

Community and Public Health Response to an Influenza Outbreak Involving School Closure

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NC Center for Public Health Preparedness

Webinar Symposium Series on Public Health Preparedness



Influenza Outbreak in Yancey County, North Carolina October-November 2006



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Yancey County, North Carolina

- Population: ~18,000
- 91% white, non-Hispanic
- Median household income: \$30,200
- Main industry: textiles
- Public school system: 2559 students
- Mountainous

1 High School
2 Middle Schools
6 Elementary Schools



Burnsville, Town Square (only incorporated town)



Recognizing the Outbreak

- October 26th - MFMC diagnoses 3 children with flu
- October 30th - excessive absenteeism (20%) in 2 elementary schools, Burnsville and Micaville schools
- October 31st - absenteeism in the 2 schools increases to 25%, MFMC reports seeing 29 children with flu local hospital ER sees 12
- November 1st - absenteeism is 40% at Burnsville and Micaville, 17% system-wide, decision made to close schools
- November 6th - 7 of 8 cultures sent to state public health lab confirm influenza B

Yancey County Health Dept.



What we did:

- Used modified incident command structure
- Called Epi Team meetings
- Surveillance
- Public Education
- Flu shots
- Invited the CDC to study the impact

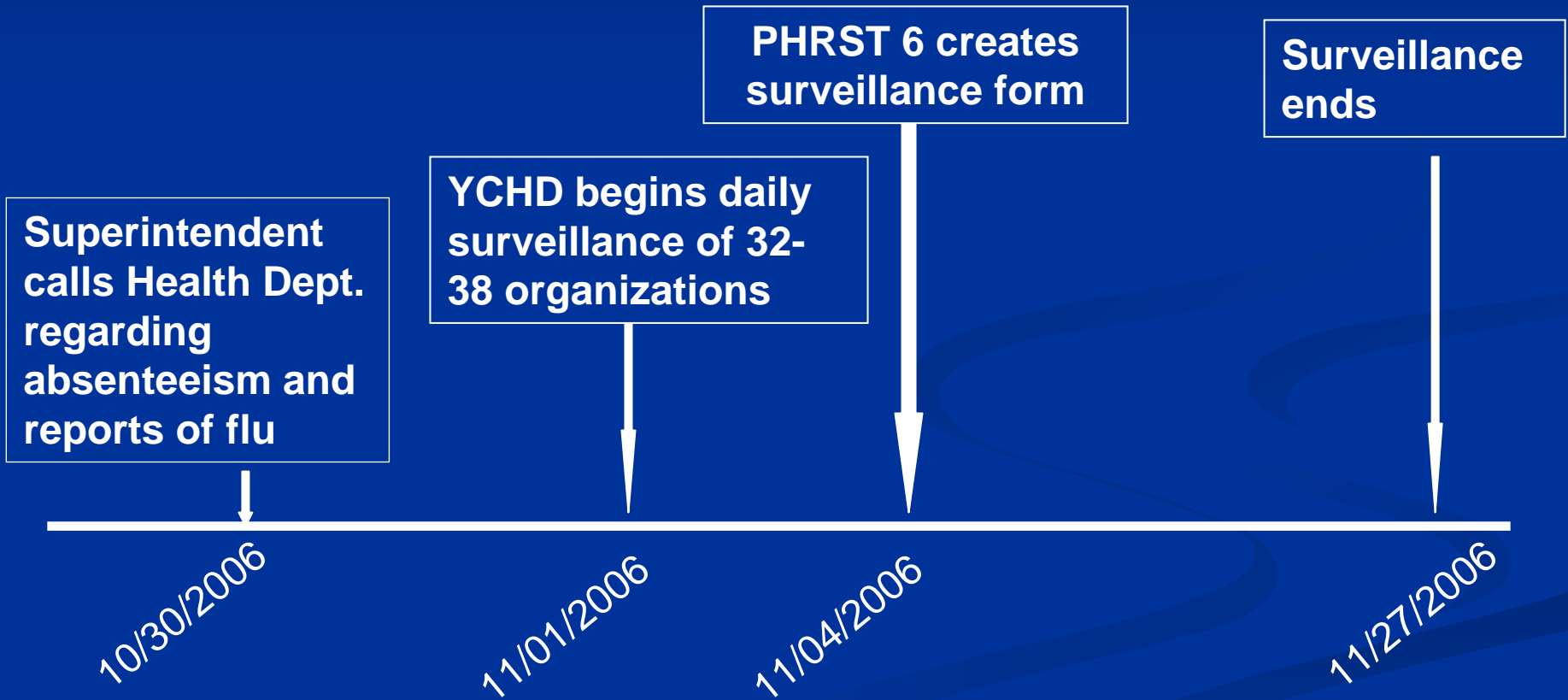
Epidemiology Team

- District health director
- Local health department director
- Health dept. staff (CD nurse, lab staff, nurse supervisor, medical director, FNP)
- Superintendent of Schools
- School Facilities Manager
- County Manager
- Emergency Management Coordinator
- Pediatrician
- Plant nurse
- Private school principal
- Public Health Response and Surveillance Team (PHRST) 6 member
- CDC representative

Epidemiology Team

- Met daily from 10/31/06 – 11/8/06 (excluding week-ends)
- Met every other day through 11/15/06
- Reviewed surveillance data
- Planned public education strategy

Surveillance



Daily Call List

1. Arthur Morgan School
2. Avery County Health Dept.
3. Bakersville Medical Clinic
4. Bald Creek Day Care
5. Blue Ridge Family Practice
6. Brian Center Nursing Home
7. Brookside Nursing Center
8. Buncombe Co. Health Dept.
9. Celo Health Center
10. Centro de Enlace
11. Erwin/Unicoi Co. Health Dept.
12. Glen Raven Mills
13. Head Start
14. Kidz First
15. Madison County Health Dept
16. Madison Manor Nursing Home
17. Mars Hill College Infirmary
18. Mars Hill Medical Center
19. Mayland CC Yancey Campus
20. Mayland Family Medical Center
21. McDowell Family Practice
22. Mission Family Medical Center
23. Mission Hospitals
24. Mitchell Co. Health Dept.
25. Mountain Manor Rest Home
26. Mountain Opportunity Center
27. Spruce Pine Community Hospital
28. Spruce Pine Family Medical
29. Tiny Town Day Care
30. WAMY Adult Day Care
31. Yancey Child Dev. Center
32. Yancey Christian School
33. Yancey Co. Home Care
34. Yancey Co. Sheriff's Office (Jail)
35. Yancey County Schools
36. Yancey EMS
37. Yancey Residential Services
38. Yancey Senior Center

Surveillance, example

Toe River Medical Facilities	Phone	Contact	Ped w/ Symptoms	Ped w/ + Screen	Adults w/ Symptoms	Adults w/ + Screen	Flu Shots Given	Total w/ Symptoms
Bakersville Medical Clinic	(828) 688-2104	June	1	1	0	0	535	1
Celo Health Center	(828) 675-5532	Nurse	1	1	5	1		6
Drs. Steven Hill & Chad Smoker	(828) 765-6101							0
Home Health	(828) 682-7825	Kelly Hensley	0	0	0	0	5	0
Mission Family Medical (Peds/Adults)	(828) 682-0200	Susan MacLean MD Or Nurse	18	12	8			26
Mitchell Co. Health Dept.	(828) 688-2371	Erla ODell					350	0
Spruce Pine Family Medical								0
Spruce Pine Hospital	(828) 876-5420	Mary Ann Johnson						0
Yancey County Health Dept.								
Total			20	14	13	1		33
Area Medical Facilities	Phone	Contact	Peds w/ Symptoms	Ped w/ + Screen	Adults w/ Symptoms	Adult w/ + Screen	Flu Shots Given	Total w/ Symptoms
Buncombe Co. Health Center	(828) 250-5203	CD Nurse						
Madison County Health Department	(828) 649-3531	Amy Massey						0
MM/ St. Joseph Hospital	(828) 213-1111	Rachel Long	2	0	7	0		0
Total			2		7			9

FAX back form

Yancey County Health
Department

Flu Surveillance Report

Date: _____

Site: Mountain Manor	number
Total Patients	
Patients with flu like symptoms	
Total staff	
Staff with flu like symptoms	

Please FAX in by 11:00 AM each day. Report for the previous workday.

Flu Shots

- On 11/2/06 YCHD had 350 doses of vaccine, and none for children under age 4
- PHRST 6 help locate 1,000 doses
- State Immunization consultant located pediatric vaccine
- 1,000 doses given in 2 days
- 3,100 given during entire flu season (more than twice the usual amount given by YCHD)



Flu Shots

November 22, 2006 press release:

“The CDC recently confirmed that the influenza B virus isolated from all 9 viral cultures they tested from Yancey County **is not represented** in this season’s influenza vaccine (2006-07). Therefore, persons who have been vaccinated will not have significant protection against the flu that is currently circulating in the county.”



Public Education

- WARN system (reverse 911) calls made to inform public of outbreak and educate on control measures
- Daily press releases to local media outlets, focus on control measures and immunization
- Superintendent, Health Dept. Director and County manager made media calls following every team meeting
- Health educators visited local businesses, posted cough etiquette posters and encouraged businesses to provide hand sanitizer and tissue to customers and staff

Conclusions

- Regular community team meetings resulted in a unified response
- Pre existing flu surveillance tools would have provided more accurate useful information
- The flu vaccine distributions system is not optimal
- Even in a small outbreak with a mild strain of flu, many more people than usual will want vaccine

Acknowledgements

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- Niles Howell, Facilities manager

■ Yancey County Government

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- Junior McIntyre, EMS Coordinator

■ PHRST 6

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- Keith Rowland
- Phyllis Rocco, RN
- Ginger Bumby

■ Rotary Club

- Bob and Gail Howell
- Ann Berdeen
- Marilyn Woodby
- Wade James

■ Others

- Gina Holland, State Nurse Consultant
- Sharon Trka, RN Glen Raven Mills
- Susan MacLean, MD MFMC

■ Yancey County Health Department

- Linda Angel, Lead Management Support
- Penny Bailey, Health Educator
- Laura Hylemon, WIC Interviewer
- Janet Hill, Management Support
- Cindy Shuford, Management Support
- Teresa Hensley, Laboratory
- Amberly Rohr, Laboratory
- Patsy Riddle, Clinic Aide
- Tonda Gosnell, Health Educator
- Darlene Tipton, Nurse Supervisor
- Janet Meynall, FNP
- Annie Barrus, FNP
- Fran Giardina, OGNP
- Donna Ross, RN
- Gail Crisp, RN
- Tammy Goodson, Health Check Coordinator
- Mike Ledford, Safety Officer
- Suzette Renfro, RN
- Martha McKay, MD

Investigating School Closure In Yancey County, NC November 2006

Paul J Edelson MD

**Division of Global Migration and Quarantine
Centers for Disease Control and Prevention**



Quarantine

SAFER · HEALTHIER · PEOPLE™



Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States—

Early, Targeted, Layered Use of Nonpharmaceutical Interventions



Quarantine

http://www.pandemicflu.gov/plan/community/community_mitigation.pdf



School Closure

- Occasionally recommended during community-wide outbreaks of other illnesses
- A proposed response to an influenza pandemic to mitigate impact
- *Community Strategy for Pandemic Influenza Mitigation* recommends closing schools from 4-12 weeks depending on severity
- Few studies have evaluated the effect school closure has on families with school children



Reasons for School Closure for Pandemic Influenza

- Children more susceptible to infection
- Children more likely to cause secondary household cases
- Schools amplify spread of influenza
- Vaccination of children reduces community activity
- Anecdotal evidence that school closure may limit respiratory outbreaks

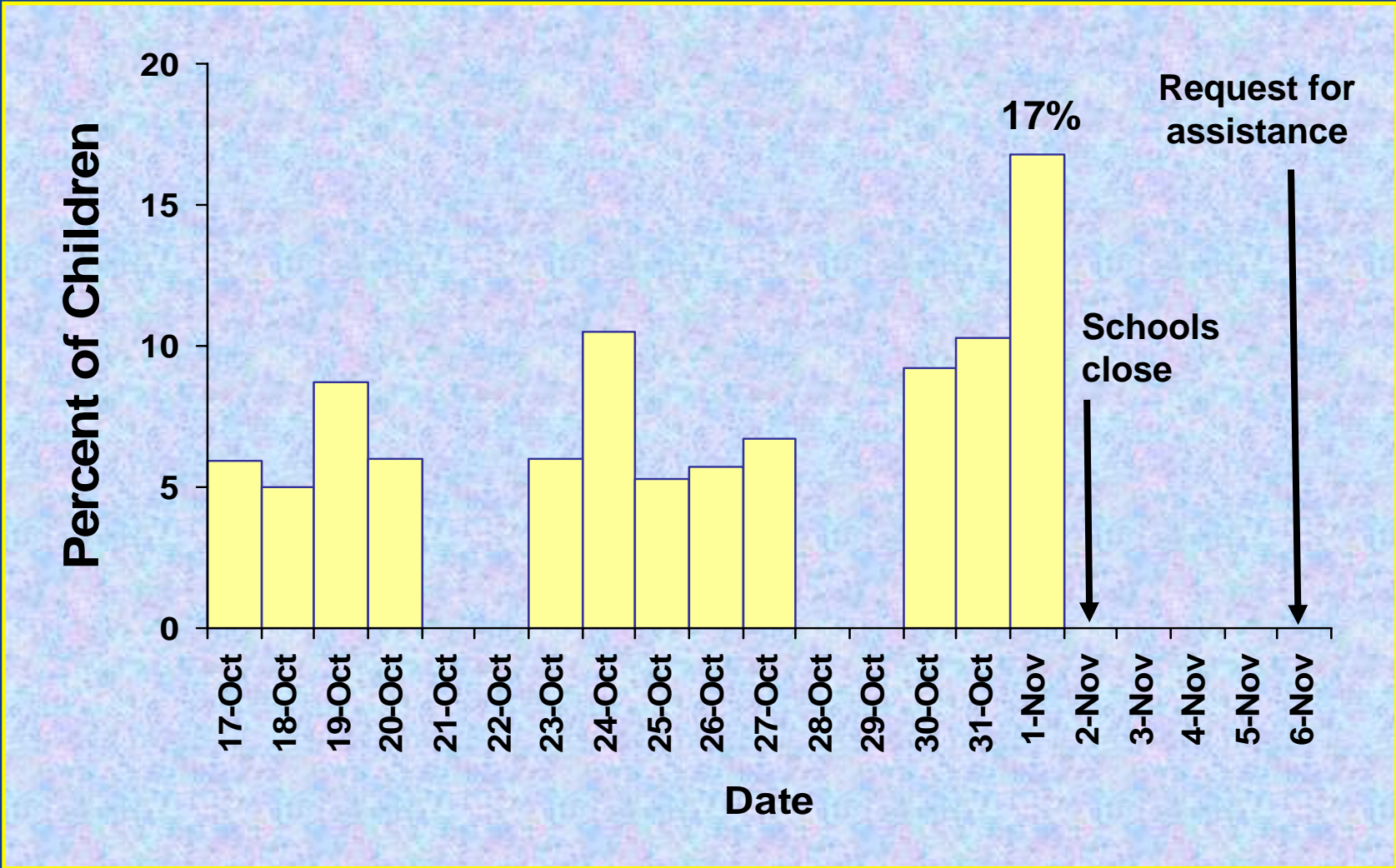


Secondary Consequences of School Closures

- Need for child care
- Secondary work-place absenteeism
- Increased household transmission
- Interruption of school-based services
- Unacceptable to parents
- Social mixing of children in other venues



School Report of Percent of Children Absent — Yancey Co. Public Schools



Aims of the Yancey County Investigation

- Determine burden on families for childcare
- Determine secondary absenteeism in adults
- Determine extent of social distancing achieved



Survey Methods

- **Cross-sectional survey of parents and guardians of children in the school system**
- **Telephone questionnaire**
- **400 numbers randomly selected from 1,750 unique telephone numbers for students known to the school system**
- **Target sample was 220 households (~10%)**

Survey Results

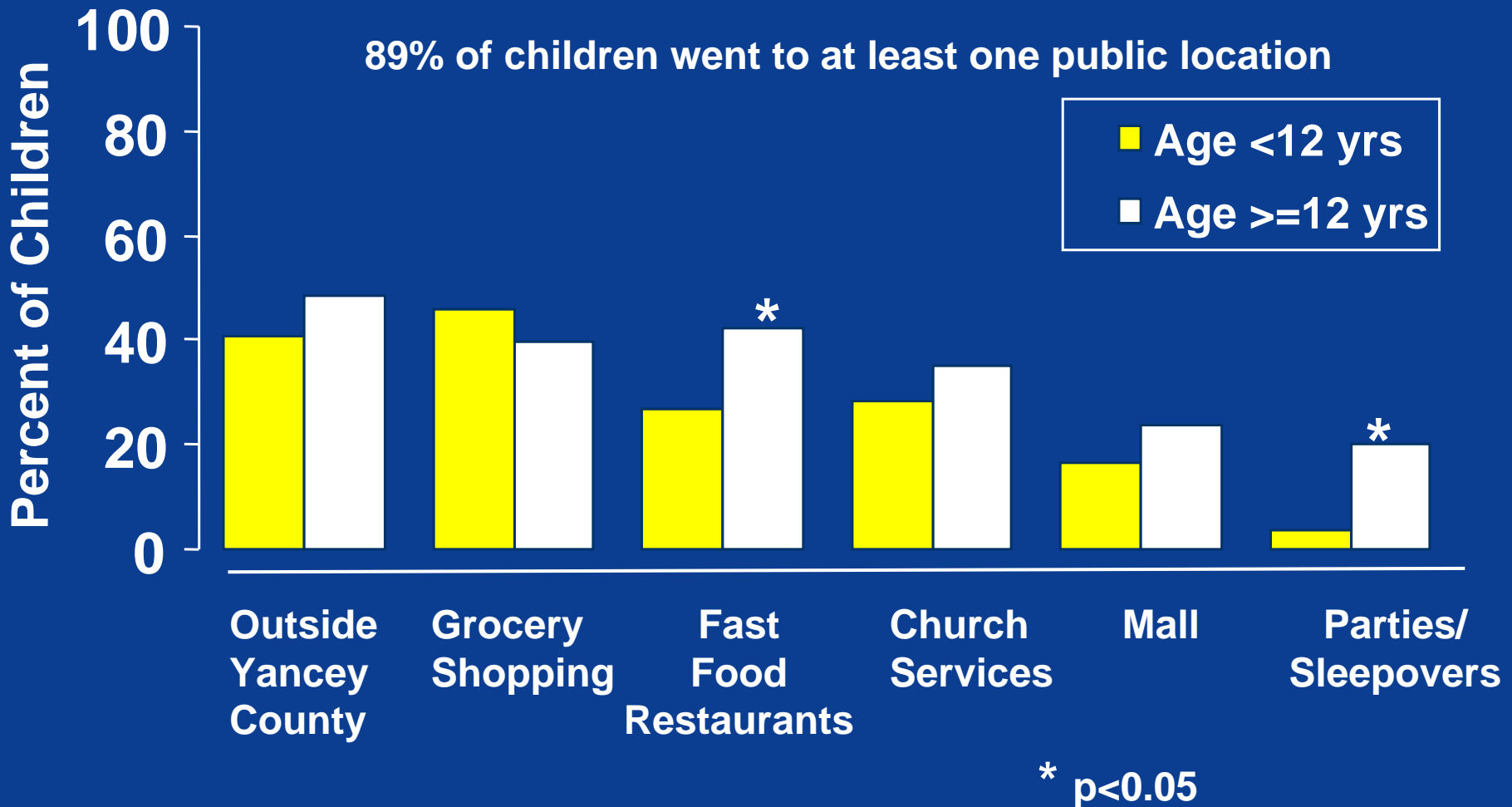
- **220 (97%) of 228 households contacted completed surveys**
- **Surveys gathered data on:**
 - **355 children**
 - **Median age: 12 years (range 5-19)**
 - **50% were male; 50% were female**
 - **438 adults**



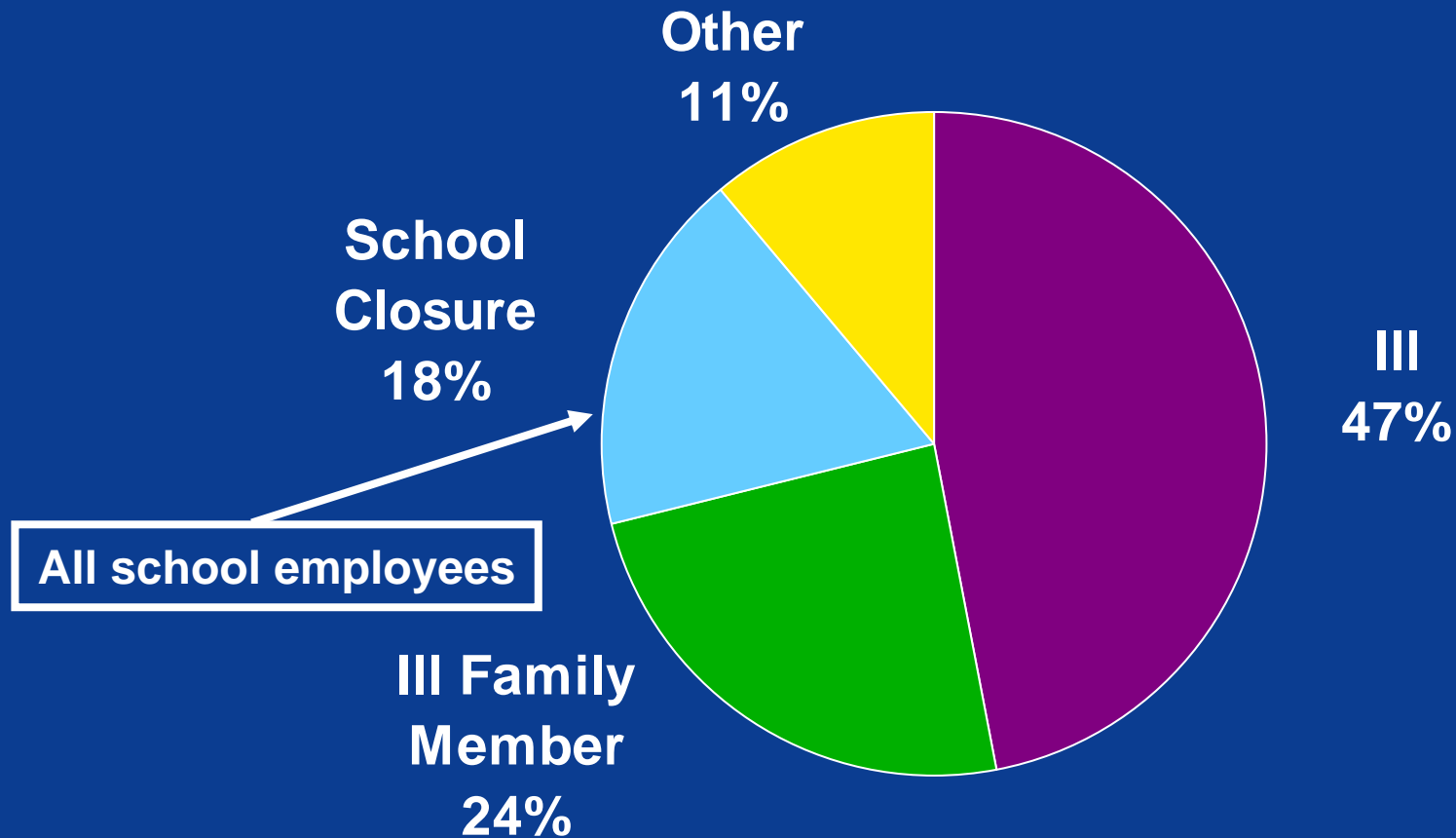
Childcare Arrangements (n=220)

Arrangement	No. of households (%)
Someone home during the day	154 (70)
Special childcare arrangements	22 (10)
Child spent 1 or more nights away from home	7 (3)
Spent extra money on childcare	2 (1)

Locations Visited by School Children During School Closure by Age Group



Reasons for Employee Absenteeism



Limitations

- **Results might not be generalizable**
 - **Outbreak occurred in rural community**
 - **Most illnesses were not severe**
 - **Family resources were often available**
 - **Interruption of school was brief**
- **Community response to school closure might be different during a pandemic**
- **Investigation was not intended to determine the effect of school closure on illnesses in the community**

Summary

- **Most parents did not experience difficulties in caring for children**
- **Adults missed work primarily due to own illnesses or to care for sick family**
- **89% of children went to public locations despite recommendations to avoid large gatherings**

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