



**St. Marys Cement  
Health Hazard Investigation Follow-up:  
Pneumonia Rates in St. Marys**

April 2019

## **Perth District Health Unit**

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## Introduction

In the fall of 2017, the Perth District Health Unit (PDHU) received multiple complaints regarding emissions from the St. Marys Cement (SMC) plant in St. Marys, Ontario, with specific concerns related to the air quality and possible adverse health impacts.

Based on information received from the community and the Ministry of Environment, Conservation and Parks (MOECP), PDHU decided to conduct an independent health hazard investigation to determine if the air quality in St. Marys constitutes a health hazard as defined in the Health Protection and Promotion Act.

PDHU found that while emissions from SMC are likely contributing to local air pollution levels, they are within the acceptable standards set out by the MOECP to protect the environment and human health.

This Health Hazard Investigation was shared with stakeholders and partners as well as the St. Marys Community in May 2018.

As part of the follow-up, PDHU committed to continue to log any complaints related to SMC and air quality and follow-up according to internal Policies & Procedures.

Since the report was issued, PDHU has received 2 data requests: one from the St. Marys Cement Liaison Committee (SMCLC) regarding the incidence of breast cancer; and an enquiry from a resident about pneumonia rates, both specifically concerned that there may be a higher rate in St. Marys due to poor air quality secondary to the cement factory. In addition, the resident was also concerned about emergency room volume this past winter due to respiratory illness.

In general, it is not recommended to examine an issue(s) in such an ad hoc manner, as this approach may give rise to scientific and statistical issues, such as the chance occurrence of an apparent relationship due to multiple testing of statistics. In other words, if we conduct 100 tests, we expect 5 results to be “significant” by chance.

However, given the recent focus on the St. Marys Cement Plant, the Health Unit proceeded to fulfil these two requests. We looked into breast cancer rates because it is a very common diagnosis and there was opportunity to provide clarifying information, and pneumonia rates because air pollution contributes to pneumonia (WHO, 2018) and was not specifically considered in the PDHU report.

PDHU provided a response regarding breast cancer directly to the SMLC. The findings on pneumonia follow below, and will be shared with the citizen who made the enquiry as well as St. Marys Cement (as further requested), the Town of St. Marys, and the Ministry of Environment, Conservation and Parks.

Any further data requests regarding St. Marys Cement plant, air quality and health effects will be individually considered with regard to the merit of completing such data analyses given the current understanding of air pollution, cement factories and health effects.

## Results

### Influenza / Influenza-like Illness Activity & System Pressure Dashboard by LHIN, Winter 2018-19

PDHU monitors the Ministry of Health and Long-Term Care Respiratory Surge & System Pressure Dashboard, which provides an overview by LHIN of health system pressures related to influenza and influenza-like illnesses (which would include respiratory illnesses such as pneumonia). The Respiratory Surge Dashboard is for health providers across Ontario and highlights activity challenges that health organizations are experiencing with respect to meeting an increased demand for services, and challenges that health organizations are experiencing with respect to managing decreased resource availability. In the weekly report, LHINs are rated as follows:

LHIN Status	
Green	<b>Influenza /ILI activity is at low seasonal levels</b> <ul style="list-style-type: none"><li>No significant increase in influenza/ILI activity is expected this week.</li></ul>
Yellow	<b>Influenza /ILI activity is at elevated seasonal levels</b> <ul style="list-style-type: none"><li>Limited but increasing impacts on the health system (or a decrease from a seasonal peak).</li></ul>
Orange	<b>Influenza / ILI activity is at elevated seasonal levels and may reach peak levels this week.</b> <ul style="list-style-type: none"><li>Impacts are likely being felt across many sectors of the health system.</li></ul>
Red	<b>Influenza / ILI activity is at greatly elevated levels.</b> <ul style="list-style-type: none"><li>Significant impacts on the health care system are expected due to influenza virus activity.</li></ul>

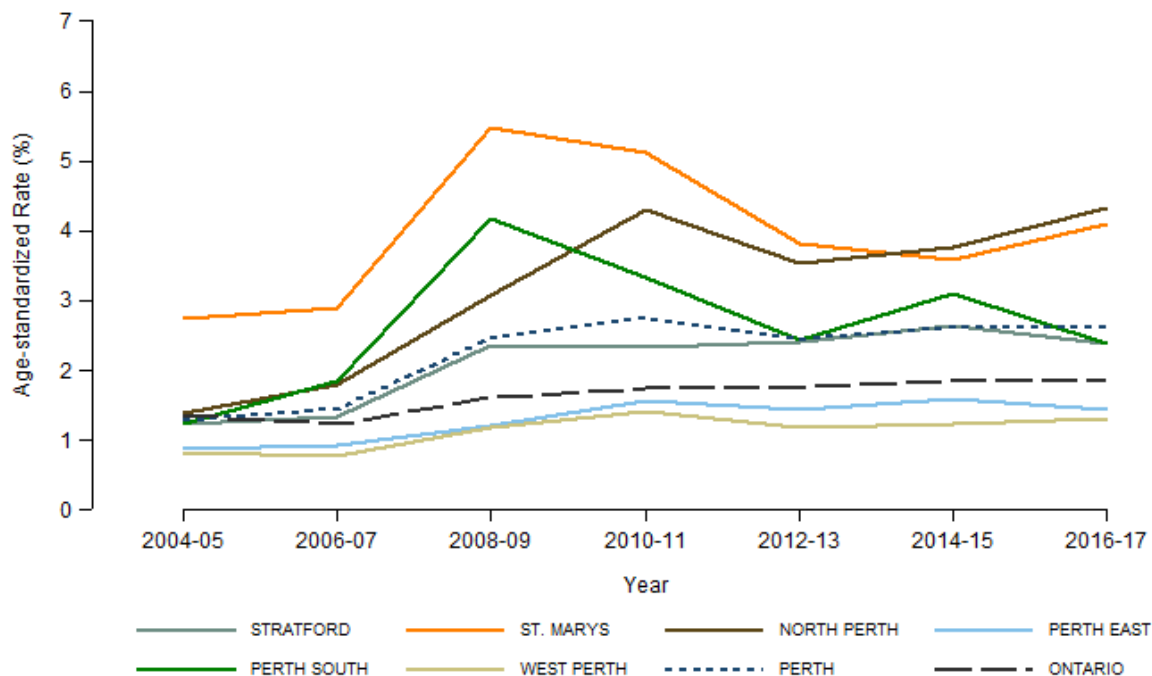
St. Marys and Perth hospitals are in the Southwest LHIN catchment. Between December 2018 and April 2019, the Southwest LHIN ratings were:

- December 6 – January 3: Green
- January 3 – January 14: Orange
- January 14 – January 21: Yellow
- January 28 – Current: Green

Therefore, hospitals in the Southwest LHIN experienced a typical surge that happens annually due primarily to influenza.

## Pneumonia Rates for St. Marys

**Figure 1.** Emergency department visits due to pneumonia: age-standardized rate (per 100 population) among residents of Perth County and its municipalities at any Perth County hospital and Ontario residents visiting any Ontario hospital, 2004-2017



**Source:** Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Ambulatory Visit Cube (NACRS, CIHI). Extracted: March 26, 2019

The age-standardized rates<sup>1</sup> of pneumonia visits have been increasing over time for Perth County, its municipalities (except for St. Marys), and Ontario (Figure 1). The rate of pneumonia visits has been stable over time for St. Marys; fluctuations are due to small numbers.

The age-standardized rate of pneumonia visits is higher for Perth County compared to Ontario. The rates of pneumonia visits are impacted by many factors, including practice patterns and smoking rates. Smoking rates are higher in Perth County compared to Ontario (Perth District Health Unit, 2018). The age-standardized rates of pneumonia visits are higher for Stratford, St. Marys, North Perth and South Perth and are lower for West Perth and Perth East compared to Ontario.

The age-standardized rate of pneumonia visits is higher from 2004 to 2009 for St. Marys compared to the other municipalities; the reason is unknown at this time. From 2010 to 2017, the age standardized rate of pneumonia visits for North Perth and St Marys are similar, and higher than the other municipalities. Some of this variation may be due to practice patterns, as North Perth and St. Marys both have small primary hospitals where it is common practice for the on-call physician to see lower acuity patients in the emergency department.

See figures below for additional analyses that were completed.

<sup>1</sup> Data were standardized to the 2011 Canadian standard population when describing "age-standardized rates (per 100 population)".

The age-specific rate for pneumonia visits has remained the same over time for all the age groups for residents of St. Marys from 2004 to 2017 (Figure 2 to 6).

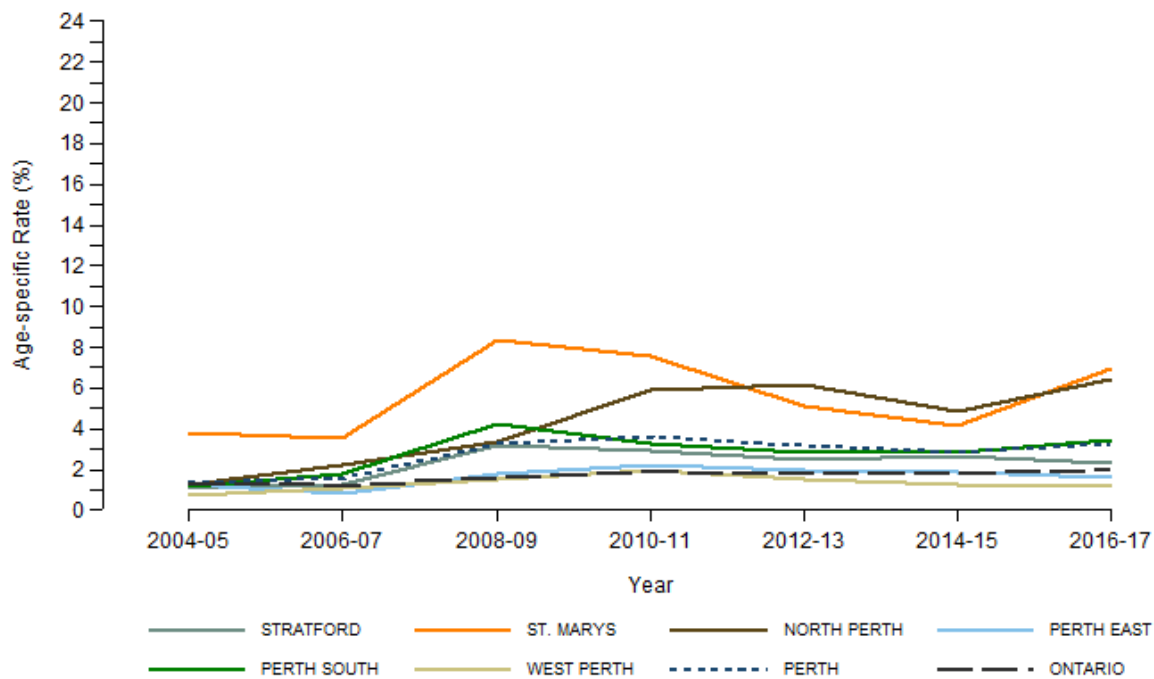
The age-specific rate for pneumonia visits has increased over time for the age groups 0 to 74 years of age for residents of Ontario from 2004 to 2017 (Figure 2 to 6).

The age-standardized rate of pneumonia visits is higher for males compared to females (Figures 7 and 8).

Interrupted lines on figures 2 to 6 are the result of small numbers or unreliable estimates.

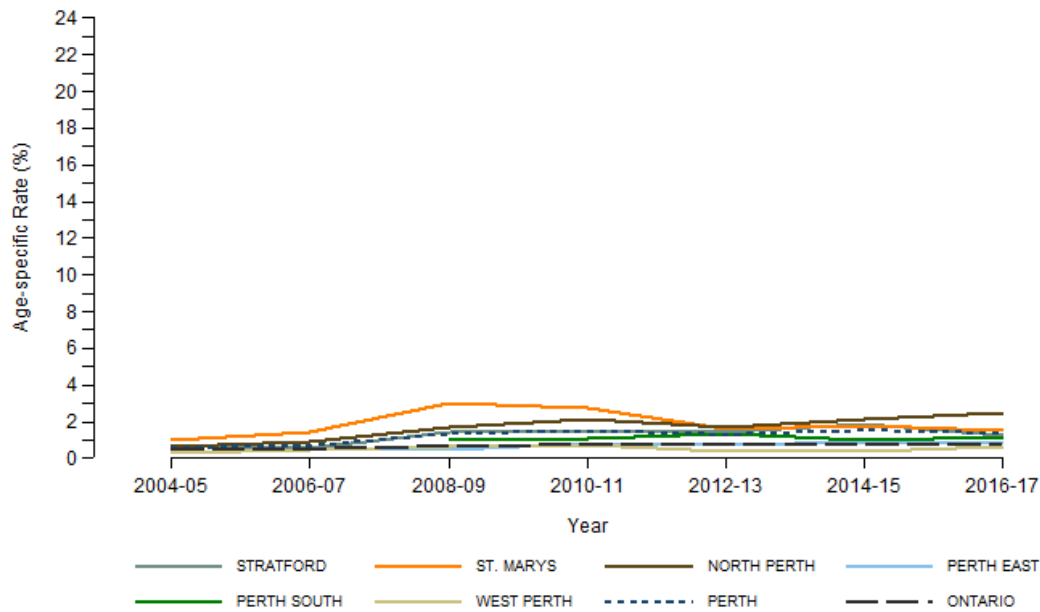
The analyses were repeated using a different method (standardized morbidity ratio) and the results were similar.

**Figure 2.** Emergency department visits due to pneumonia: Age specific rates (per 100 population) among residents aged 0 to 19 years of Perth County and its municipalities at any Perth County hospital, and of Ontario at any Ontario hospital, 2004-2017



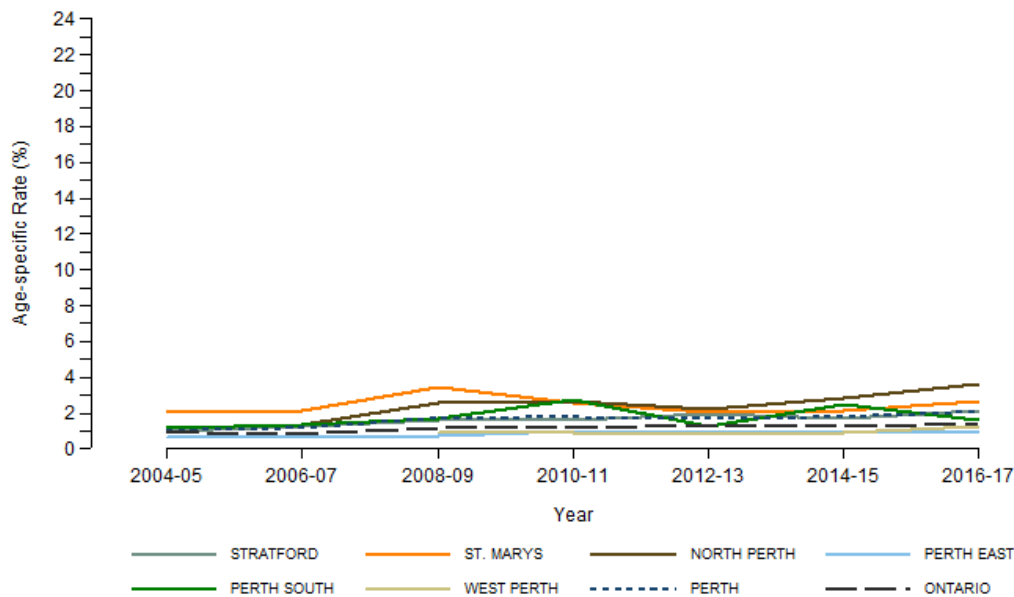
**Source:** Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Ambulatory Visit Cube (NACRS, CIHI). Extracted: March 26, 2019

**Figure 3.** Emergency department visits due to pneumonia: Age specific rates (per 100 population) among residents aged 20 to 44 years, of Perth County and its municipalities at any Perth County hospital, and of Ontario at any Ontario hospital, 2004-2017



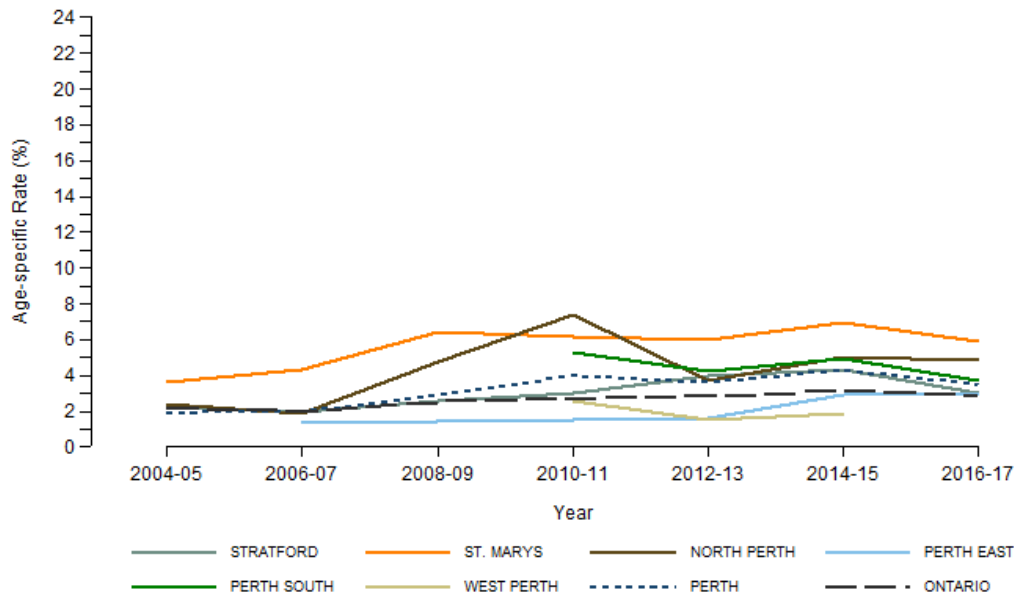
**Source:** Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Ambulatory Visit Cube (NACRS, CIHI). Extracted: March 26, 2019

**Figure 4.** Emergency department visits due to pneumonia: Age specific rates (per 100 population) among residents aged 45 to 64 years, of Perth County and its municipalities at any Perth County hospital, and of Ontario at any Ontario hospital, 2004-2017



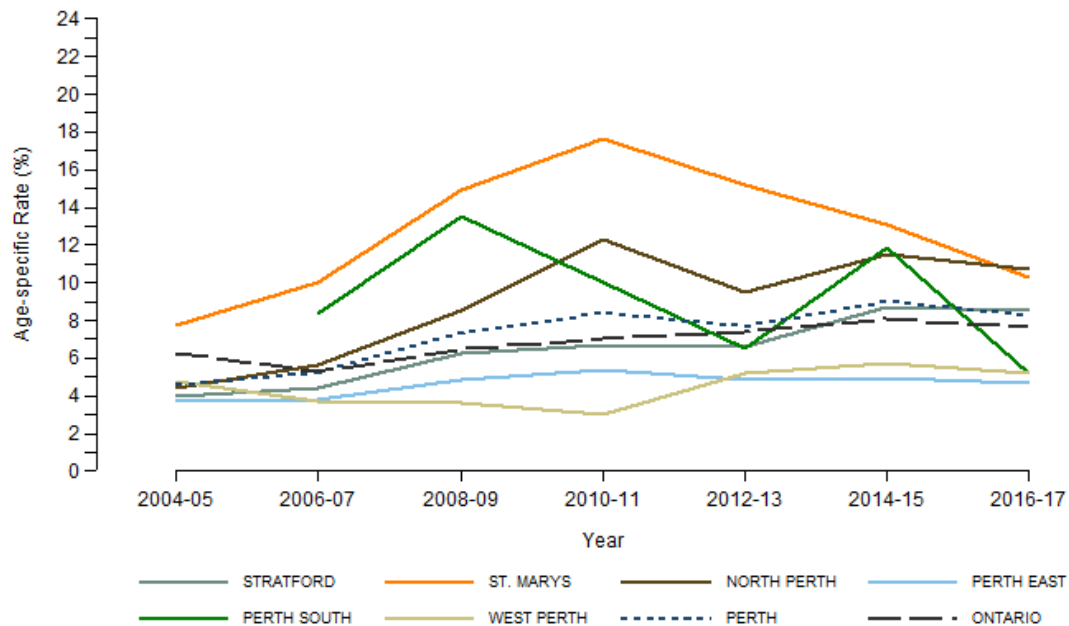
**Source:** Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Ambulatory Visit Cube (NACRS, CIHI). Extracted: March 26, 2019

**Figure 5.** Emergency department visits due to pneumonia: Age specific rates (per 100 population) among residents aged 65 to 74 years, of Perth County and its municipalities at any Perth County hospital, and of Ontario at any Ontario hospital, 2004-2017



**Source:** Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Ambulatory Visit Cube (NACRS, CIHI). Extracted: March 26, 2019

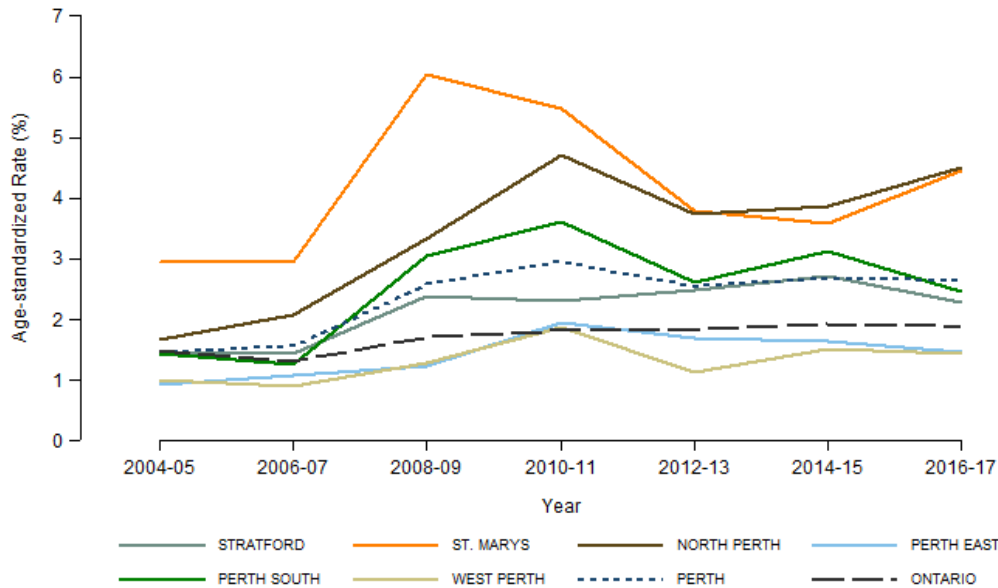
**Figure 6.** Emergency department visits due to pneumonia: Age specific rates (per 100 population) among residents aged 75 years and over, of Perth County and its municipalities at any Perth County hospital, and of Ontario at any Ontario hospital, 2004-2017



**Source:** Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Ambulatory Visit Cube (NACRS, CIHI). Extracted: March 26, 2019

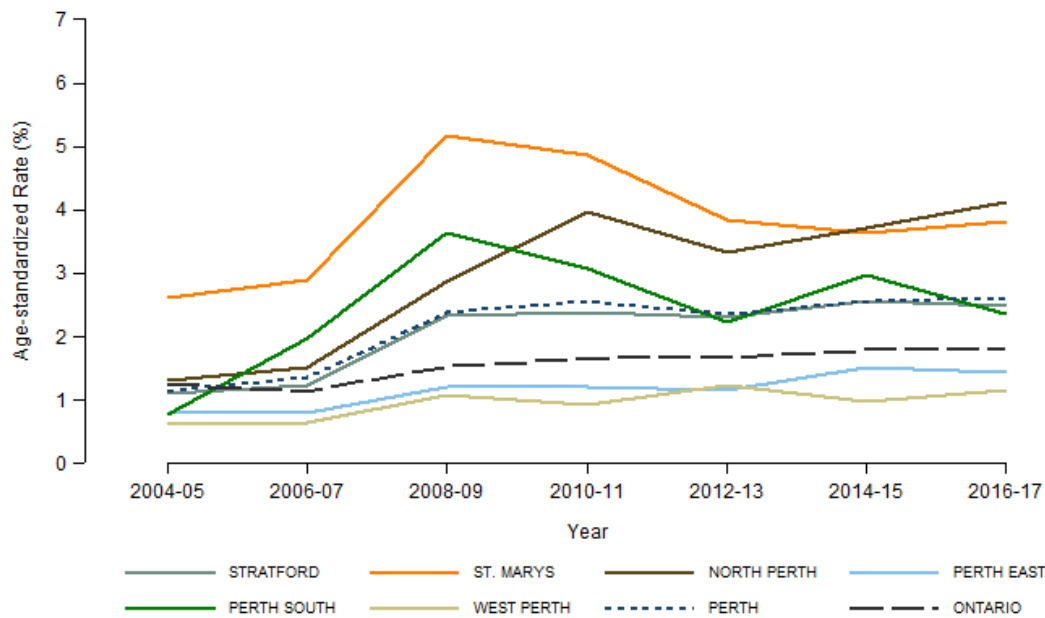


**Figure 7.** Pneumonia emergency visits: age-standardized rates (per 100 population) among males of Perth County, its municipalities and Stratford and St. Marys visiting Perth County hospitals and Ontario residents visiting any Ontario hospital, 2004-2017



**Source:** Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Ambulatory Visit Cube (NACRS, CIHI). Extracted: March 26, 2019

**Figure 8.** Pneumonia emergency visits: age-standardized rates (per 100 population) among females of Perth County, its municipalities and Stratford and St. Marys visiting Perth County hospitals and Ontario residents visiting any Ontario hospital, 2004-2017



**Source:** Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO. Ambulatory Visit Cube (NACRS, CIHI). Extracted: March 26, 2019

## Conclusion

Having reviewed the data compiled in this report, the Health Unit does not believe further investigation is required regarding pneumonia rates in relationship to St. Marys Cement.

## References

Perth District Health Unit (2018). St. Marys Cement Factory Air Quality Complaints Investigation Report.

WHO global urban ambient air pollution database (update 2018). Received from:  
<http://www.who.int/airpollution/data/cities/en/>