

# Syndromic surveillance

## - HealthStat and HealthLine -

National surveillance systems for influenza-like illness



Kylie Mason  
Senior Advisor (Epidemiology)  
Health and Disability Intelligence  
Ministry of Health  
kylie\_mason@moh.govt.nz

19 March 2010

# Outline

- Overview of the surveillance systems
- Description of surveillance systems
  - HealthStat
  - HealthLine
  - Methods for analysing
- Surveillance during H1N1 2009 pandemic
- Summary

# Overview of the surveillance systems

- Syndromic surveillance of influenza-like illness (ILI)
  - Prior to lab diagnosis, so quicker
- Set up in 2006-2007
  - Part of MoH pandemic preparedness planning
  - Fulfill obligations of International Health Regulations 2005
  - Complement existing systems
- Currently managed by Health and Disability Intelligence (HDI) in the Ministry of Health
- Purpose: early warning, monitoring
- Year-round

- Sentinel GP-based system run by CBG Health Research Ltd
- GPs use a defined list of ILI Read codes
  - Case definition of ILI: *“acute upper respiratory tract infection (URTI), with abrupt onset of two or more symptoms from chills, fever, headache and myalgia”*
- Data uploaded from GP management systems to CBG every week
- Data reported for 2 groups of GP practices
- ‘Original’ HealthStat panel of GP practices
  - About 84 GP practices (about 10% of population)
  - Since March 2008
- ‘Extended’ HealthStat panel of GP practices
  - About 384 GP practices (about 37% of population)
  - Since May/June 2009



- Free 24-hour national health advice call centre
- Funded by the Ministry of Health
- HealthLine calls triaged by registered nurses, using electronic clinical decision support software
- Symptoms coded by HDI for influenza-like illness
  - *Flu-like symptoms; known / suspected influenza*
  - *Upper respiratory tract infections; colds*
  - *Fever*
  - *Sore throat; cough*
  - *Breathing difficulties*
  - *Headache*
  - *Muscle ache / pain*
- Continuous since December 2006
- HealthLine data emailed to HDI every week



# Methods for analysing

- Monitor for change
  - Calculating rate of ILI in population, trends over time
  - Examining data by age group and District Health Board (DHB)
  - Statistical analysis using EARS (Early Aberration Reporting System, from CDC)
    - ‘Flags’ triggered when number of events exceeds a certain threshold
    - Threshold based on the previous 1–2 weeks of data, and use cumulative summation methods
    - Types of flags based on sensitivity: C1–Mild, C2–Medium, C3–Ultra
- Reports emailed to key people, such as:
  - Ministry of Health, NHCC
  - Medical Officers of Health, public health units

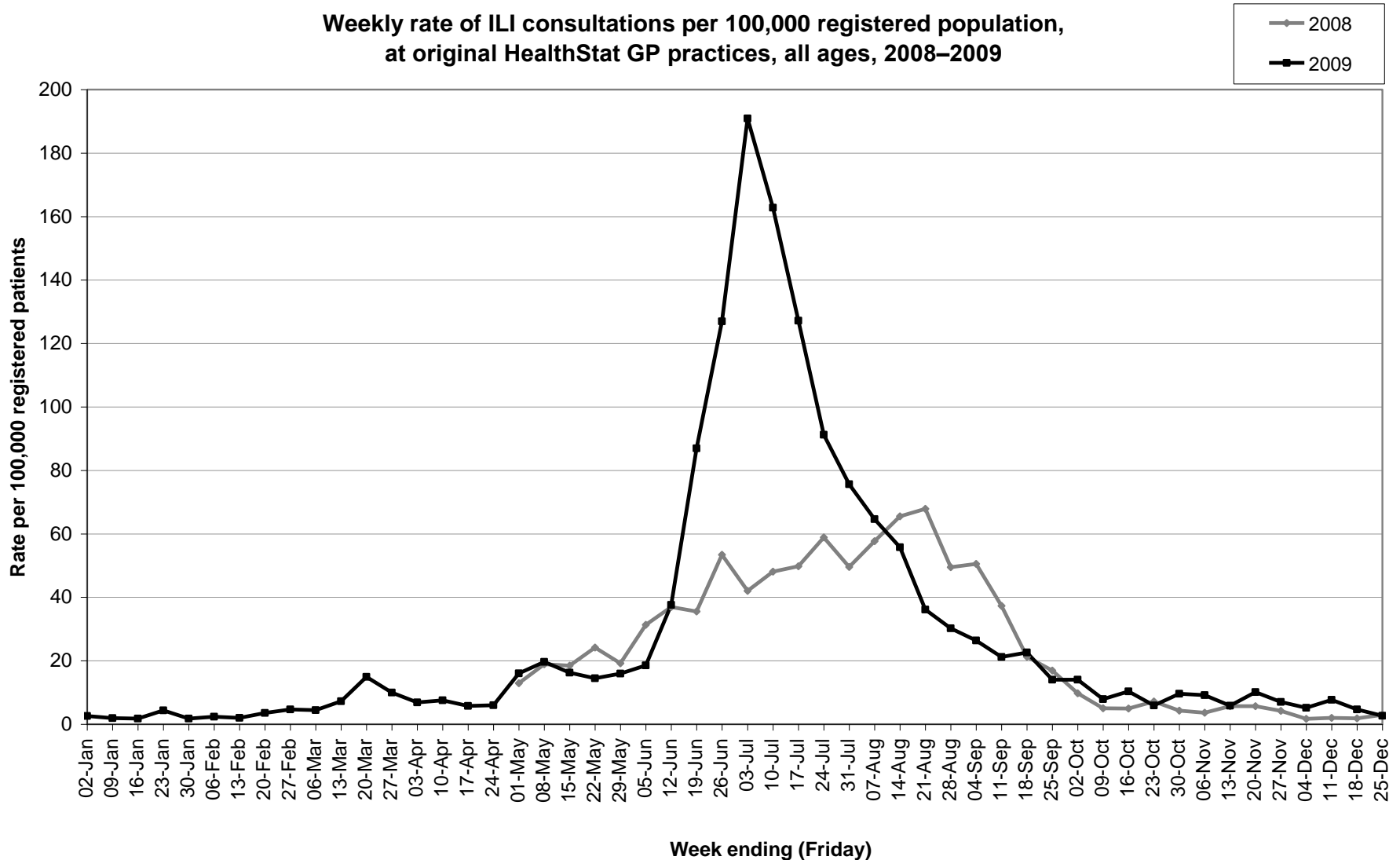
# H1N1 2009 influenza pandemic

- Both HealthStat and HealthLine systems ran during H1N1 2009 influenza pandemic
  - HDI was involved in surveillance throughout entire pandemic
- During the pandemic:
  - HealthStat recruited an additional 300 GP practices during May-June 2009, to increase coverage
  - HDI began reporting on these practices towards end of June
  - HealthLine provided daily data for 4 months
  - HDI prepared daily reports from 4 May – 24 August



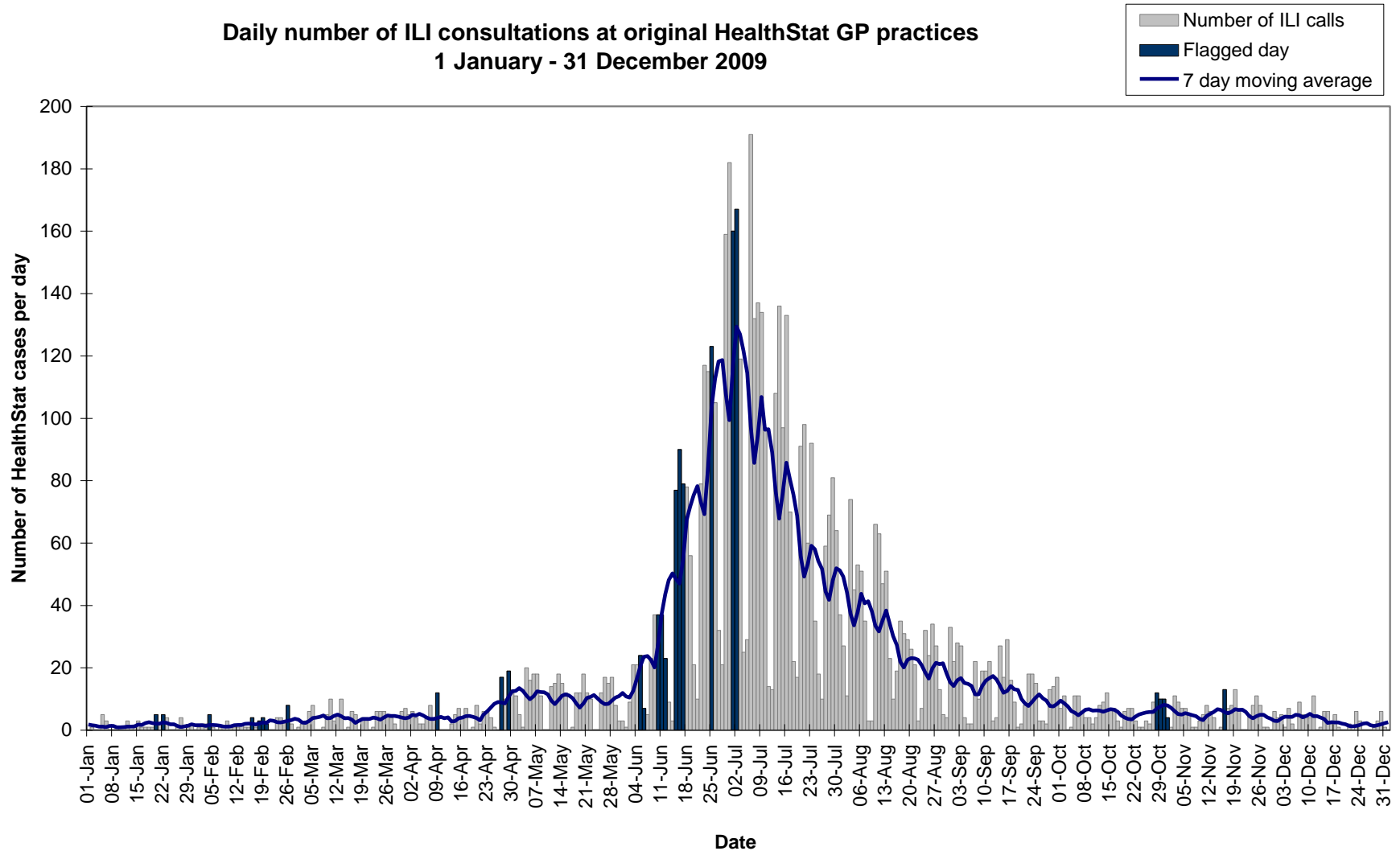
## Weekly ILI rate in the registered population

Weekly rate of ILI consultations per 100,000 registered population, at original HealthStat GP practices, all ages, 2008–2009



# HealthStat—original

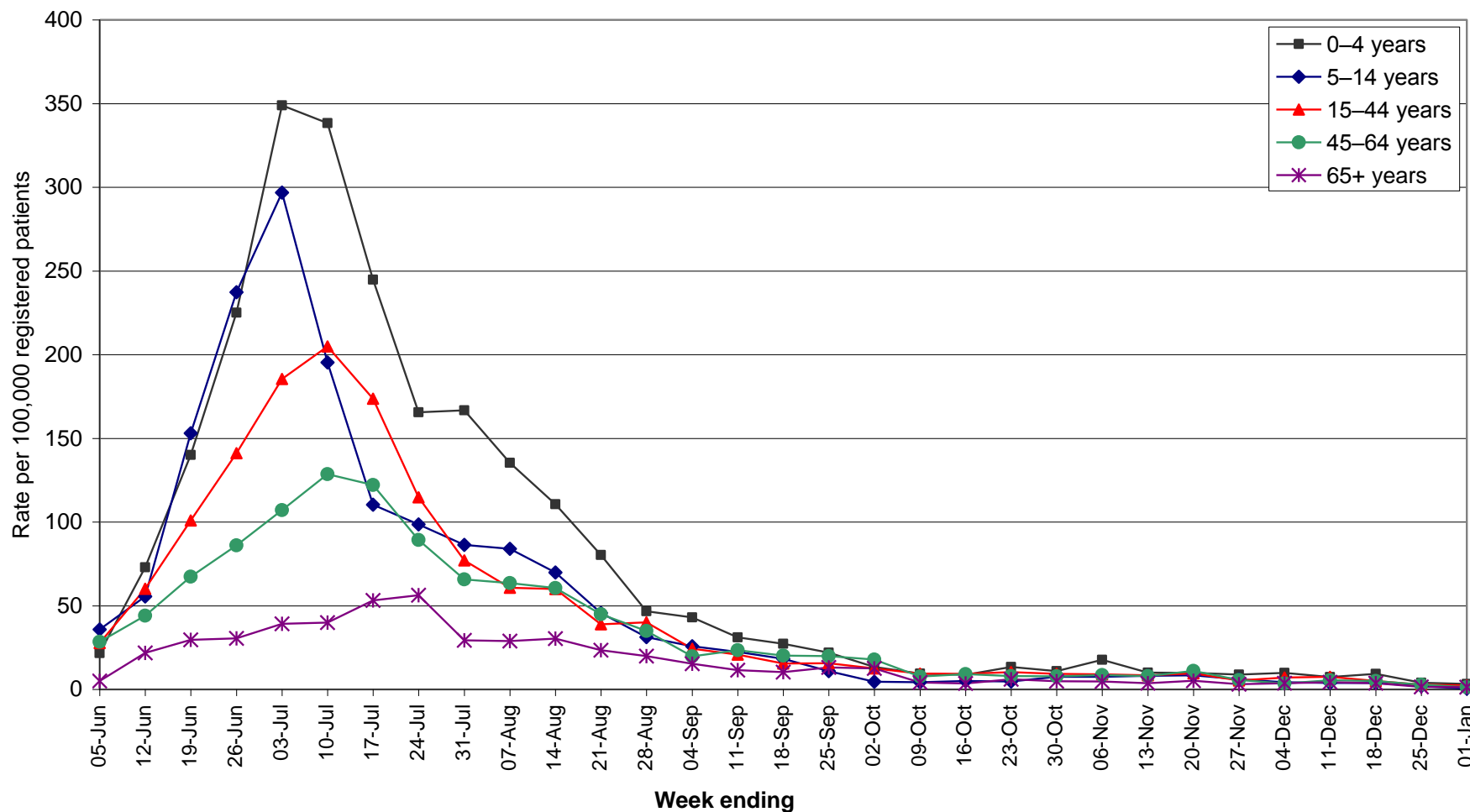
An example of EARS analysis with flags (dark blue bars)



# HealthStat—extended

## Age group analysis

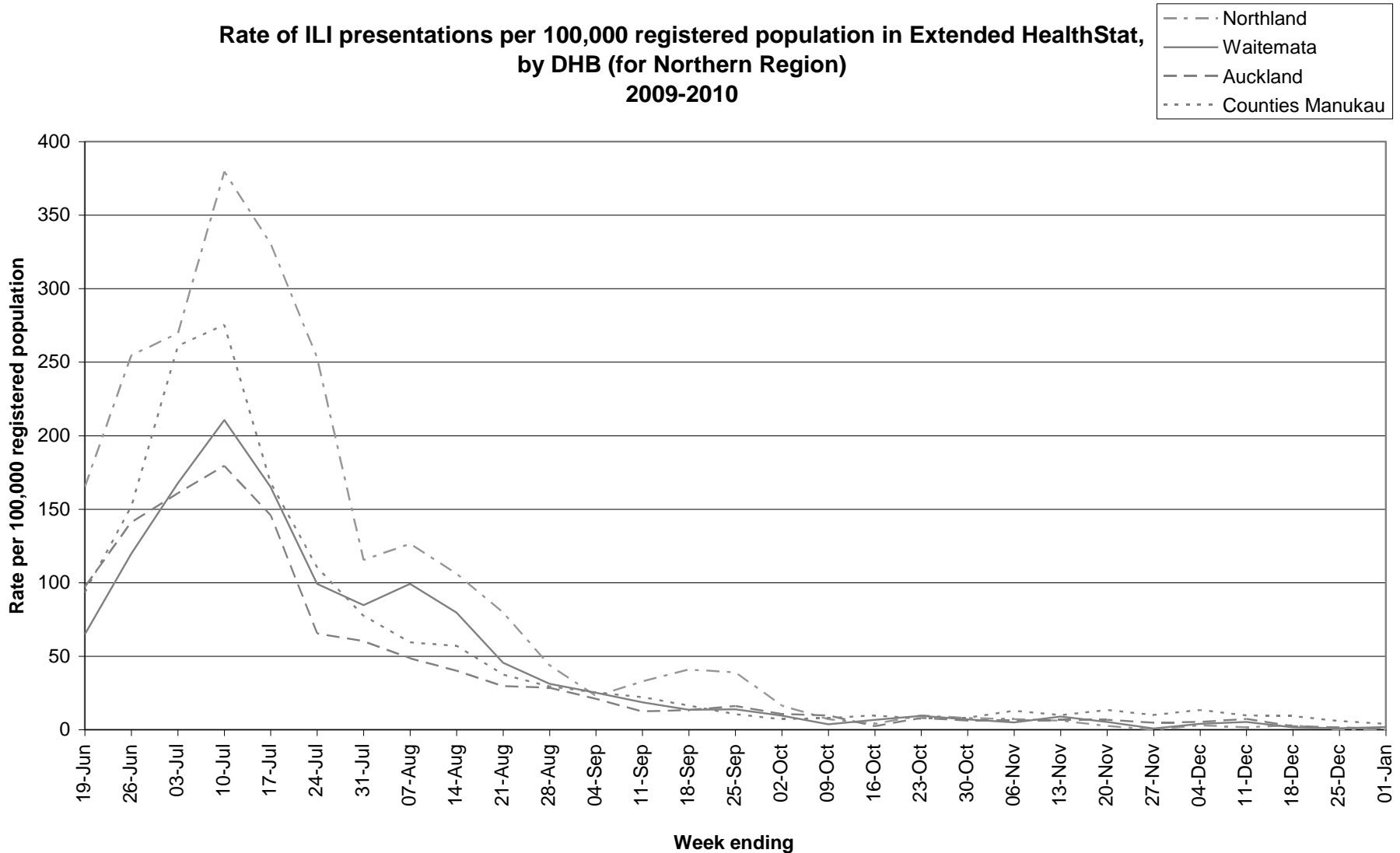
Weekly rate of ILI consultations per 100,000 registered patients in Extended HealthStat by age group, 5 June 2009 - 1 January 2010



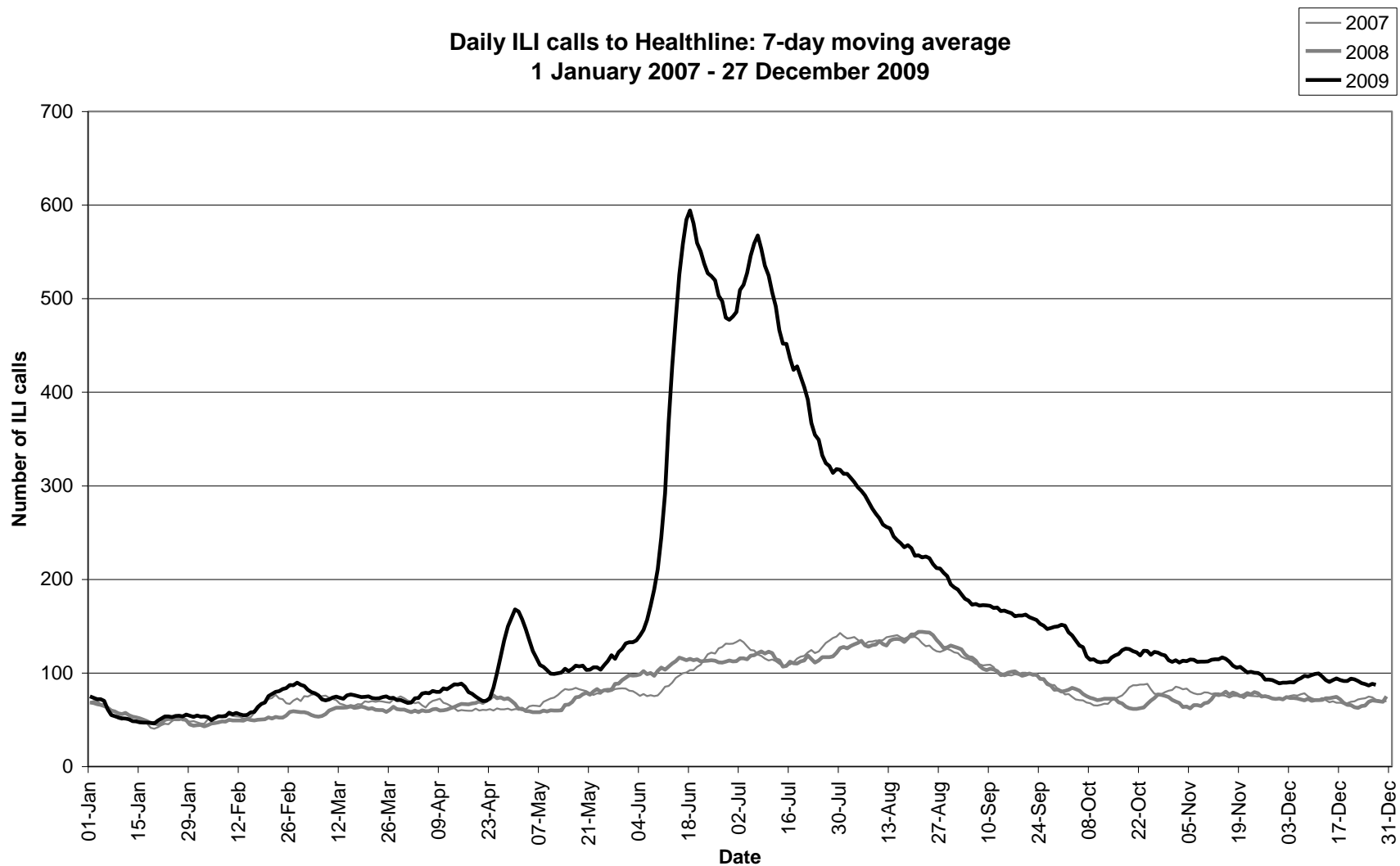
# HealthStat—extended

## District Health Board analysis

Rate of ILI presentations per 100,000 registered population in Extended HealthStat,  
by DHB (for Northern Region)  
2009-2010

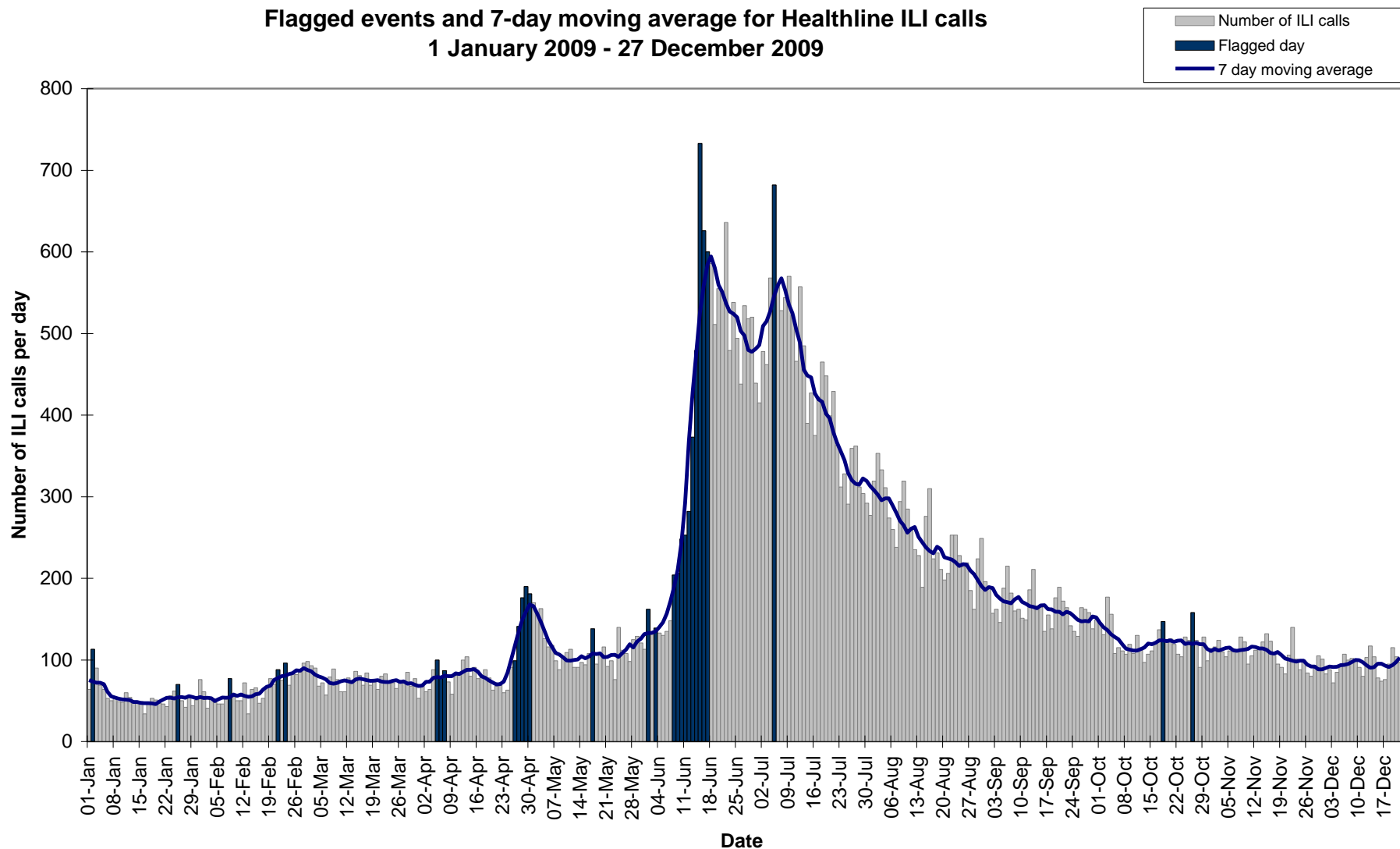


HealthLine showed small peak around end of April, large peak in June-July



## EARS flags at end of April, start of June, start of July

**Flagged events and 7-day moving average for Healthline ILI calls  
1 January 2009 - 27 December 2009**



# Summary

- Syndromic surveillance can provide useful information on influenza-like illness
  - Close to real time
- HealthStat and HealthLine complement existing systems
  - Different data sources provide different parts of the picture
- Mostly automated systems
- Surveillance reports provided to a wide group of people

# Acknowledgements

Many thanks to people in HDI involved in surveillance:

- Martin Tobias
- Erin Holmes
- Roy Costilla
- Roimata Timutimu
- James Harris

And to Paul White for helping develop the systems

And to McKesson and CBG Health Research Ltd for providing data on an on-going basis