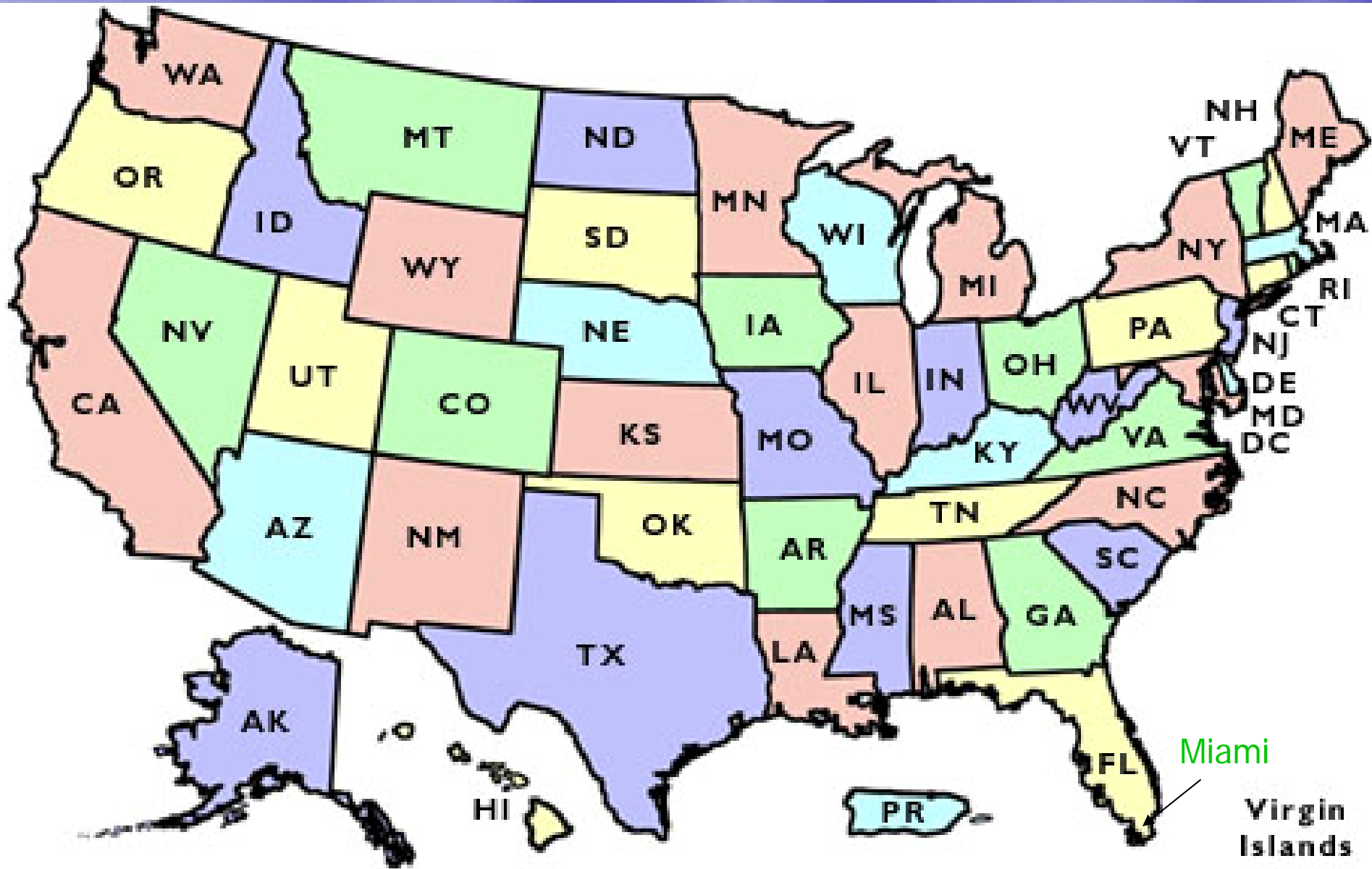


Innovative Alert System to Detect Possible School-Based Outbreaks of H1N1 Influenza

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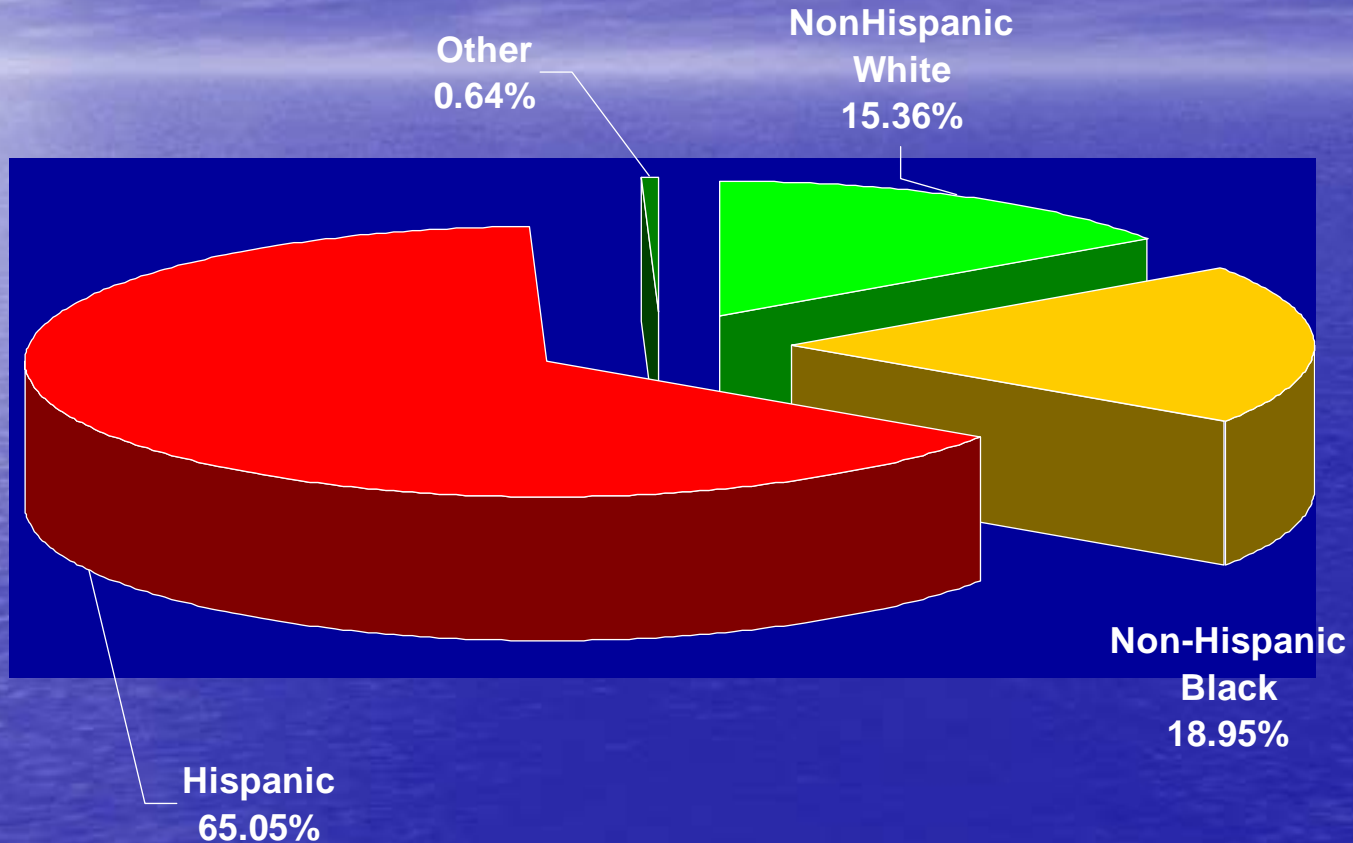
Miami

Virgin Islands

Demographic Characteristics

- Miami-Dade County (MDC), located in southeast Florida, has an estimated population of 2.5 million in 2010 (13% of Florida's Population)
 - More than 67.9% of Miami-Dade County's population reports a primary language other than English
 - 50.9% of foreign born
 - The racial/ethnic demographics reflect a population comprised of 65% Hispanic, 19% Black and 15% White
- 10-14 million visitors annually

Miami-Dade County (MDC) Population by Race/Ethnicity, 2010 (N=2,496,435)



Miami-Dade County Public Schools

- There are approximately 350,000 students enrolled in Miami-Dade County Public Schools (MDCPS)
 - the fourth largest school district in the United States with 392 public schools

Public School Attendance System

- Each school is required to enter students' attendance information daily into an MDCPS database, the Automated Student Attendance Recordkeeping System
- MDCHD has automatically received electronic raw data daily since 2007
 - contain students' demographic and geographic information such as gender, race/ethnicity, age, school code, and zip code

School absenteeism data

- School absenteeism data has been widely used to monitor and detect unusual public health events as part of syndromic surveillance in the United States
- New York City used the 2001–02 public school year data to detect moderate increases in student absenteeism associated with peak influenza A activity

School absenteeism data

- Absence is not always related to illness
- Specific reasons are not usually recorded
- There is no unique model to collect and analyze absenteeism data

School absenteeism System In MDC

- At the beginning of the 2009 – 10 school year, the absenteeism report system was redesigned in order to improve monitoring of absenteeism that may have been associated with the H1N1 Flu outbreak(s)

School absenteeism System In MDC

- Previously, alerts were automatically created when an absenteeism rate is $\geq 8\%$ at countywide level by age group and individual school level
- After redesign, all schools, with an absenteeism rate $\geq 8\%$, compared to their own historical data using mean and standard deviation to generate an alert:

School absenteeism System In MDC

- beyond the mean plus 1.0 standard deviation (warning)
- the mean plus 1.96 standard deviations (yellow alert)
- or the mean plus 2.58 standard deviations (red alert)

School absenteeism System In MDC

- To increase sensitivity at the school level
- To reduce false alerts for schools who typically have high absenteeism rates due to low attendance based on historic data
- Only the yellow and red alerts are applied to countywide absenteeism trends by age group

School absenteeism System In MDC

- SAS 9.13, Visual Basic and ArcGIS 9.3 were used to design an automated report system with three reports

Menu

Absenteeism Report

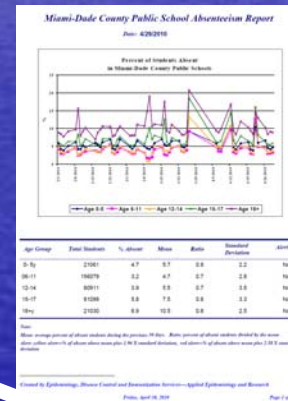
Get Report

Search by School

Weekly by Age

Duplicate Previous Report

Exit



Schools with Absenteeism Rate 8% and Alert Status

Date: 4/29/2010

School Name	Type	Level	% of Absent	Mean	Standard Deviation	Alert
CORPORATE ACADEMY SOUTH	P	S	24.4	18.5	3.5	Warning
NEVA KING COOPER EDUCATIO	VA	M	22.1	15.5	4.1	Warning

School absenteeism System In MDC

- Additional research reports that will help us to determine if we need to contact school when the system detects an alert at the school level


Menu

Absenteeism Report

Get Report

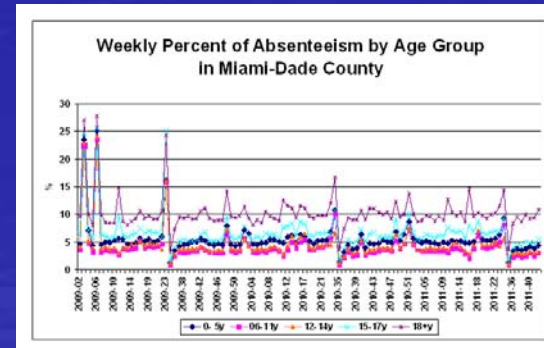
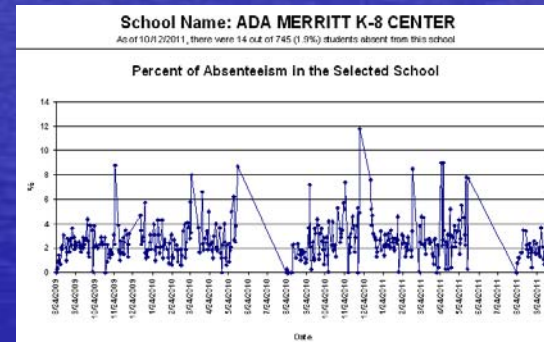
Search by School

Weekly by Age



Duplicate Previous Report

Exit



School absenteeism System In MDC

- The MDCHD Epidemiology, Disease Control and Immunization Services (EDC-IS) Applied Epidemiology and Research team performs daily school absenteeism surveillance
- When the system detects an alert at the school level we may contact the school after performing research

School absenteeism System In MDC

- We obtained the school calendar which indicates teacher planning days, early release days, holidays and other events as a guidance to perform data analysis. Special events such as preliminary standard assessment test (PSAT) and holidays such as Columbus Day were excluded
- Study Period: September 8 and October 21, 2009

Results

- During study period, SBASS detected:
 - 61 red alerts
 - 28 yellow alerts
 - 67 warnings
- 9 of 89 alerted schools (red & yellow) had an influenza outbreak
 - 71 persons with ILI were identified
 - 2 schools simultaneously reported outbreaks

Results

- During the same time period, MDCHD received 26 reports of suspected influenza activity from schools
 - Two (8%) were confirmed outbreaks
 - Both were detected via SBASS
- All outbreaks were investigated in accordance with EDC-IS protocol, regardless of detection method

Results

Table. Influenza-like illnesses identified through a SBASS, Miami-Dade County, Florida, USA, September 8–October 21, 2009*

Week	Dates	No. red alerts	No. yellow alerts	No. warning alerts	No. schools with outbreaks identified through SBASS	No. ILI identified through SBASS
1	Sep 8–Sep 11	3	2	17	0	0
2	Sep 14–Sep 18	8	2	16	1	27
3	Sep 21–Sep 25	9	11	10	2	17
4	Sep 28–Oct 2	9	4	7	0	0
5	Oct 5–Oct 9	16	4	11	2	7
6	Oct 12–Oct 16	16	5	6	1	20
7	Oct 19–Oct 21	0	0	0	3	0
	Total†	61	28	67	9	71

*SBASS, school-based absentee surveillance system.

†3 d were excluded due to school closures. October 20–21, high schools were excluded for participation in Florida's Comprehensive Assessment Test and only elementary schools were counted.

Discussion

- H1N1 Pandemic was a novel disease
 - Unknown Implications
 - Aggressive surveillance approach was needed
 - Especially among children
- SBASS detected several influenza-related outbreaks among public schools during H1N1 pandemic



Discussion

- Schools: Ideal settings for detecting influenza outbreaks
 - Children play a vital role in acquisition and spread of ILI
- During pandemic, clusters of ILI were considered H1N1-related

Discussion

- SBASS design different from previous school-absentee surveillance systems
 - Only use percentages to determine absentee rates
 - SBASS assesses absenteeism against historic baseline
 - Schools with consistently high levels did not generate alerts
 - Only those with higher than normal levels were identified and investigated

Discussion

- SBASS assisted in a stronger partnership between MDCHD and the school system
 - Frequent communication
 - Increased public health awareness
 - Emphasized role schools play in preventing and controlling disease
- SBASS mapping feature enabled better detection of geographic clustering of multiple schools

Limitations

- Inability to capture reasons for absenteeism
- Private schools not included
- Manual entry by school attendance offices lead to a lag in data submission time
 - Data may also contain typographical errors

Future Directions

- Extending study period
 - Comparing influenza trends over several years
- Using SBASS to detect other infectious disease outbreaks

Acknowledgements

- Erin O'Connell
- Lizbeth Londono
- Rene Borroto-Ponce
- Pamela Mann
- MDCHD Surveillance Staff
- We would like to express our appreciation to the Miami-Dade County Public Schools for their support to the absenteeism surveillance.

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The background is a smooth blue gradient, transitioning from a lighter blue at the top to a darker blue at the bottom. On the left side, there is a bright, glowing area that resembles a sun or moon reflecting on water, creating a shimmering effect. The overall atmosphere is calm and serene.

Questions?