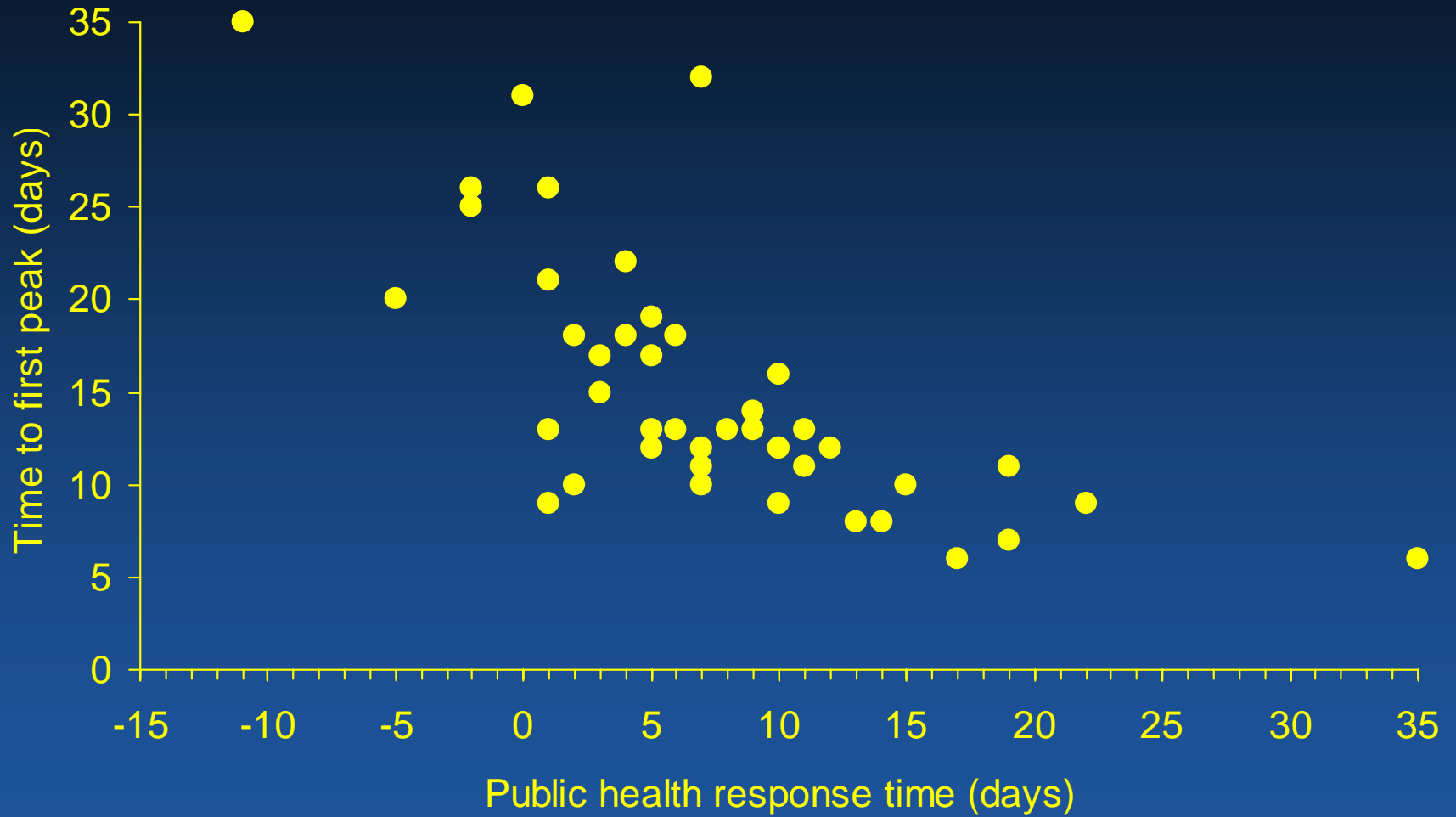


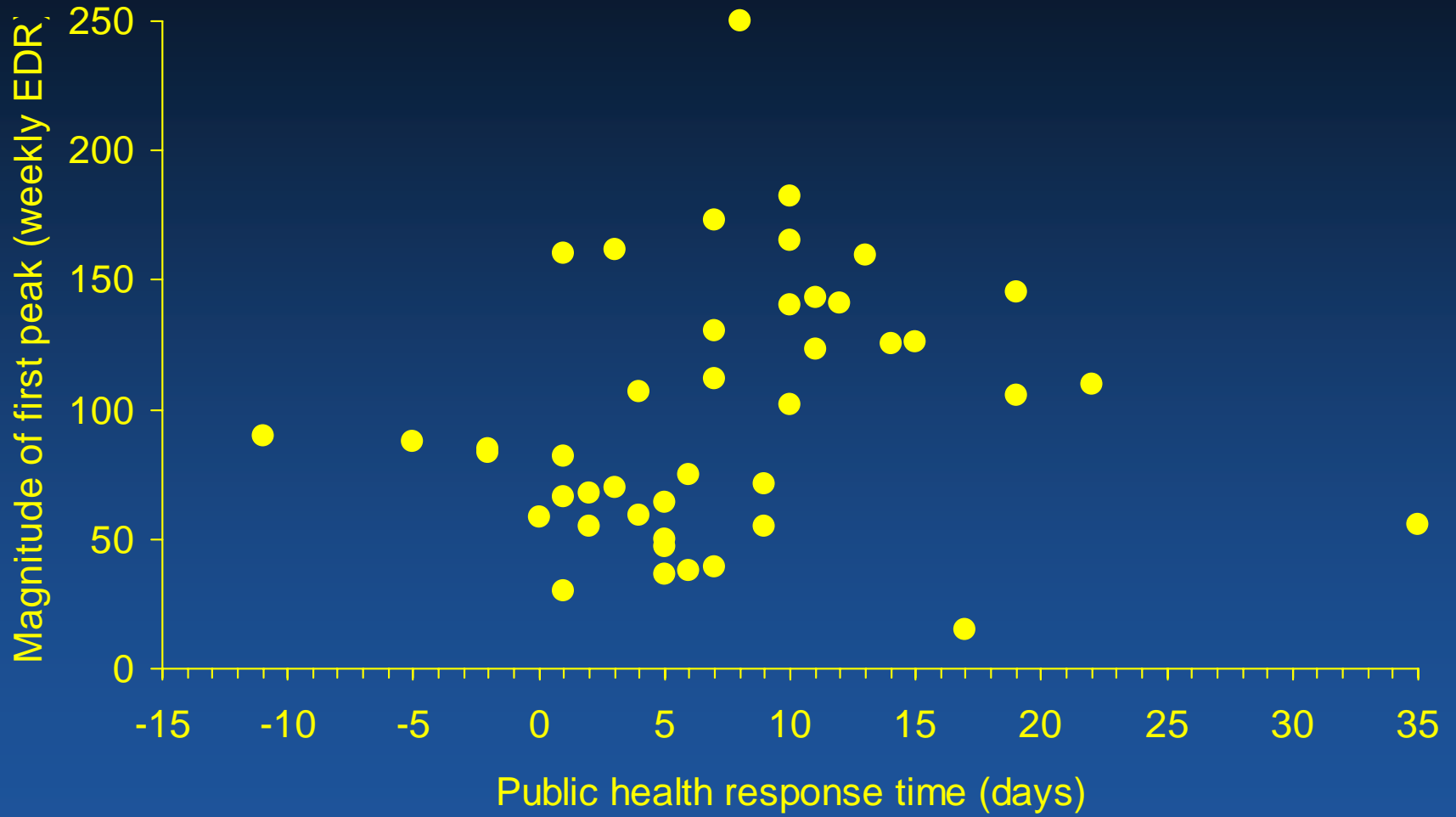
# Time to First Mortality Peak by Public Health Response Time



Spearman's  $r = -0.74$   $p < .001$

Figure 1

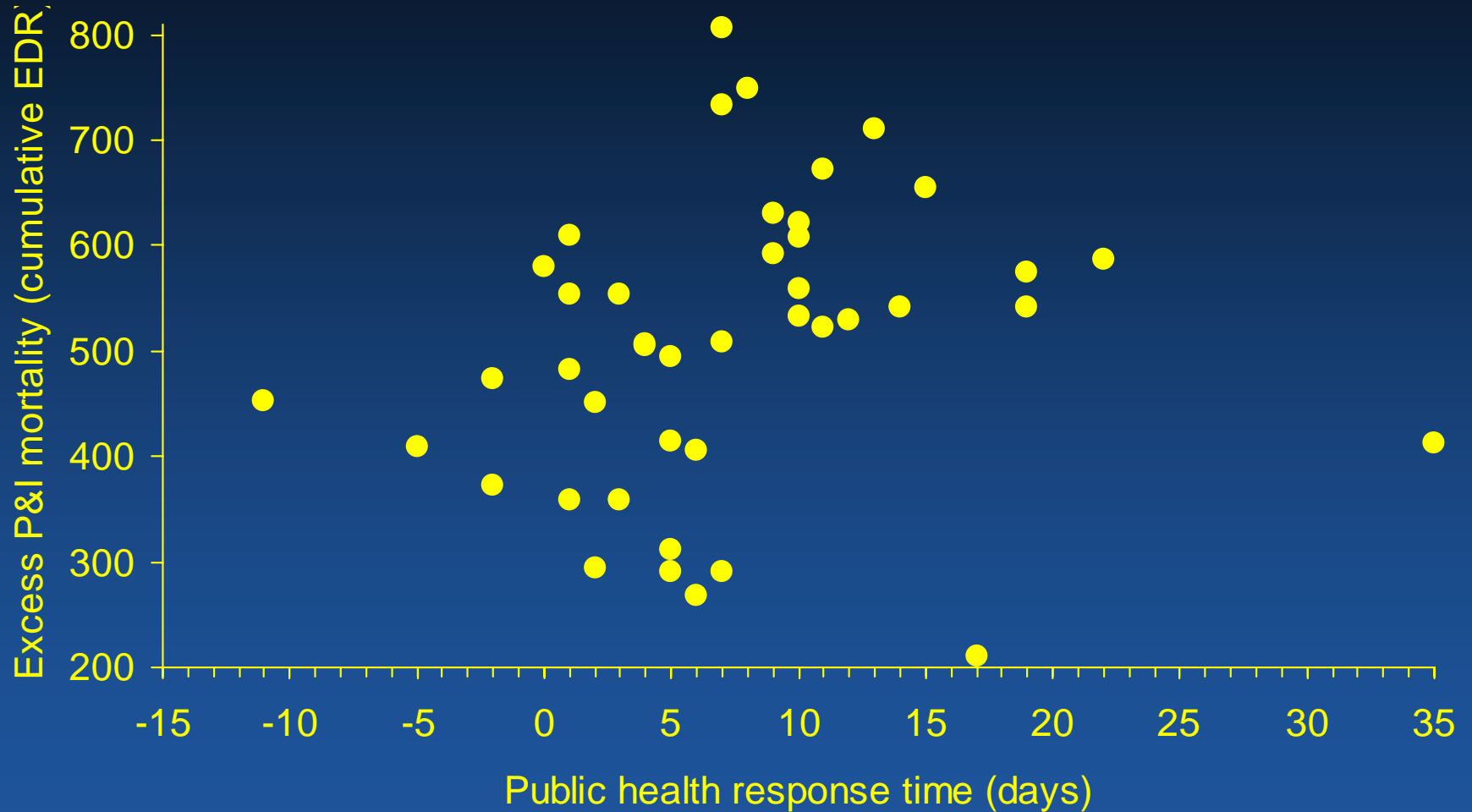
# Magnitude of First Mortality Peak by Public Health Response Time



Spearman's  $r = 0.31$   $p = .024$

Figure 2

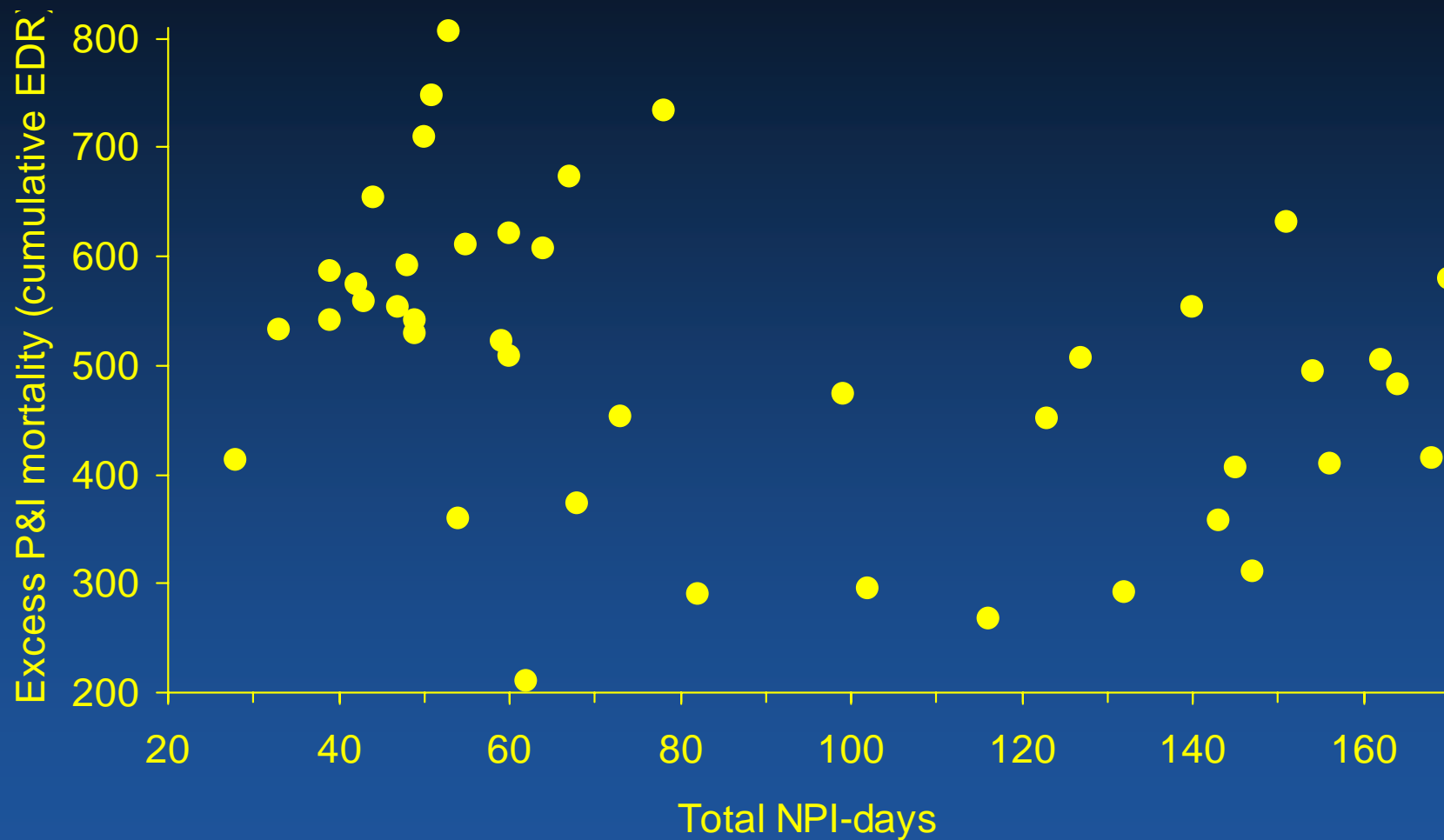
# Excess Pneumonia and Influenza Mortality by Public Health Response Time



Spearman's  $r = 0.37$   $p = .008$

Figure 3

# Excess Pneumonia and Influenza Mortality by Total NPI-days



Spearman's  $r = -0.39$   $p = .005$

Figure 4

# Excess Death Rate (per 100,000) by Region

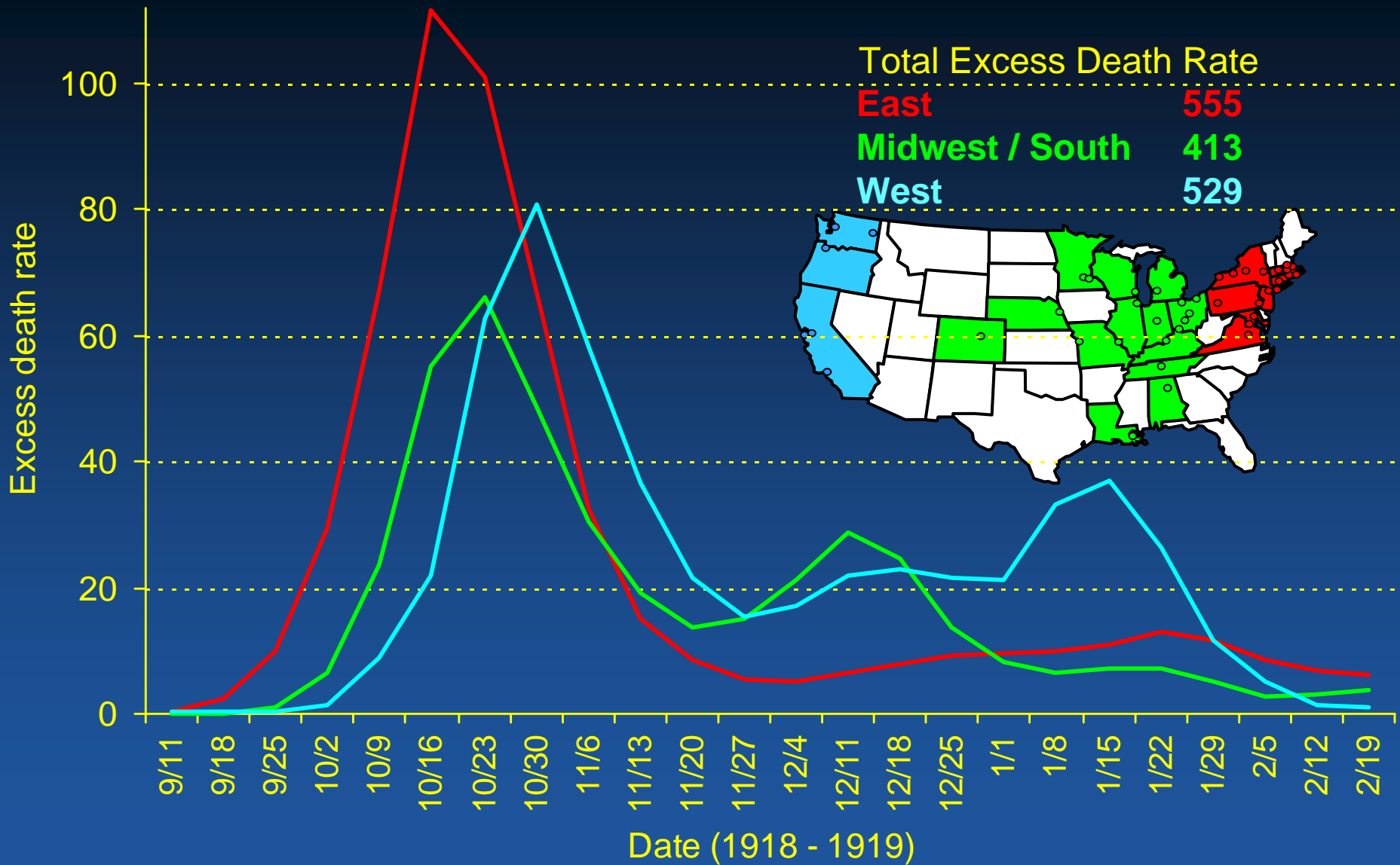
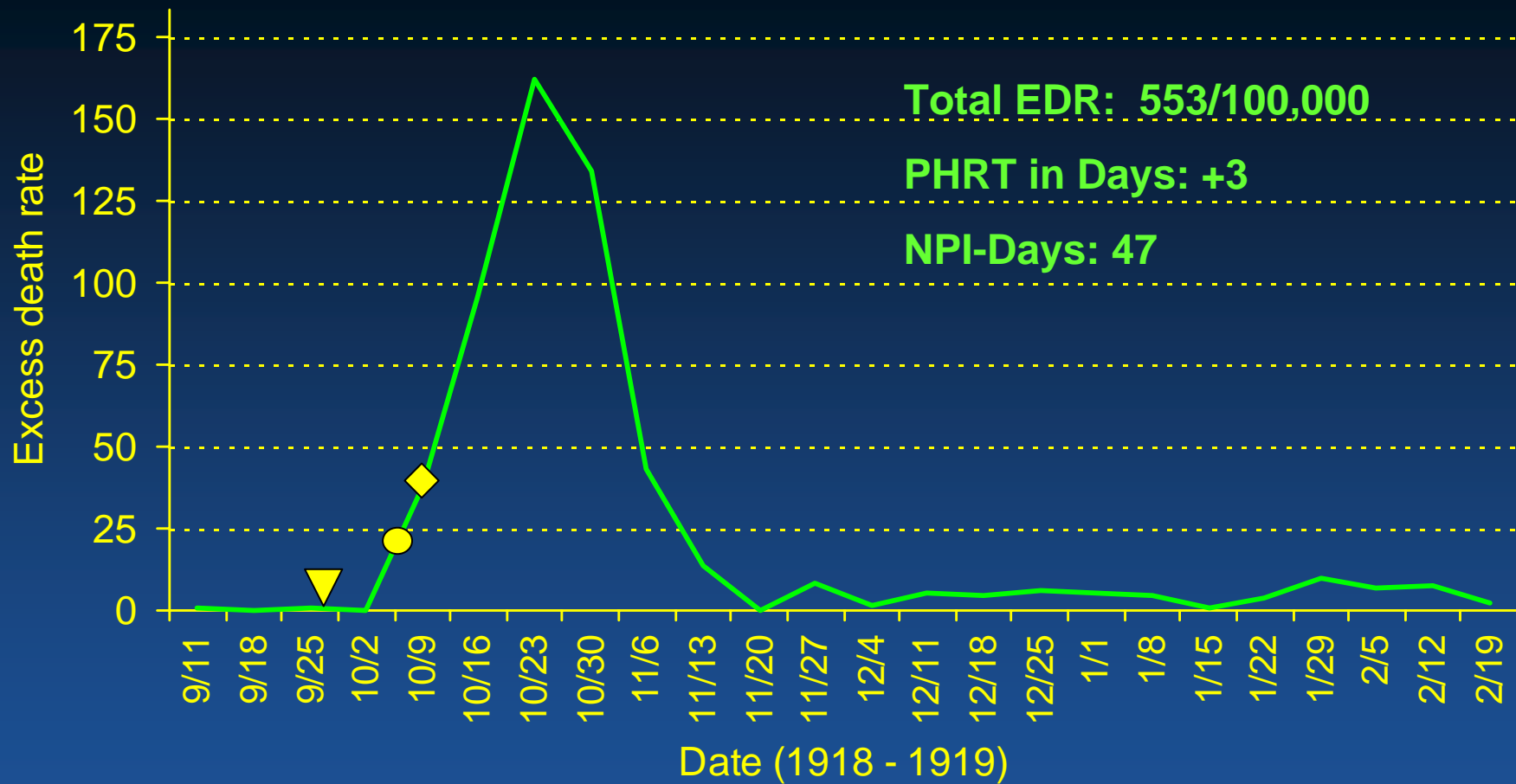


Figure 5



# Excess Death Rates (per 100,000) - Albany



School closure

Public gathering ban

Other NPIs

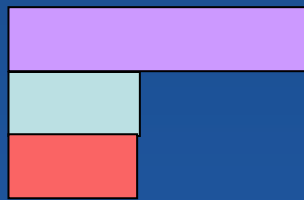


Figure 6



# Excess Death Rates (per 100,000) - Baltimore

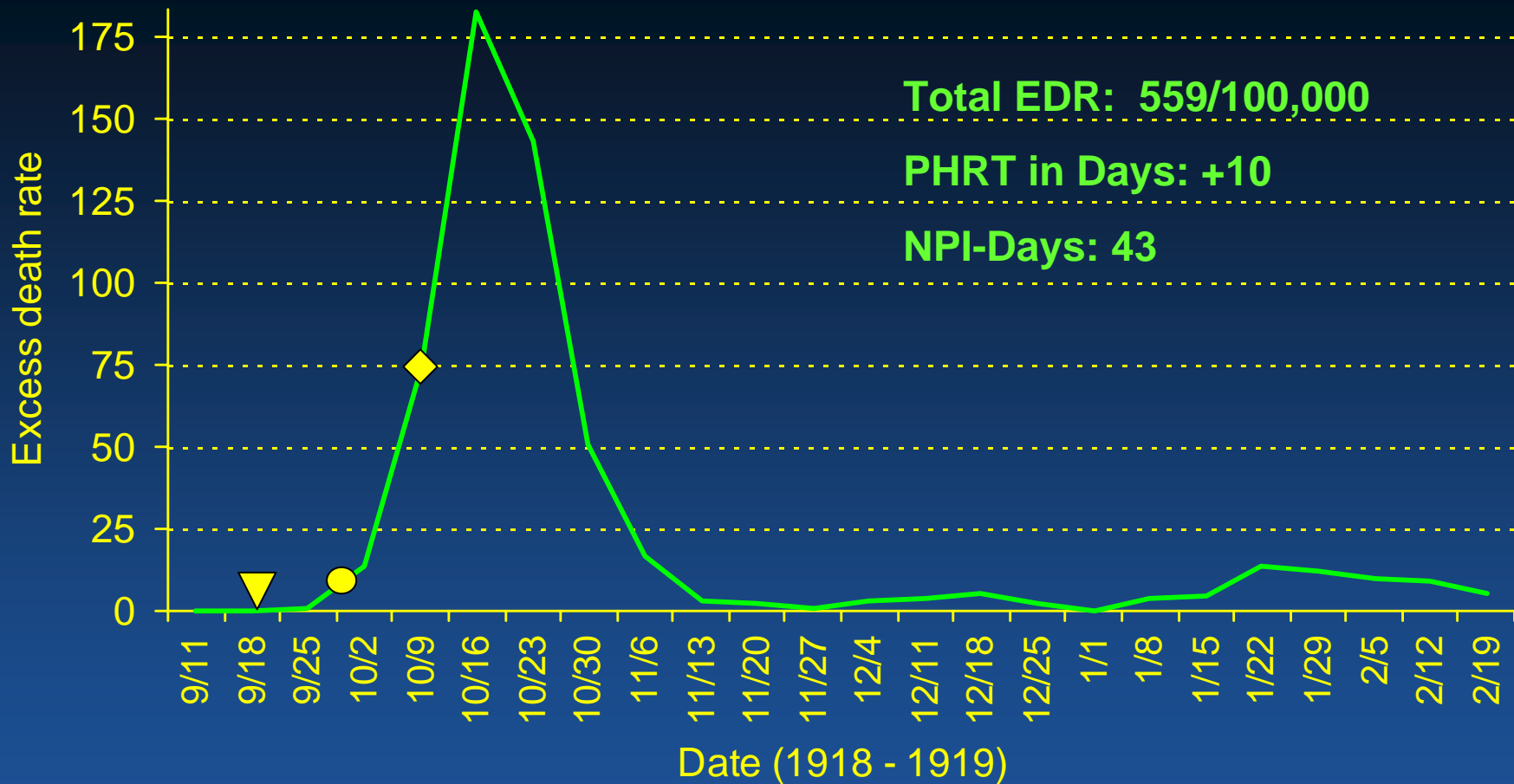


Figure 7

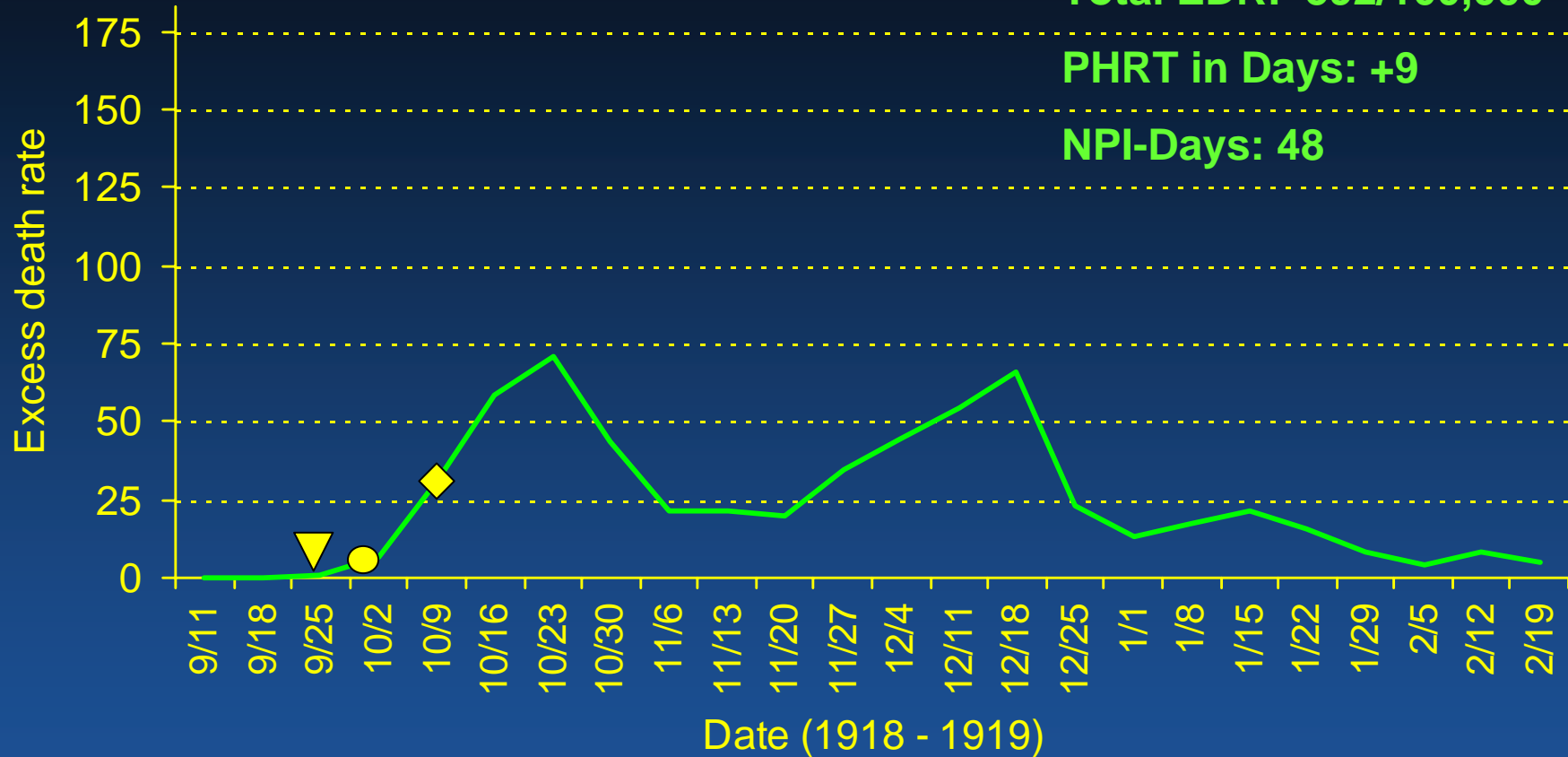
▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Birmingham

Total EDR: 592/100,000

PHRT in Days: +9

NPI-Days: 48



School closure

Public gathering ban

Other NPIs

Figure 8





# Excess Death Rates (per 100,000) - Boston

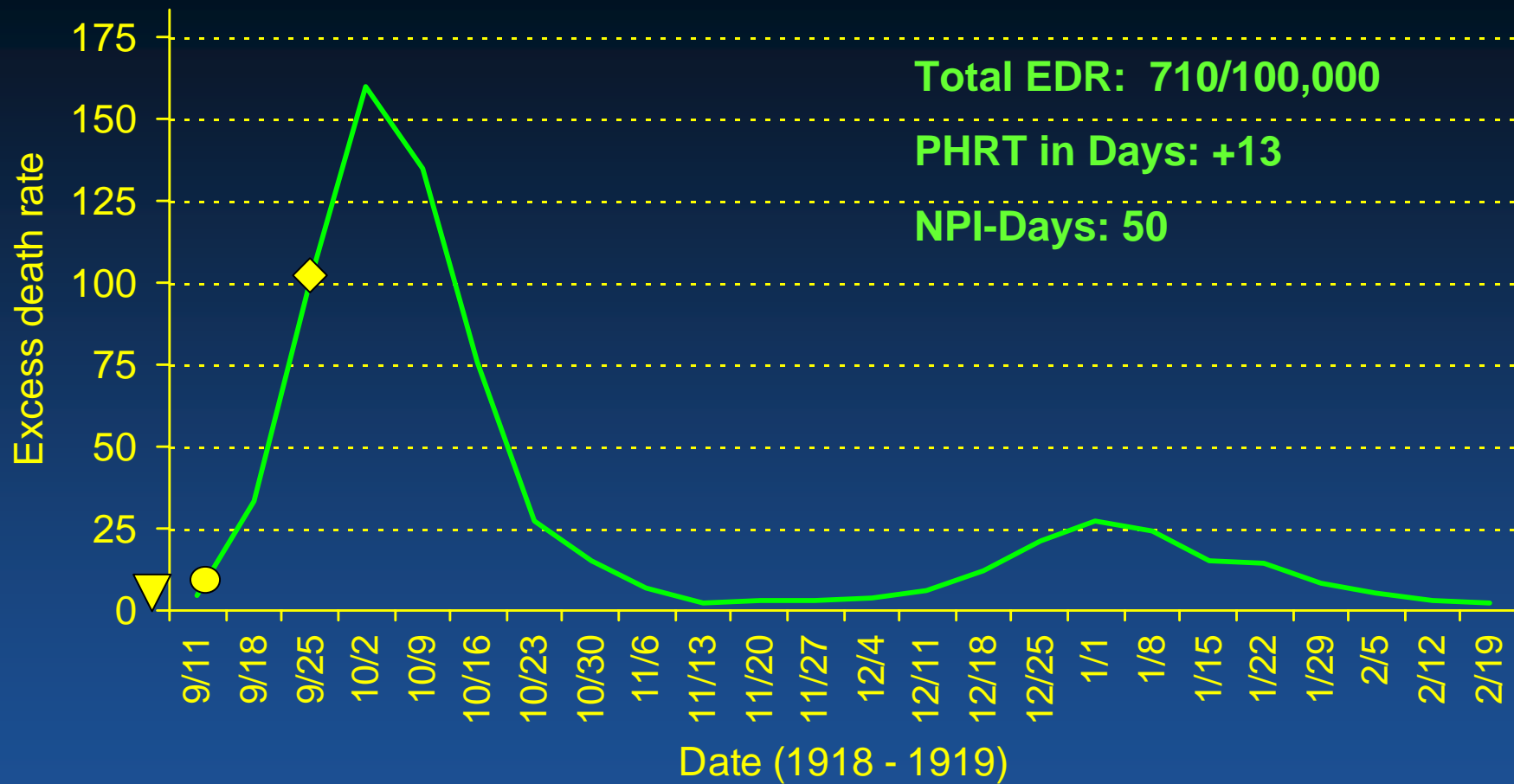
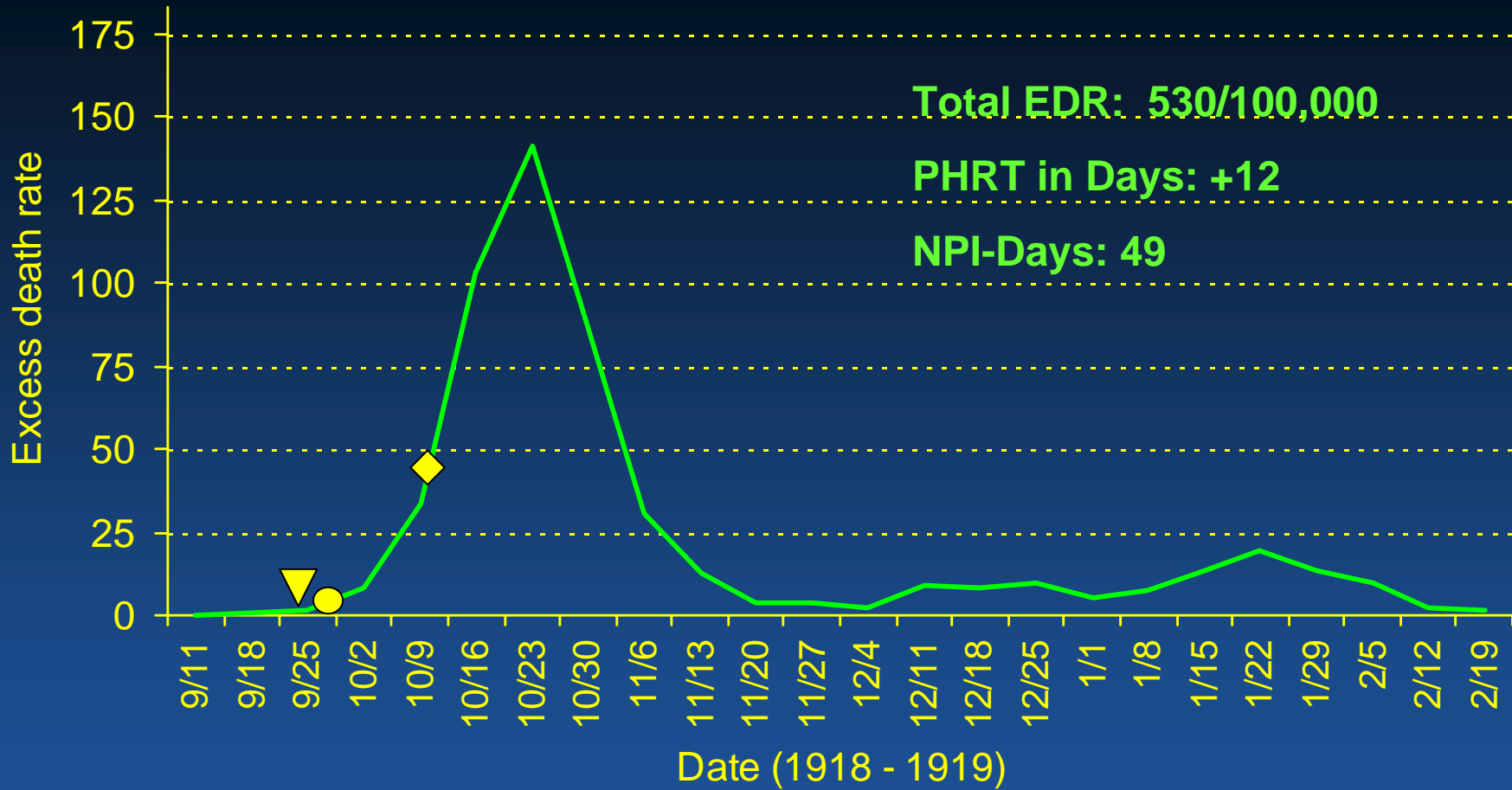


Figure 9



# Excess Death Rates (per 100,000) - Buffalo



Public gathering ban  
 School closure  
 Other NPIs

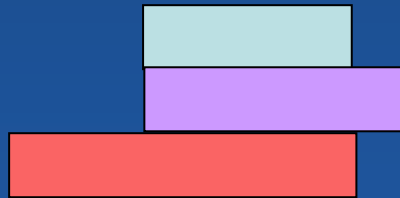
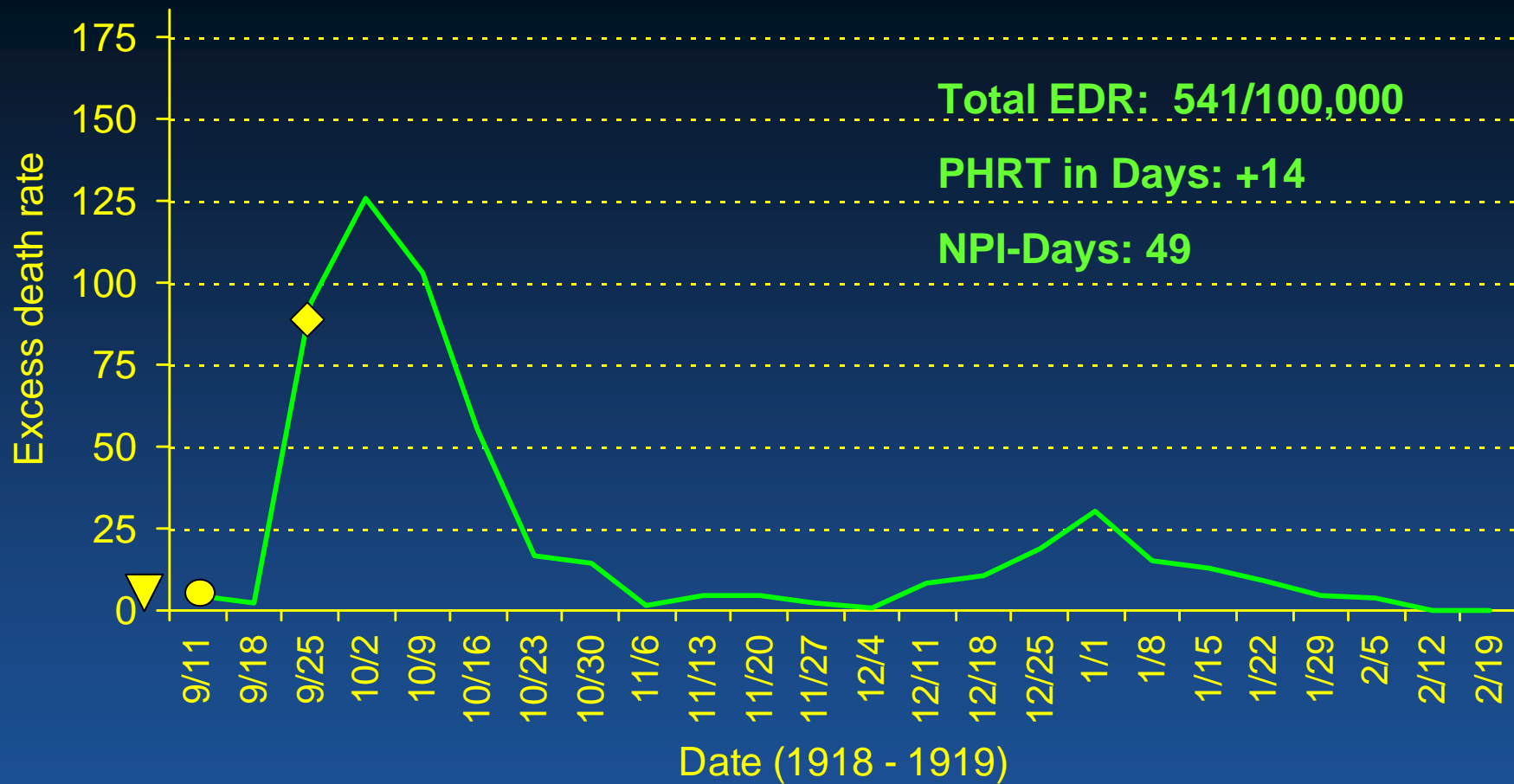


Figure 10



# Excess Death Rates (per 100,000) - Cambridge



School closure

Public gathering ban

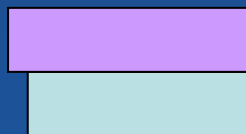


Figure 11



# Excess Death Rates (per 100,000) -Chicago

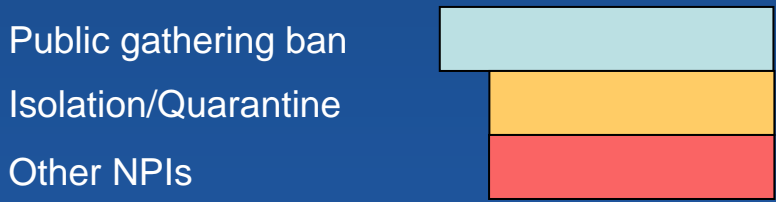
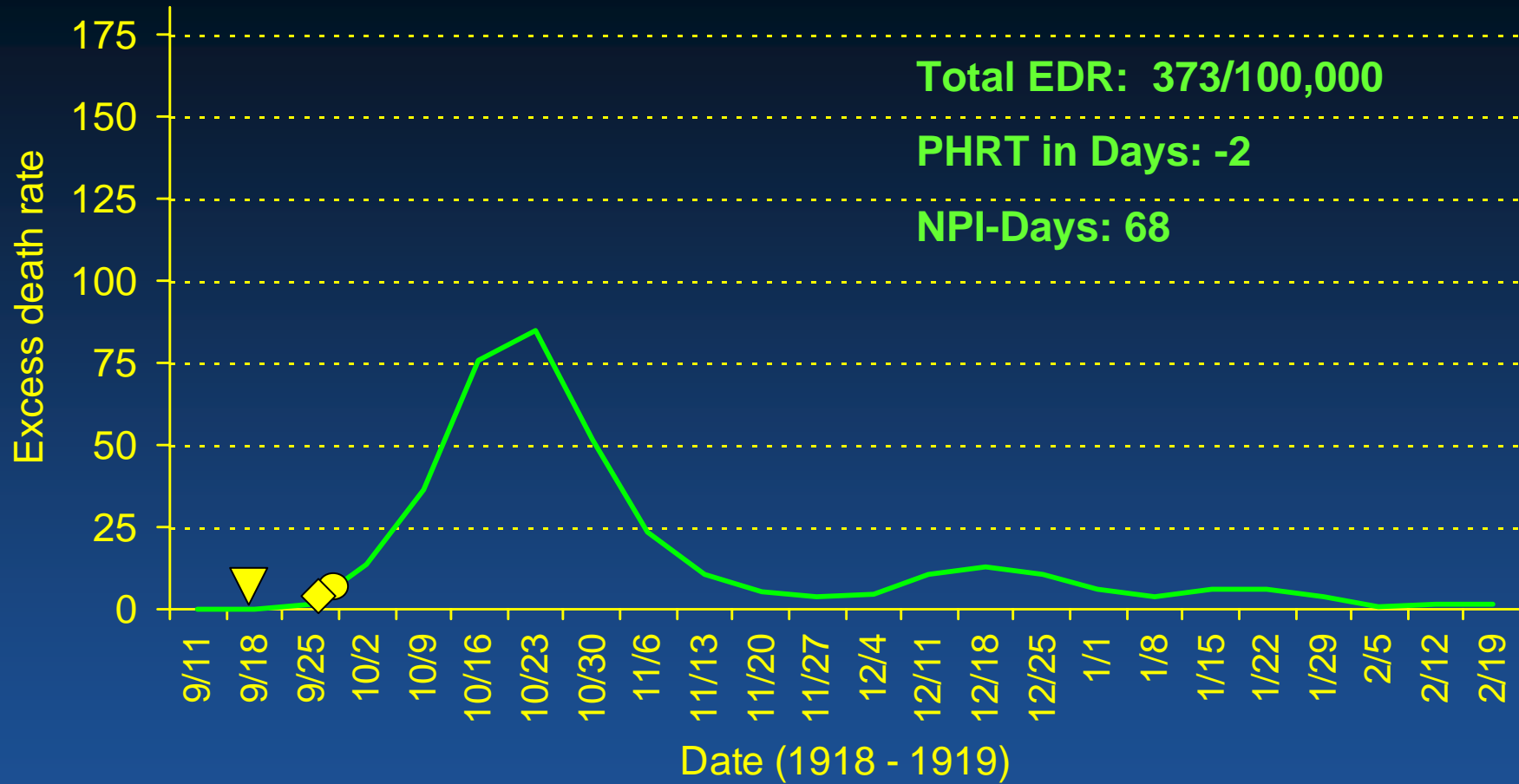
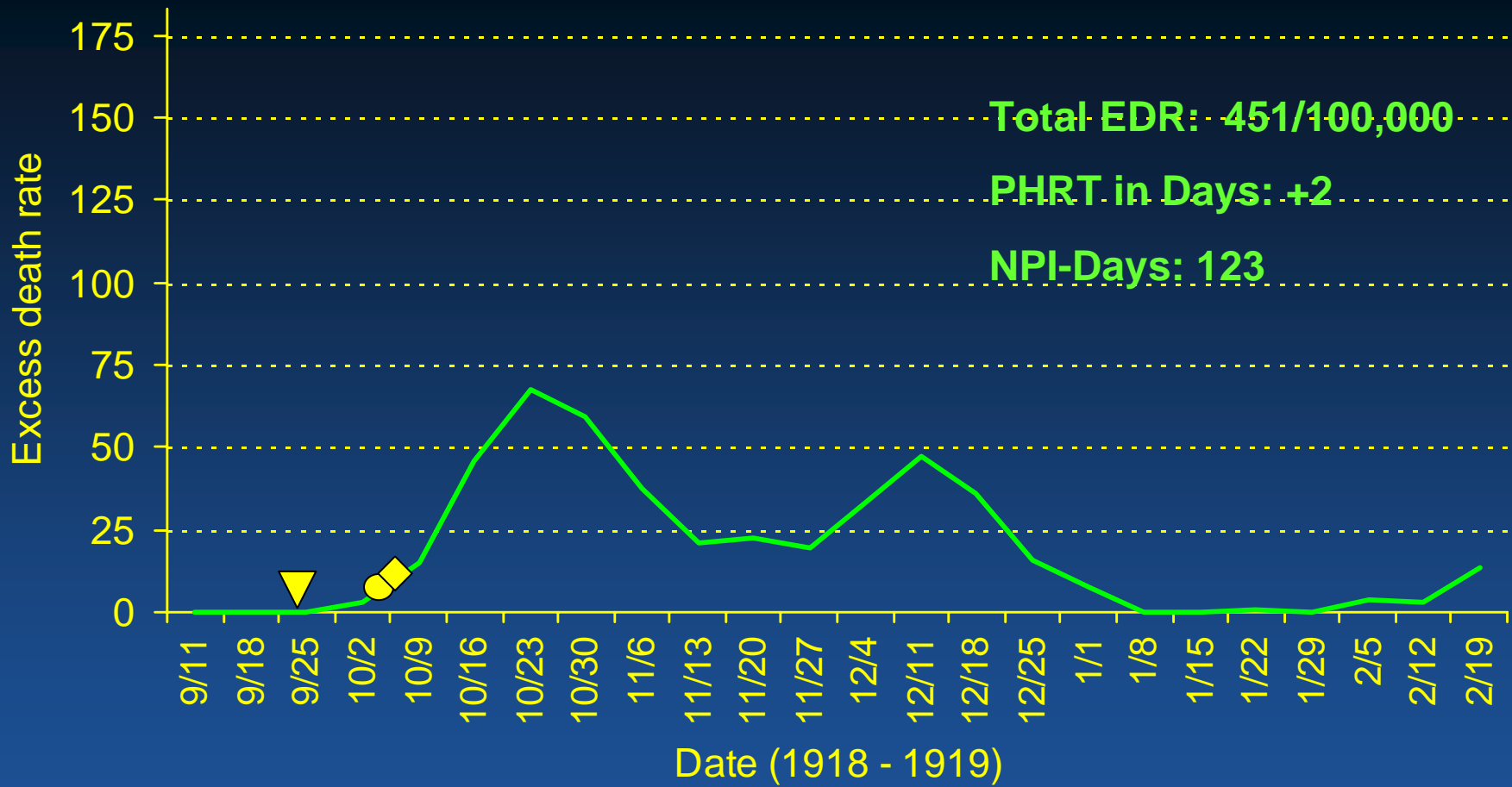


Figure 12

▼ first case
● 2 X baseline mortality
◆ first major NPI

# Excess Death Rates (per 100,000) - Cincinnati



School closure  
 Public gathering ban  
 Other NPIs

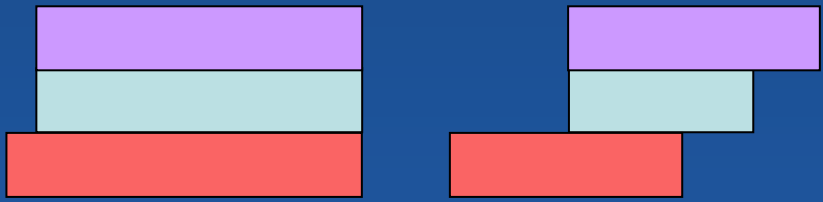


Figure 13

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) -Cleveland

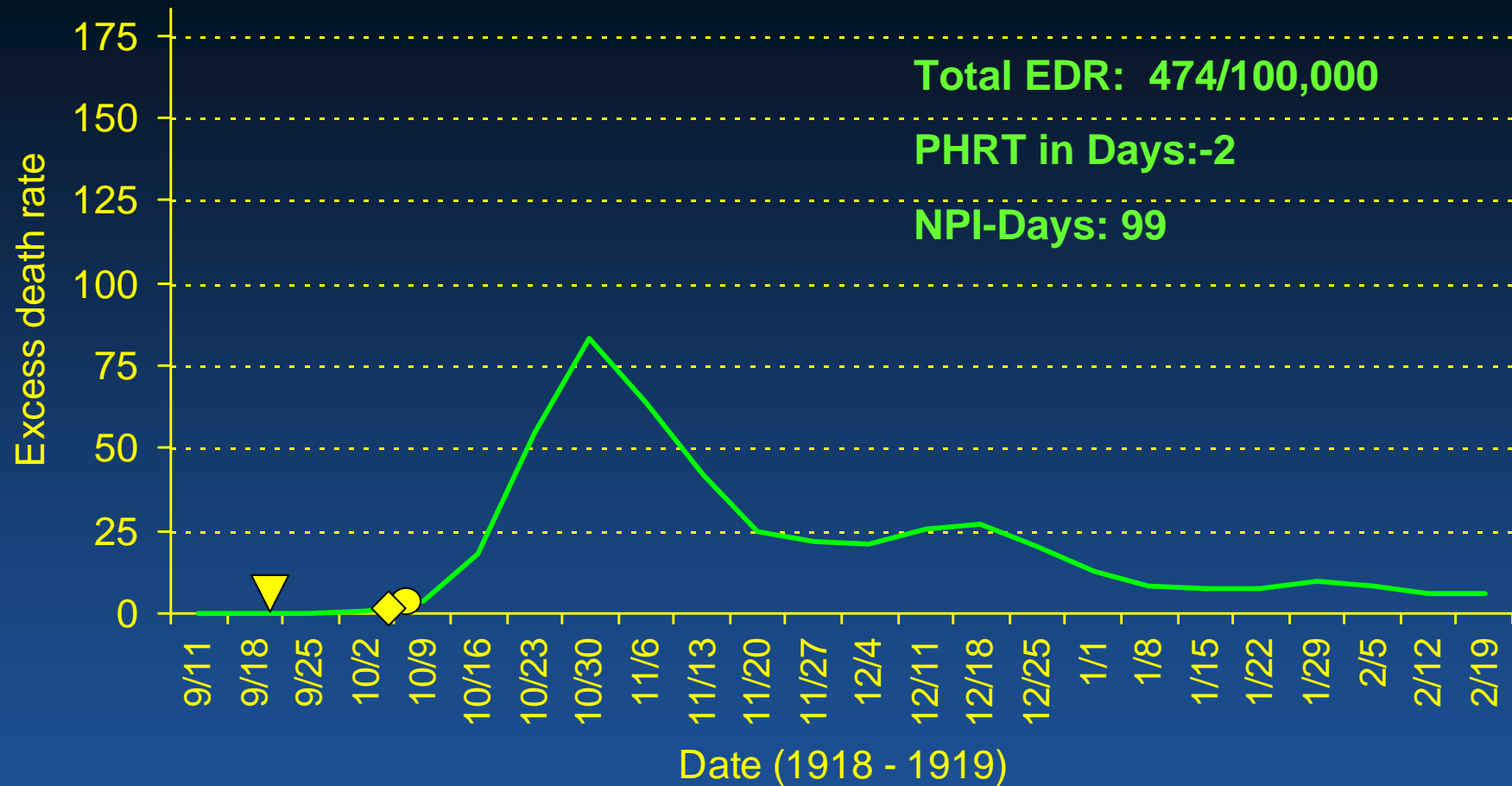


Figure 14



# Excess Death Rates (per 100,000) - Columbus

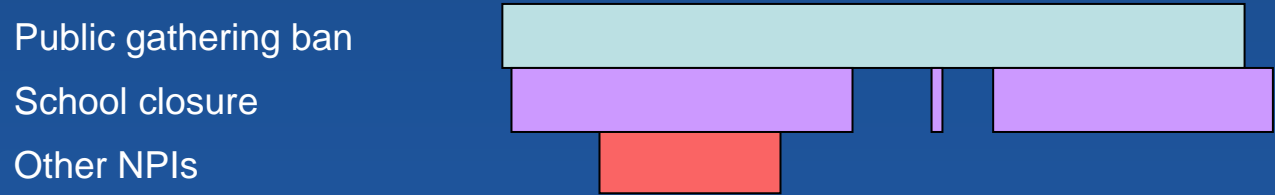
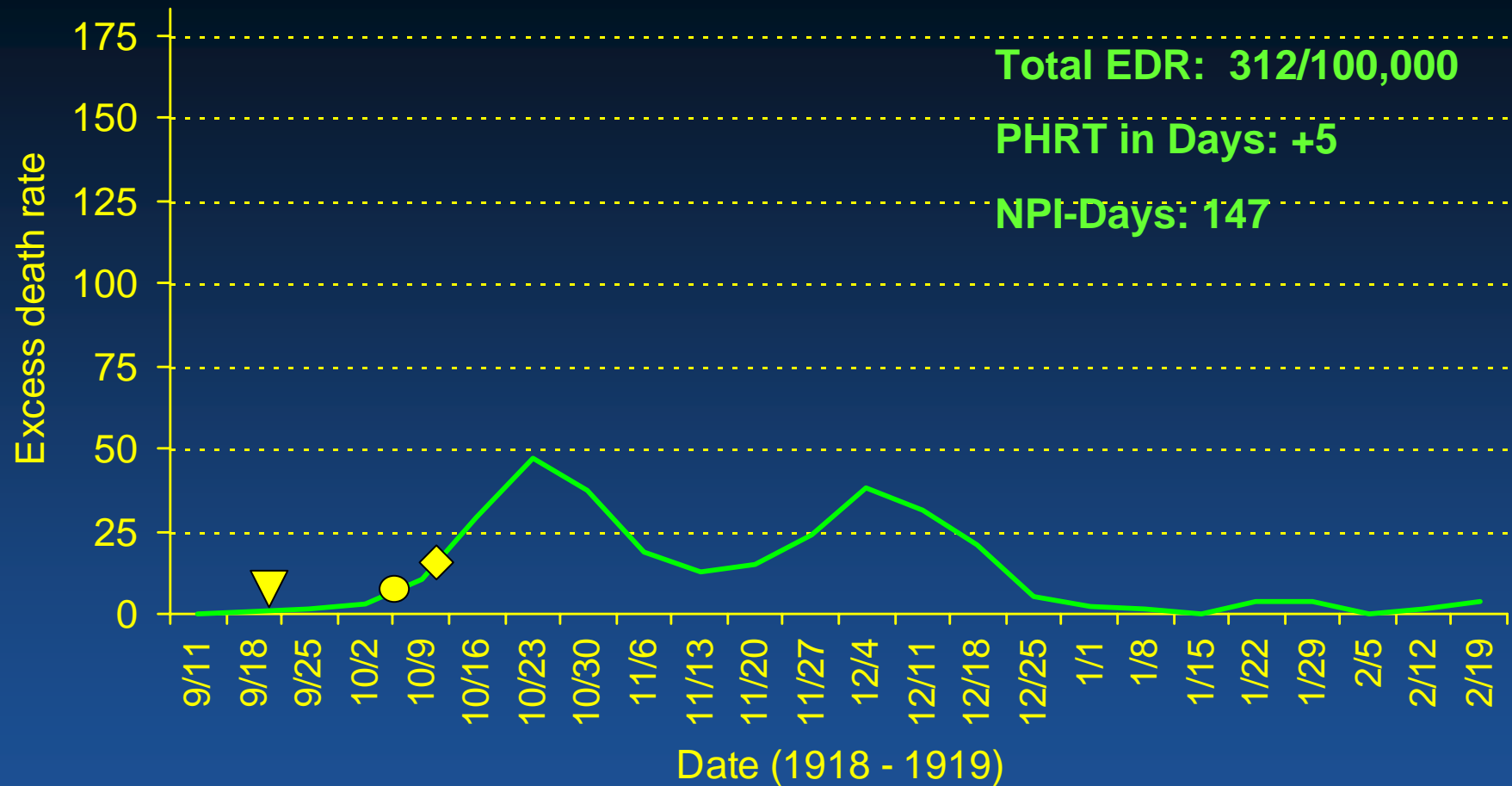


Figure 15

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Dayton

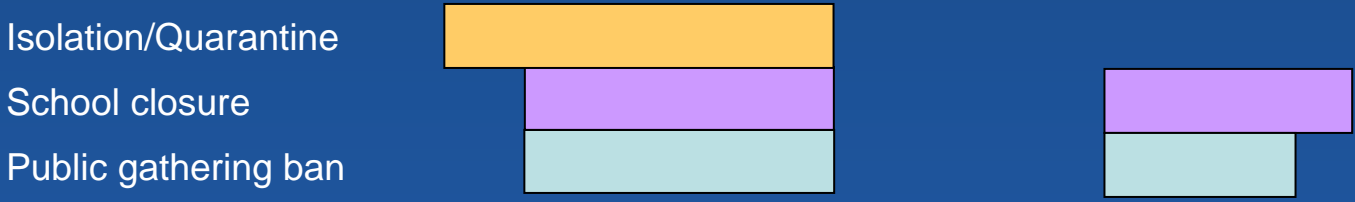
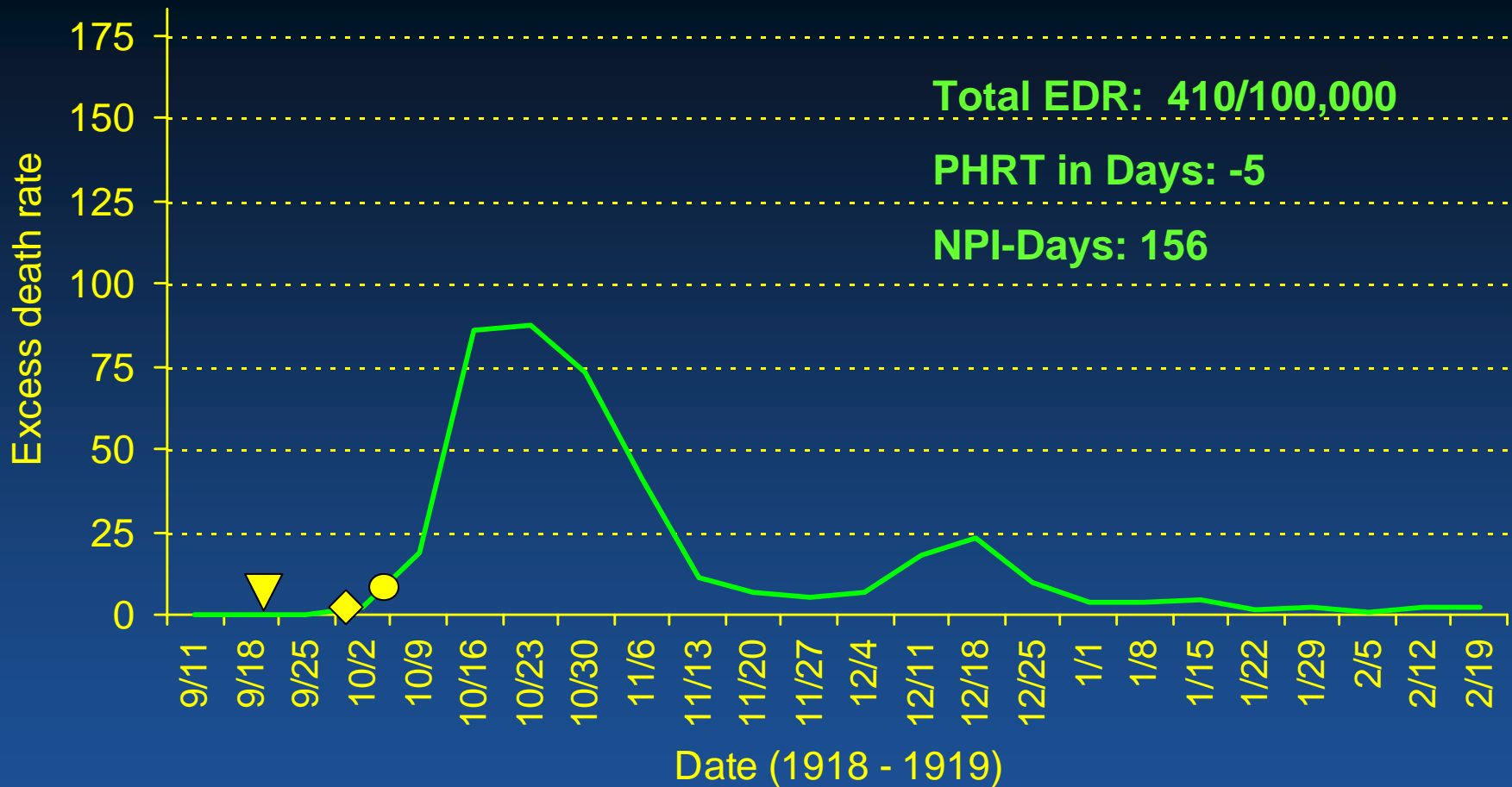


Figure 16

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI



# Excess Death Rates (per 100,000) - Denver

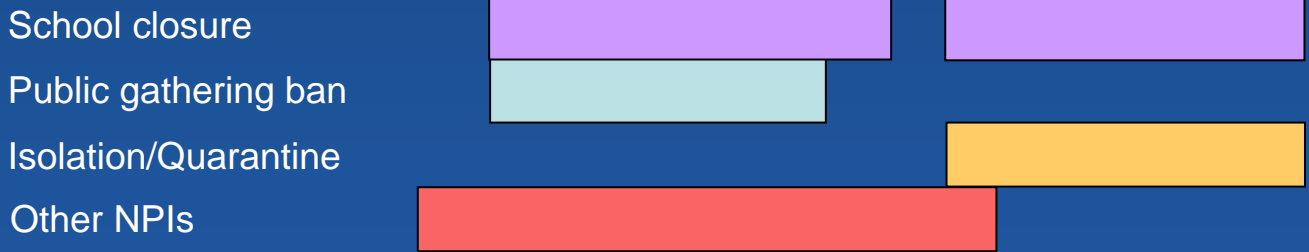
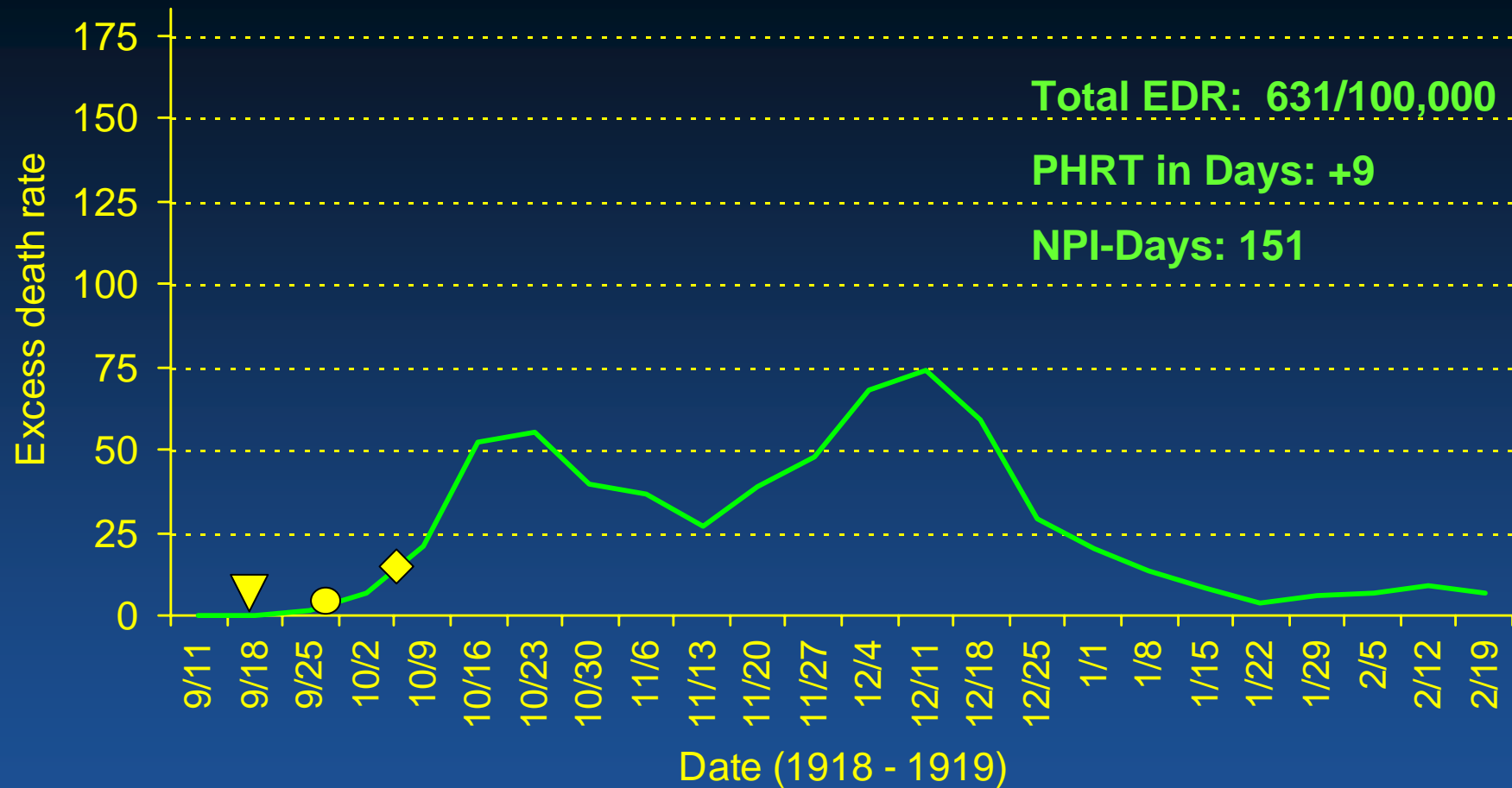


Figure 17

# Excess Death Rates (per 100,000) - Fall River

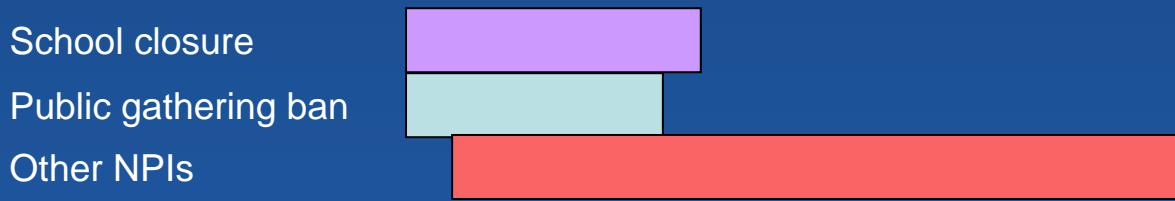
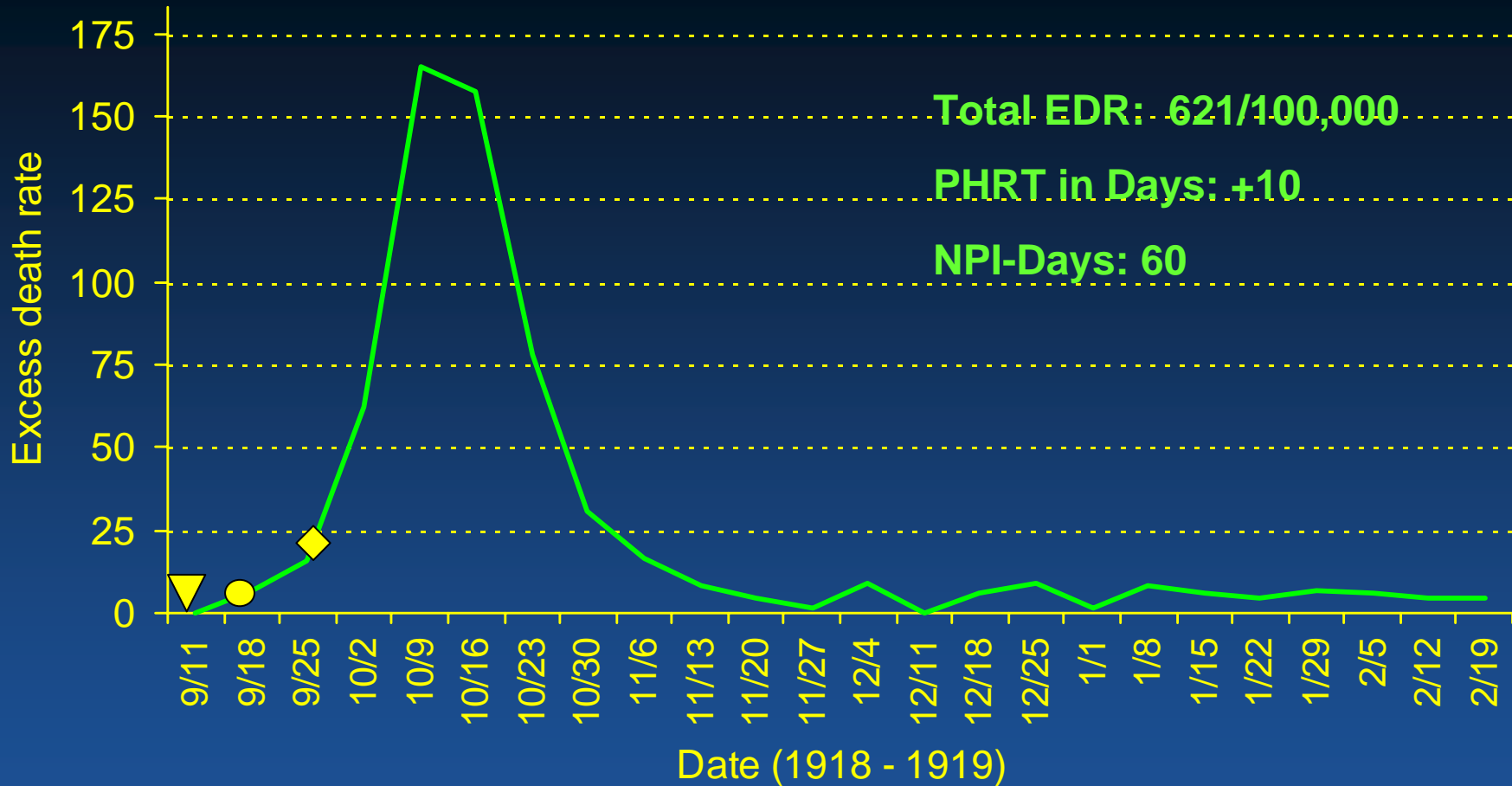


Figure 18



# Excess Death Rates (per 100,000) - Grand Rapids

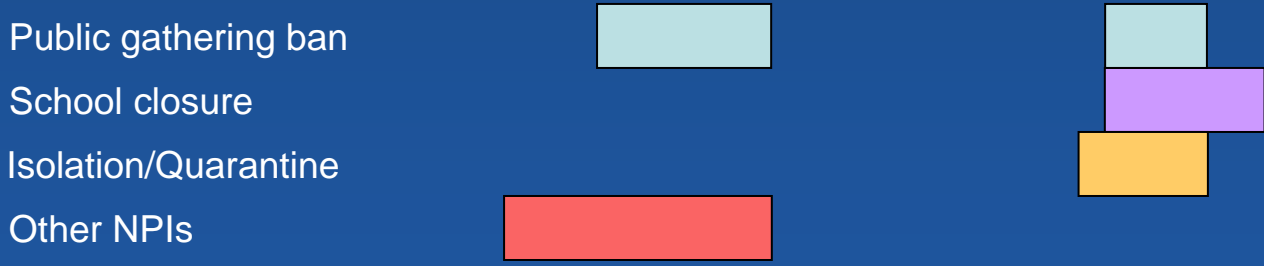
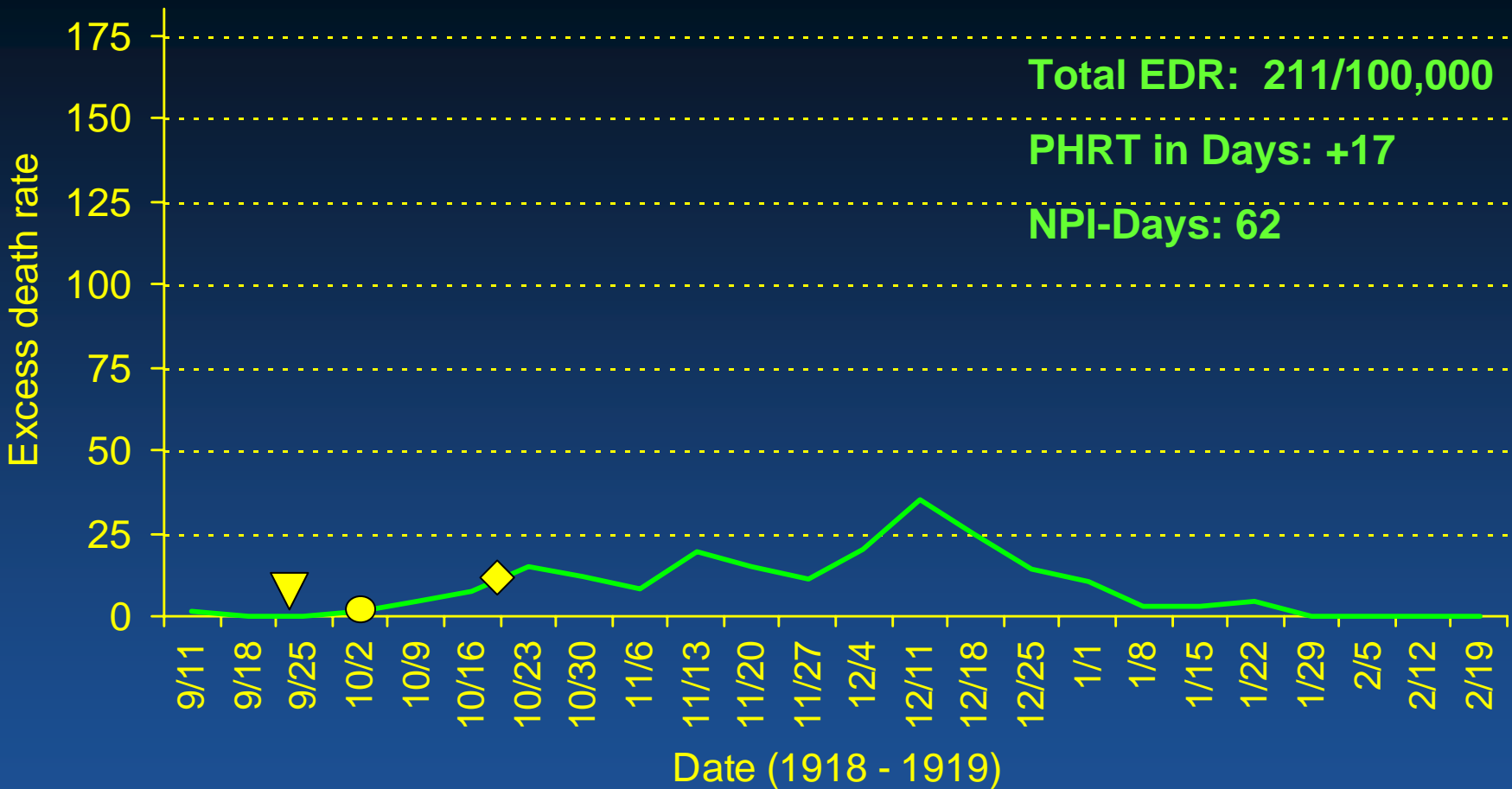


Figure 19

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Indianapolis

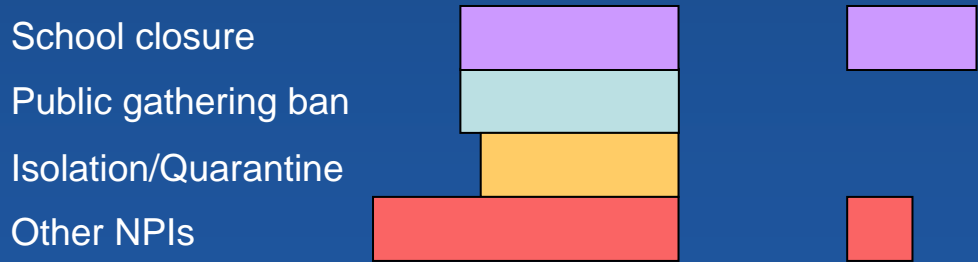
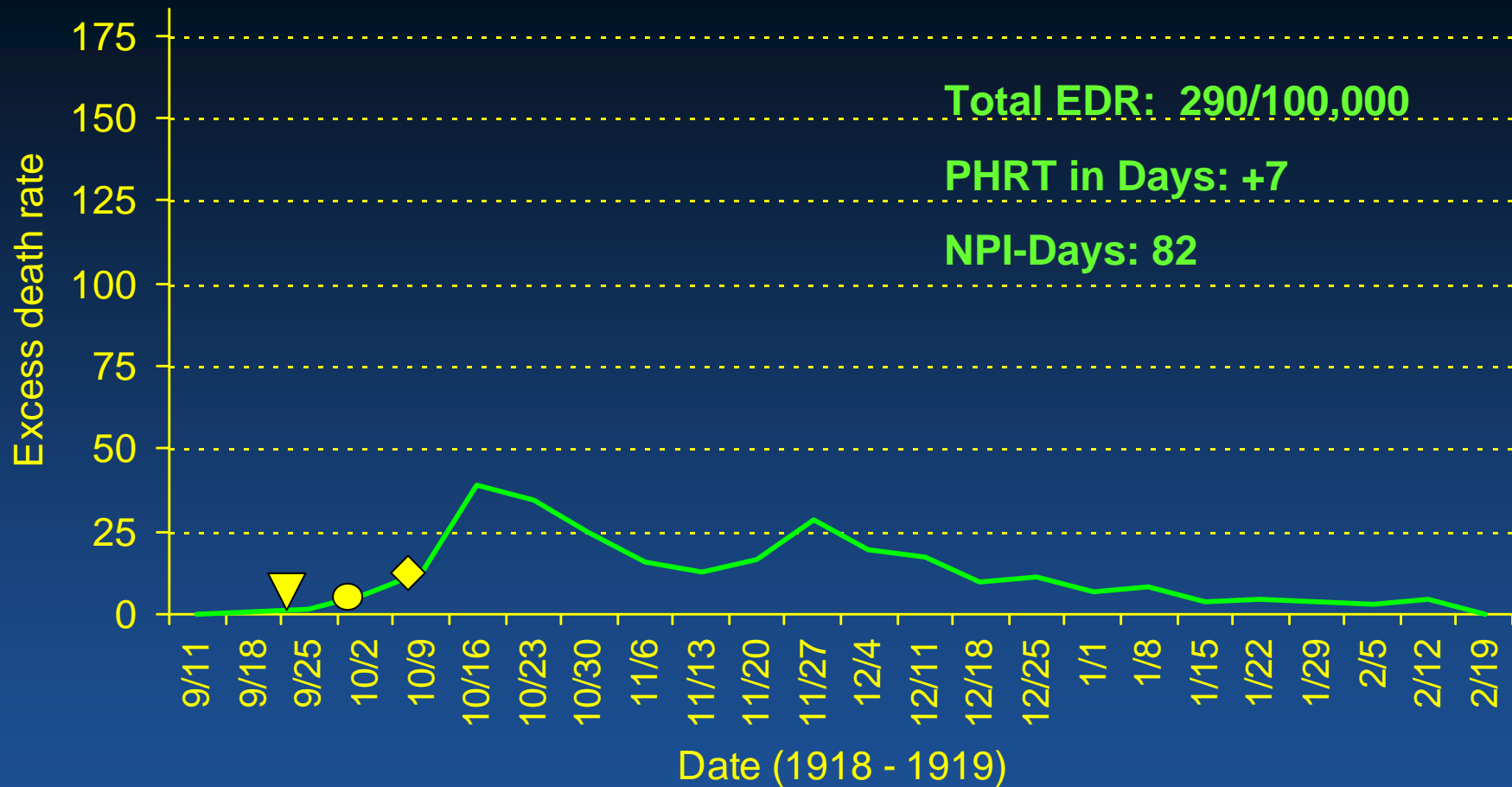


Figure 20



# Excess Death Rates (per 100,000) - Kansas City

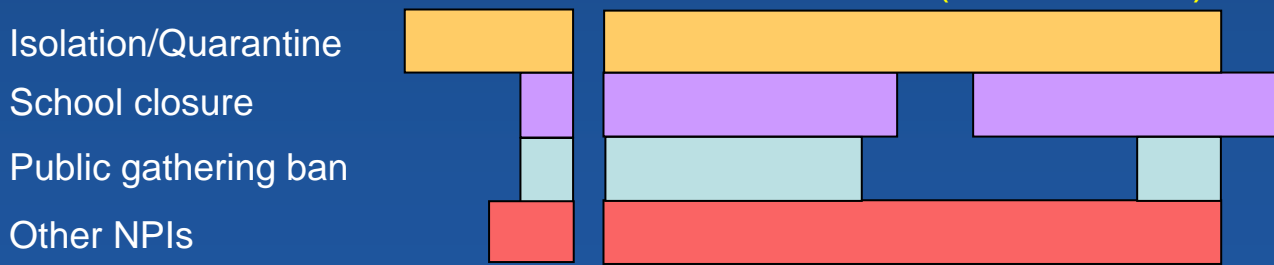
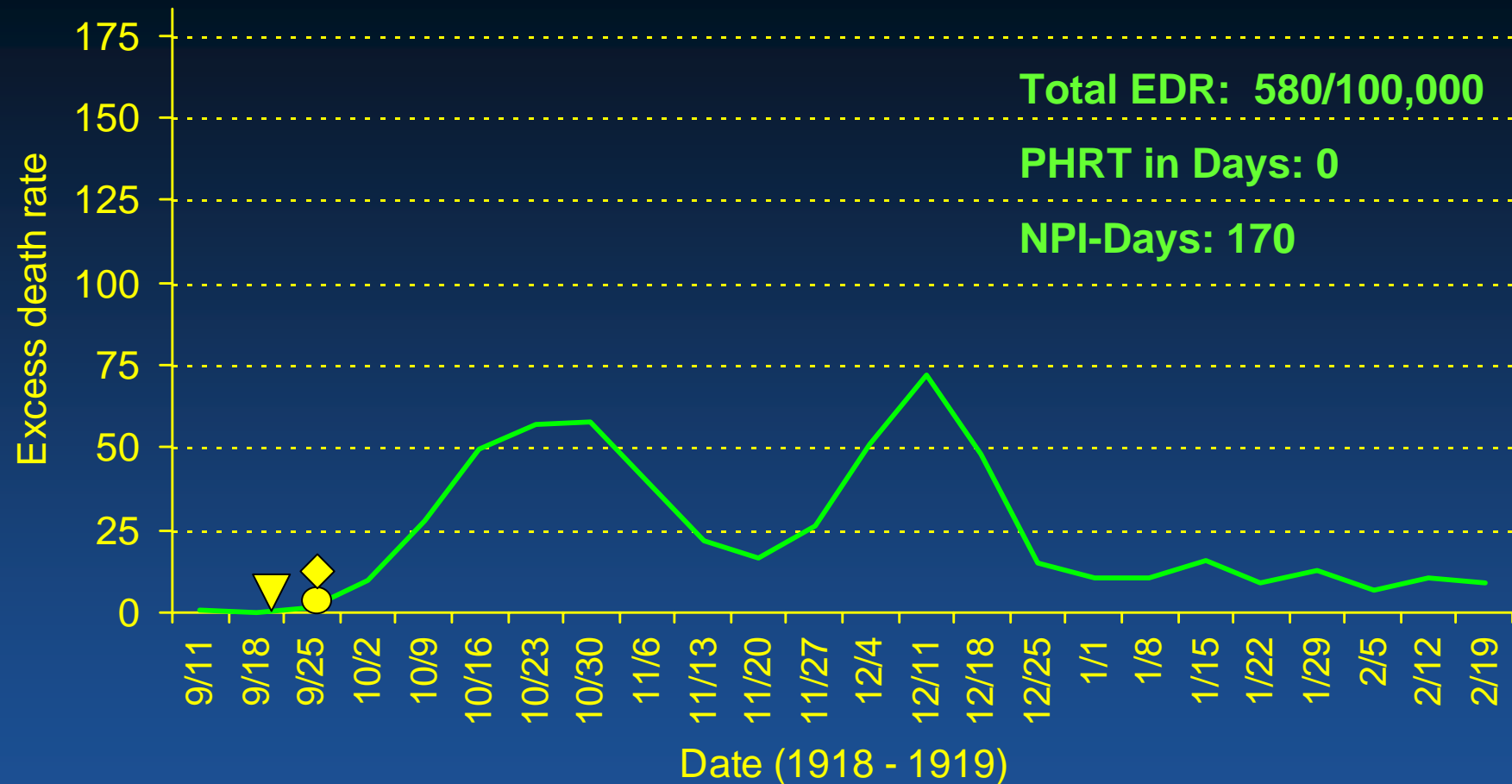
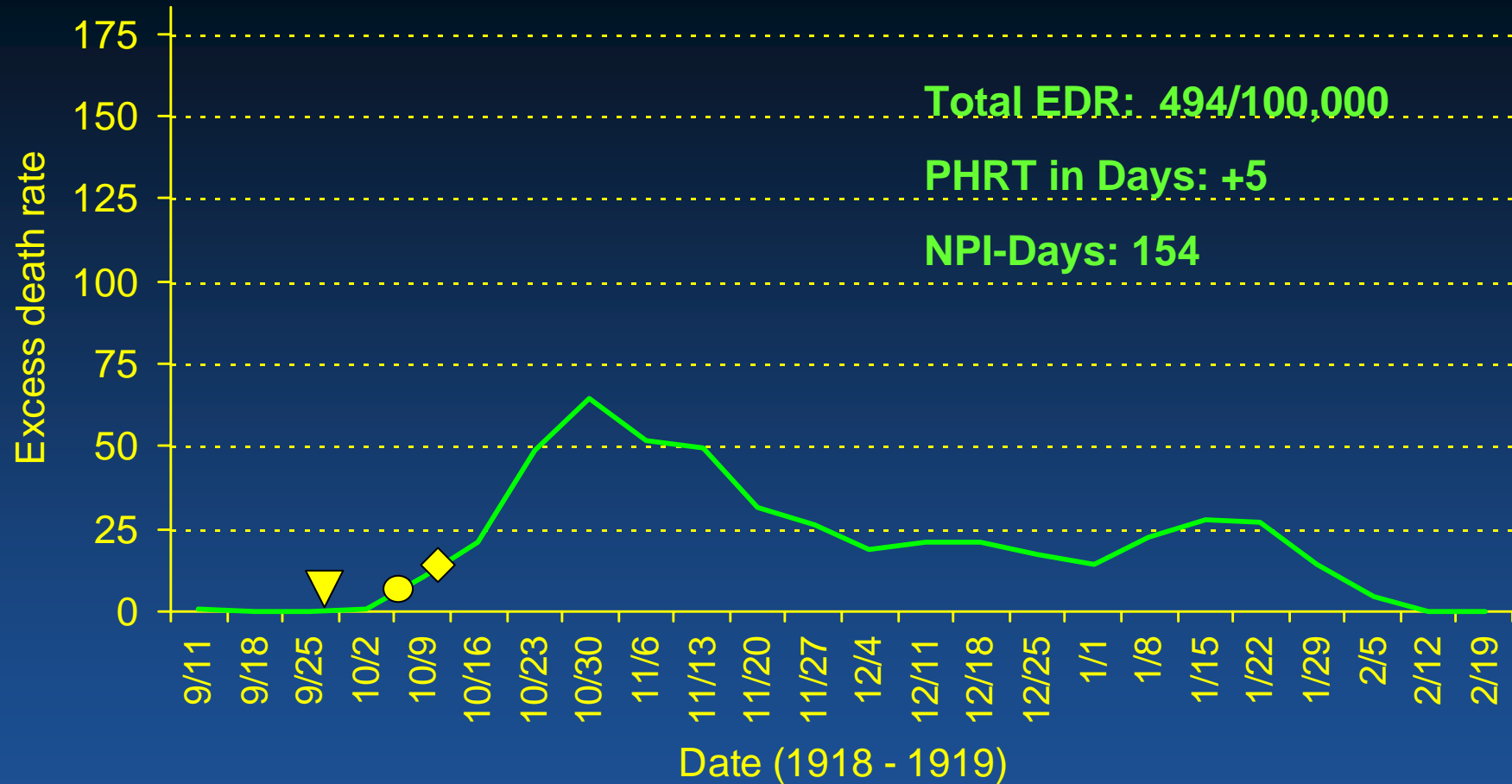


Figure 21

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Los Angeles



School closure  
 Public gathering ban  
 Other NPIs

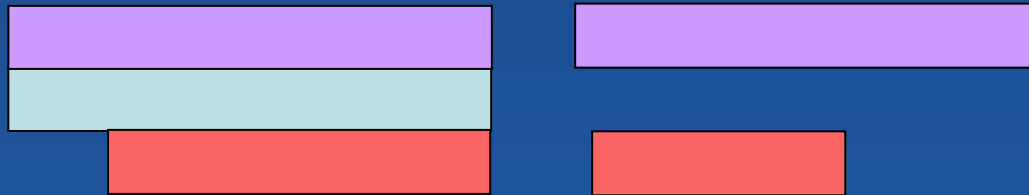


Figure 22



# Excess Death Rates (per 100,000) - Louisville

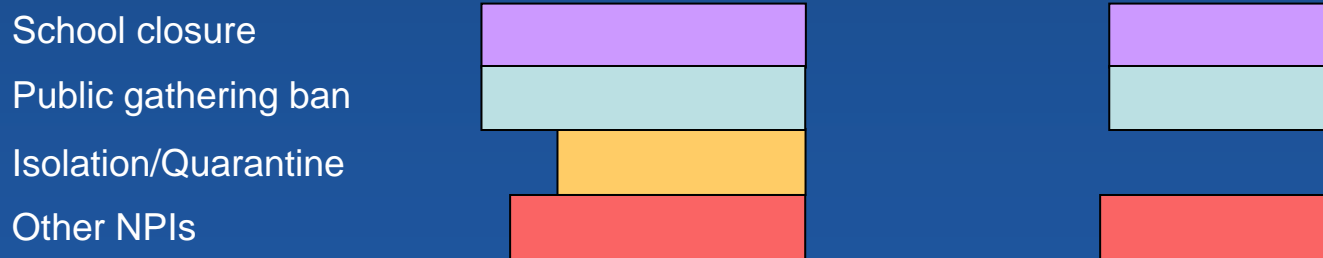
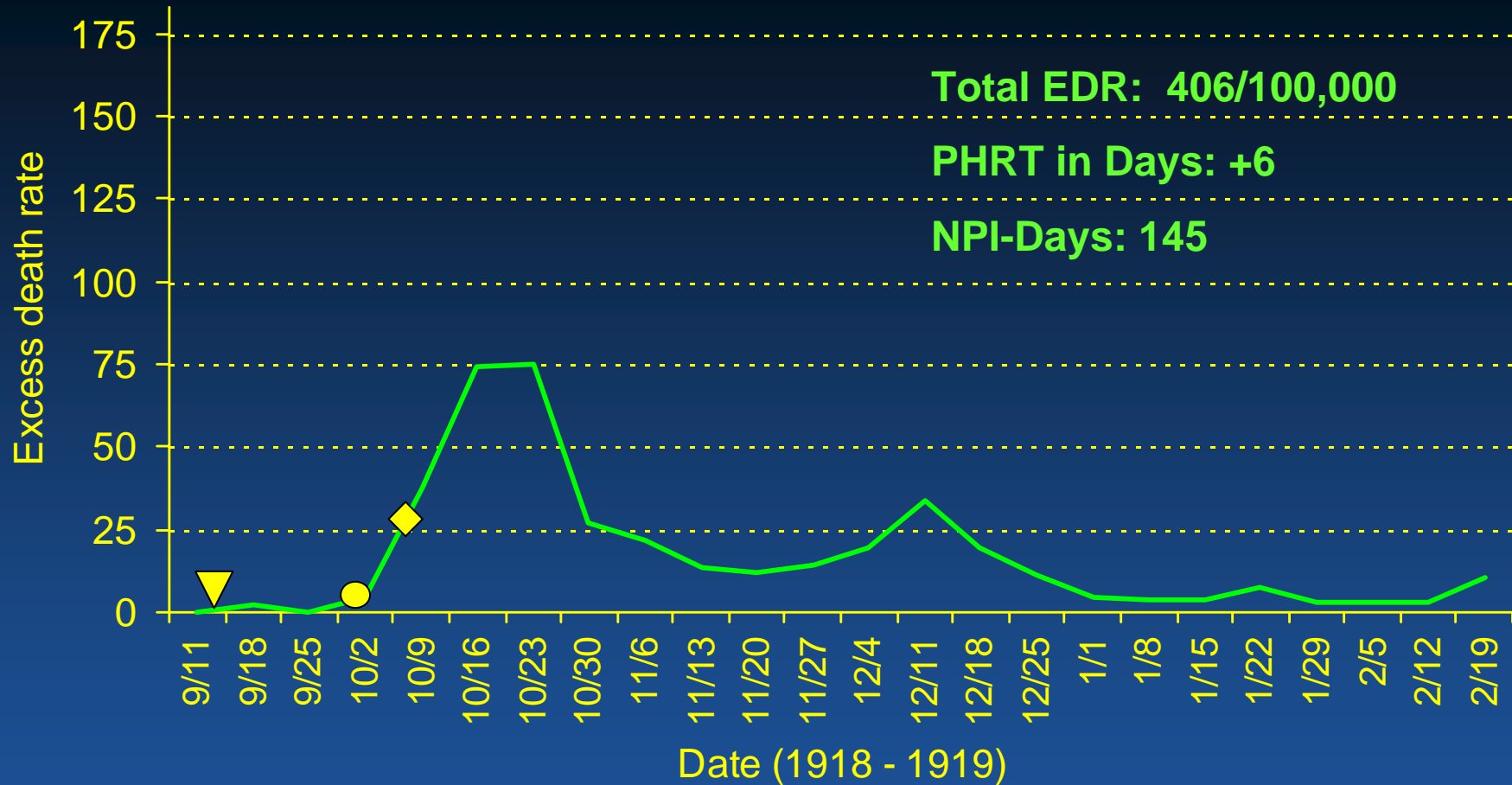


Figure 23



# Excess Death Rates (per 100,000) - Lowell

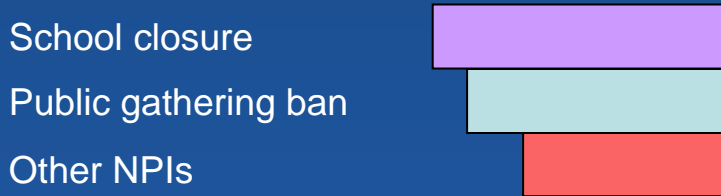
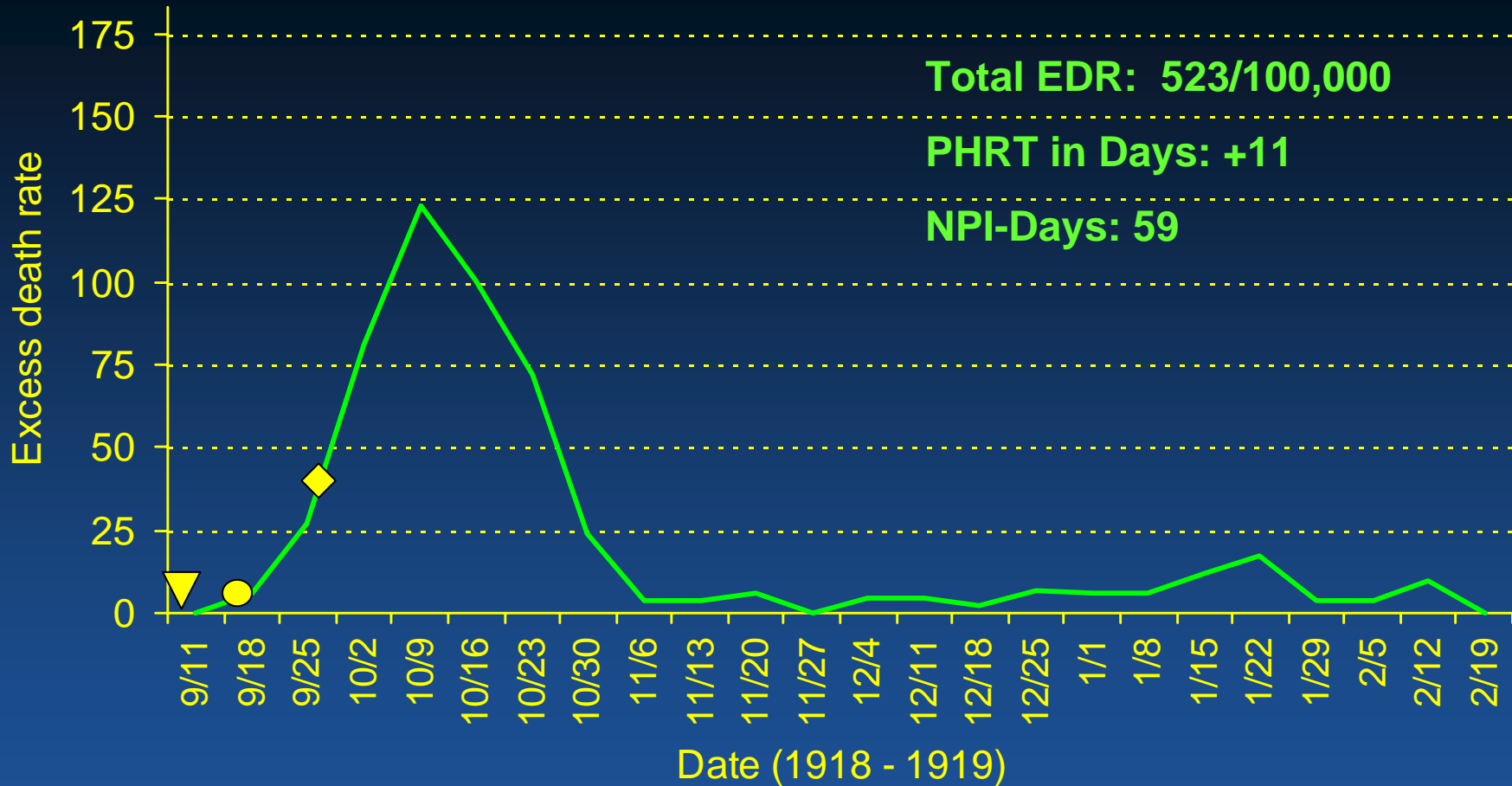


Figure 24





# Excess Death Rates (per 100,000) - Milwaukee

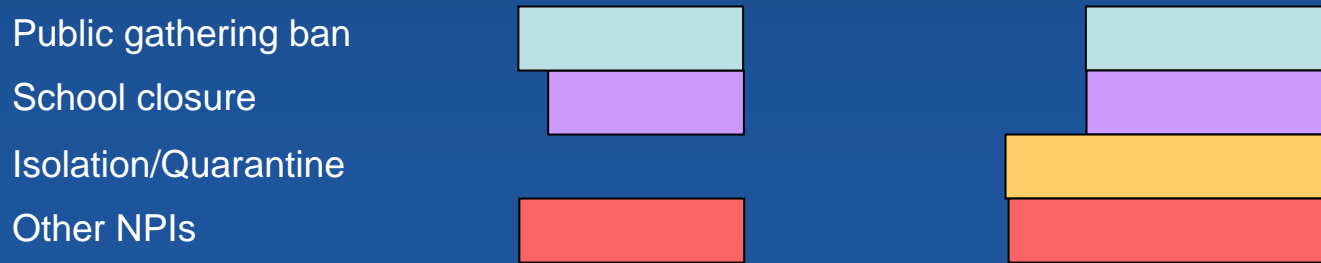
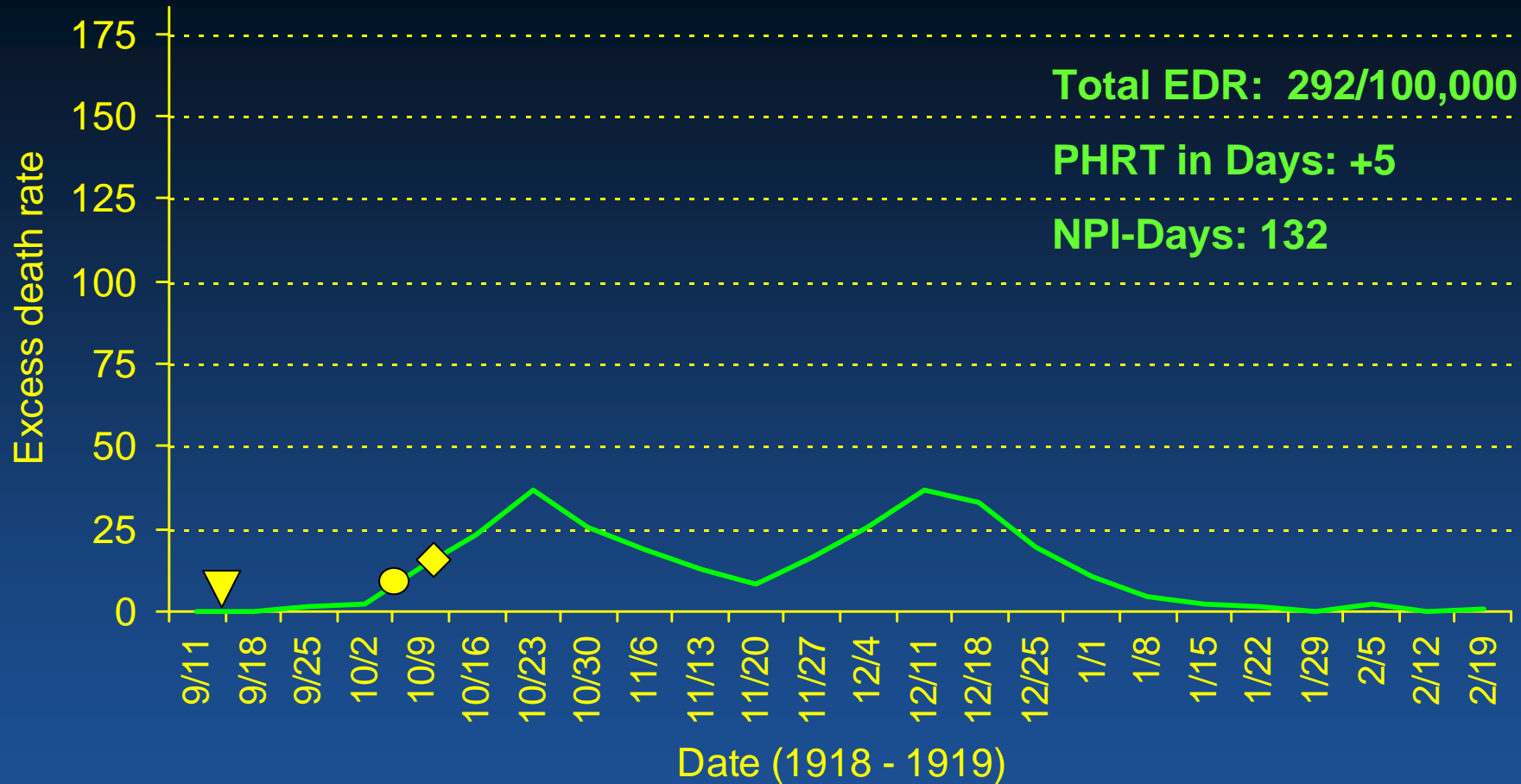
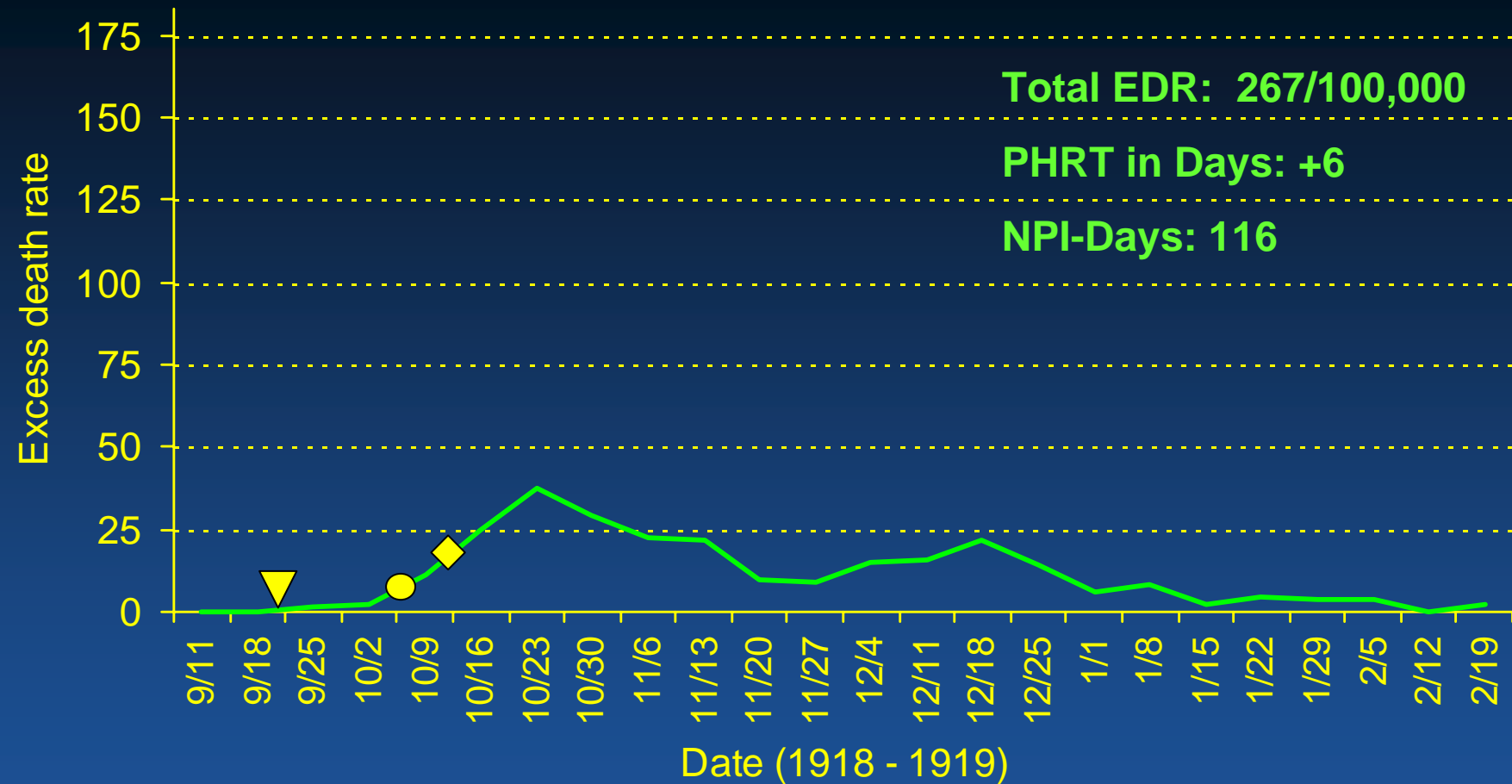


Figure 25



# Excess Death Rates (per 100,000) - Minneapolis



Public gathering ban  
 School closure  
 Other NPIs

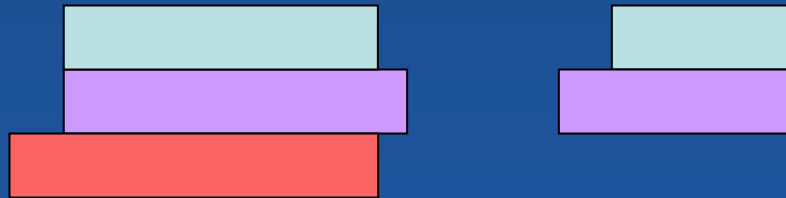
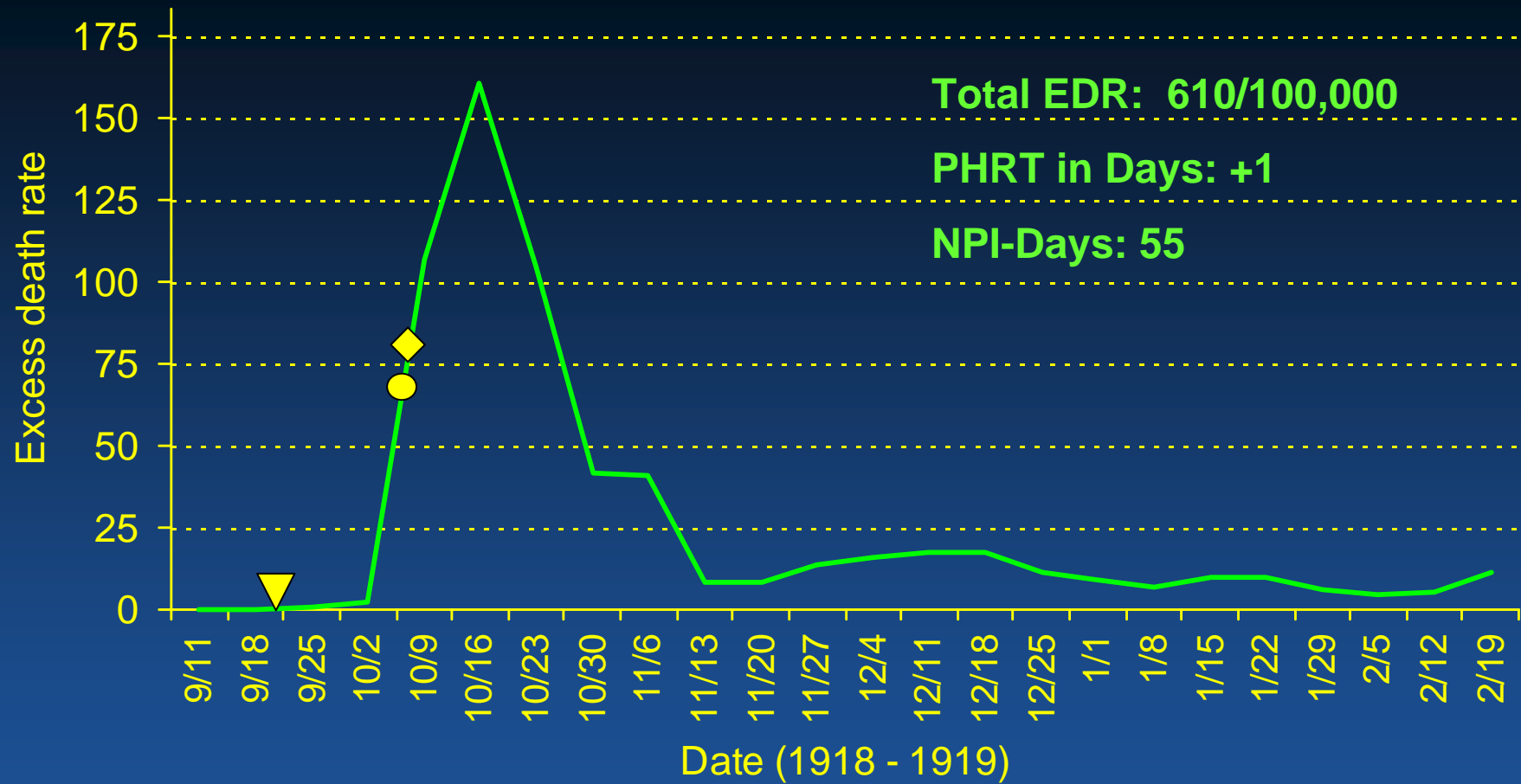


Figure 26



# Excess Death Rates (per 100,000) - Nashville



Public gathering ban  
 School closure

Figure 27

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - New Haven

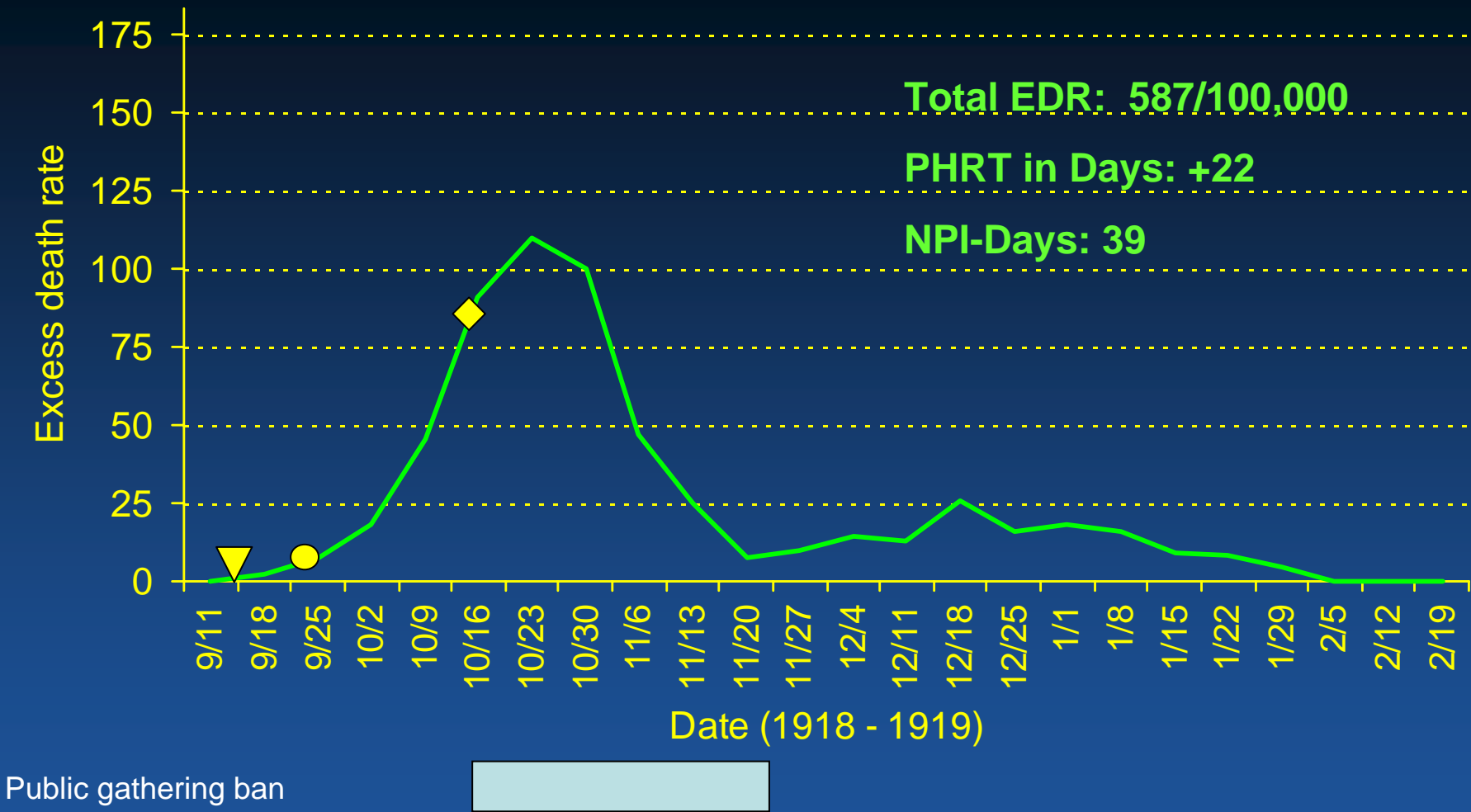


Figure 28

▼ first case      ● 2 X baseline mortality      ◆ first major NPI

# Excess Death Rates (per 100,000) - New Orleans

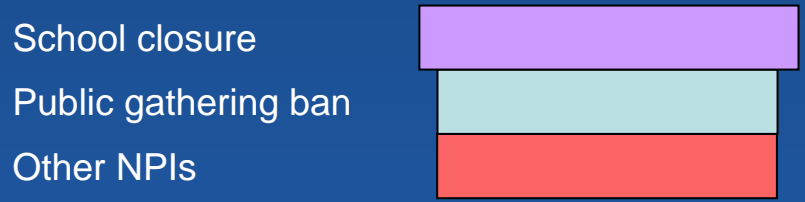
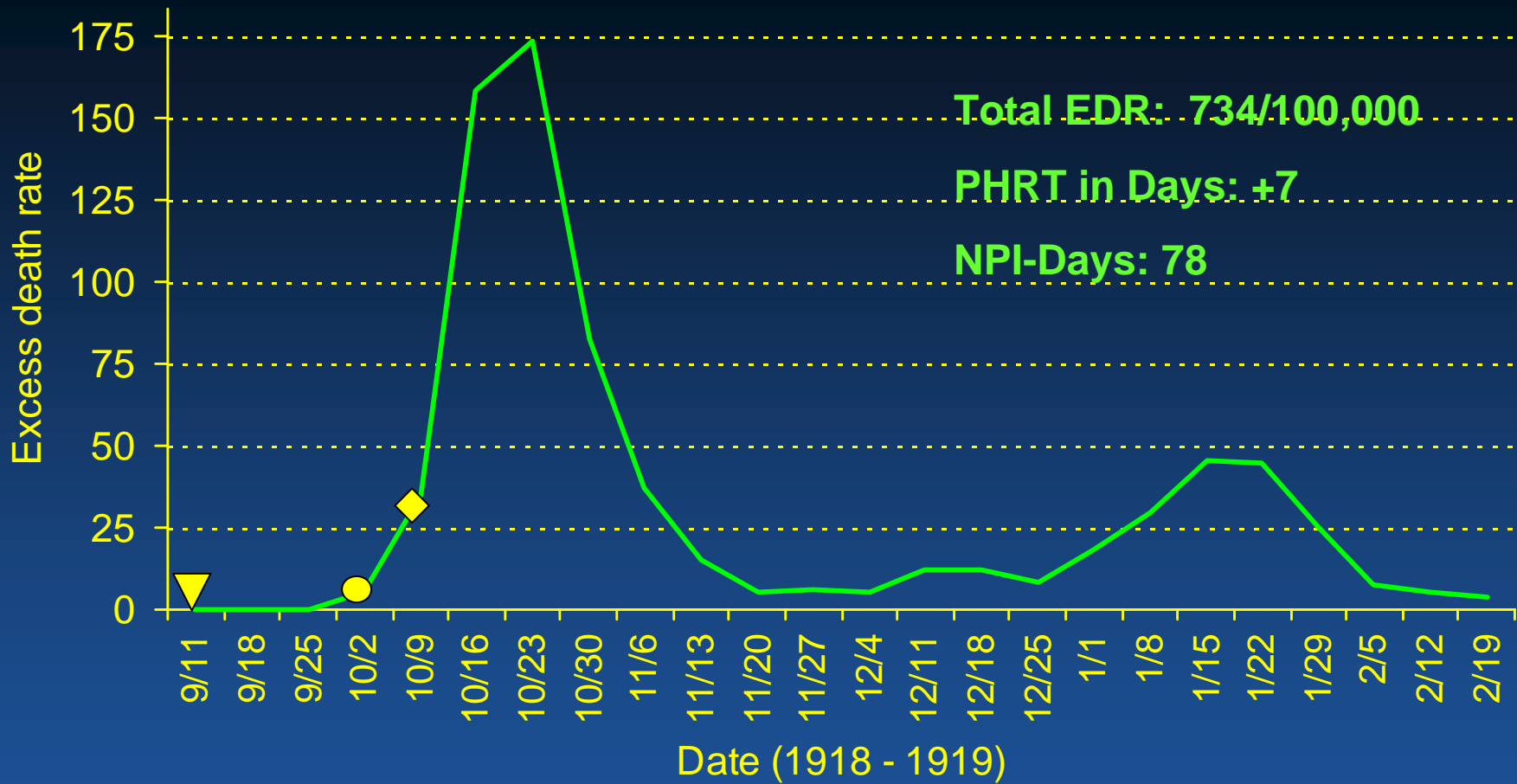


Figure 29

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - New York

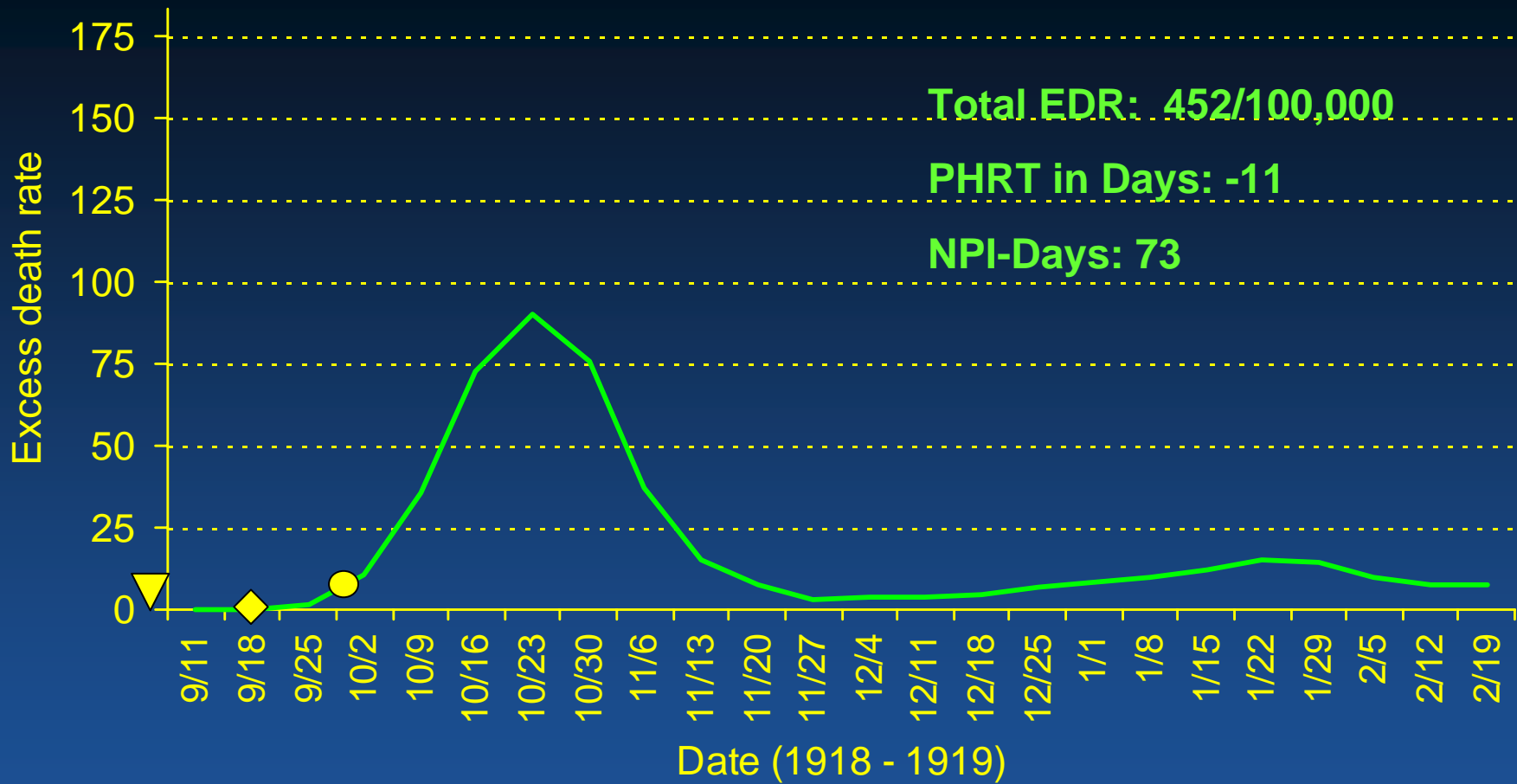
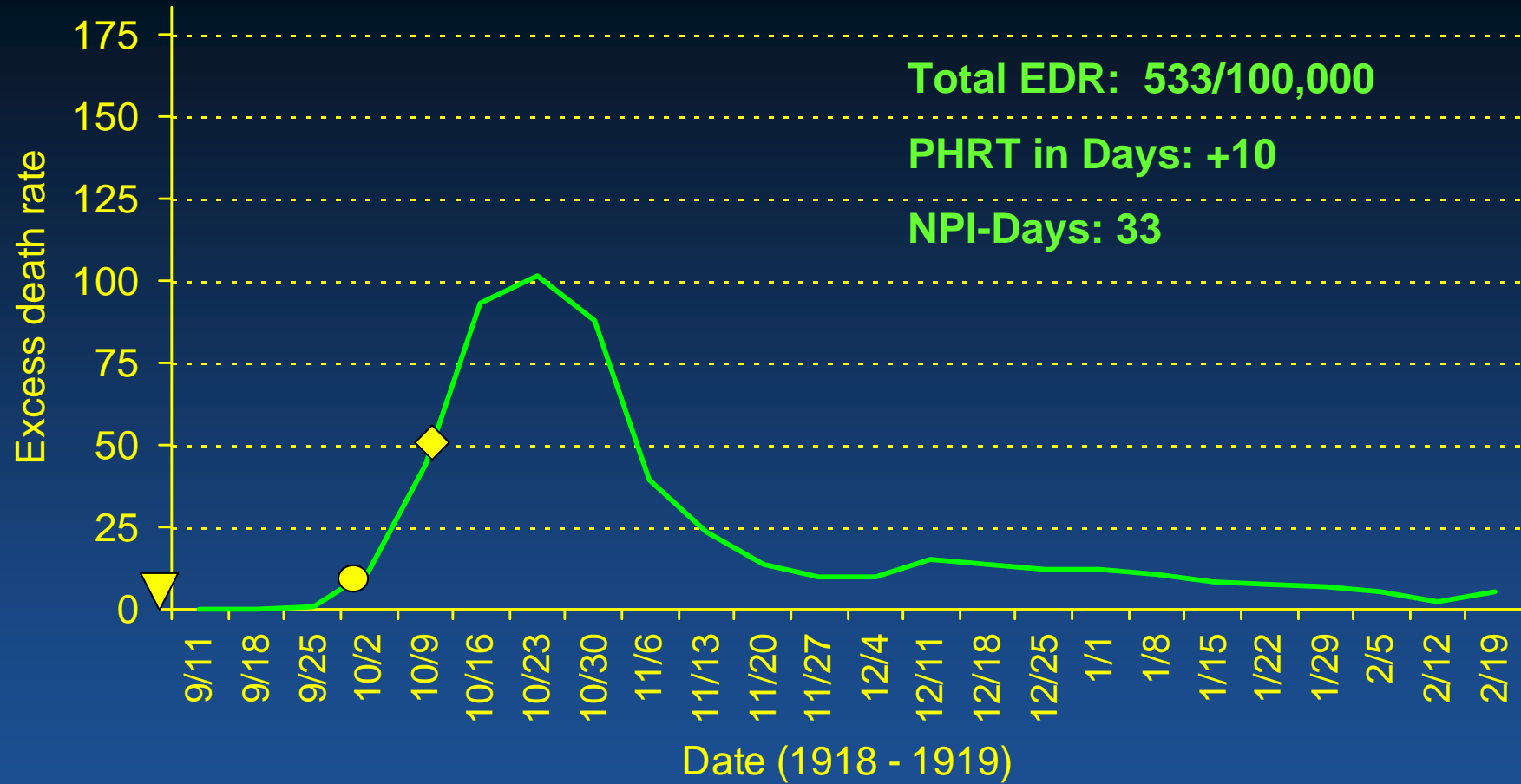


Figure 30

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Newark



Public gathering ban  
 School closure  
 Other NPIs

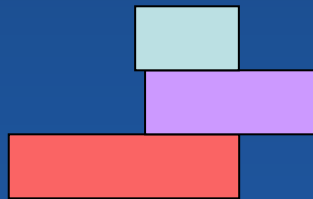
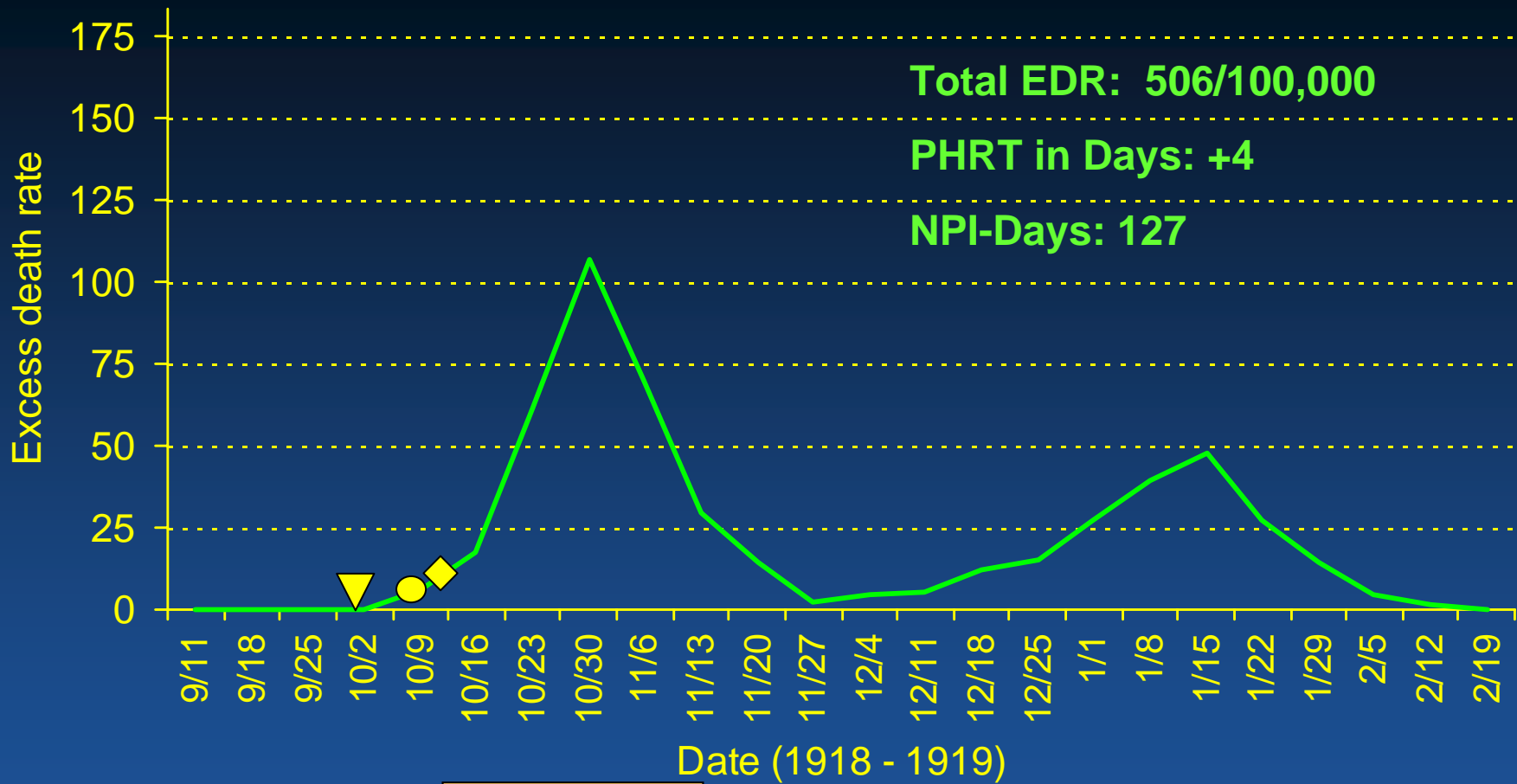


Figure 31



# Excess Death Rates (per 100,000) - Oakland



- Isolation/Quarantine
- School closure
- Public gathering ban
- Other NPIs



Figure 32

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI



# Excess Death Rates (per 100,000) - Omaha

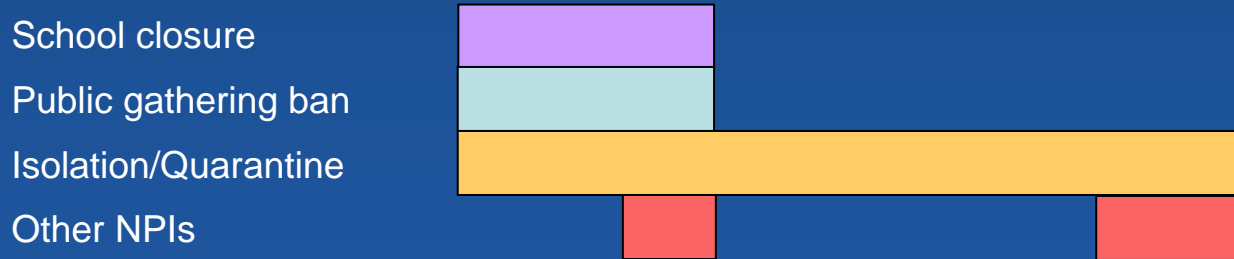
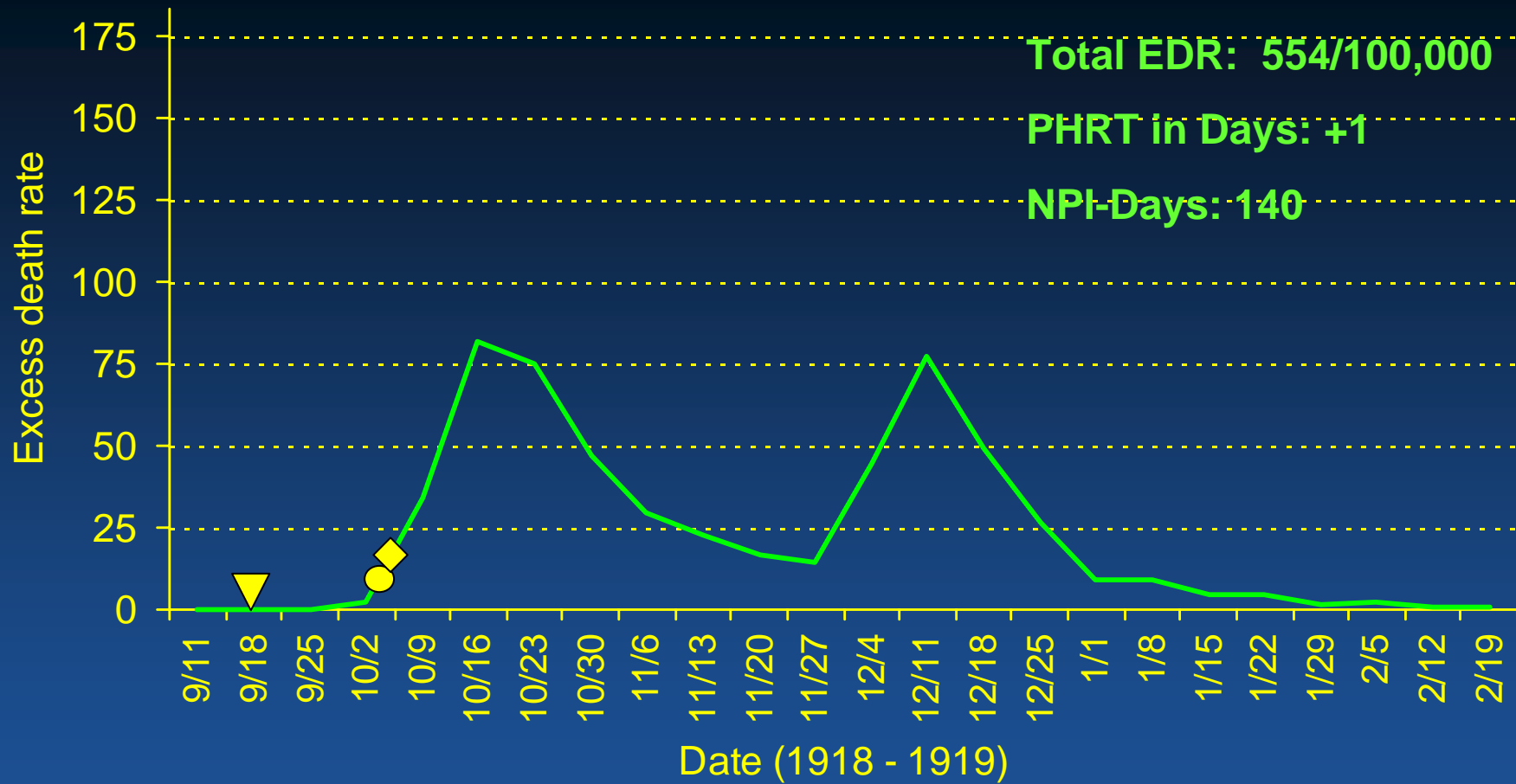


Figure 33



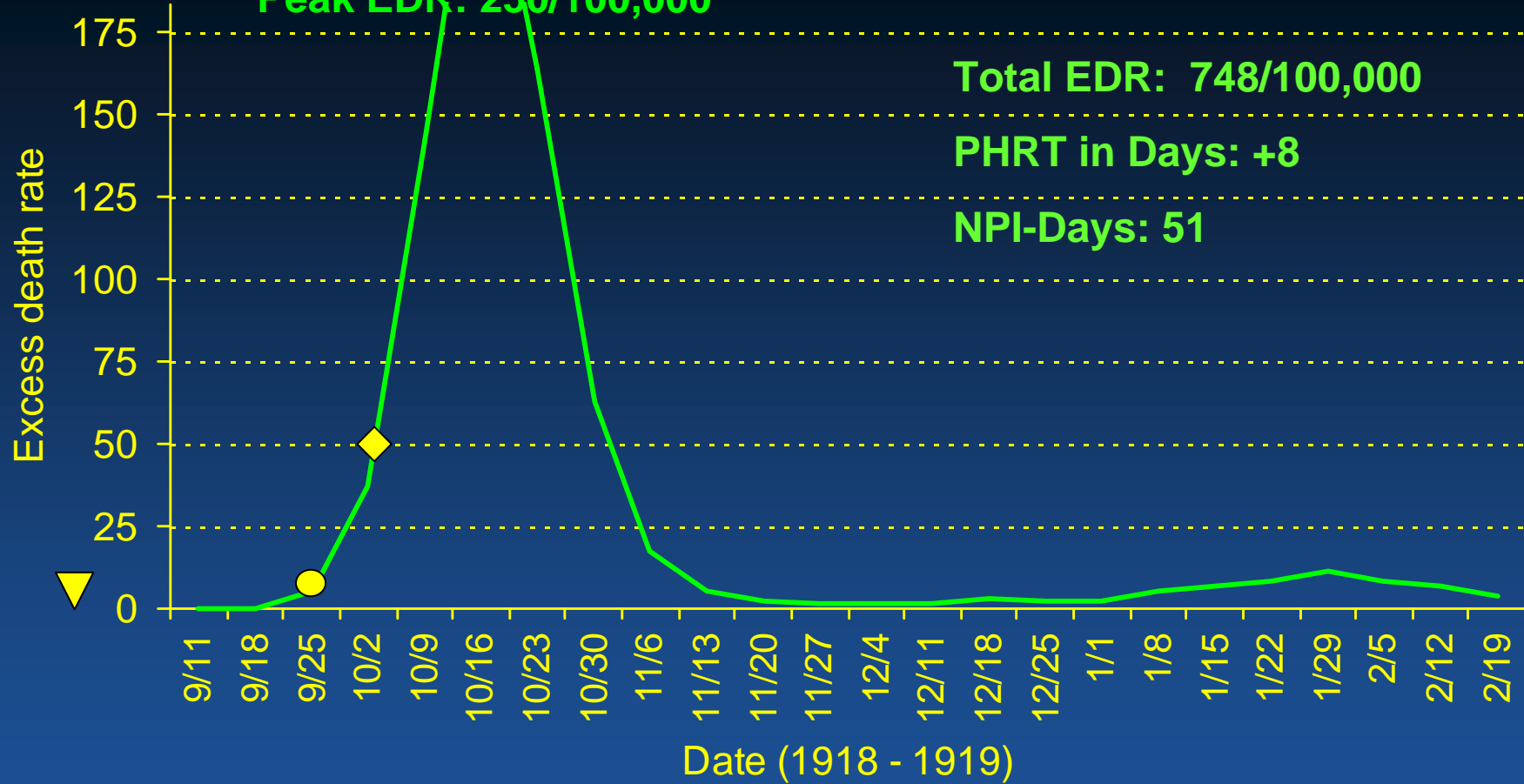
# Excess Death Rates (per 100,000) - Philadelphia

Peak EDR: 250/100,000

Total EDR: 748/100,000

PHRT in Days: +8

NPI-Days: 51



Public gathering ban

School closure

▼ first case

● 2 X baseline mortality

◆ first major NPI

Figure 34

# Excess Death Rates (per 100,000) - Pittsburgh

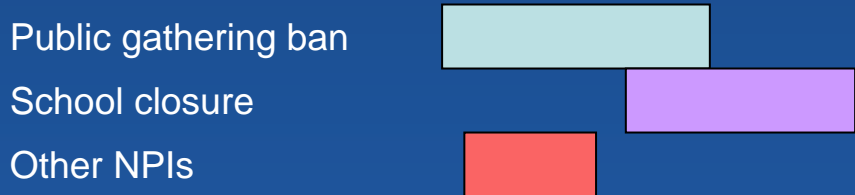
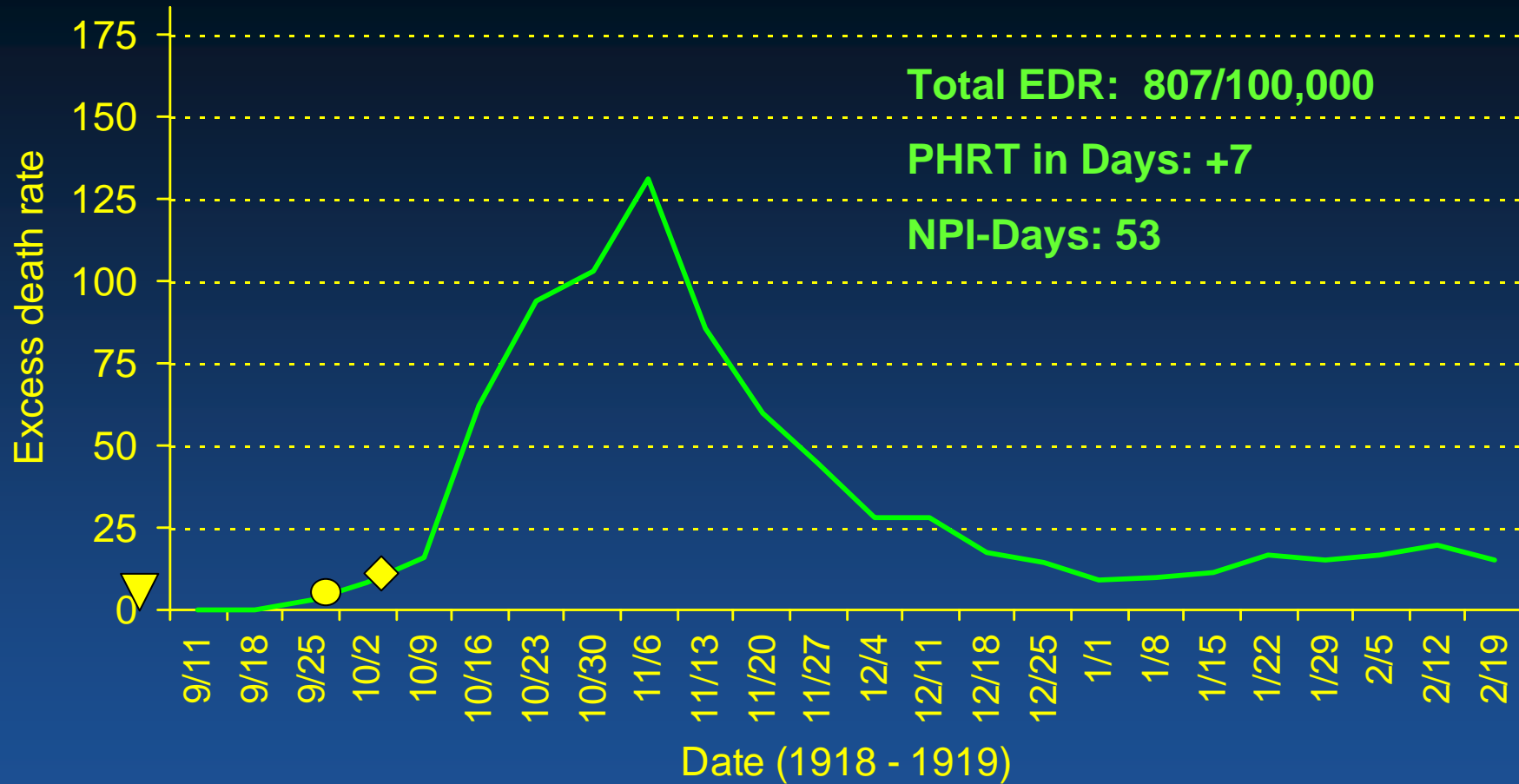


Figure 35



# Excess Death Rates (per 100,000) - Portland

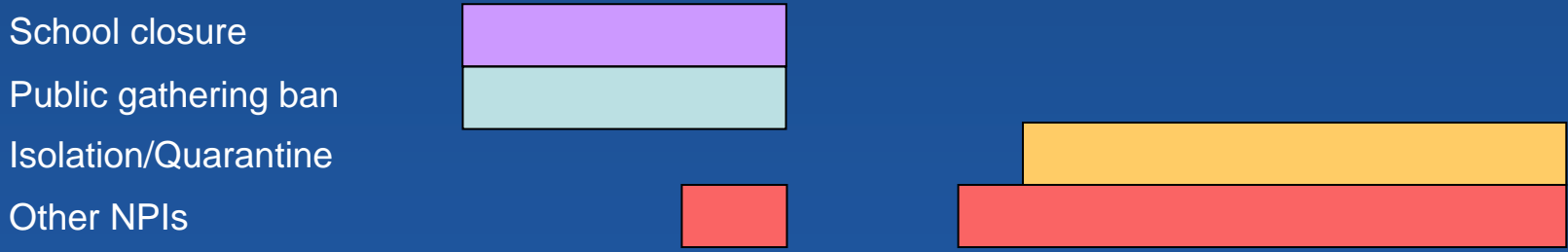
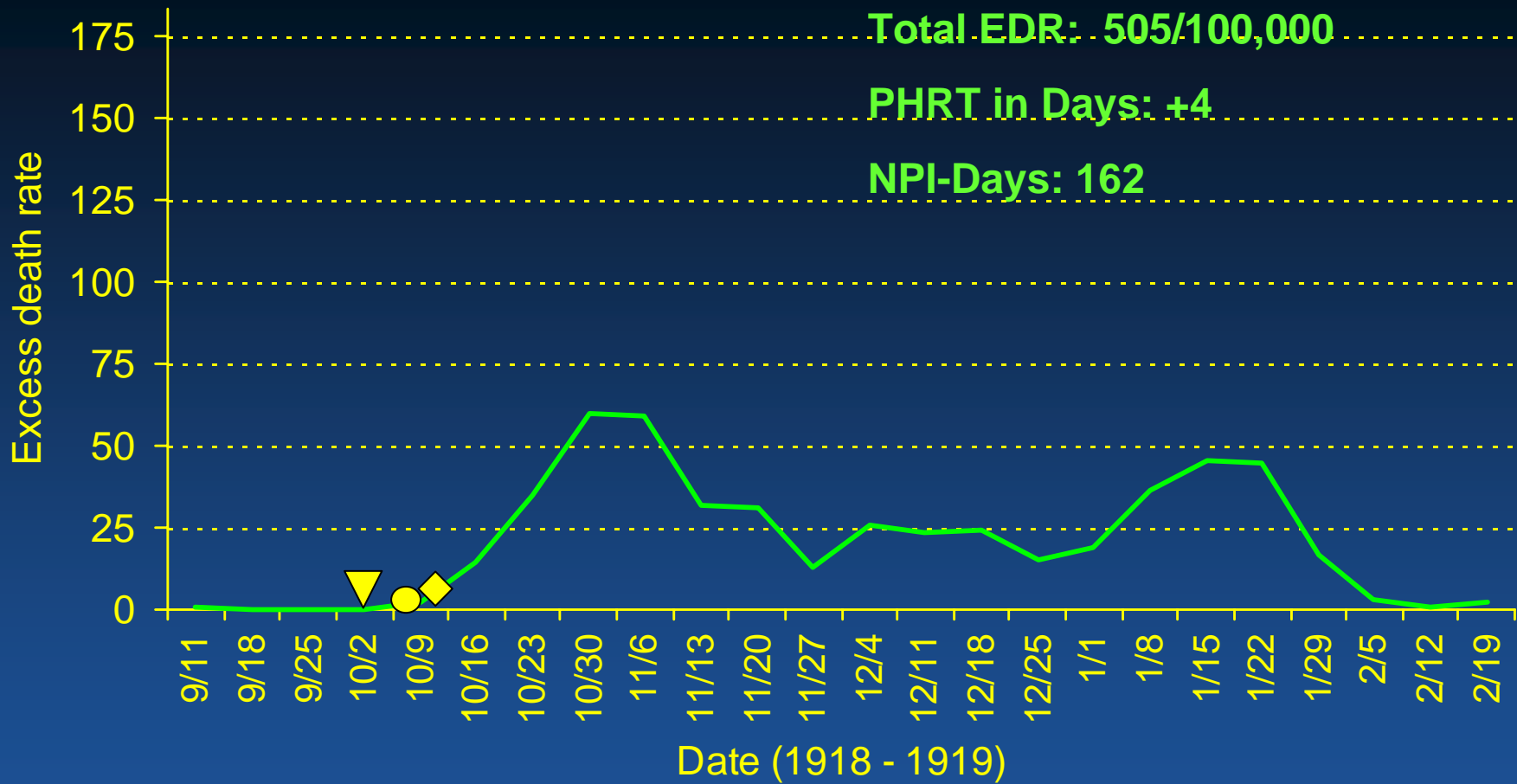


Figure 36

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Providence

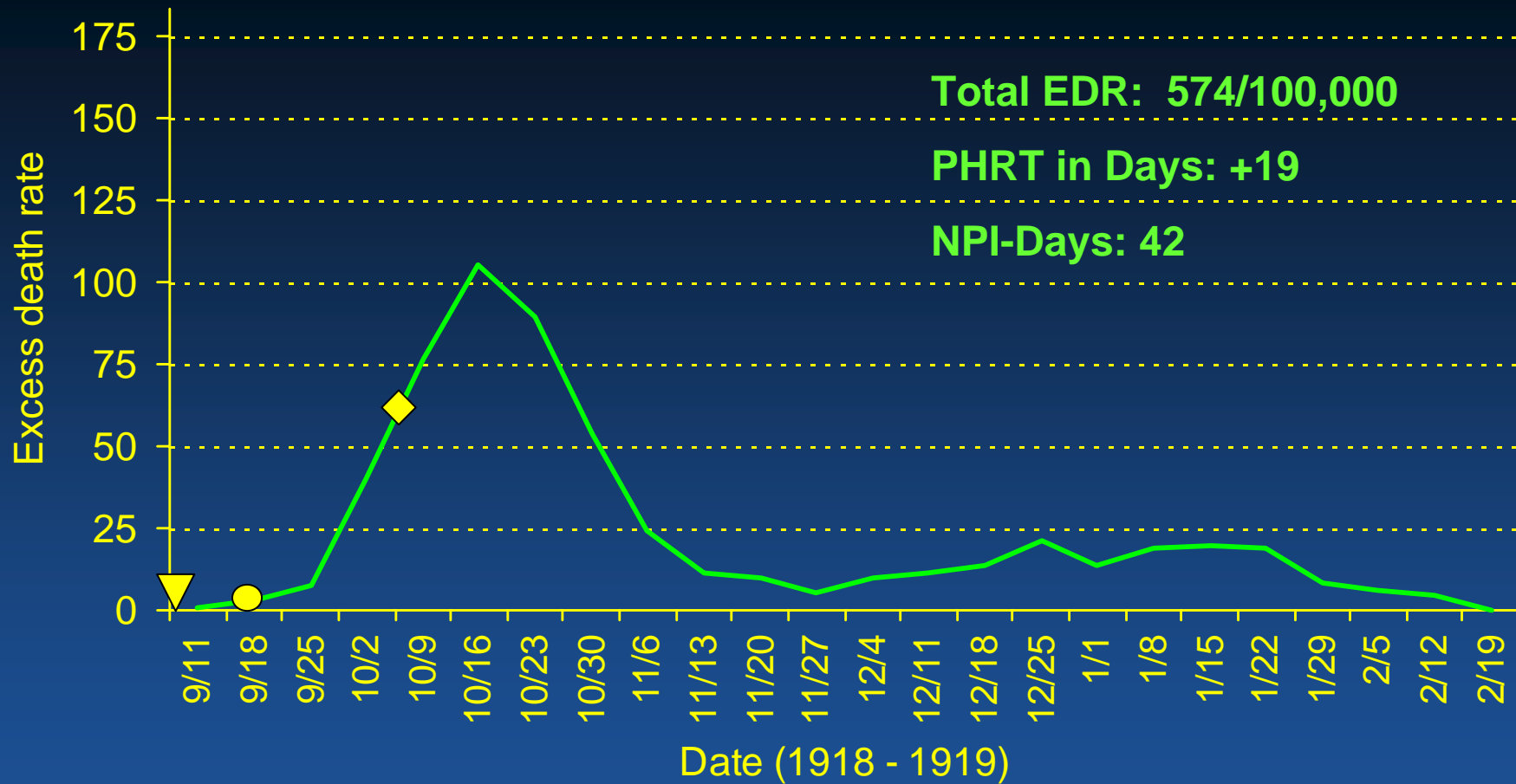
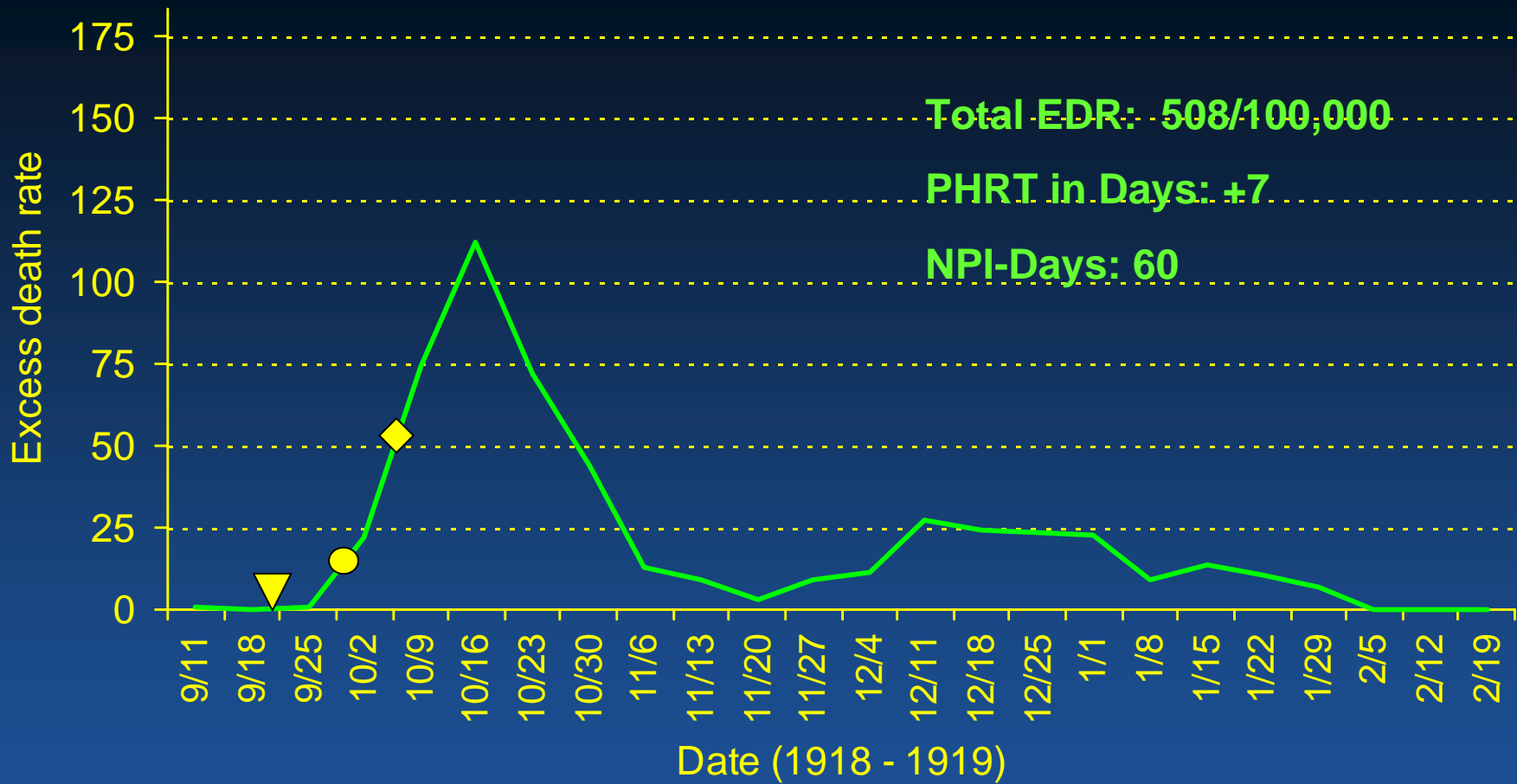


Figure 37



# Excess Death Rates (per 100,000) - Richmond

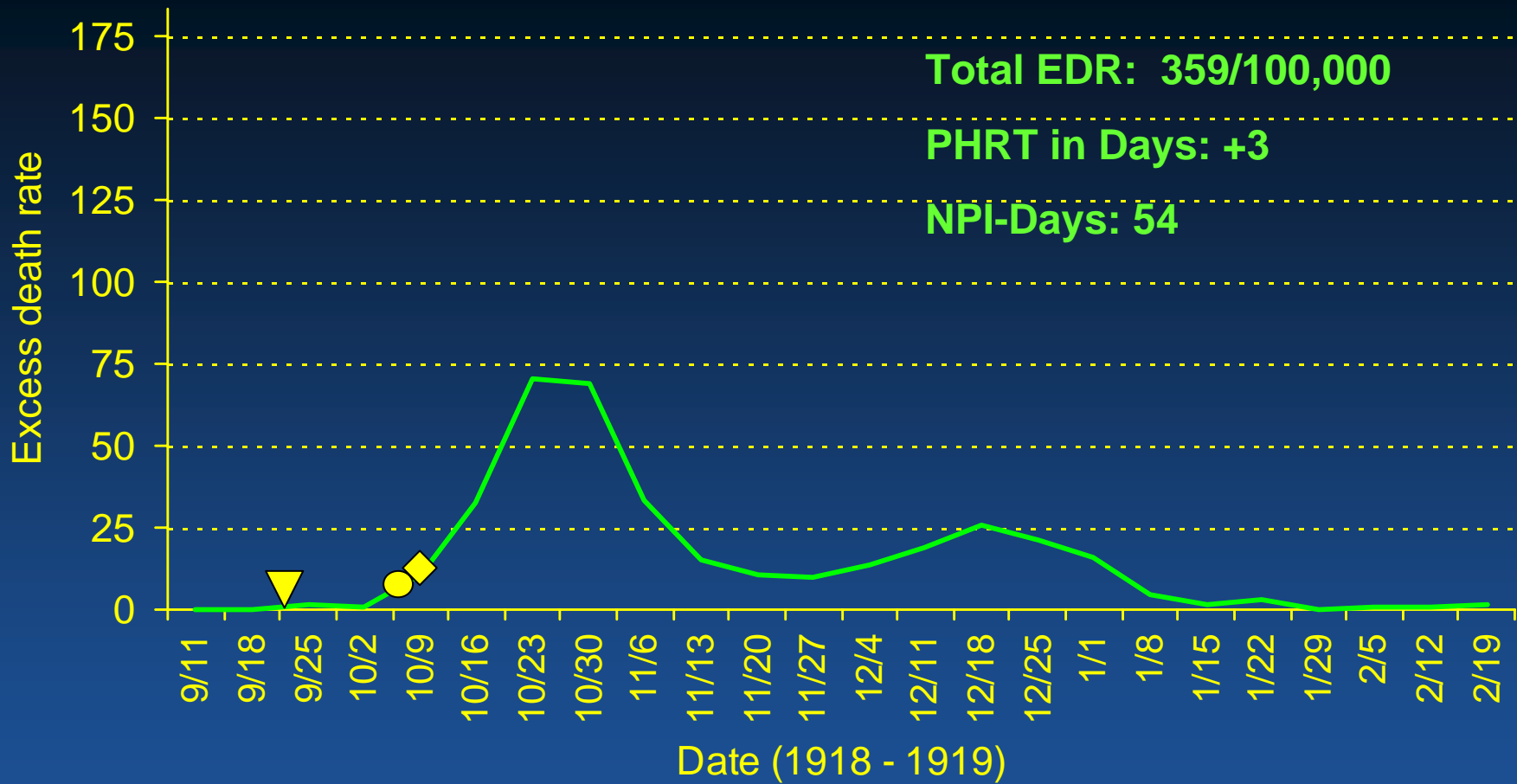


- School closure
- Public gathering ban
- Other NPIs

Figure 38

- ▼ first case
- 2 X baseline mortality
- ◆ first major NPI

# Excess Death Rates (per 100,000) - Rochester



- School closure
- Public gathering ban
- Other NPIs



Figure 39



# Excess Death Rates (per 100,000) - St. Louis

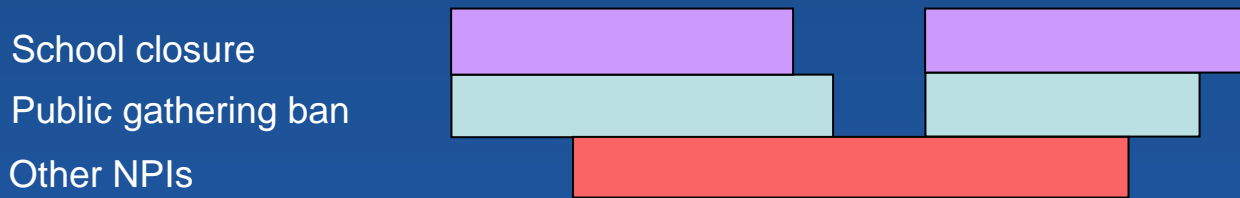
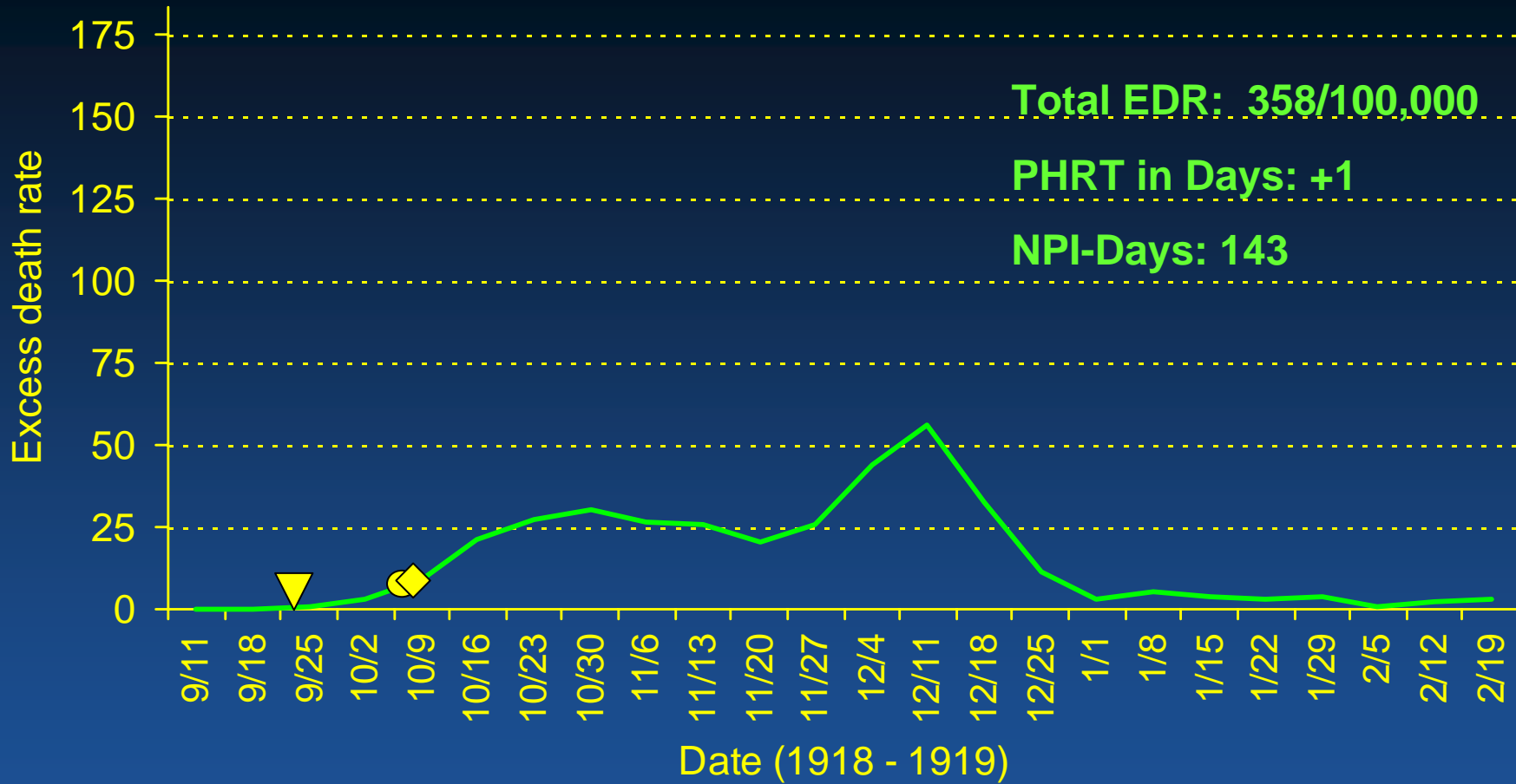
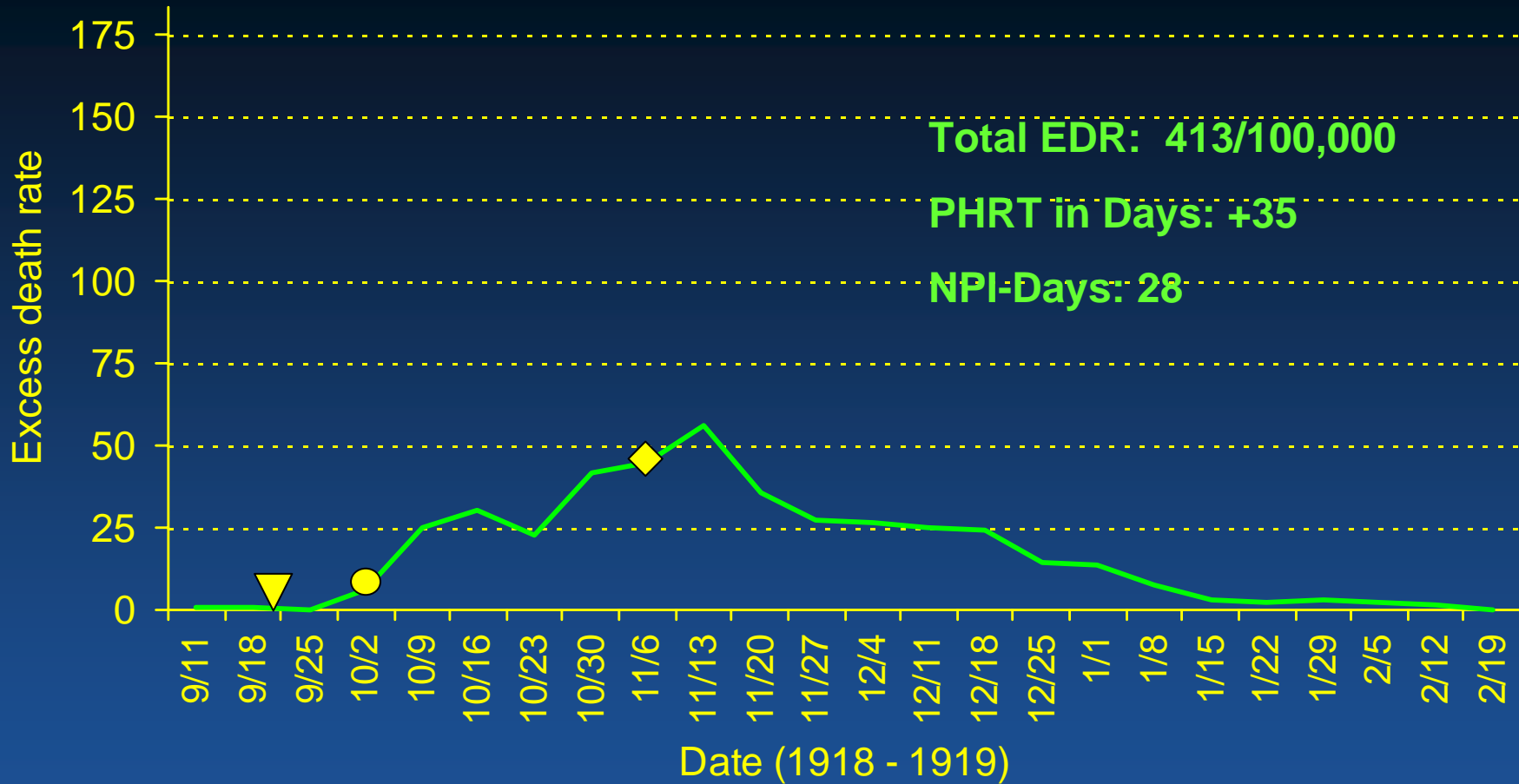


Figure 40





# Excess Death Rates (per 100,000) - St. Paul



Public gathering ban  
 School closure  
 Other NPIs

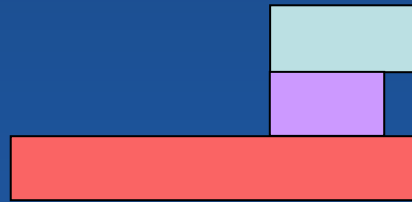


Figure 41



# Excess Death Rates (per 100,000) - San Francisco

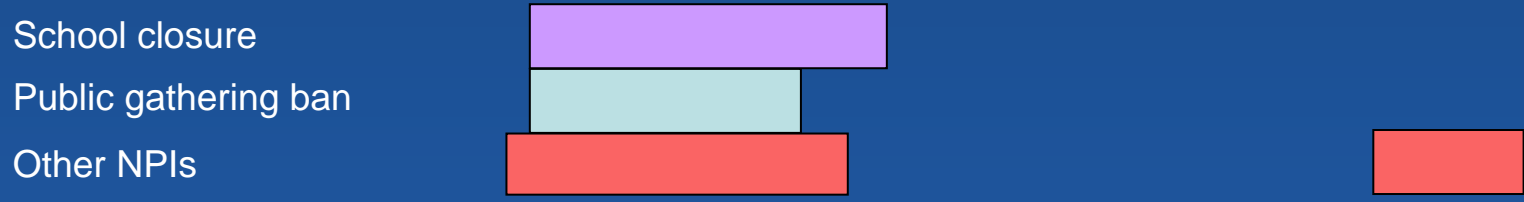
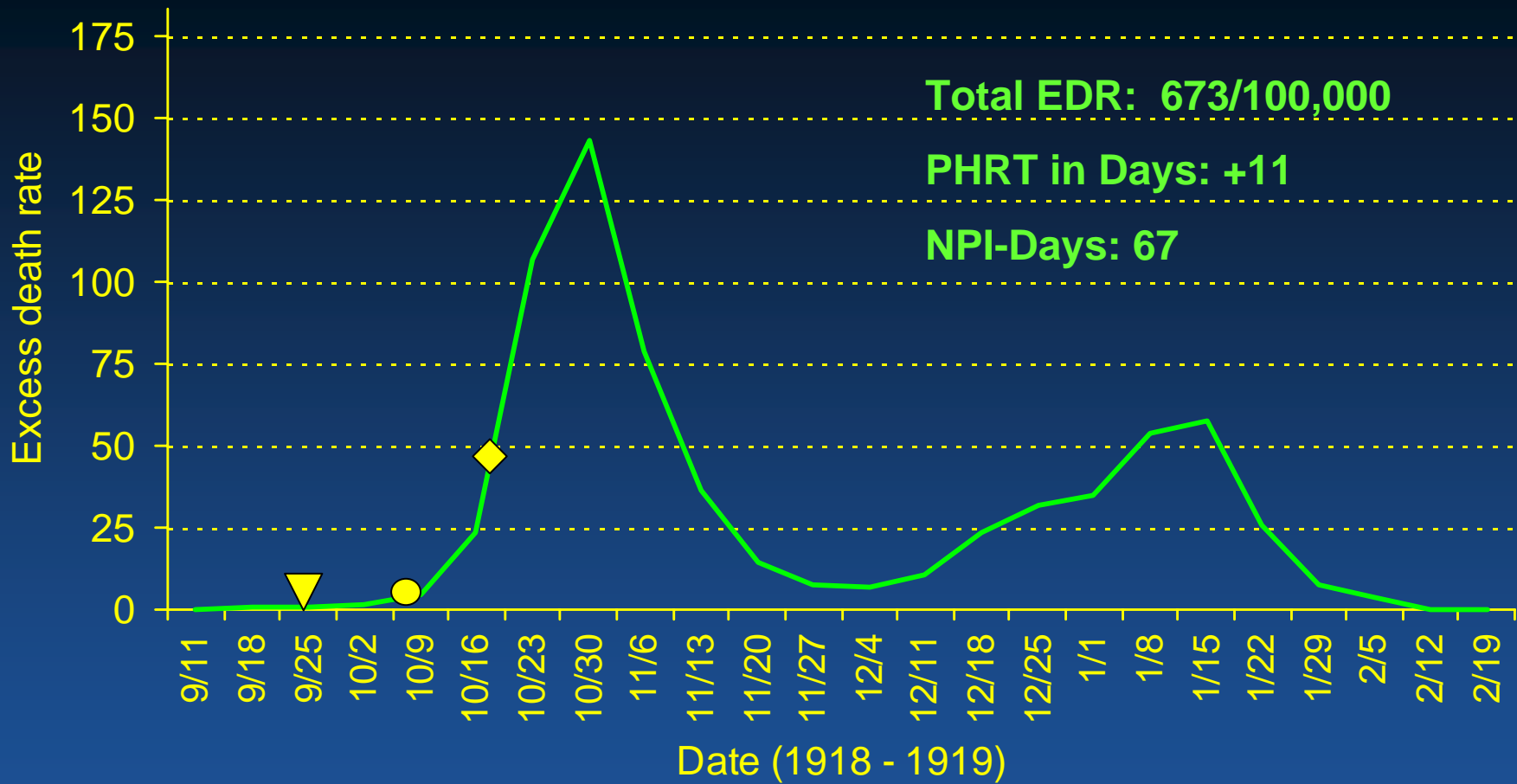


Figure 42

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Seattle

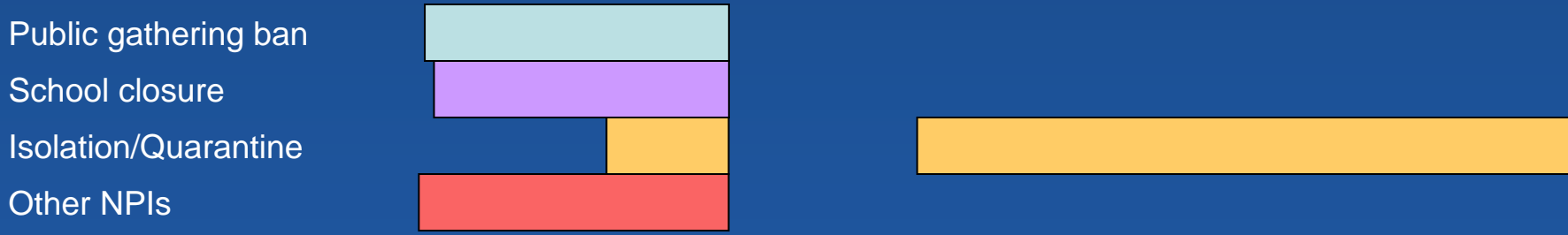
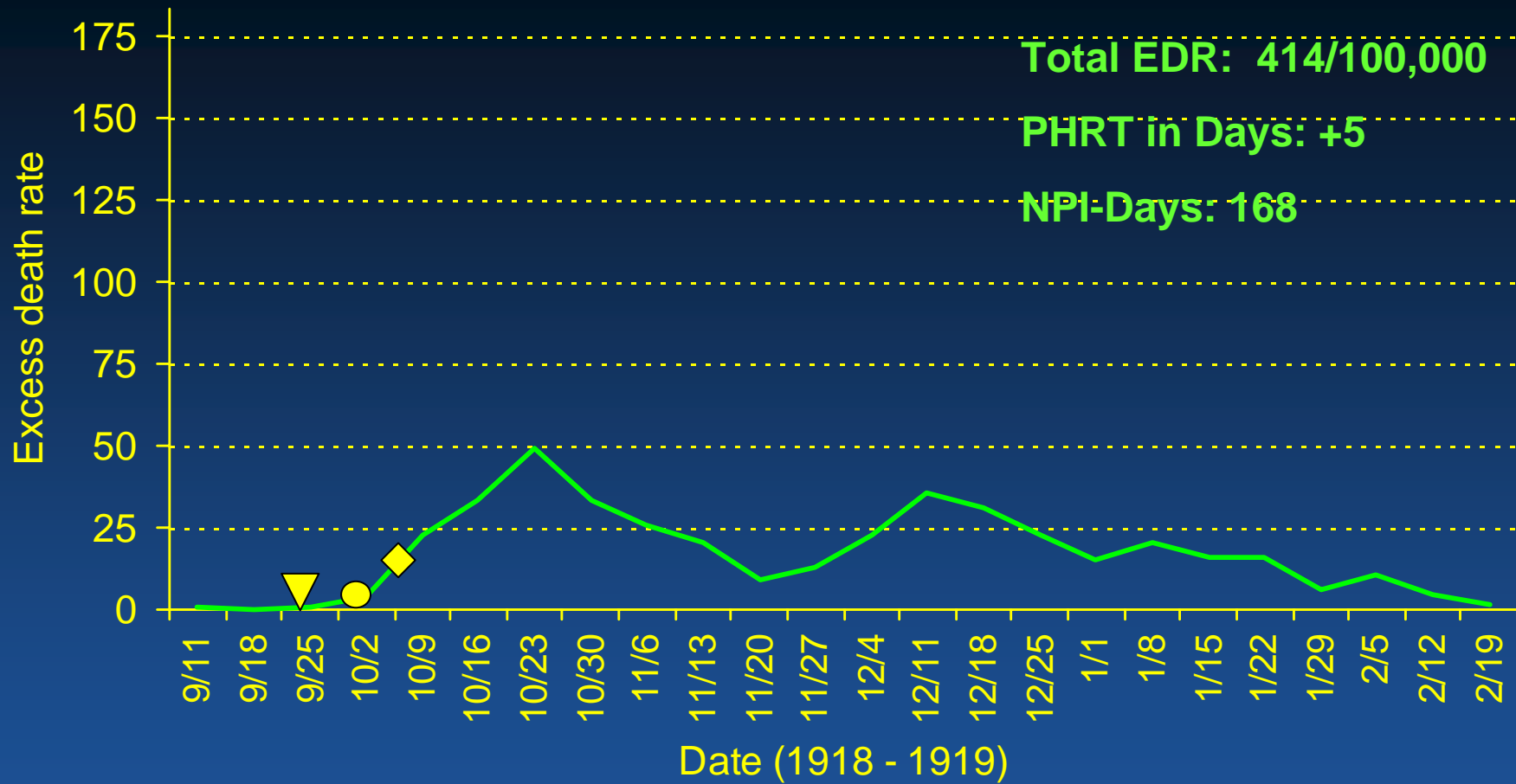


Figure 43



# Excess Death Rates (per 100,000) - Spokane

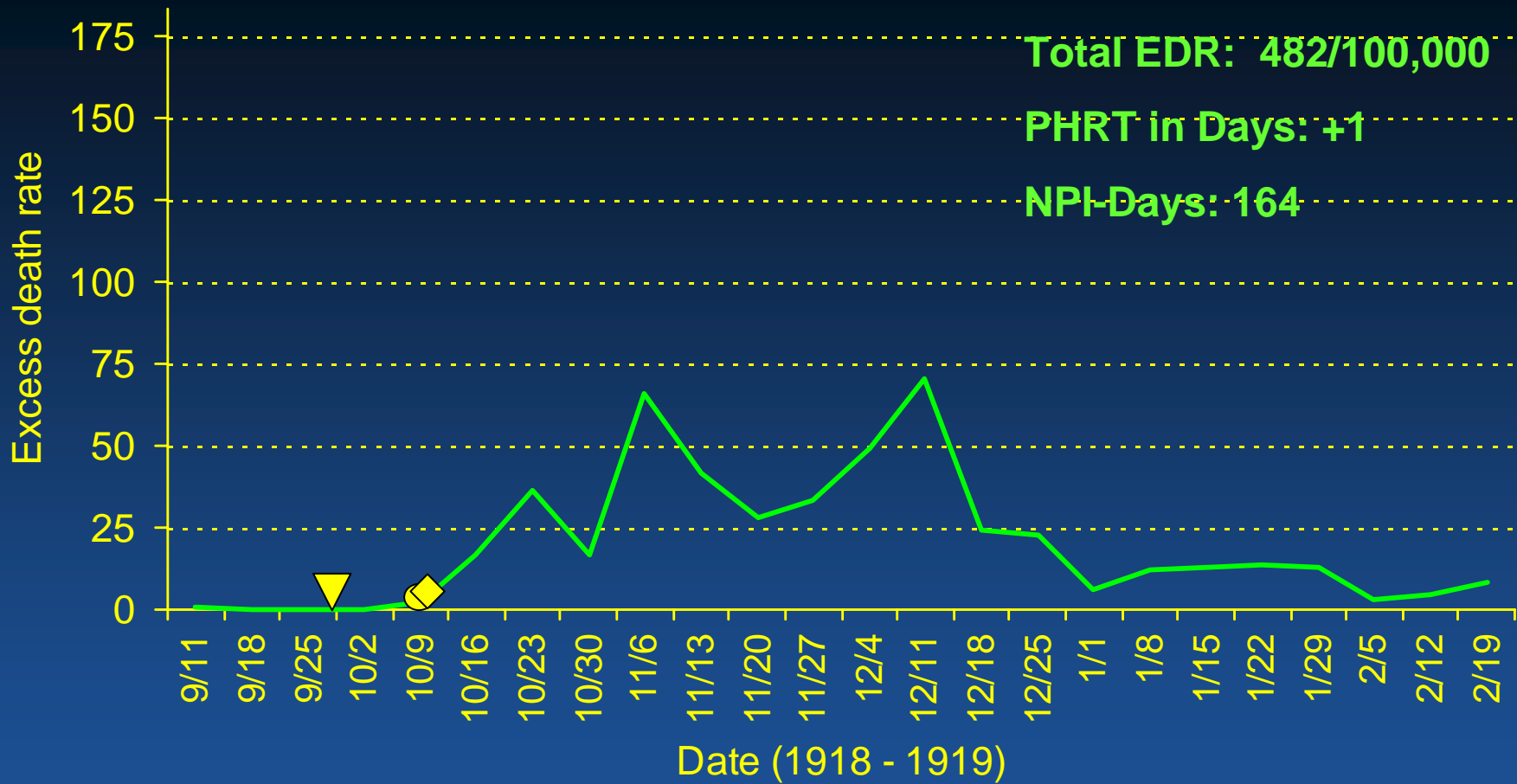


Figure 44

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Syracuse

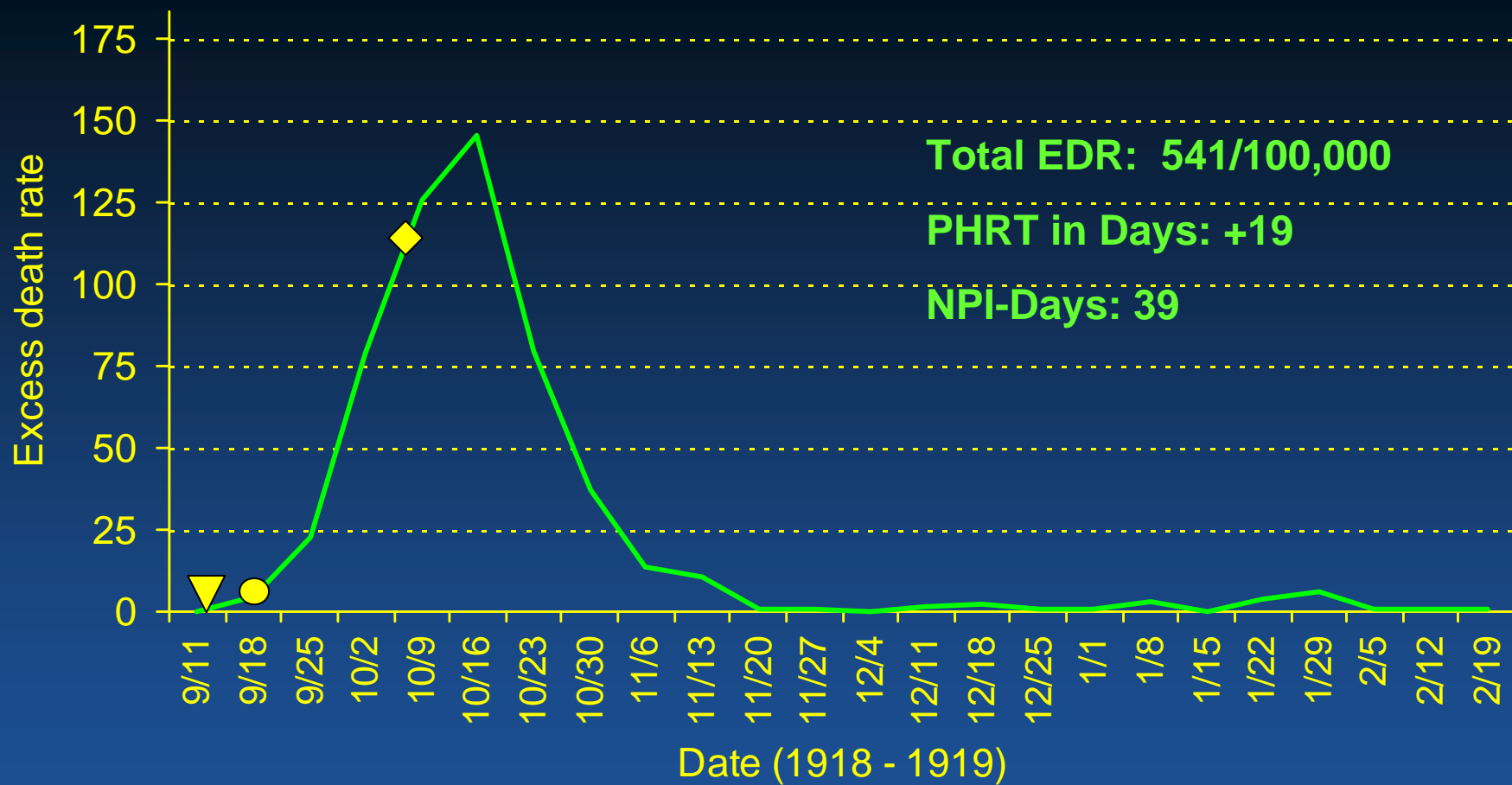


Figure 45



# Excess Death Rates (per 100,000) - Toledo

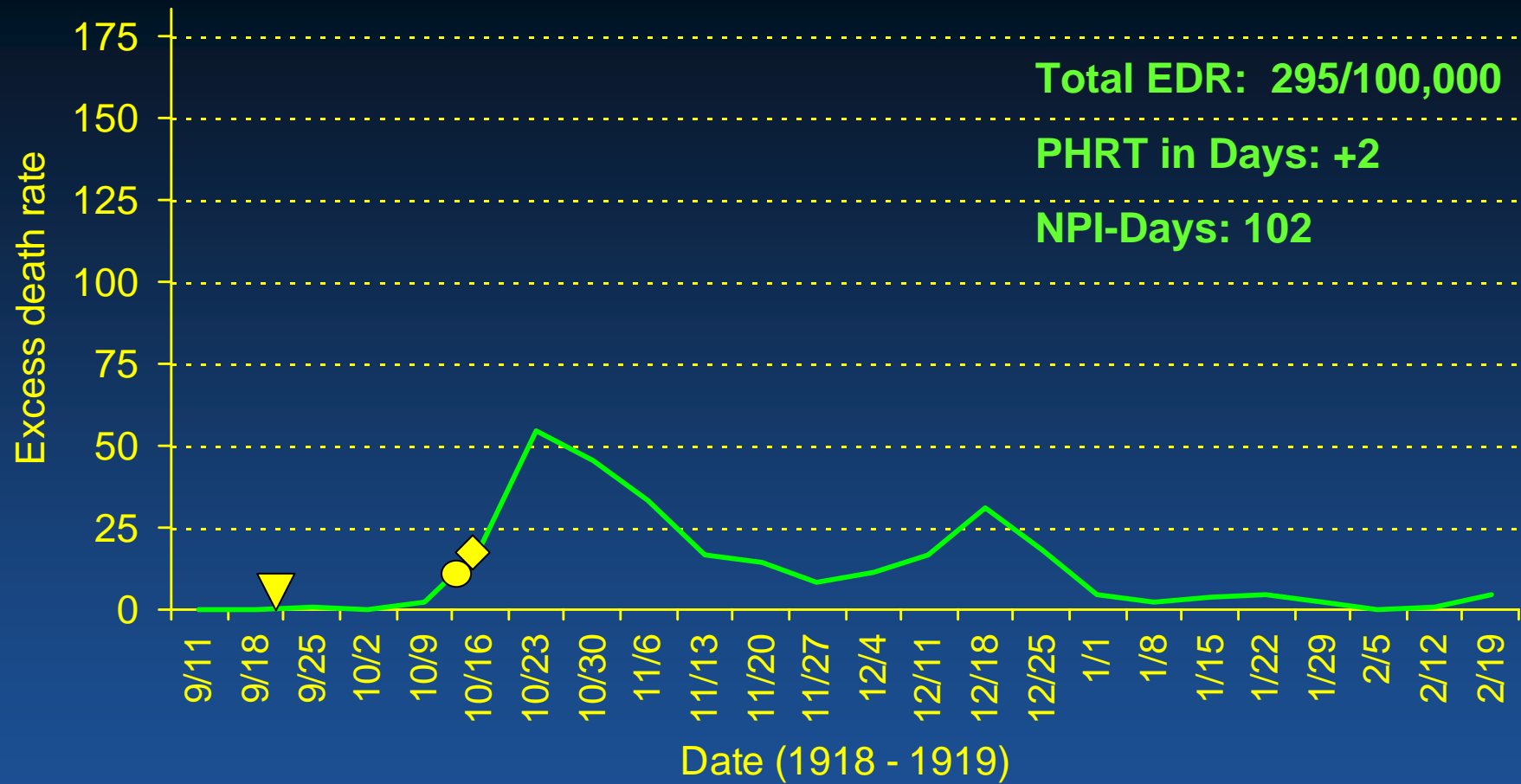


Figure 46

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI

# Excess Death Rates (per 100,000) - Washington

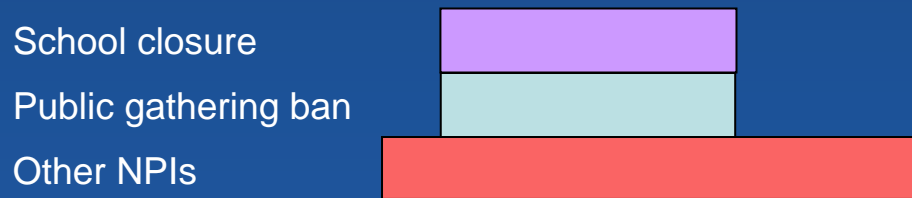
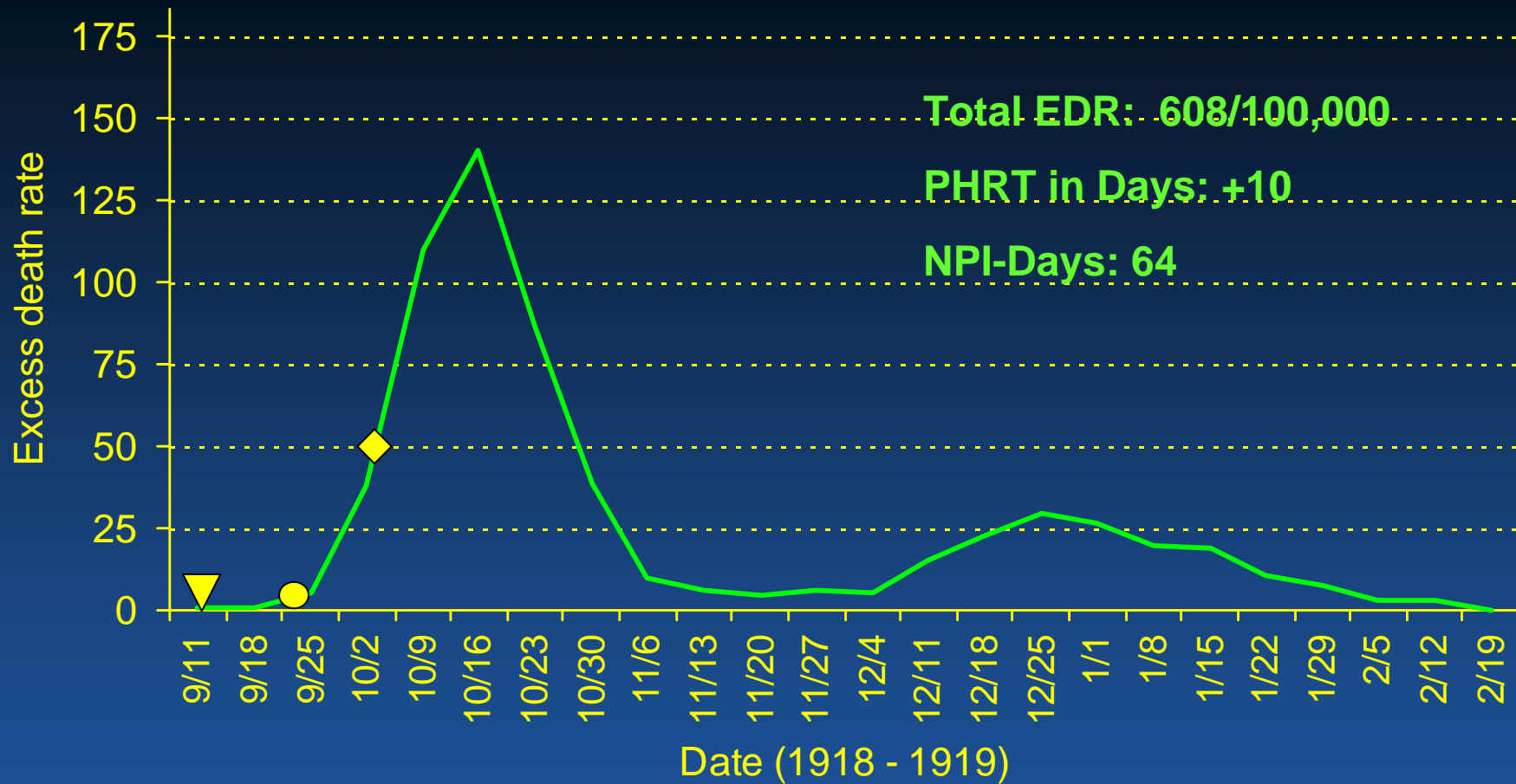
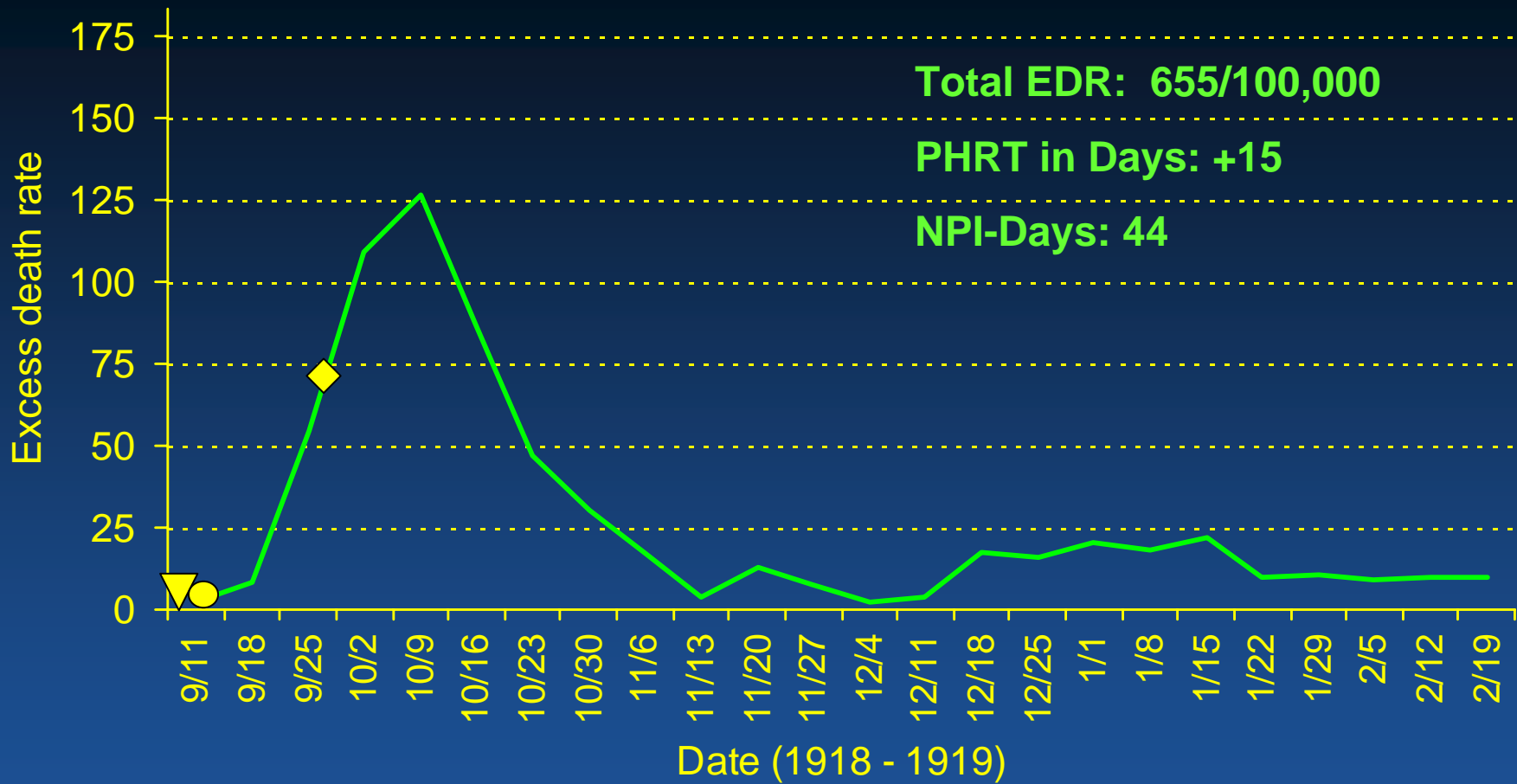


Figure 47



# Excess Death Rates (per 100,000) - Worcester



School closure  
 Public gathering ban

Figure 48

▼ first case     
 ● 2 X baseline mortality     
 ◆ first major NPI



Table detailing each city's implementation of "Other NPIs"

Albany	Street cars required to be well ventilated.
Baltimore	Business hours restricted; mask use required for dentists; street cars required to be well ventilated.
Birmingham	Coal mines close; mask use recommended; public health risk communications in movie theaters.
Boston	Additional street cars put into service to prevent crowding; business hours restricted and staggered; public health risk communications in businesses; influenza prevention circular issued.
Buffalo	Mask use required for health care professionals; mask use recommended. For general public; public health risk communication distributed to schoolchildren.
Cambridge	None recorded.
Chicago	Public health risk communications posted in public transportation; public places required to be well ventilated.
Cincinnati	Public health risk communications in movie theaters; mask use recommended for barbers and elevator operators; business hours restricted and staggered; business owners required to prevent crowding in their shops; street cars required to be well ventilated.
Cleveland	Public health risk communications in public transportation; crowding prohibited in elevators and street cars; mask use required for physicians, dentists, and barbers, and for all while in court; public health risk communications (films) shown outdoors; business hours restricted.
Columbus	Business hours restricted.
Dayton	None recorded.
Denver	Business hours staggered; crowding prohibited in elevators and street cars; public health risk communications in movie theaters and businesses; masks required.
Fall River	Public health risk communications distributed in different languages.
Grand Rapids	Public health risk communications in movie theaters; crowding prohibited in public places.
Indianapolis	Mask use voluntary, then compulsory; crowding prohibited in meetings; business hours staggered; schools required to be well ventilated.
Kansas City, MO	Crowding prohibited in street cars; business hours restricted; mask use recommended for those serving the public.
Los Angeles	Mask use recommended for those care-givers and for general public when in crowds, and compulsory for elections officers; crowds not allowed to watch shooting of films; business hours staggered; public health risk communications to areas where influenza is reported and in public transportation.
Louisville	Business hours restricted; merchants prohibited from advertising sales; street car capacity limited.
Lowell	Business hours restricted.
Milwaukee	Public health risk communication distributed to schoolchildren, church-goers (printed in several languages); business owners required to prevent crowding in their shops; alternate seating in theaters; additional street cars put into service to prevent crowding; mask use required at public dances.

Figure 49

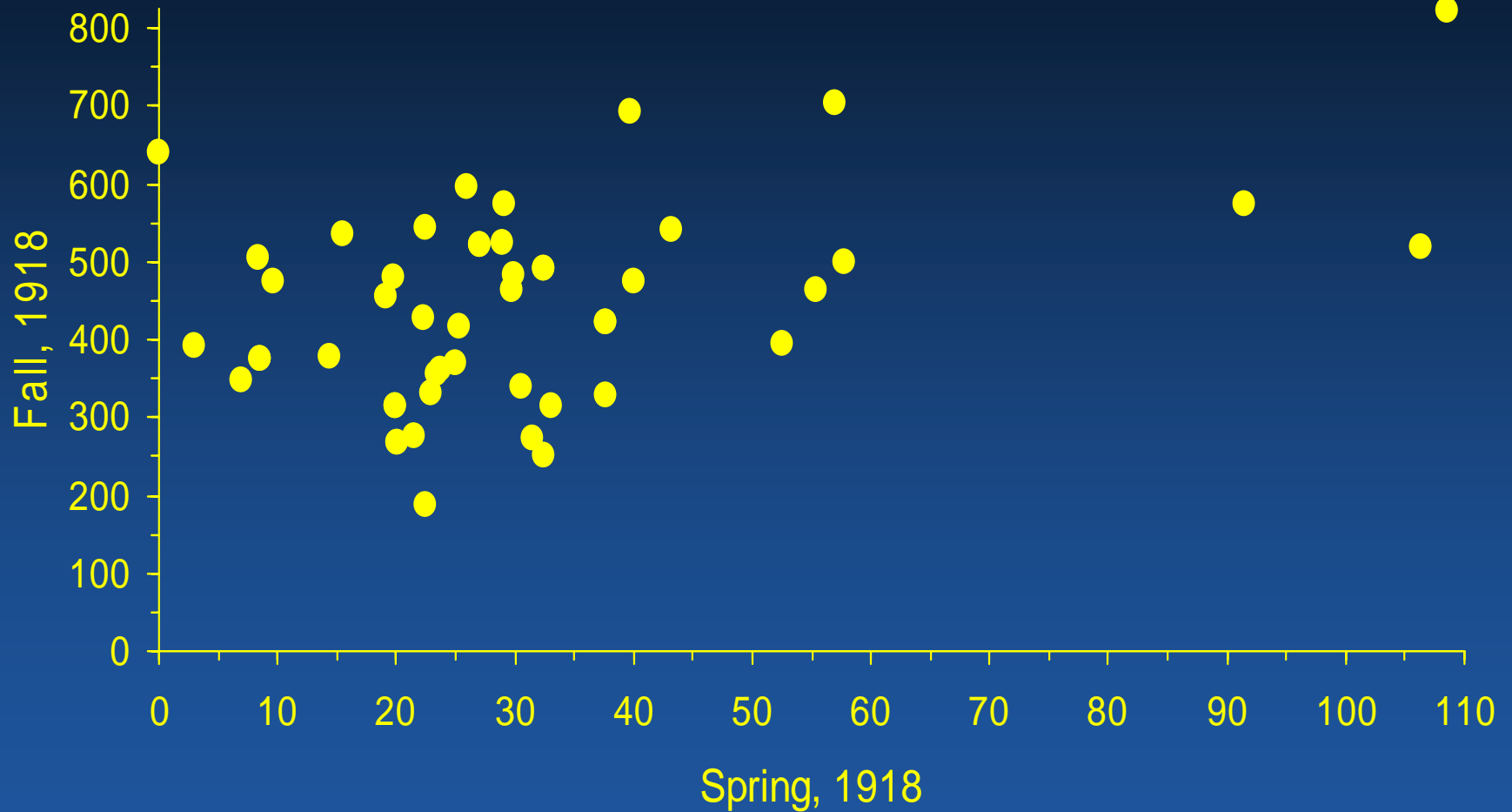
Table detailing each city's implementation of "Other NPIs" (cont.)

Minneapolis	Mask use recommended for those care-givers; street cars required to be well ventilated and un-crowded; business hours staggered; crowding prohibited in churches and saloons.
Nashville	None recorded.
New Haven	None recorded.
New Orleans	Crowding prohibited in street cars; business hours staggered; merchants prohibited from advertising sales.
New York	Public health risk communications (signs) posted across city; business hours staggered.
Newark, NJ	Public health risk communication mailed to every household and distributed to schoolchildren; masks required for barbers while with customers; businesses required to be well ventilated.
Oakland, CA	Public health risk communications distributed in theaters; mask use required in department of health office and by store clerks; mask use then made mandatory for the general public.
Omaha	Business hours restricted; crowding prohibited on street cars and in theaters.
Philadelphia	None recorded.
Pittsburgh	Public health risk communication distributed to schoolchildren.
Portland, OR	Business hours staggered; crowding prohibited in theaters; street cars required to be well ventilated; mask use recommended for general public.
Providence	Street cars required to be well ventilated and additional street cars put into service; business hours staggered.
Richmond	Public health risk communications posted in classrooms; mask use recommended.
Rochester, NY	Business hours staggered.
St. Louis	Business hours restricted; crowding prohibited on street cars and in restaurants and elevators.
St. Paul	Street cars required to be well ventilated, and crowding prohibited; merchants prohibited from advertising sales.
San Francisco	Recommended that street cars be well ventilated; mask use recommended and then required.
Seattle	Street cars and theaters required to be well ventilated; mask use required for barbers and dentists, and then required for general public; business hours restricted.
Spokane	Crowding prohibited in street cars, and must be well ventilated; masks required when indoors for general public.
Syracuse	Public health risk communications shown in movies and theaters, and distributed to general public.
Toledo	Business hours restricted; street cars, factories, and shops required to be well ventilated.
Washington, DC	Public health risk communications (posters) placed around city; business hours staggered; street cars required to be well ventilated.

Figure 49 cont.

# Excess Death Rates: Spring, 1918 by Fall, 1918

## 43 Study Cities

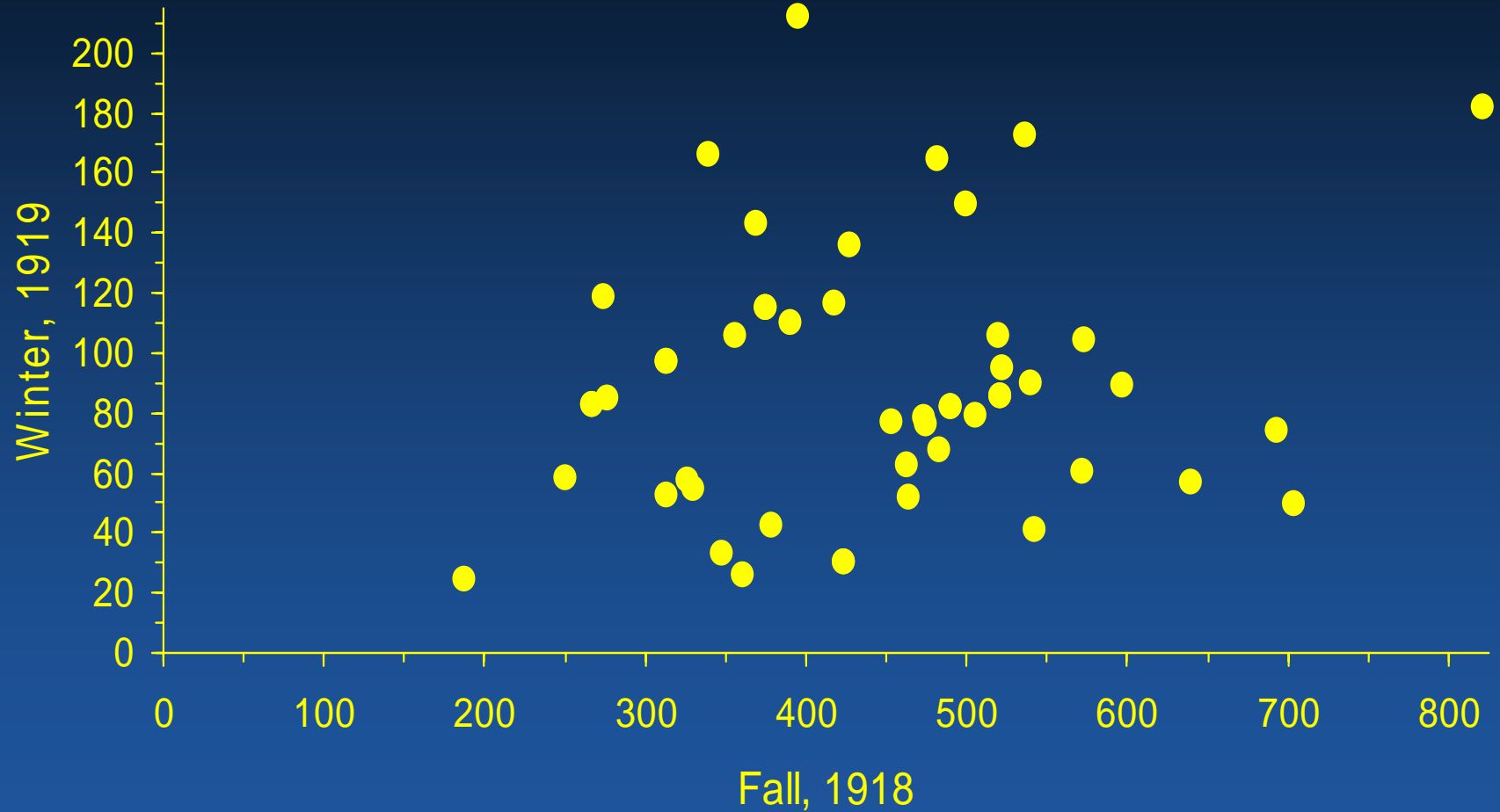


Spearman's  $r = 0.21$   $p > .05$

Figure 50

# Excess Death Rates: Fall, 1918 by Winter, 1919

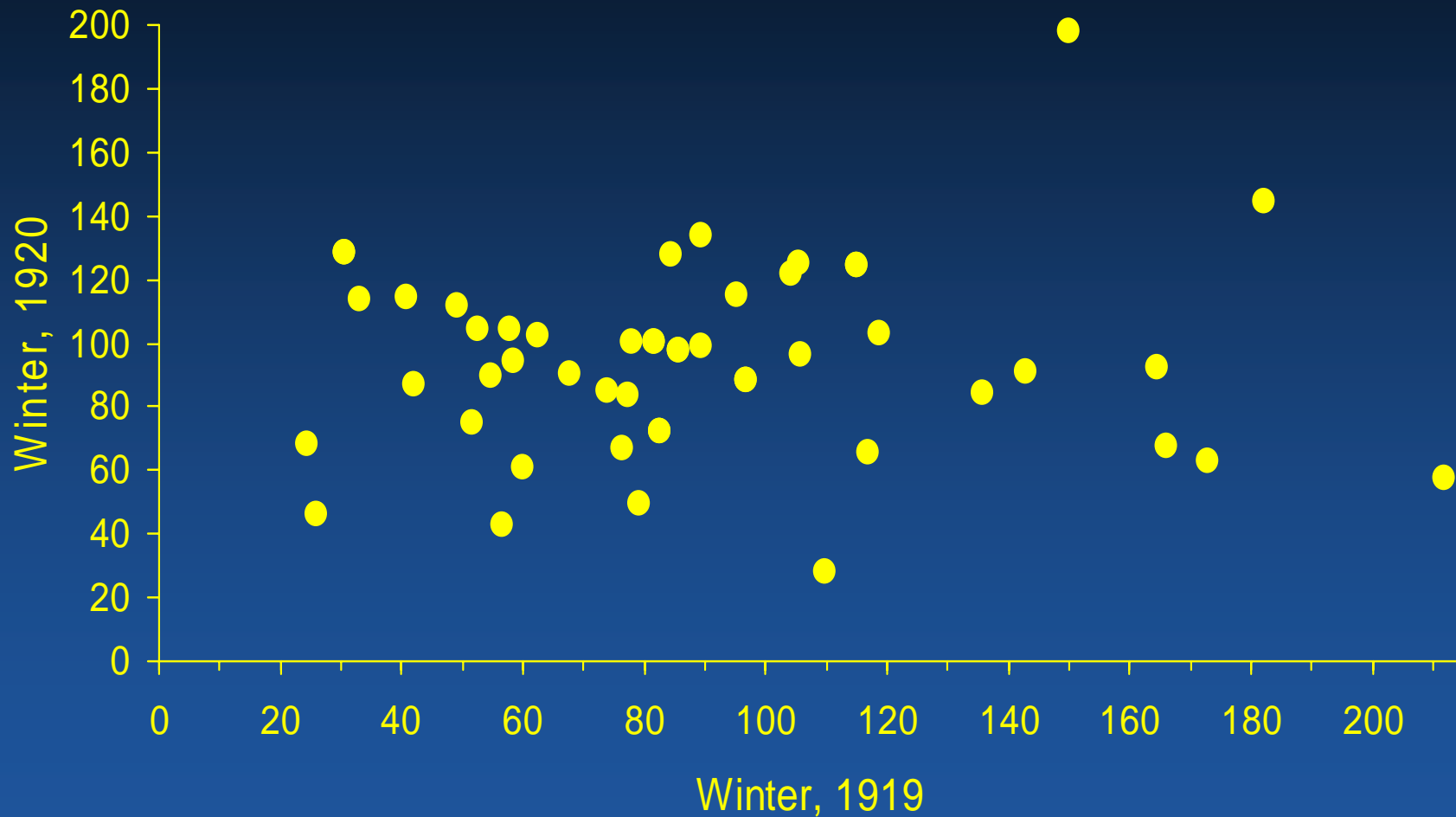
## 43 Study Cities



Spearman's  $r = 0.16$   $p > .05$

Figure 51

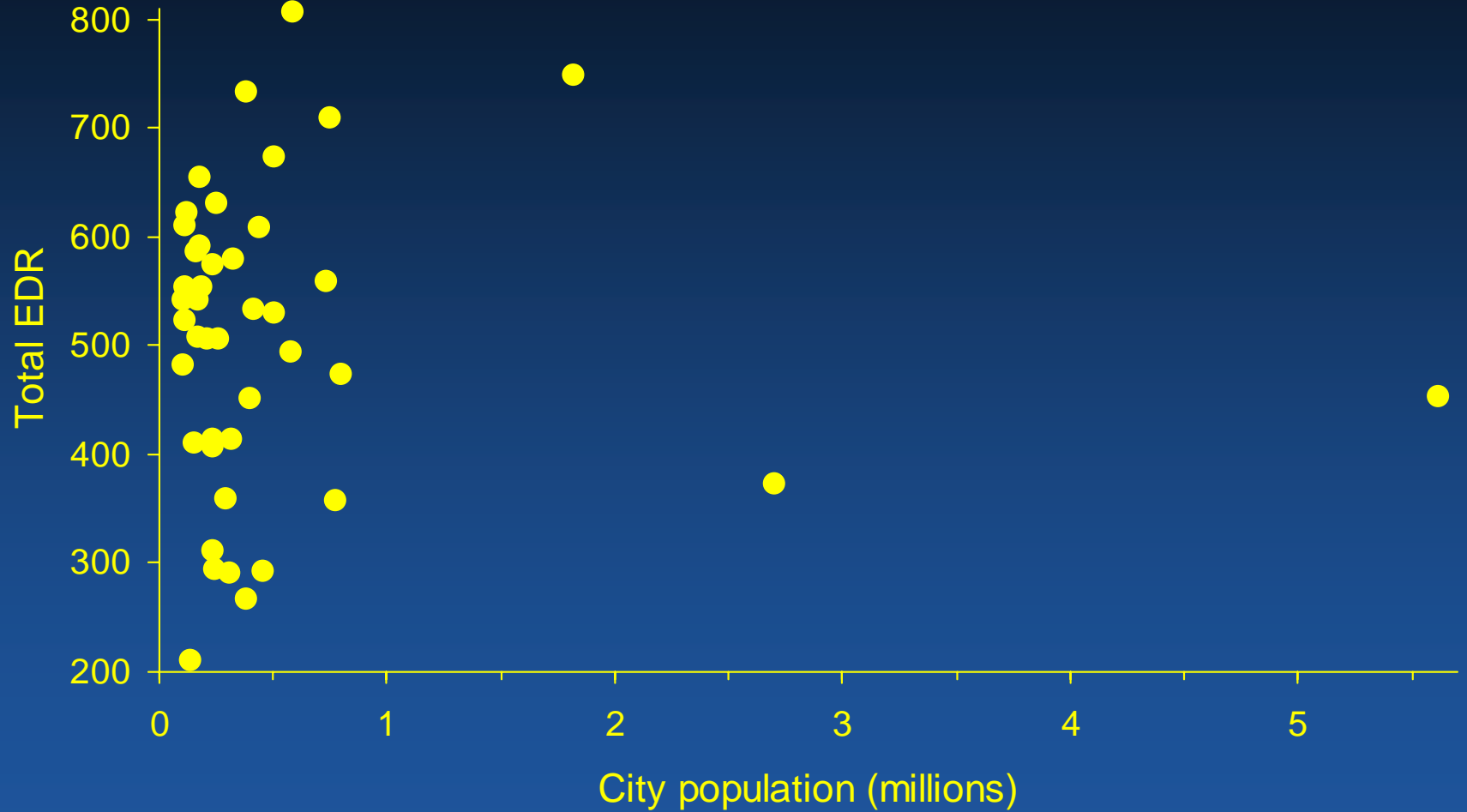
# Excess Death Rates: Winter, 1919 by Winter, 1920 43 Study Cities



Spearman's  $r = 0.06$   $p > .05$

Figure 52

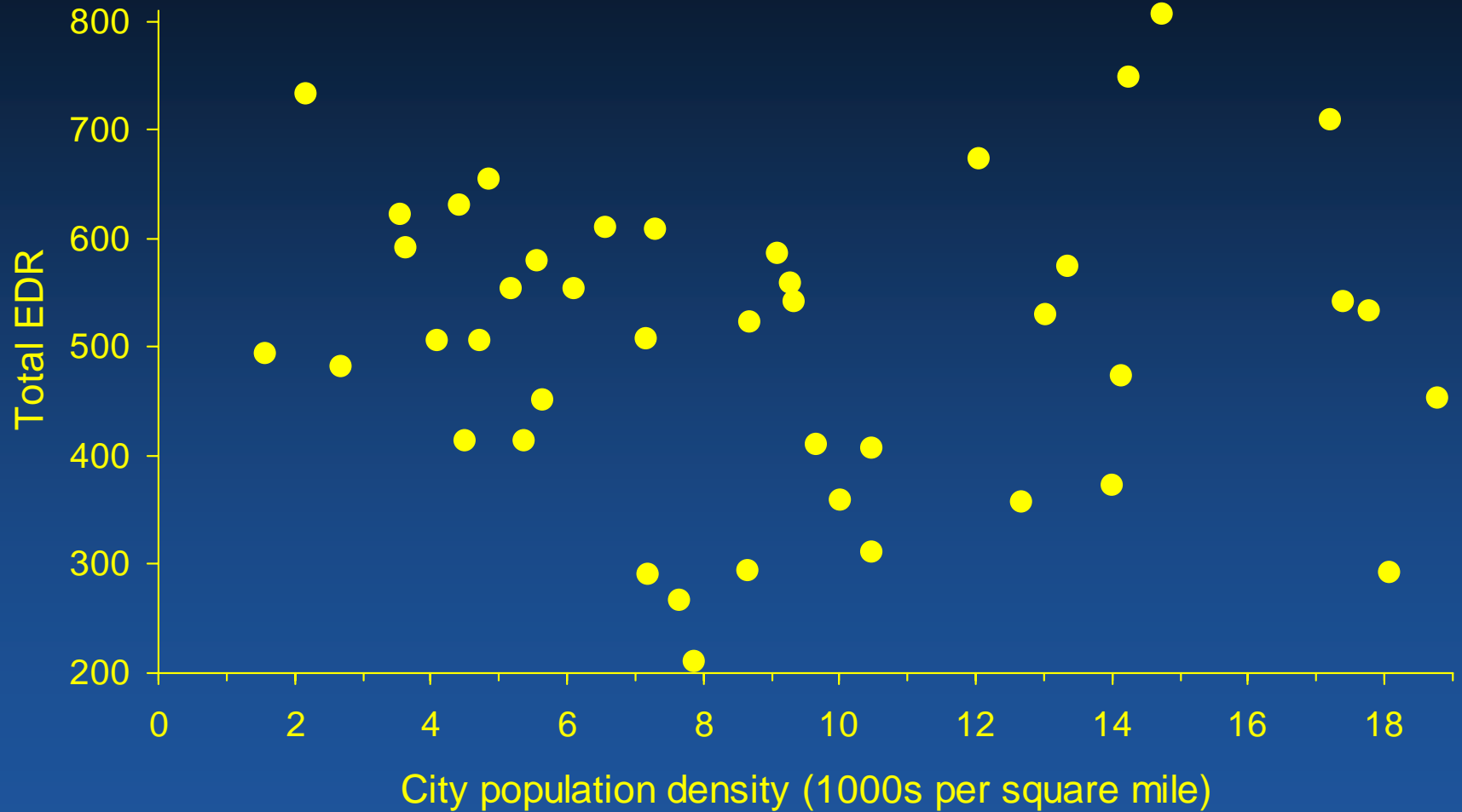
# City Population by Total Excess Death Rate



Spearman's  $r = 0.00$   $p > .05$

Figure 53

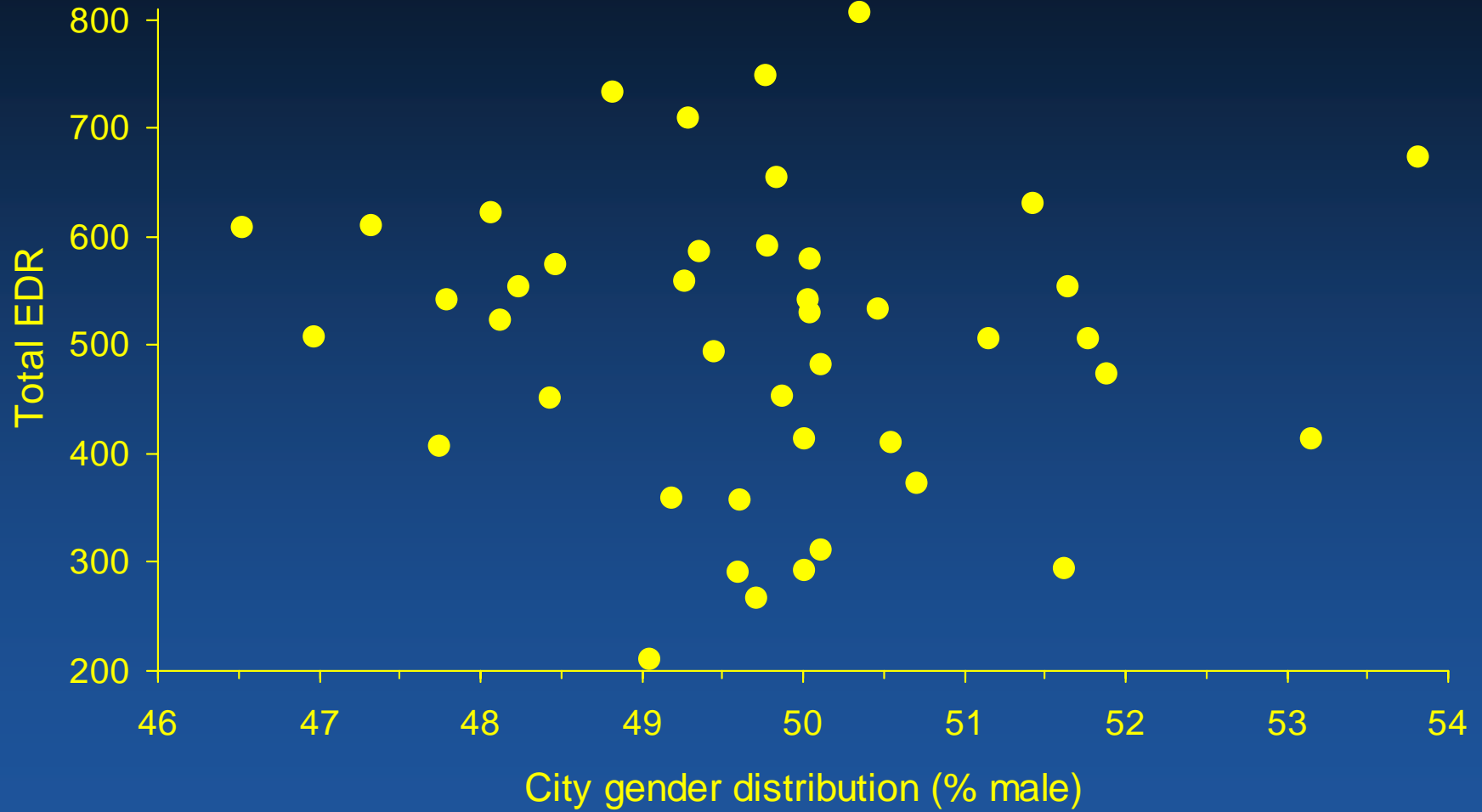
# Population Density by Total Excess Death Rate



Spearman's  $r = -0.11$   $p > .05$

Figure 54

# Gender Distribution by Total Excess Death Rate

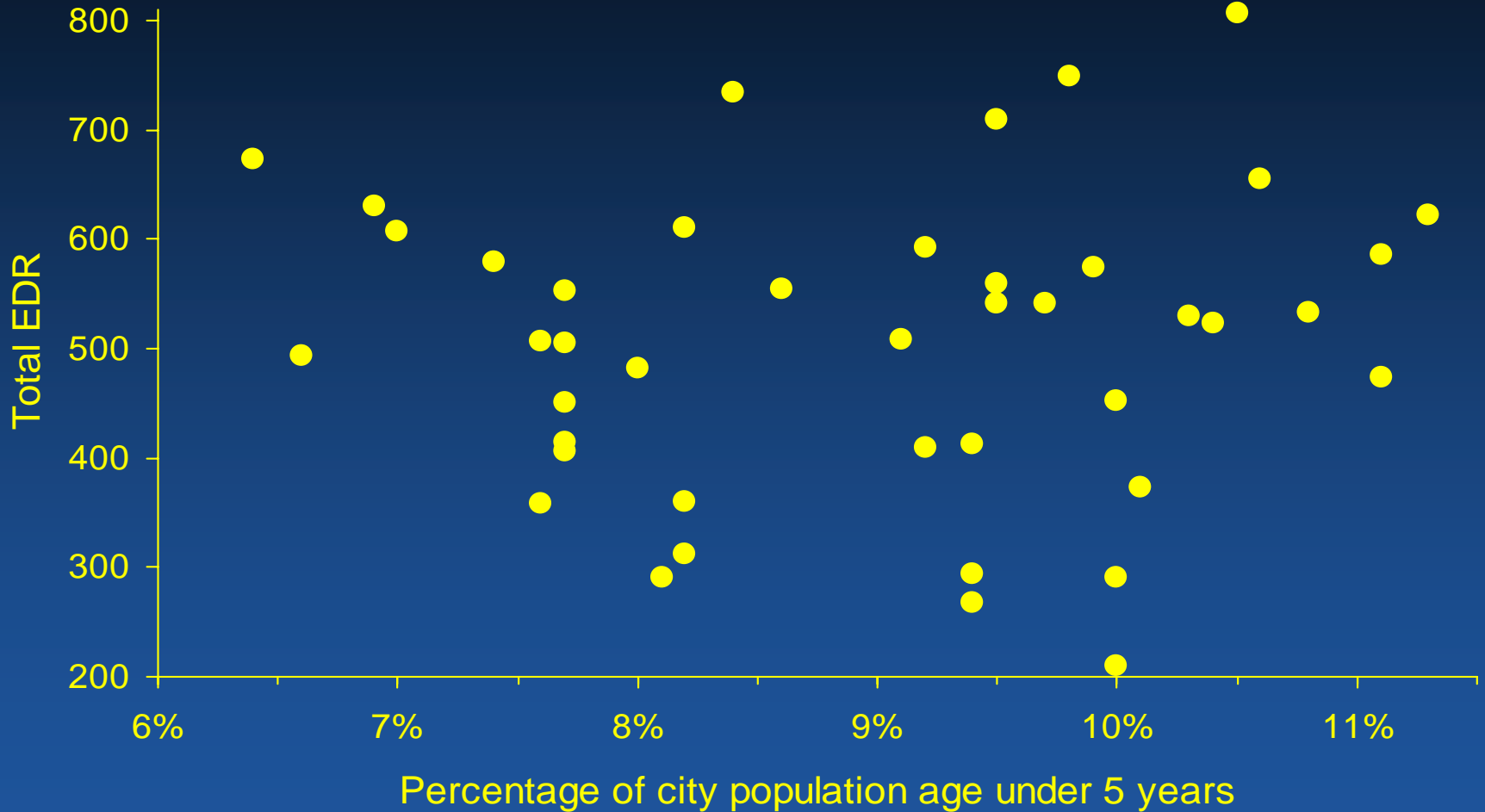


Spearman's  $r = -0.12$   $p > .05$

Figure 55



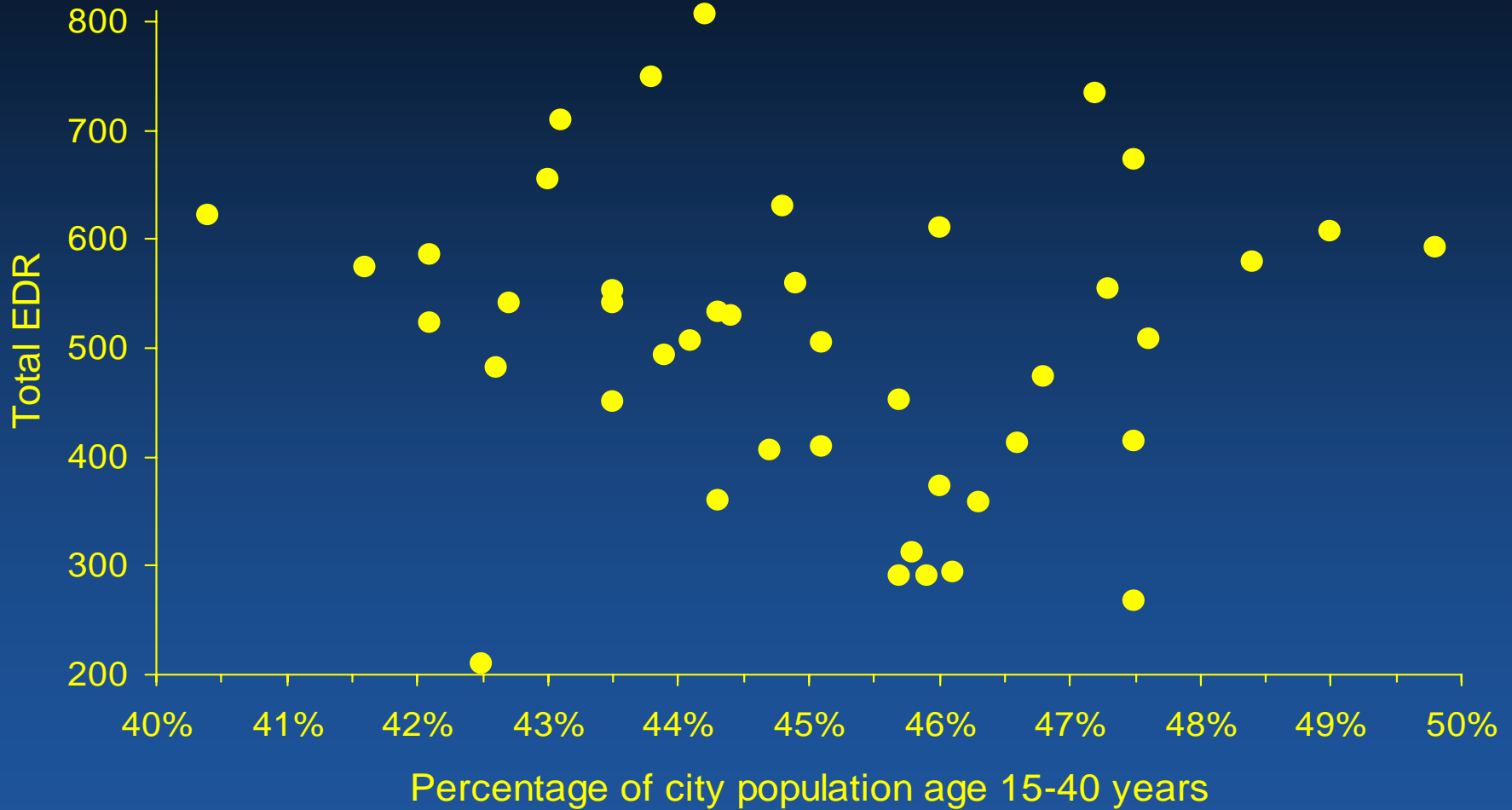
# Percentage of City Population Age Under 5 Years by Total Excess Death Rate



Spearman's  $r = 0.09$   $p > .05$

Figure 56

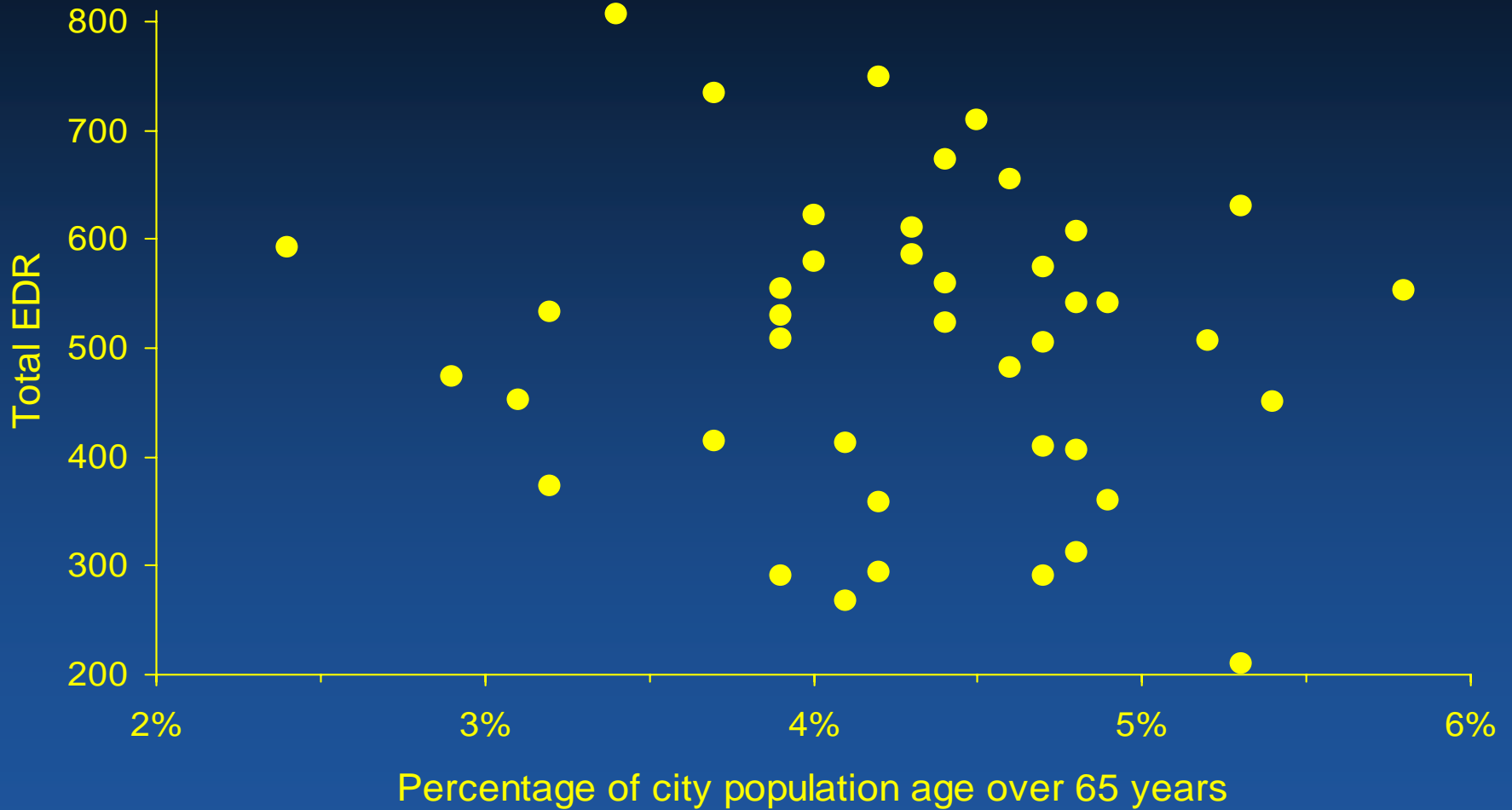
# Percentage of City Population Age 15-40 Years by Total Excess Death Rate



Spearman's  $r = -0.14$   $p > .05$

Figure 57

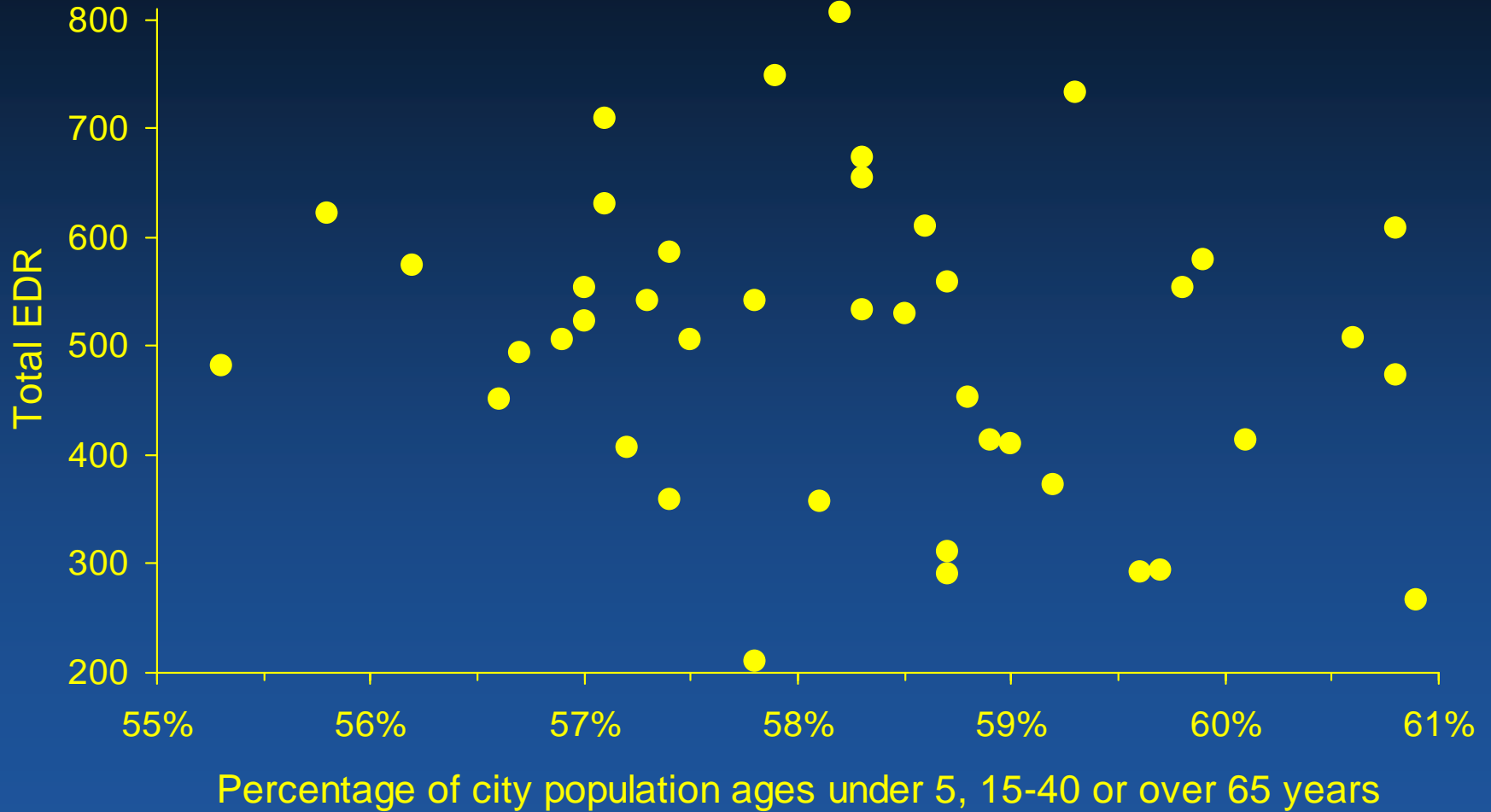
# Percentage of City Population Age Over 65 Years by Total Excess Death Rate



Spearman's  $r = -0.12$   $p > .05$

Figure 58

# Percentage of City Population Ages Under 5, 15-40, or Over 65 Years by Total Excess Death Rate



Spearman's  $r = -0.17$   $p > .05$

Figure 59