

# Use of syndromic influenza-like illness surveillance as a proxy for influenza sentinel surveillance in Salt Lake County, Utah

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## Introduction

Salt Lake Valley Health Department (SLVHD) uses syndromic surveillance to monitor influenza-like illness (ILI) activity as part of a comprehensive influenza surveillance program that includes pathogen-specific surveillance, sentinel surveillance, school absenteeism and pneumonia and influenza mortality. During the 2009 spring and fall waves of novel H1N1 influenza, sentinel surveillance became increasingly burdensome for both community clinics and SLVHD. Given that syndromic surveillance is more efficient and less error-prone, could it be an effective proxy for influenza sentinel surveillance?

## Methods

All data were collected 8/30/09-12/26/09.

- Confirmed and probable hospitalized reported H1N1 cases were summed weekly from daily lab and provider reports.
- Daily sentinel provider ILI, defined as fever  $\geq 100.4^{\circ}\text{F}$  and cough and/or sore throat, and total patient visits were summed from 12 sentinel sites (Figure 1) and used to calculate weekly percentages of sentinel provider ILI.
- Daily text-based chief complaint data from 15 syndromic sites (Figure 1) were obtained from EpiCenter, mapped to an ILI disease category, defined as "fever" and "cough" or "sore throat," and summarized using the Early Aberration Reporting System (EARS). Daily ILI and total patient visits were used to calculate weekly percentages of EARS/syndromic ILI.

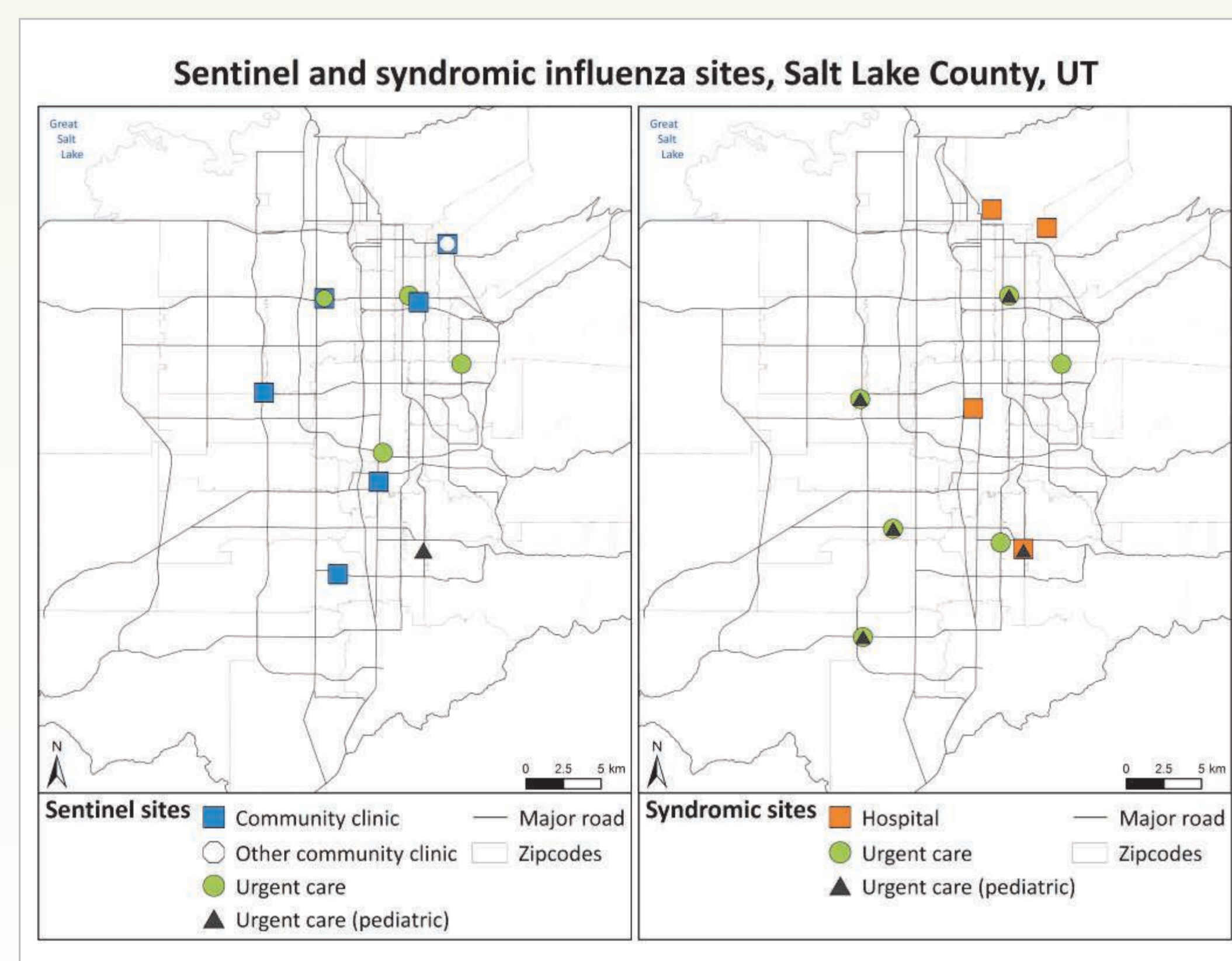


Figure 1. Sentinel and syndromic influenza sites, Salt Lake County, UT.

- Spearman correlations were calculated using SAS to determine the relationship between weekly percentage of EARS/syndromic ILI, weekly percentage of sentinel provider ILI and weekly reported hospitalized H1N1 case counts for all ages and for each ILI age group (0-4, 5-24, 25-49, 50-64,  $\geq 65$  years of age).

## All ages

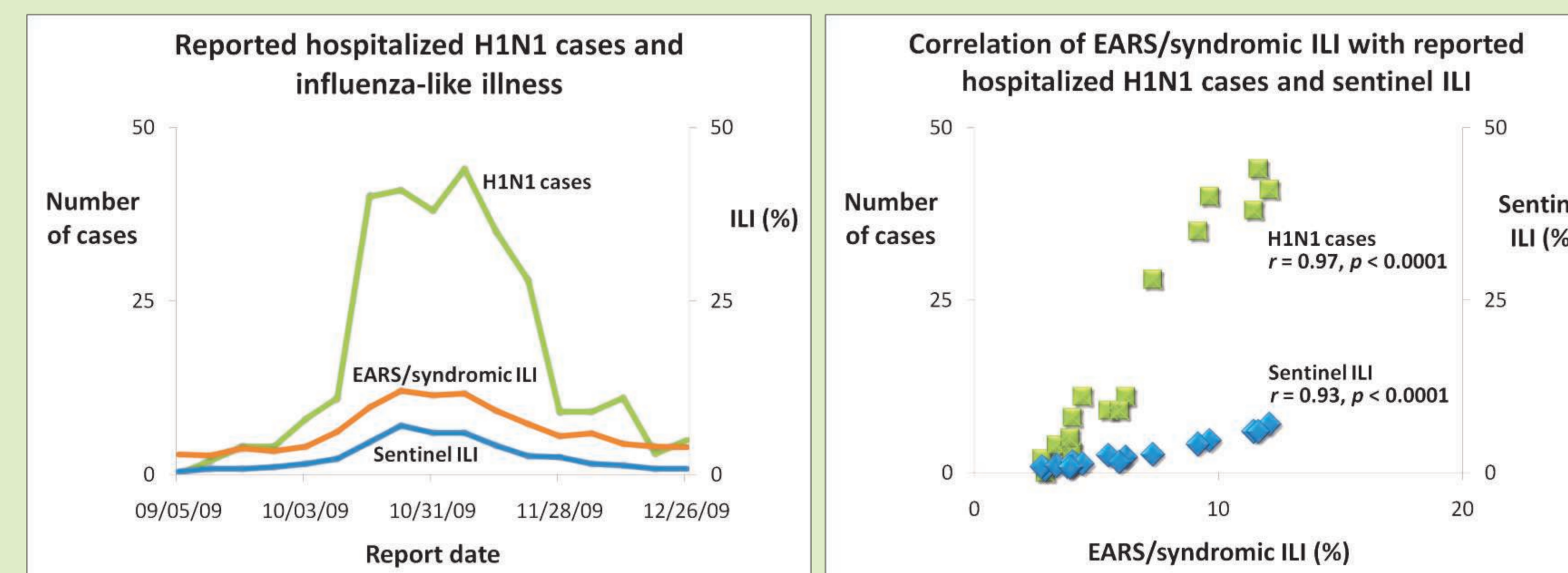


Figure 2. Reported hospitalized H1N1 influenza cases, EARS/syndromic ILI and sentinel ILI by report date, Fall 2009.

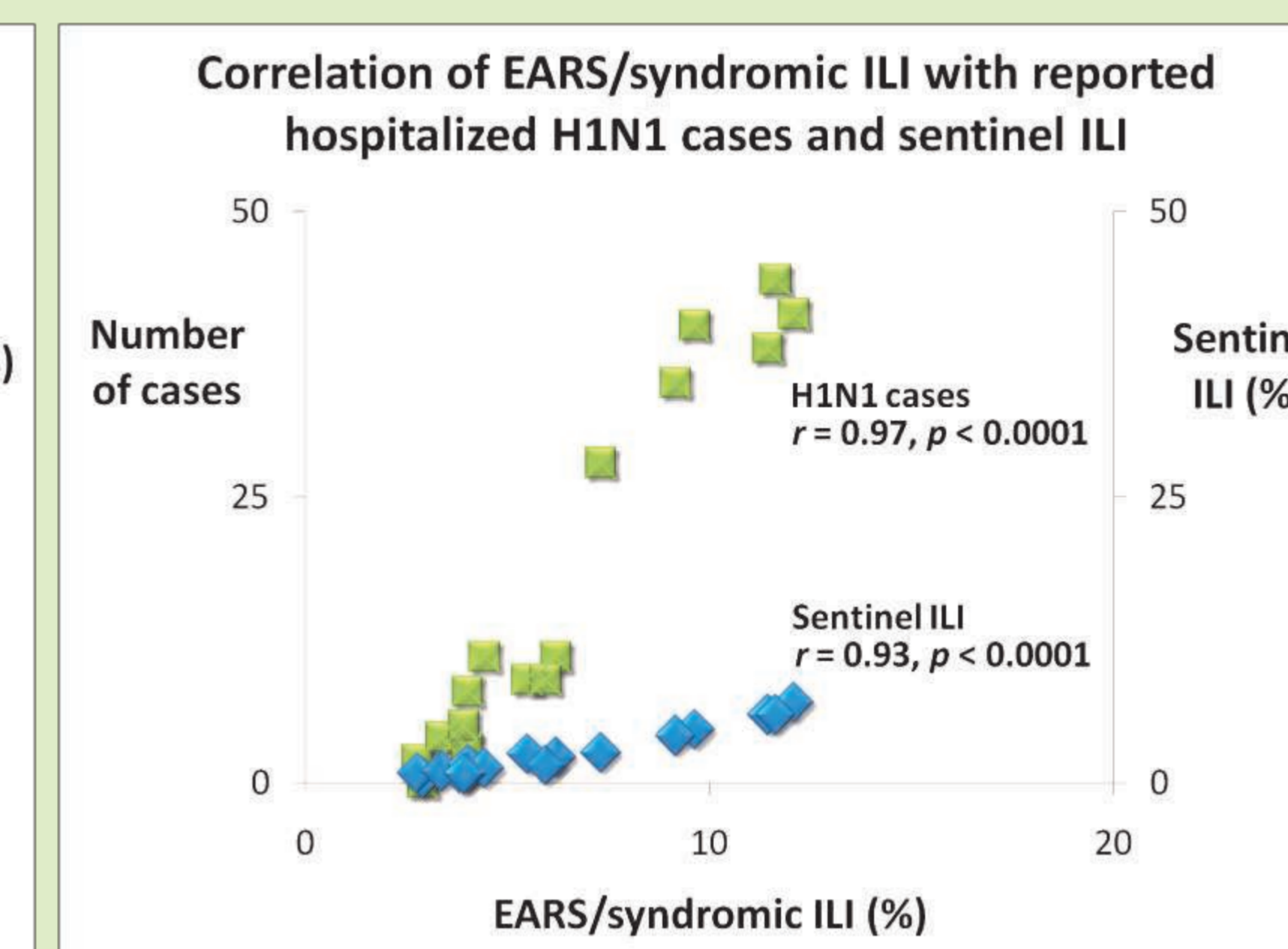


Figure 3. Correlation of EARS/syndromic ILI with reported hospitalized H1N1 influenza cases (green) and sentinel ILI (blue).

## By age group

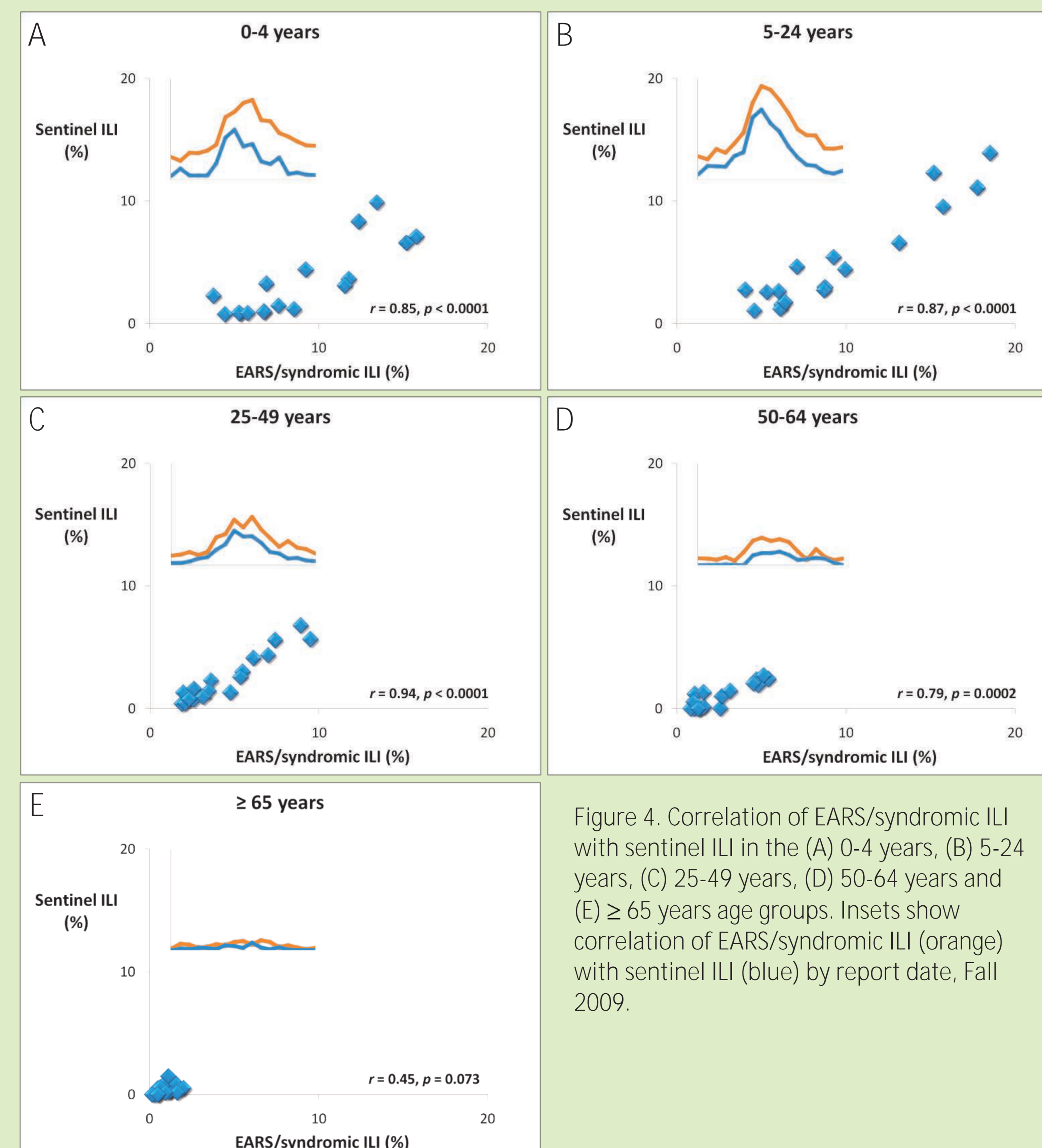


Figure 4. Correlation of EARS/syndromic ILI with sentinel ILI in the (A) 0-4 years, (B) 5-24 years, (C) 25-49 years, (D) 50-64 years and (E)  $\geq 65$  years age groups. Insets show correlation of EARS/syndromic ILI (orange) with sentinel ILI (blue) by report date, Fall 2009.

## Results

Overall, weekly percentage of EARS/syndromic ILI highly correlated with both weekly percentage of sentinel provider ILI ( $r = 0.93$ ,  $p < 0.0001$ ) and weekly reported hospitalized H1N1 cases ( $r = 0.97$ ,  $p < 0.0001$ ) (Figure 3). Strong correlations of EARS/syndromic ILI with sentinel provider ILI were also evident in the 0-4 ( $r = 0.85$ ,  $p < 0.0001$ ), 5-24 ( $r = 0.87$ ,  $p < 0.0001$ ), 25-49 ( $r = 0.94$ ,  $p < 0.0001$ ) and 50-64 ( $r = 0.79$ ,  $p = 0.0002$ ) age groups (Figure 4).

## Conclusions

- The strong correlations of EARS/syndromic ILI with both reported hospitalized H1N1 cases and sentinel provider ILI indicate that syndromic ILI surveillance may be an accurate and efficient substitute for sentinel ILI surveillance.
- Although the  $\geq 65$  years age group showed only moderate correlation, this is likely an artifact of novel H1N1 influenza, as this virus affected older individuals much less than seasonal influenza and resulted in lower case counts.
- SLVHD plans to collect ILI data from both syndromic and sentinel surveillance systems in future influenza seasons to establish an epidemic threshold percentage, with the eventual goal of replacing sentinel ILI surveillance with syndromic ILI surveillance.
- Use of syndromic ILI surveillance will eliminate the data collection burden on community clinics, reduce the data collection burden on public health agencies and eliminate the human error in hand tally counts of ILI data.
- Syndromic ILI surveillance is particularly advantageous during outbreaks of influenza when resources are stretched beyond capacity.

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## Further information

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