care at the time the survey was completed.
- Slightly more than 4 in 10 respondents (42%) reported having a problem (either moderate or extreme) with performing their usual activities at the time the survey was completed.
- Slightly more than 1 in 2 respondents (52%) reported having a problem (either moderate or extreme) with pain or discomfort at the time the survey was completed.
- Almost 1 in 3 respondents (32%) reported having a problem (either moderate or extreme) with anxiety or depression at the time the survey was completed.

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<sup>lxxiv</sup> The EQ-5D is a patient-reported outcome measure (PROM) that captures five dimensions of health-related quality of life: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. See the *Alberta Provincial Norms for EQ-5D-3L* report on the HQCA website (<http://hqca.ca/studies-and-reviews/health-outcomes-measurement/>).

**Table 19:** Self-reported health characteristics

<b>Q63: Overall, how would you rate your health during the past 4 weeks?</b>			
<b>Q58: EQ-5D Mobility</b>			
<b>Q59: EQ-5D Self care</b>			
<b>Q60: EQ-5D Usual activities</b>			
<b>Q61: EQ-5D Pain or discomfort</b>			
<b>Q62: EQ-5D Anxiety or depression</b>			
		<b>June 2010-July 2013 (n = 18,946)</b>	
<b>Health during past four weeks</b>			
Excellent	13%		
Very good	24%		
Good	30%		
Fair	23%		
Poor	9%		
Very poor	2%		
<b>EQ-5D Health related quality of life (collapsed) for June 2010-July 2013</b>			
<b>Scale</b>	<b>No problem</b>	<b>Moderate problem</b>	<b>Extreme problem</b>
Mobility (n=18,747)	70%	28%	1%
Self-care (n=18,775)	83%	14%	2%
Usual activities (n=18,726)	58%	33%	9%
Pain or discomfort (n=18,682)	48%	46%	6%
Anxiety or depression (n=18,550)	69%	28%	4%
<i>Note: Data is weighted for cluster sample at site level</i>			

## 7.4 Prior use of personal family doctor or emergency department services

Respondents were asked to provide information about their use of selected healthcare services, including their personal family doctor and emergency department services, in the past 12 months.

Almost nine in 10 respondents (88%) reported that they currently have a personal family doctor or specialist whom they see for most of their healthcare needs. Among those respondents with a personal family doctor or specialist, almost all (98%) reported visiting them at least once in the past 12 months, including more than four in 10 (46%) who visited more often (five or more visits in the past 12 months). Slightly more than five in 10 respondents (53%) have visited the emergency department more than once in the past 12 months, and one in 10 (10%) have visited five or more times. Table 20 provides a breakdown of the responses to these questions.

**Table 20:** Visits to personal family doctor or emergency department services

<b>Q64: Do you currently have a personal family doctor or specialist whom you see for most of your health care needs?</b>	
<b>Q65: In the past 12 months, approximately how many times in total have you visited your personal family doctor or your specialist for your own care?</b>	
<b>Q66: In the past 12 months, approximately how many times have you visited an emergency department for your own care?</b>	
	<b>June 2010-July 2013</b>
<b>Has a personal family doctor</b>	<b>(n=19,075)</b>
Yes	88%
<b>In the past twelve months, how many times have you visited...</b>	
<b>Your personal family doctor*</b>	<b>(n=16,672)</b>
None	3%
1 time	10%
2 to 4 times	42%
5 to 10 times	29%
More than 10 times	17%
<b>An emergency department</b>	
	<b>(n=18,847)</b>
1 time	47%
2 to 4 times	43%
5 to 10 times	8%
More than 10 times	2%
<i>Note: Data is weighted for cluster sample at site level</i>	
<i>* Respondents who indicate that they do not have a personal family doctor (Q64) were not asked this question</i>	

## 8.0 THE EMERGENCY DEPARTMENT VISIT AND RELATED HEALTH ISSUES

This section examines reasons for survey respondents' visits to the emergency department. It also includes information about their decision to go to the emergency department, their means of getting there, and the urgency of their healthcare problem.

### 8.1 Decision to go to the emergency department

As Table 21 indicates, respondents' decisions to go to the emergency department were influenced by a variety of factors:

- Slightly less than 4 in 10 respondents (36%) reported that a family member or friend advised them to go to the emergency department.
- Similarly, slightly less than 4 in 10 respondents (36%) decided on their own to present to the emergency department.<sup>lxxv</sup>
- About 1 in 3 respondents were advised to go to the emergency department by a healthcare professional (personal family doctor, Health Link nurse, doctor at a walk-in clinic, or specialist doctor), most often by their personal family doctor (13%) or a Health Link nurse (9%).

**Table 21:** Who advised respondent to go to emergency department

<b>Q1: Please identify all those who advised you to go to the emergency department.</b>	
	<b>June 2010-July 2013 (n=19,038)</b>
Friend or family member	36%
Decided on my own	36%
Personal family doctor	13%
Other	13%
Health Link phone-line nurse	9%
Doctor at walk-in clinic	7%
Specialist doctor	5%
<i>Note: Data is weighted for cluster sample at site level Respondents could choose more than one answer, so the total sum can be more than 100 per cent</i>	

While the decision to go to the emergency department was often made in consultation with others, many respondents chose to go to the emergency department instead of somewhere else because they

<sup>lxxv</sup> Responses are not mutually exclusive; it is possible that some of those who say they decided on their own also indicated that others influenced them.

felt they had no other option. According to Table 22, the most common reasons for choosing to go to the emergency department were:

- The emergency department was perceived to be the only choice available at the time for just over 4 in 10 respondents (42%).
- Almost 5 in 10 respondents (48%) believed the emergency department was the best place to go given their medical problem.
- Almost 3 in 10 respondents (26%) reported they were told to go to the emergency department rather than somewhere else.
- Just over 1 in 10 respondents (12%) reported the emergency department was the most convenient place to go to seek health care.

Many respondents indicated that more than one of these reasons was relevant in their decision; however the vast majority believed they had no other option because the emergency department was the only medical service available, their medical condition dictated it, or they were told to go there.

**Table 22:** Why patients chose the emergency department

<b>Q2: Why did you choose to go to the emergency department, instead of somewhere else such as a doctor's office?</b>	
<b>Reason</b>	<b>June 2010-July 2013 (n=19,165)</b>
Emergency department was only choice available at time	42%
Emergency department was the best place for my medical problem	48%
Told to go to the emergency department rather than somewhere else	26%
Emergency department was the most convenient place to go	12%
<i>Note: Data is weighted for cluster sample at site level Respondents could choose more than one answer, so the total sum can be more than 100 per cent</i>	

## 8.2 Getting to the emergency department

Typically, respondents report that they arrived at the emergency department by car, after a trip that lasted 30 minutes or less. As shown in Table 23:

- Almost 7 in 10 respondents (69%) traveled to the emergency department by car.
- Slightly more than 8 in 10 respondents (83%) traveled to the emergency department in 30 minutes or less.

**Table 23:** Travelling to the emergency department

<b>Q4: How did you travel to the emergency department?</b>	
<b>Q5: When you went to the emergency department, how long did it take you to get there?</b>	
	<b>June 2010-July 2013 (n=19,234)</b>
<b>Mode of transportation</b>	
Car	69%
Ambulance	22%
Taxi	4%
Foot	2%
Bus/train	2%
Other	1%
<b>Time to get to emergency department</b>	
Up to 30 minutes	83%
More than 30 minutes, but less than 1 hour	10%
More than 1 hour	7%
<i>Note: Data is weighted for cluster sample at site level Sample size (n) is reported for mode of transportation (Q4)</i>	

### 8.3 Urgency of healthcare problem

Respondents were asked to provide their own assessment of the seriousness of the health problem that brought them to the emergency department.<sup>lxxvi</sup> Table 24 shows that:

- Almost 3 in 10 respondents (27%) believed that the health problem for which they visited the emergency department was *life threatening* or possibly *life threatening*.
- About 3 in 10 respondents (31%) stated that their visit was urgent in nature, that is, they believed there was a risk of permanent damage.
- Just over 4 in 10 respondents (42%) reported that their visit was *somewhat urgent* (needed to be seen today) or *not urgent*.

**Table 24:** Self-rated urgency

<b>Q3: Would you have described your health problem as...?</b>	
<b>Urgency Rating</b>	<b>June 2010-July 2013 (n=19,072)</b>
Life threatening	6%
Possibly life threatening	21%
Urgent	31%
Somewhat urgent	37%
Not urgent	5%

*Note: Data is weighted for cluster sample at site level*

Triage priority is assessed by emergency department staff for patients in most emergency department facilities using the Canadian Triage and Acuity Scale (CTAS). CTAS scores are reported in Table 25.

- About 2 in 10 respondents (19.4%) were identified as CTAS 1 or 2, the two most urgent acuity designations.
- Almost 1 in 2 respondents (48%) were identified as CTAS 3.
- Almost 1 in 3 respondents (32%) were identified as CTAS 4 or 5, the two least urgent acuity designations.

<sup>lxxvi</sup> The self-reported urgency question (Q3) was designed to provide a patient reported “proxy” for CTAS urgency, which is the Canadian Emergency Department Triage and Acuity Scale developed by the Canadian Association of Emergency Physicians (CAEP).

**Table 25: CTAS (triage) score**

<i>From administrative data</i>	
<b>CTAS Level</b>	<b>June 2010-July 2013 (n=19,316)</b>
CTAS 1	0.4%
CTAS 2	19%
CTAS 3	48%
CTAS 4	28%
CTAS 5	4%
<i>Note: Data is weighted for cluster sample at site level In the CTAS score, 1 is most urgent, and 5 is least urgent</i>	

Comparing self-rated urgency with CTAS scores allows limited evaluation of how accurately patients may have viewed the urgency of their medical problem compared to the CTAS score they were assigned by emergency department staff during triage. The response scale used for self-rated urgency (question 3) was designed to approximate the meaning of the CTAS score. In Table 26, CTAS has been subtracted from self-rated urgency, hence a value of (-2) indicates that CTAS urgency was two degrees less urgent than self-rated urgency was. Likewise, a value of (+2) indicates that CTAS urgency is two degrees higher priority (more urgent) than self-rated urgency.

**Table 26:** Degree of difference between self-rated urgency (Q3) and administrative CTAS

<i>CTAS subtracted from Q3 for each respondent</i>		
<b>(Q3) Relative Difference</b>	<b>Q3 (-) CTAS</b>	<b>June 2010-July 2013 (n=18,949)</b>
CTAS is less Urgent                   ↑	-4	0.1%
	-3	1%
	-2	7%
	-1	23%
Identical                                   >	<b>0</b>	37%
CTAS is more Urgent                   ↓	1	26%
	2	6%
	3	0.4%
	4	0%
Kappa (un-weighted) <sup>lxxvii(11)</sup>		0.0953
<i>Note: Data is weighted for cluster sample at site level            Kappa statistic is un-weighted Kappa            Kappa is calculated for CTAS score versus self-rated urgency (Q3) within patient</i>		

In general there is poor correspondence between CTAS and self-rated urgency, with only 37 per cent of cases agreeing completely. The Kappa statistic supports this conclusion; an un-weighted Kappa of 0.0953 suggests there is only slight correspondence between CTAS and self-rated urgency. Interestingly, similar proportions of patients, about one in four, underestimate (26%) or overestimate (23%) the acuity of their condition by one degree.

Table 27 focuses specifically on patients who are classified as CTAS 1 or 2 (the two most urgent categories) at triage:

- Almost 8 in 10 respondents (77%) rate their acuity in the three most urgent categories (life threatening, possibly life threatening, or urgent).
- More importantly, slightly more than 2 in 10 respondents (23%) rate their acuity as only somewhat urgent or not urgent, substantially underestimating the urgency of their health problem.

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<sup>lxxvii</sup> Kappa is a measure of inter-rater reliability; in this case the triage nurse versus the patient. Although the scales are different, self-reported urgency was intended to serve as a “proxy” for CTAS.

**Table 27:** Self-rated urgency (Q3) for CTAS 1 or 2 respondents

Self-rated urgency	June 2010-July 2013 (n=3,361)
Life-threatening/or possibly life threatening	48%
Urgent, risk of permanent damage	29%
Somewhat urgent, needed to be seen today	21%
Not urgent, but I wanted to be seen today	2%

## 8.4 Reasons for the emergency department visit

Respondents were asked to indicate if the health problem that brought them to the emergency department was the result of a new injury or illness, or related to previous problems. Table 28 shows the following with respect to reasons for patients' visits:

- More than half of the respondents (58%) stated that the medical problem that brought them to the emergency department was unrelated to a previous illness or injury; it was either a new illness or condition (33%) or a new injury or accident (25%).
- Almost 4 in 10 respondents (39%) said that the medical problem that brought them to the emergency department was due to a previous health problem. This included: worsening of a pre-existing illness or condition (22%), complications or problems following recent medical care (13%), routine care of a pre-existing illness or condition (2%), or follow-up care (2%).

**Table 28:** The reason for visiting an emergency department

<b>Q6: Thinking about the medical problem that brought you to the emergency department, would you say that your problem was...</b>	
	June 2010-July 2013 (n=19,043)
<b>New illness or injury</b>	
New illness/condition unrelated to previous illness/condition	33%
New injury/accident unrelated to previous injury/accident	25%
<b>Related to previous illness or injury</b>	
Worsening of pre-existing chronic illness/condition	22%
Complications or problems following recent medical care	13%
Routine care of a pre-existing chronic illness/condition	2%
Told to return to the emergency department for follow-up care	2%
Other	3%

*Note: Data is weighted for cluster sample at site level*

## 9.0 PATIENTS WHO CONSIDERED LEAVING BEFORE TREATMENT

Patients leaving before treatment can be an important issue for emergency departments. Included are patients that may leave prior to a diagnosis or prior to receiving recommended treatment. These patients may be putting themselves at risk of potentially suffering adverse events (including death) by leaving before receiving treatment for their health problem. As previous results have demonstrated, patients' assessment of urgency often differs from the acuity score (CTAS) assigned to them by emergency department staff. Although patients who left before treatment were excluded from the survey, to better understand this issue, question 13 asked whether the respondent considered leaving before they had been seen.

Table 29 shows whether respondents considered leaving, stratified by discharge status and CTAS level. In this survey sample, there are a number of patients who were either admitted or were classified as CTAS 1 or 2 (the most urgent triage acuity designations), and considered leaving before they had been seen. For example:

- Slightly more than 1 in 10 respondents (11%), who were ultimately admitted, either definitely considered leaving (5%) or considered leaving to some extent (6%).
- About 1 in 20 respondents (6%) who were classified as CTAS 1 (most urgent) considered leaving. More than 1 in 10 respondents (14%) who were classified as CTAS 2 (second most urgent) considered leaving. Almost 1 in 4 respondents (24%) who were classified as CTAS 3 considered leaving.

The results indicate that respondents who were not admitted were significantly more likely to consider leaving before being seen or treated compared to respondents who were admitted; however, this is a very weak association (Cramer's  $V < 0.15$ ). Table 29 also indicates that respondents who were classified in the lower-urgency CTAS levels (i.e., CTAS 4 or 5) were significantly more likely to consider leaving before being seen or treated compared to respondents classified as more urgent with respect to acuity at triage (i.e., CTAS 1 or 2); however, this is also a very weak association (Cramer's  $V < 0.15$ ).

**Table 29:** Considered leaving before being seen or treated by discharge status and CTAS

<b>Q9: During your visit to the emergency department, did you consider leaving before you had been seen and treated?</b>								
		<b>Discharge status</b>		<b>CTAS level</b>				
	<b>Considered Leaving</b>	Admitted (column%)	Not admitted	CTAS 1	CTAS 2	CTAS 3	CTAS 4	CTAS 5
		<b>n=18,840</b>		<b>n=18,942</b>				
<b>June 2010- July 2013</b>	Yes definitely	5%	10%	2%	6%	10%	12%	12%
	To some extent	6%	16%	4%	8%	14%	18%	16%
	No	89%	74%	94%	86%	76%	70%	72%
p value		Cramer's V = 0.1331		Cramer's V = 0.0930				
<i>Note: Data is weighted for cluster sample at site level Chi-squared is significant at p = 0.000 where Cramer's V is shown</i>								

While it is unclear as to why these respondents ultimately decided to stay, it is reasonable to surmise that they may have been at some risk of harm if they had left. Leaving prior to the completion of assessment or treatment is a risky option for all emergency department patients. Therefore, it is important to learn more about the individuals who contemplate leaving early, and what factors may predispose them to leaving prior to seeing a physician or receiving full treatment.

In order to further explore both the factors that influence patients to leave the emergency department before being assessed or treated and the potential health risks associated with leaving, the HQCA is currently undertaking a focused study of these patients. The HQCA has surveyed a matched sample of patients who left the emergency department prior to completing their visit and patients with similar characteristics that ultimately decided to stay and complete their assessment and treatment. This study will seek to illustrate who the patients leaving the emergency department are (both demographically and in terms of their health characteristics) and how they differ from patients who stayed for assessment and treatment. To the extent possible, the study will assess the emergency department experience of patients who left. This will include an exploration of the factors that led to patients leaving, as well as the factors which might encourage patients to remain in the emergency department to receive treatment.

**SECTION C: APPENDICES**



## APPENDIX I: SURVEY METHODOLOGY

### Selection of survey tool, validation, and testing

The 2007 working group and the HQCA reviewed the relevant literature, previously developed emergency department survey tools, and survey material from both the public and private domain. As a result, several well validated survey tools were identified as options. It was determined that the HQCA should use a public domain survey tool that could be available to stakeholders without proprietary restrictions. The *British Emergency Department Patient Experience Survey* tool was ultimately selected based on multiple criteria. This survey instrument was developed by Picker Europe (a non-profit organization) for the British National Health Service and the Healthcare Commission. It was used as the core set of questions for the HQCA survey with written permission from the Healthcare Commission.

Building on the British Emergency Department Survey, the HQCA developed additional items to reflect the unique Alberta context. In 2006, these new items and selected original items underwent several rounds of cognitive testing, after which a pilot test involving 480 emergency department patients was conducted. The pilot test conducted by the HQCA involved adults and children who visited an emergency department in one of two Alberta hospitals during December of 2006. The pilot test helped to identify ambiguous survey questions, uncover challenges in conducting the survey, set expectations, and established the survey methodology.

A full survey was run in 2007 and further evaluation of psychometric properties, validity, reliability at both the patient and facility level, and evaluation of structure and validity of possible composite factors were conducted using this data set. A more detailed description of this multi-stage validation process, as well as results from cognitive testing, the pilot test, and validation studies are provided in the 2007 *Emergency Department Patient Experience Survey* technical report.<sup>9</sup> As a result of the findings from the 2007 survey and to accommodate additional questions (i.e., EQ-5D), several items considered to be of lower value<sup>lxxviii</sup> were dropped from the 2009 and 2010-2013 versions of the survey.

In addition, the EQ-5D (a five-item health related quality of life measure) was included with permission of the Euroqol Foundation.

### Privacy impact assessment

As a custodian under the *Health Information Act of Alberta*, the HQCA submitted a privacy impact assessment (PIA) to conduct this survey and related data matching and analysis. The PIA was submitted to and was accepted by the Office of the Information and Privacy Commissioner of Alberta in 2007. The survey and data matching process was carried out in 2007, 2009, and 2010-2013. Whereas data from

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<sup>lxxviii</sup> This included questions targeting information outside the scope of the current initiative (e.g., the journey of patients prior to ED visit). No core questions were dropped.

2007 and 2009 was extracted at a point in time, data from 2010-2013 was extracted in two-week intervals.

## **RFP and selection of survey vendor**

The HQCA selected and engaged the services of a national research firm, Prairie Research Associates Incorporated (PRA), to conduct the emergency department patient experience survey. PRA conducted the original 2007 survey and to maintain consistency in methods, this firm was selected again for the 2009 and 2010-2013 surveys.

## **Preparation of data**

Substantial assistance was provided by Alberta Health Services personnel in extracting and preparing data files from regional data sets and emergency department information systems. This data provided the basis for sample creation as well as reporting of administrative data measures and parameters. Subsequent cleaning and manipulation of this data was conducted by the HQCA to generate a consolidated sample frame database.

## **Sample design and selection**

The HQCA provided PRA with random samples of patients drawn from each of the 13 sites every two weeks, such that lag time from the actual emergency department visit was controlled between samples. Site-level samples for the 2010-2013 survey were set at the level required to report reliable zone-level results on a quarterly basis, and site-level results annually.

To achieve the desired sample size, patients were selected randomly from the entire population of patients seen in an emergency department during the sample period. Sample sizes were determined by predicted response rates (based on the previous surveys) to achieve a representative sample at the facility level. Sample sizes were proportionately larger for smaller facilities, requiring the calculation of cluster sample weights to adjust for the higher probability of patient selection in low volume sites.<sup>lxxxix</sup>

Adult patient samples (16 years of age and up) were generated for the facilities surveyed, and excluded children aged 0 to 15,<sup>lxxx</sup> patients who left before being seen or treated, and patients who died in the context of their emergency department stay. Patients without contact information, and a small number of “privacy” sensitive cases, such as domestic abuse, were also excluded from the sample and were randomly replaced with eligible cases. A rigorous four-stage survey protocol was used to maximize the response rate and quality of the final sample.

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<sup>lxxxix</sup> Cluster weights are applied to the provincial aggregate results but not site-level results, because samples were selected to be representative at the site level.

<sup>lxxx</sup> Surveys were also conducted with parents of patients at the Alberta Children’s Hospital and the Stollery Children’s hospital. The survey instrument for this population was separately field-tested along with the adult version and was modified to facilitate responses from a third party rather than the actual patient. Because data from this survey group represents a parent proxy sample, results are not included in this report. This information will be reported in a supplemental report.

## Survey methodology

Table 30 shows the timeline of the mailings and follow-up calls.

- **First survey mailing:** The first mailing included a cover letter, a copy of the questionnaire, and a postage-paid return envelope (Appendix VII). This package of materials was addressed to all the patients included in the HQCA’s sample.
- **Reminder postcard:** The reminder postcard (Appendix VII) was sent approximately two weeks after the first mailing to those participants who had not returned their completed questionnaire at the time of this mailing. Participants who indicated that they did not want to participate were excluded from this reminder, as were individuals whose initial package had been returned as undeliverable or not at this address.
- **Telephone reminders and surveys:** PRA monitored the response rate by facility throughout the data collection period. To increase the response rate, PRA, in consultation with the HQCA, conducted reminder calls with those people who had not returned their questionnaire. The main purpose of the reminder calls was to emphasize to participants the importance of the survey and thus increase the likelihood of participation. If participants preferred, they were given the option to complete the survey over the phone. Telephone calls started approximately three weeks after the initial mailing (just after the reminder postcard was mailed) and ended approximately 10 weeks after the initial mailing.
- **Second survey mailing:** The second survey mailing contained the same documents as the first mailing, with slight revisions to the cover letter (Appendix VII). The second mailing was sent approximately two weeks after the reminder postcard and four weeks after the first mailing to those participants who had not yet responded. Again, this excluded those who had indicated that they did not want to participate and those whose correct address information was unavailable.

**Table 30:** Survey protocol timelines

Timeline	
Two week sample period ends (discharged)	Sunday
Extraction of random samples	Friday (+5 days)
First survey mailing	Monday (+8 days)
Postcard mailing	+22 days
Telephone reminders (and surveys)	+25 days
Second survey mailing	+36 days
Survey cut-off	+75 days

## Overall response rate from June 2010 to July 2013

Table 31 shows a breakdown of the outcomes for the survey process over the June 2010 to July 2013 study period.<sup>lxxxi</sup>

**Table 31:** Summary outcomes – June 2010 to July 2013

Outcome	June 2010-July 2013	
	n	%
<b>Total sample</b>	<b>53,963</b>	<b>100%</b>
<b>Total completed</b>	<b>24,181</b>	<b>44.8%</b>
By mail	21,508	39.9%
By phone	2,673	5.0%
<b>Non-respondents (protocol complete)</b>	<b>23,473</b>	<b>43.5%</b>
<b>Refused</b>	<b>1,417</b>	<b>2.6%</b>
Refused by mail	161	0.3%
Refused by phone	1,256	2.3%
<b>Returned survey blank</b>	<b>15</b>	<b>&lt;0.1%</b>
<b>Works for hospital/ED</b>	<b>8</b>	<b>&lt;0.1%</b>
<b>Language Barrier</b>	<b>713</b>	<b>1.3%</b>
<b>Unable due to illness</b>	<b>659</b>	<b>1.2%</b>
<b>Incorrect contact information</b>	<b>2,788</b>	<b>5.2%</b>
<b>Deceased</b>	<b>478</b>	<b>0.9%</b>
<b>Denied visiting emergency department</b>	<b>137</b>	<b>0.3%</b>
<b>Duplicate</b>	<b>94</b>	<b>0.2%</b>

<sup>lxxxi</sup> Note that Table 31 includes patients aged 0-15, who are excluded from analyses elsewhere in this report, as previously mentioned.

- Of the 53,963 survey packages that were distributed to emergency department patients during the study period 24,181 were completed,<sup>lxxxii</sup> for an overall response rate of 44.8%. Of those who completed a questionnaire, 88.9% completed it by mail and 11.1% completed it by phone.
- 43.5% of the sample received the two mailings and the reminder postcard, but did not complete the survey.
- 5.2% of the sample had incorrect contact information, meaning they did not receive the mailings. Of these, almost all were contacted by phone to complete the survey by telephone.
- 2.6% of the sample refused to participate in the survey.
- 0.9% of the sample was deceased at the time of the survey.<sup>lxxxiii</sup>

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<sup>lxxxii</sup> A completed questionnaire is defined as a questionnaire with a valid response to at least one question.

<sup>lxxxiii</sup> While individuals who passed away during their emergency department visit were removed from the sample, it was not feasible to identify individuals who died afterwards.

## Response rate by site

Table 32 shows the response rates by site,<sup>lxxxiv</sup> which ranged from 32.8 per cent to 54.4 per cent, with an overall response rate of 44.8 per cent.

**Table 32:** Response rate by site – June 2010 to July 2013

Facility	Sample size (n)	Completes			Raw Response rate (%)	Refusals (n)	Incorrect contact info (n)	Language barrier or too sick (n)
		Mail	Phone	Total				
Alberta Children's Hospital	2,889	1,440	131	1,571	54.4%	39	47	61
Chinook Regional Hospital	4,357	1,739	216	1,955	44.9%	118	219	106
Foothills Medical Centre	3,018	1,372	152	1,524	50.5%	82	129	100
Grey Nuns/Edmonton General	3,209	1,394	158	1,552	48.4%	75	118	113
Medicine Hat Regional Hospital	3,161	1,363	171	1,534	48.5%	86	171	71
Misericordia Hospital	3,261	1,324	162	1,486	45.6%	101	174	99
Northern Lights Health Centre	4,544	1,206	286	1,492	32.8%	155	309	67
Peter Lougheed Centre	3,572	1,325	193	1,518	42.5%	101	173	154
Queen Elizabeth II Hospital	4,762	1,648	290	1,938	40.7%	159	289	53
Red Deer Regional Hospital	4,305	1,718	218	1,936	45.0%	138	221	93
Rockyview General Hospital	3,198	1,454	153	1,607	50.3%	76	124	92
Royal Alexandra Hospital	3,566	1,256	172	1,428	40.0%	91	327	168
Stollery Children's Hospital	3,389	1,489	108	1,597	47.1%	44	127	27
Sturgeon Community Hospital	3,073	1,356	166	1,522	49.5%	95	111	77
University of Alberta Hospital	3,641	1,424	97	1,521	41.8%	57	249	91
Blank	18	0	0	0	0.0%	0	0	0
<b>TOTAL</b>	<b>53,963</b>	<b>21,508</b>	<b>2,673</b>	<b>24,181</b>	<b>44.8%</b>	<b>1,417</b>	<b>2,788</b>	<b>1,372</b>

<sup>lxxxiv</sup> Note that Table 32 includes patients aged 0-15, who are excluded from analyses elsewhere in this report.

## Definition of compared groups

While the primary goal of this study was to produce actionable information at the site level, results were also analyzed at a provincial aggregate level. This aggregate result should not be interpreted as a true provincial result, given that many smaller rural sites have been excluded. In general, the 13 large urban or regional hospital emergency departments surveyed are faced with different and often more severe challenges than smaller rural emergency departments. This study has focused on sites that routinely deal with the greatest challenges. Based on 2007 results, patient experience for the province as a whole would be more positive if these many smaller and rural sites were included in the aggregate results.

While examination of the results at the provincial aggregate level provides useful insights about emergency department patient experience across similar high volume emergency departments, this type of high-level comparison masks important between-site differences. Provincial-level analyses assume that patients presenting to different sites all enter the same provincial emergency department care delivery system; and this is not the case. Emergency department facilities are diverse regarding the programs and initiatives they implement to improve care. Thus, site-level results are the source of actionable information in terms of improvement opportunities.

## Statistical significance and strength of association

Traditional tests of significance, such as those outlined below, are applied to the descriptive statistics presented in Section B, but not to the data presented over time in run and control charts in Section A. Identifying meaningful changes in run and control charts requires alternative probability-based tests specifically suited for examining data over time.

Statistical significance for the chi-square measure of association is more easily achieved with large sample sizes.<sup>lxxxv</sup> In view of this, the HQCA suggests the standard for designating whether a relationship can be termed statistically significant be raised from the typical significance level of 0.01 to a more stringent 0.001. In addition, Phi or Cramer's V coefficients are sometimes reported to provide a measure of the strength of association.<sup>lxxxvi</sup> While a Phi or Cramer's V of less than 0.15 suggests the strength of association is extremely weak, significantly different proportions may still be important in the context of the study objectives. For mean comparisons using ordinal or continuous data, a t-test is used to measure significance of the observed difference.

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<sup>lxxxv</sup> Pearson's chi-squared tests the hypothesis of independence between two nominal (categorical) variables. When chi-squared is significant, the null hypothesis is rejected and the two variables are assumed to be associated beyond what is expected by chance alone.

<sup>lxxxvi</sup> Phi or Cramer's V may be interpreted as the strength of association between two variables – as a percentage of their maximum possible variation. Phi is preferred when both variables are dichotomous; that is, they only have two categories.

**Table 33:** Tests for statistical significance and strength of association

Test	Value
Pearson's chi square (sig.)	0.001
t-test (sig.)	0.001
Phi or Cramer's V	0.150 or higher