

***Salmonella* Typhimurium Associated with Unpasteurized Homemade Queso Fresco March-April, 2013**



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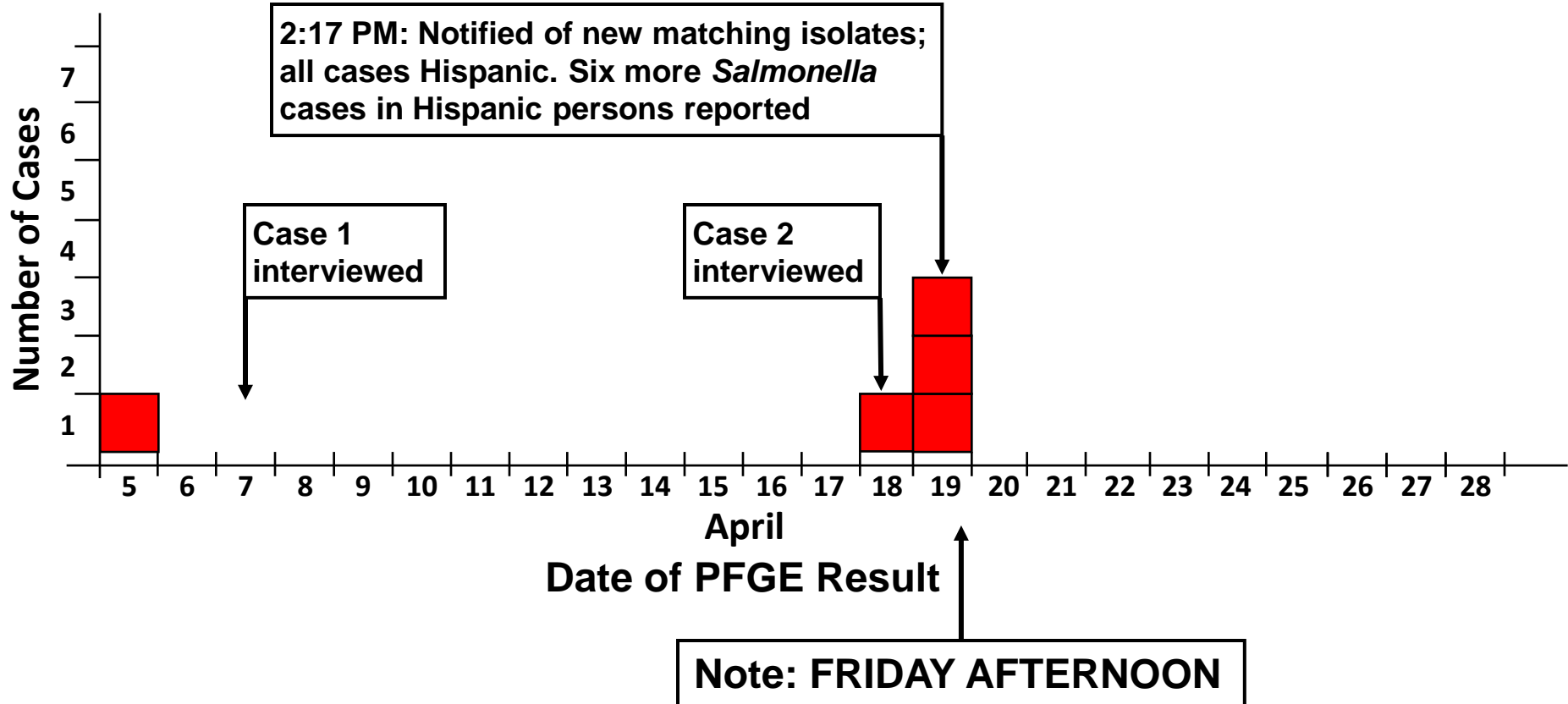
³Minneapolis Health Department

Background

April 18, 2013

- **The Minnesota Department of Health (MDH) pulsed-field gel electrophoresis (PFGE) laboratory identified 2 *Salmonella* Typhimurium isolates indistinguishable PFGE**
- **PulseNet PFGE pattern JPXX01.0954**
- **Both cases were Hispanic**

S. Typhimurium Cluster Cases by Date of PFGE Result



Minnesota Approach to Investigation of PFGE Clusters

- **All reported *Salmonella* cases are interviewed even before a cluster is identified**
- **Collect details on specific exposures**
 - **Point of sale or service**
 - **Food brands, variety names**
- **Used in generating hypotheses for commercially distributed food outbreaks**

Minnesota Approach to Investigation of PFGE Clusters: Dynamic Cluster Investigation Model



Methods

- **Case interviews were conducted by phone in Spanish or English by MDH staff**
- **Dynamic interviewing approach**

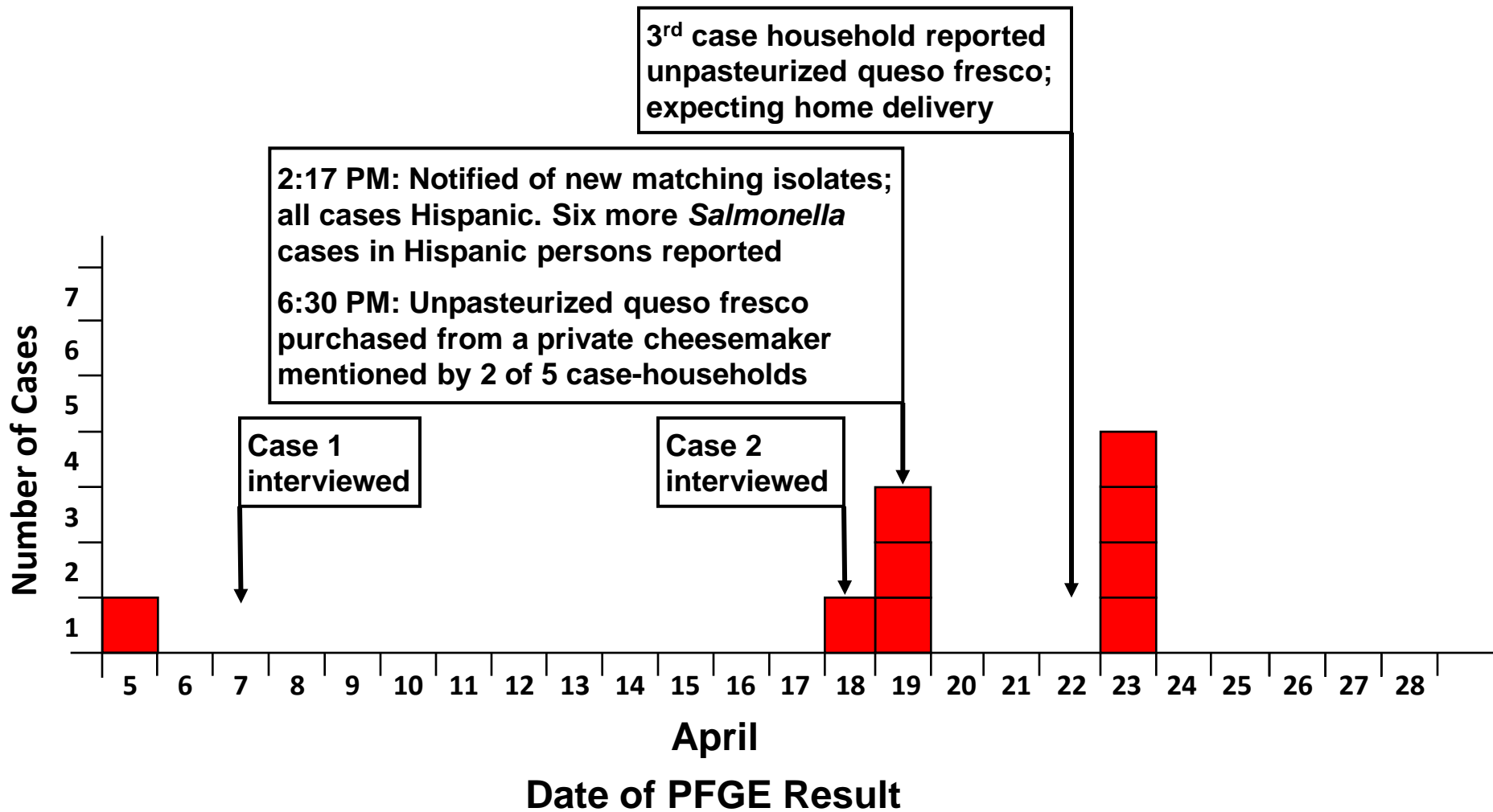
Methods

- **Case definition:**
 - **Confirmed case: a person with confirmed infection with *S. Typhimurium* PFGE pattern JPXX01.0954**
 - **Probable case: a person with diarrhea (≥ 3 loose stools in 24 hours) and fever from the same household as a confirmed case or identified from a list of customers of the implicated vendor**

Methods

- **City of Minneapolis Environmental Health led a joint investigation to identify the suspected vendor**
 - **MDH, Minnesota Department of Agriculture (MDA), and Minneapolis police participated**
- **Confiscated products were tested by MDA**
- **MDA conducted a farm investigation, including collection and testing of milk and environmental samples**

S. Typhimurium Cluster Cases by Date of PFGE Result

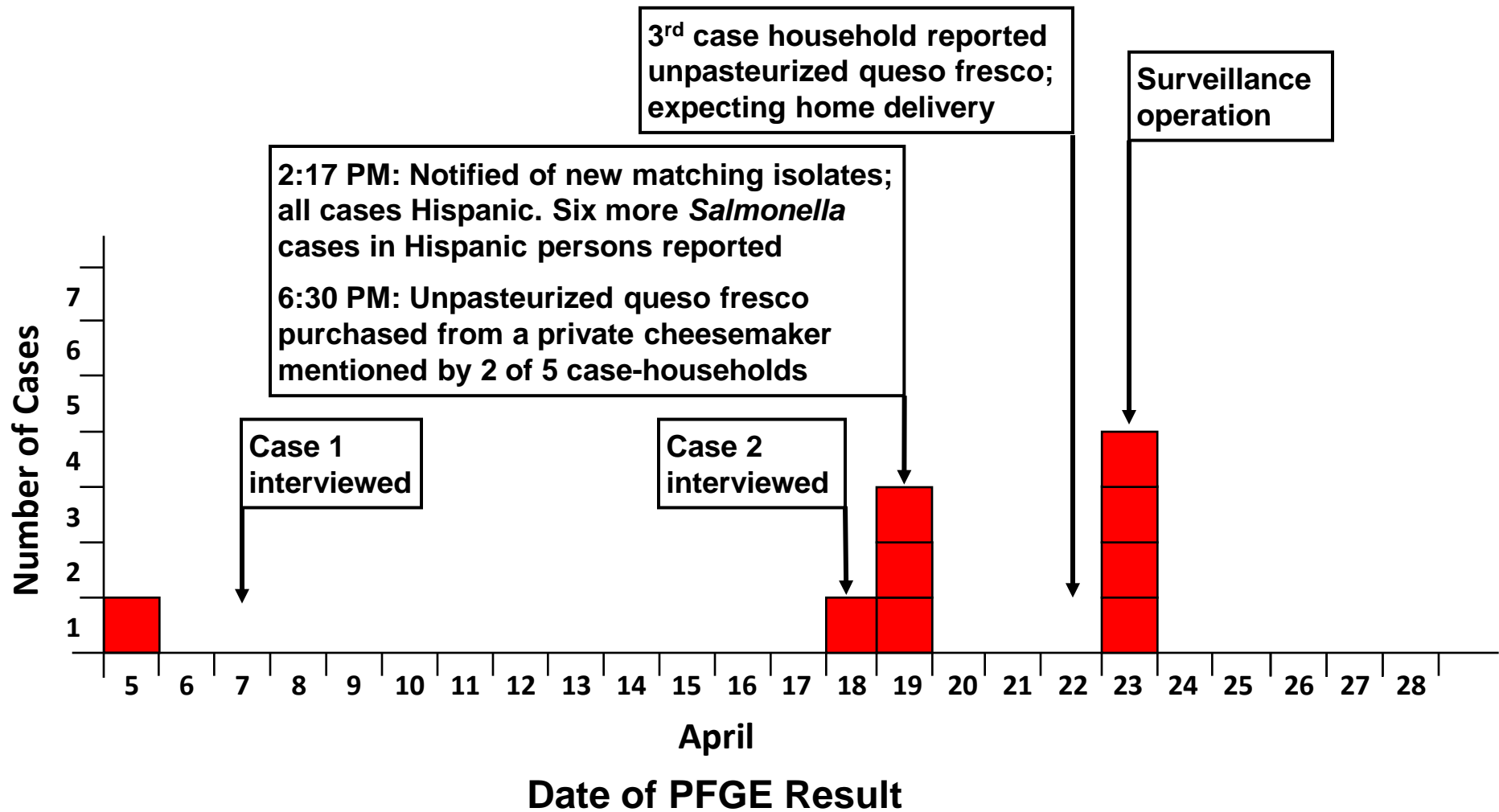


S. Typhimurium Outbreak Investigation Initial Results

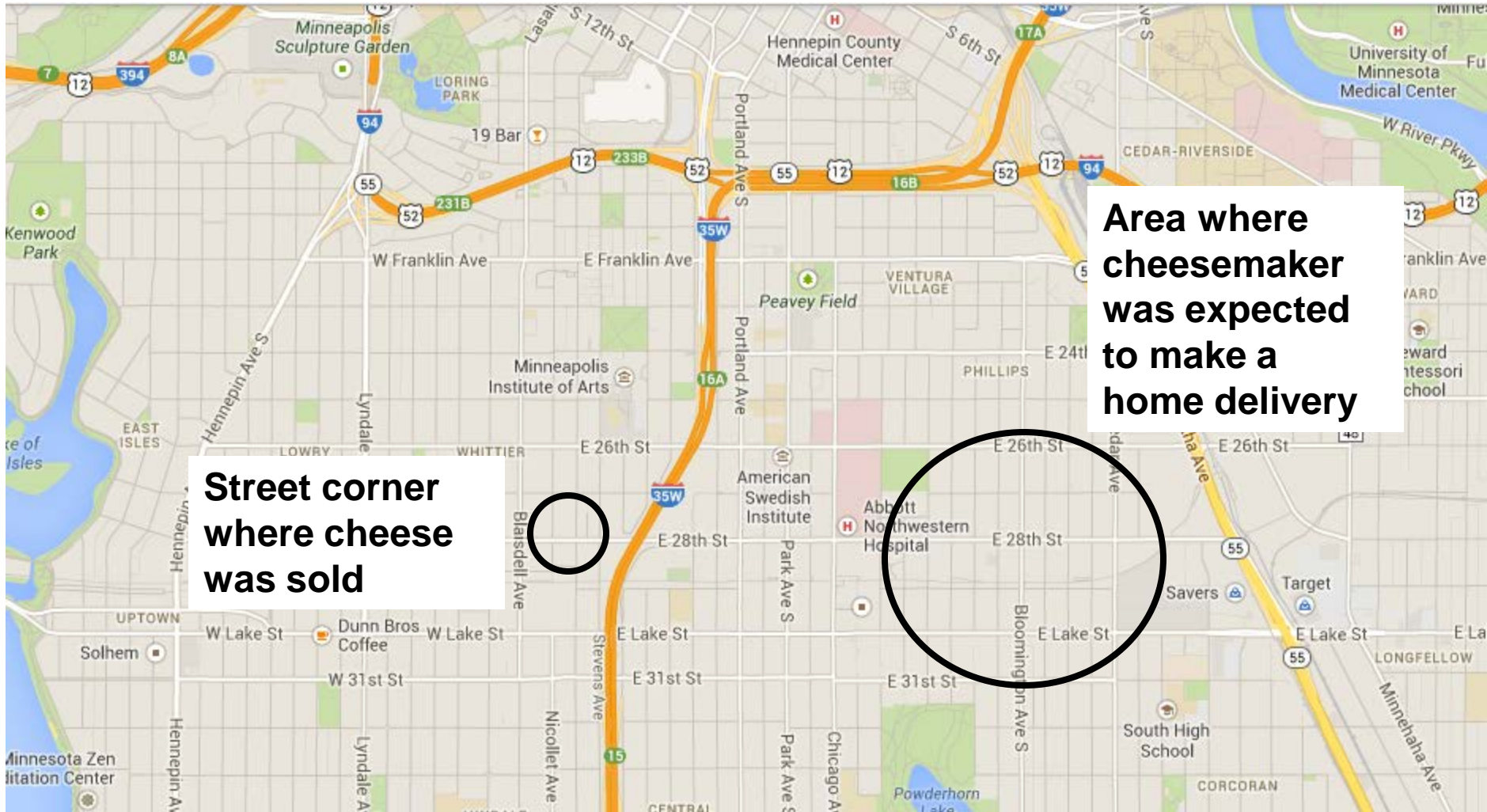
April 23

- **6 of 11 (55%) cases reported eating unpasteurized homemade queso fresco delivered to their home or purchased at a street corner**
- **4.5% of Hispanics in Minnesota report consumption of any unpasteurized cheese (FoodNet population survey, 2007)**
- **P value <0.001**

S. Typhimurium Cases by Date of PFGE Result



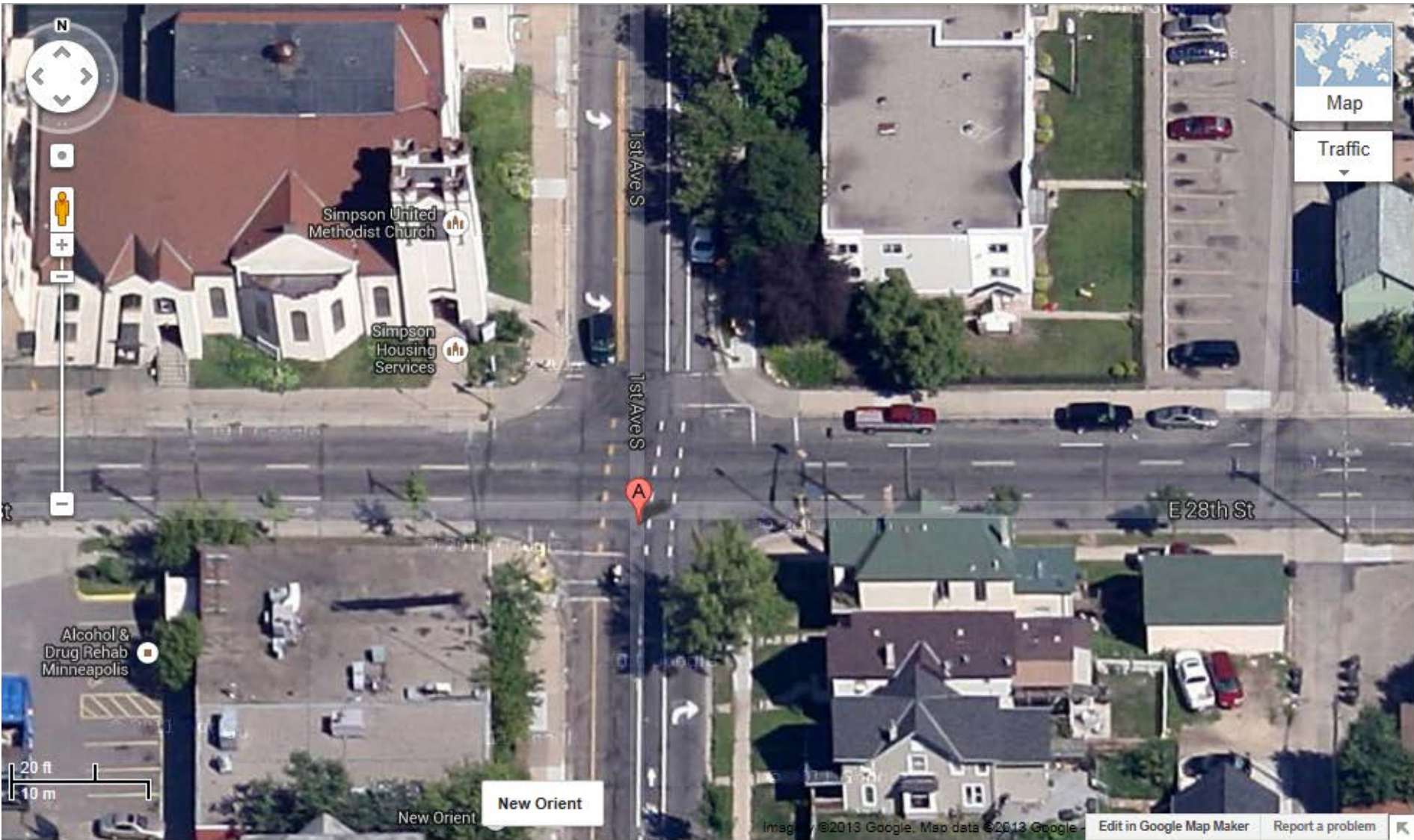
Area Under Surveillance



**Street corner
where cheese
was sold**

**Area where
cheesemaker
was expected
to make a
home delivery**

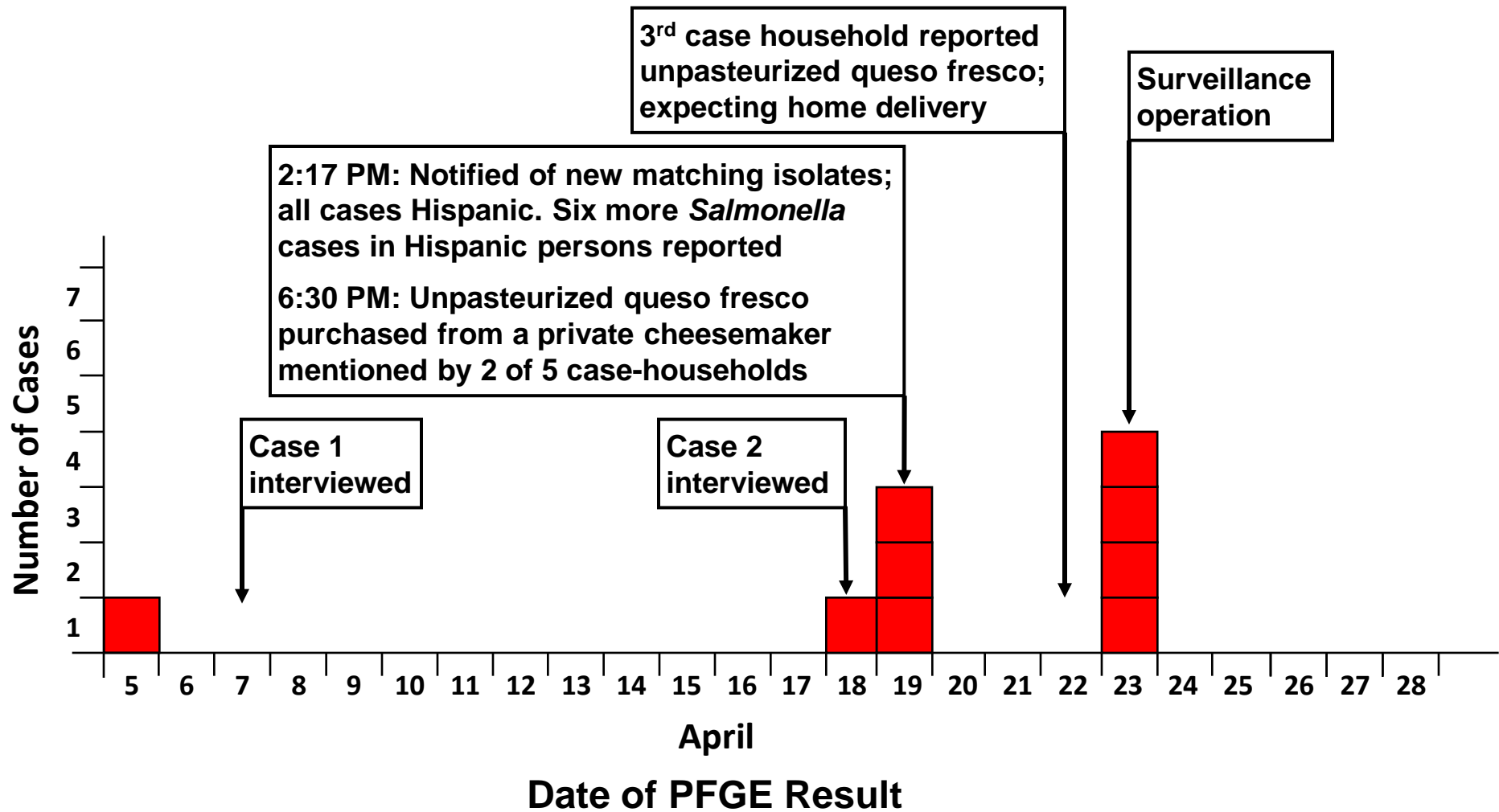
Street Corner Under Surveillance



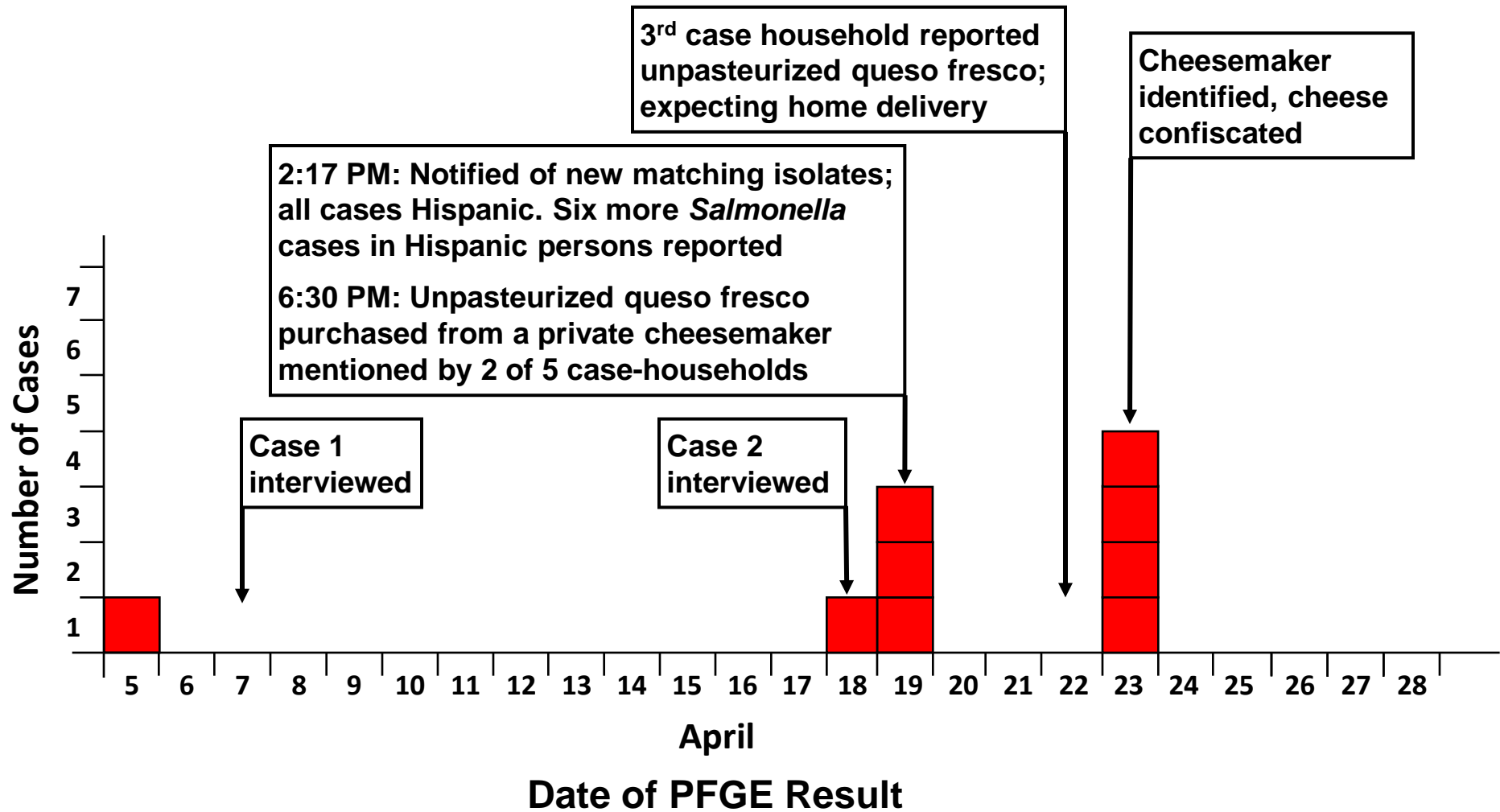
Minneapolis Street Under Surveillance



S. Typhimurium Cases by Date of PFGE Result



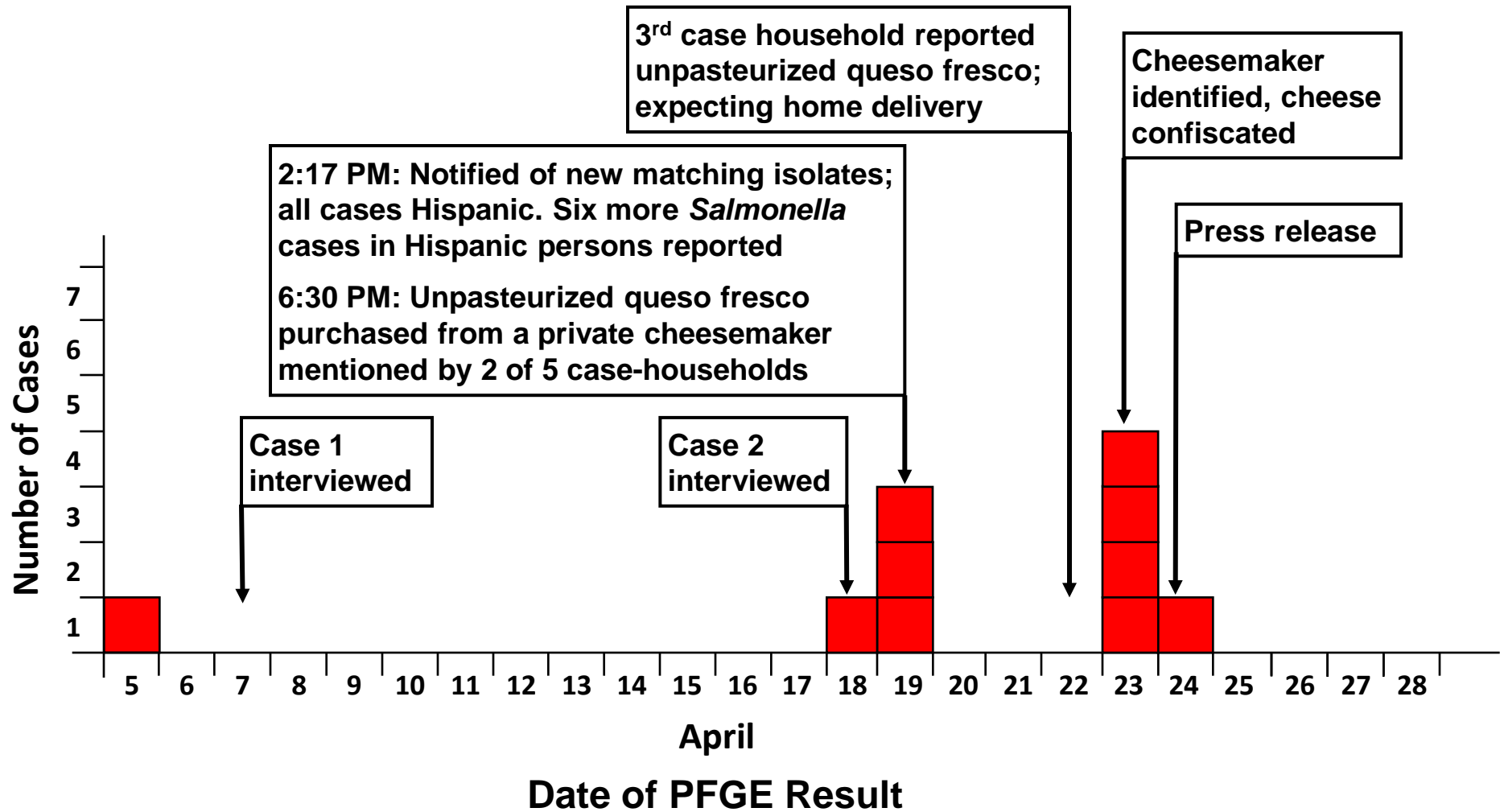
S. Typhimurium Cases by Date of PFGE Result







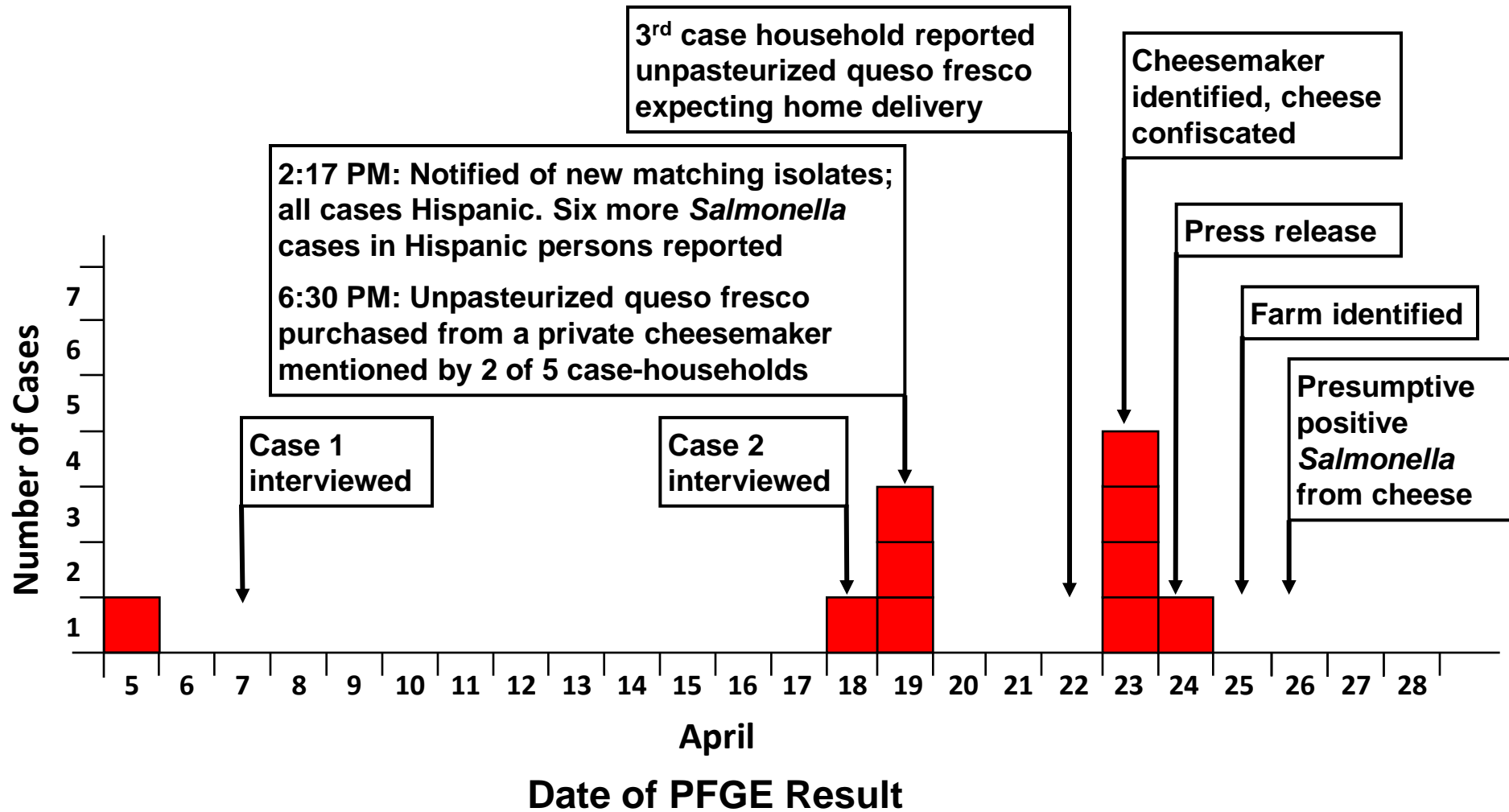
S. Typhimurium Cases by Date of PFGE Result



Cheese-making Operation

- **Unpasteurized milk purchased by cheesemaker directly from a farm**
 - **5 gallons at a time**
- **Milk collected from the line, not the bulk tank - still warm, not chilled**
- **Cheese made in cheesemaker's rented apartment in Bloomington, MN**
- **Delivered to his customers' homes and sold on a street corner in South Minneapolis**
 - **Delivered every 7 to 8 days**

S. Typhimurium Cases by Date of PFGE Result



Food Testing Results

- **Final results for the cheese samples were available on April 30**
 - **8 of 8 samples tested positive for *S.* Typhimurium of the outbreak PFGE pattern**

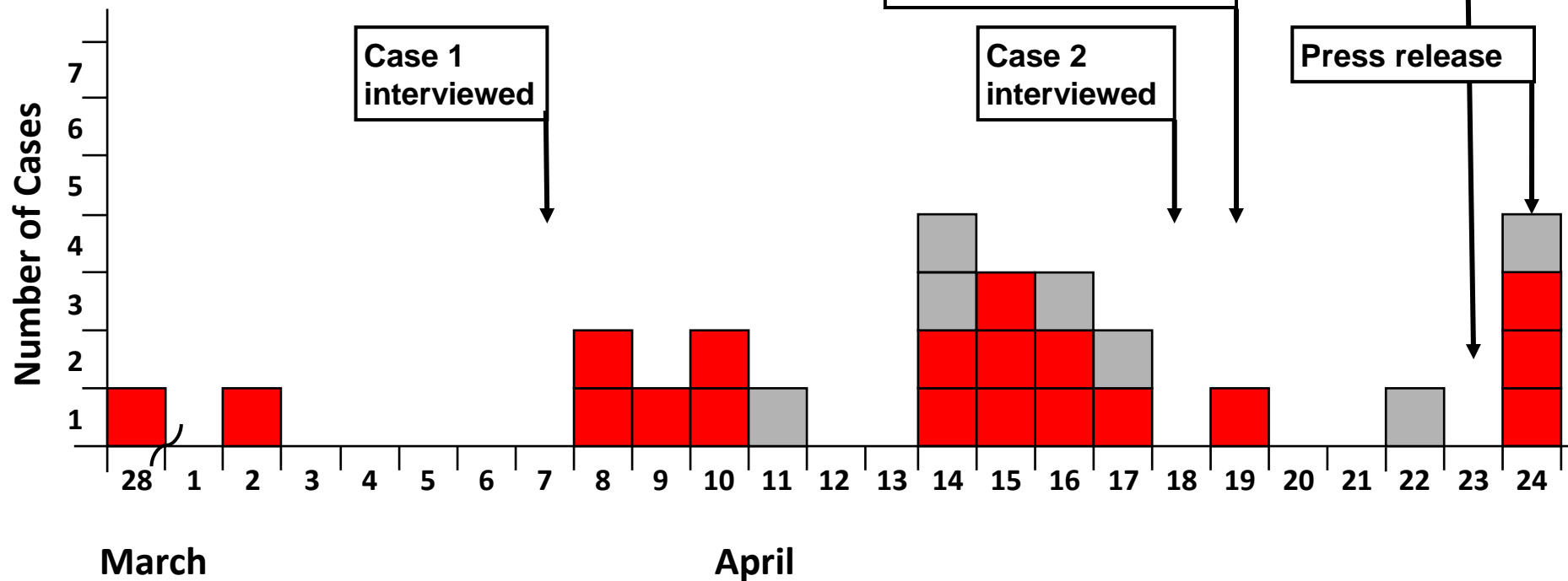
Food and Environmental Testing Results

- **Raw milk samples collected from the bulk tank at the farm on April 30**
 - **3 of 3 tested positive for *S. Typhimurium* of the outbreak PFGE pattern**
- **Cow manure samples**
 - **5 of 5 tested negative for *Salmonella***

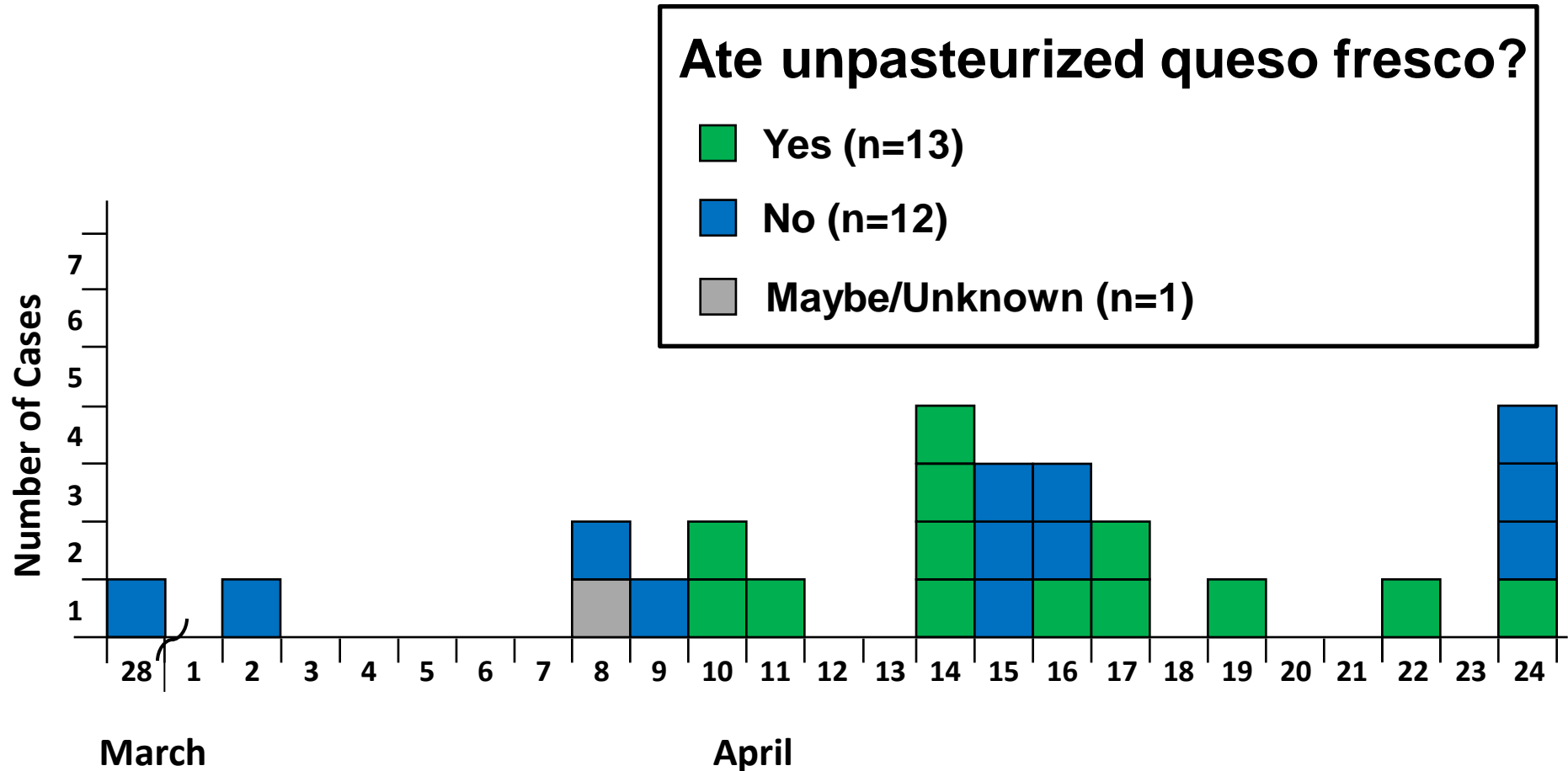
Case Summary

- **26 cases in 14 households**
 - **19 confirmed**
 - **7 probable**
 - **6 were household members of confirmed cases, 5 had onset on the same day as confirmed case**
 - **1 from cheesemaker customer list**
 - **Additional illnesses reported**
- **15 (58%) hospitalized**
- **No deaths**

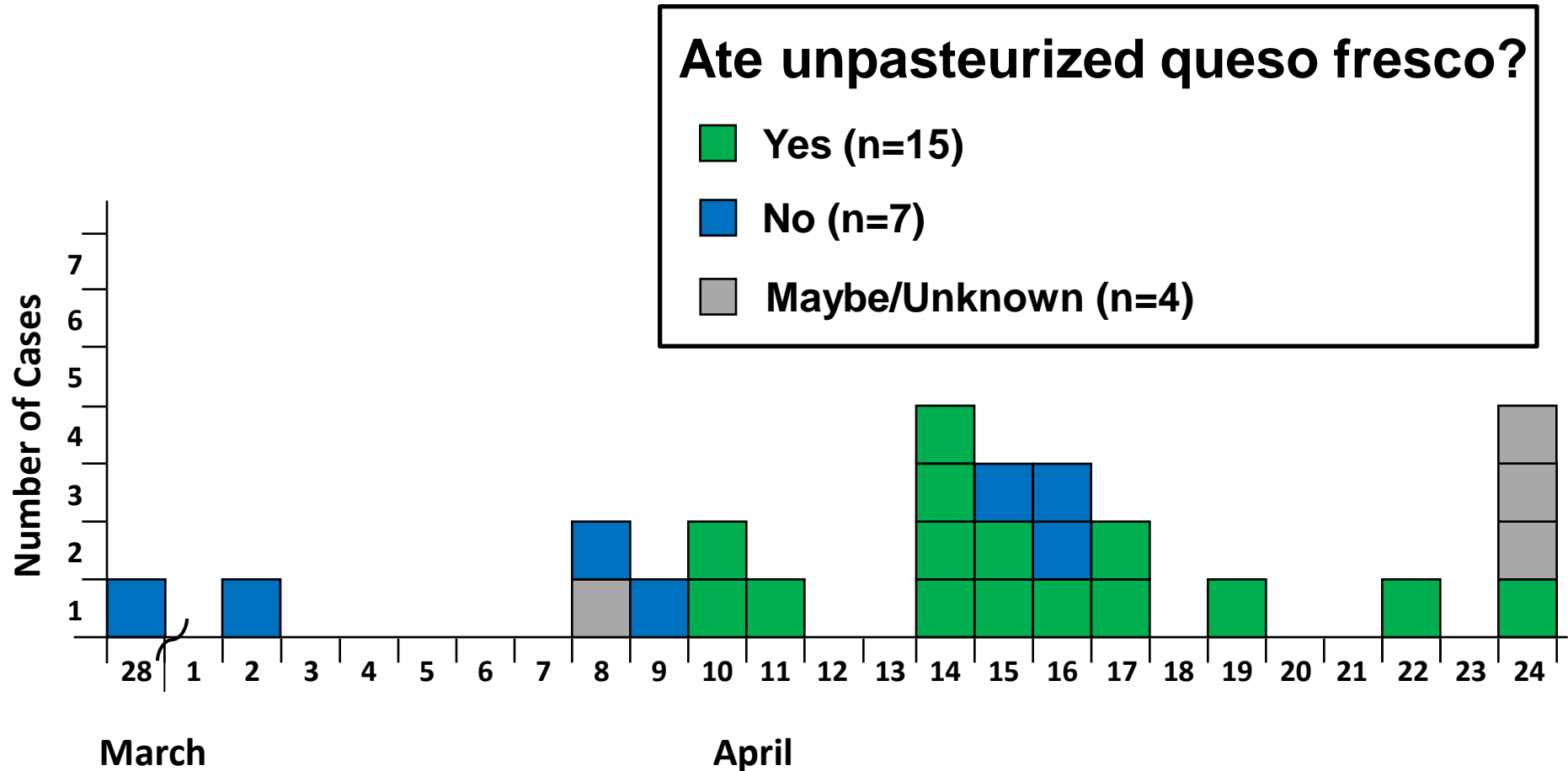
S. Typhimurium Outbreak Cases by Date of Illness Onset (N=26)



Unpasteurized Queso Fresco Consumption at Initial Interview



Unpasteurized Queso Fresco Consumption at Re-interview



Crime and Punishment

- **The City of Minneapolis waived a \$600 fine in exchange for the cheesemaker's cooperation during the investigation**
- **MDA issued**
 - **A notice of warning**
 - **\$4,000 assessment for investigation costs**
- **City of Bloomington inspected the home**
 - **No additional cheese or cheese-making equipment found on the premises**
 - **Was not fined for housing and zoning violations**

Conclusions

- **Outbreak of salmonellosis associated with unpasteurized homemade queso fresco purchased directly from a cheesemaker**
- **Early mention of specific food detail by one case-household led to asking all subsequent cases about this exposure**
- **Risky exposures warrant suspicion even when a small proportion of cases mention it**

Conclusions

- **Dynamic interviewing approach was essential in rapidly confirming the vehicle**
- **Simultaneous investigation steps rather than the more traditional sequential steps**
- **Environmental health/regulatory agencies involvement with early “signals”**
- **Press release and interventions before food testing results**

Conclusions

- **Despite asking specifically about this food, many cases initially denied eating it**
 - **Concerned that the cheesemaker would get in trouble**
- **Aggressive efforts to identify the cheesemaker led to rapid removal of the cheese from the “market”**

Acknowledgments

Minneapolis Health Department

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