Wildfires in Northern California: Emergency Department Visits in 2017

We wish to acknowledge the HCUP Partner organization from the California Office of Statewide Health Planning and Development (OSHPD) that contributed to the HCUP State Databases used in this study.

May 29, 2019

Recommended Citation: Wildfires in Northern California: Emergency Department Visits in 2017. Healthcare Cost and Utilization Project. ONLINE. August 19, 2019. Agency for Healthcare Research and Quality. Available: www.hcup-us.ahrq.gov/reports.jsp.

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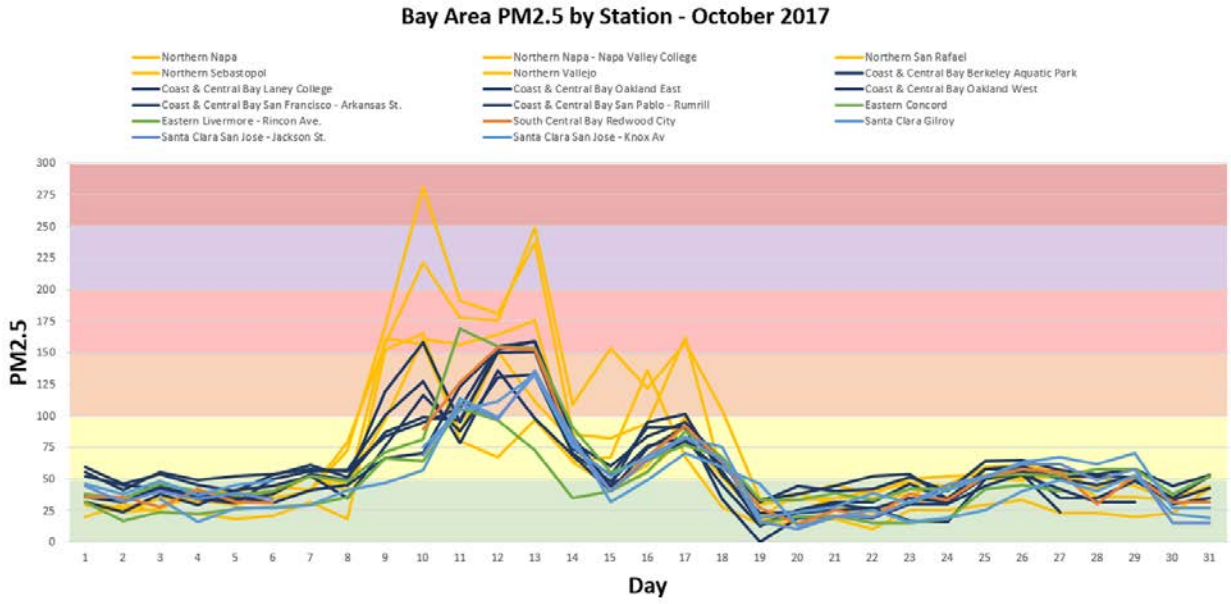
OVERVIEW

This descriptive analysis looks at emergency department (ED) utilization for select conditions (e.g., smoke inhalation and burns) from September–November 2017 in California. The focus of the analysis is the Bay Area of California during October 2017 when numerous active fires in Northern California affected the air quality.

AIR QUALITY INDEX

Many of the October 2017 Northern California fires started on October 8th. Air quality, as measured by PM2.5 AQI (an air quality index for inhalable particulate matter with diameters generally 2.5 micrometers and smaller), was in the 'Good' to 'Moderate' range (0-100) for all Bay Area zones until October 9th. On October 9th, it entered the 'unhealthy' range in the Northern Zone for 4 out of 5 measurement stations. The peak PM2.5 AQI measurement (281/'Very Unhealthy') was reached on October 10th in the Northern Zone at the Napa Valley College station. By October 19th all zones returned to the 'Good' range. Figure 1 shows daily air quality measurements from 17 San Francisco Bay Area stations in October 2017.

Figure 1. California Bay Area Air Quality, October 2017



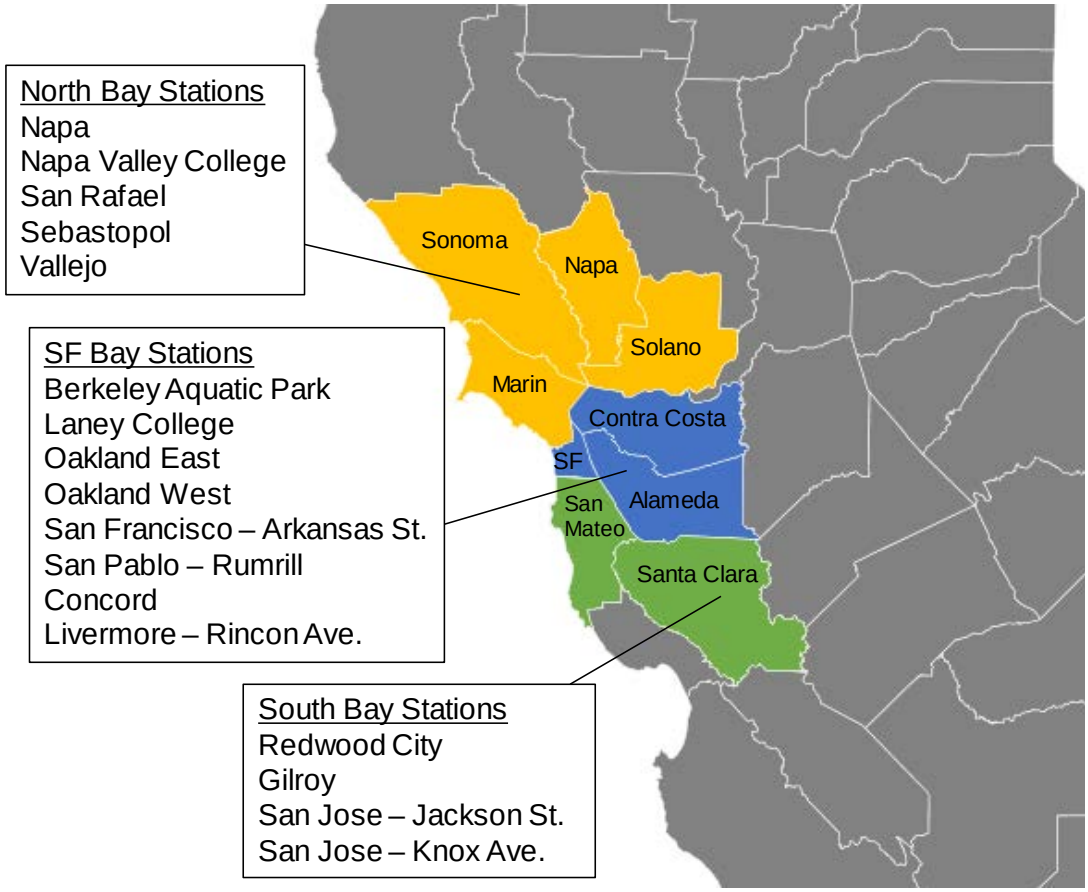
Source: Air Monitoring Data for October 2017, Bay Area Air Quality Management District online query tool (http://www.baaqmd.gov/about-air-quality/current-air-quality/air-monitoring-data?DataViewFormat=monthly&DataView=aqi&StartDate=10/1/2017&ParameterId=316), Accessed May 21, 2019.

METHODS

Groupings of California Counties

The nine counties around the San Francisco Bay with measurement stations were combined into three groups–North Bay (Marin, Napa, Sonoma, and Solano counties), San Francisco Bay (Alameda, Contra Costa, and San Francisco counties), and South Bay (San Mateo and Santa Clara counties). Figure 2 shows a map of the three Bay Area county groups and the air quality measurement stations within each group.

Figure 2. Air Quality Measurement Stations Within Three Bay Area County Groups



Source: Facility Data Maps, Bay Area Air Quality Management District (www.baaqmd.gov)

All other California counties were grouped into ten areas based on climate zones[1] and the presence of hospitals (at least seven hospitals are in each group). Figure 3 shows a map of all California county groups used in this analysis. Please note that the names used for each county groupings in this analysis was indicative of the location *relative to the Bay Area* and may differ from community-specific names commonly used by government agencies in the State of California and its residents.

Figure 3. County Groupings Used to Report Estimates of Daily Emergency Department Utilization

[1] Climate zones were defined by the California Energy Commission and are based on energy use, temperature, weather and other factors. Climate zones are defined by ZIP Code and cross county borders. More information is available at https://www.energy.ca.gov/maps/renewable/building_climate_zones.html. Accessed May 21, 2017.

Air Quality Data

We extracted three months (September–November 2017) of daily PM2.5 data for the 17 measurement stations in the Bay Area from the Bay Area Air Quality Management District online query tool. This air quality data was aggregated into a single daily measurement for each of the three county groups by using the maximum air quality measurement for the county group on each day. For the ten county groups outside the Bay Area, where air quality data was unavailable, a daily baseline measurement was created using the minimum air quality measurement available from the Bay Area stations.

HCUP Databases

ED utilization data was extracted from the Healthcare Cost and Utilization Project (HCUP) State Emergency Department Databases (SEDD) and State Inpatient Databases (SID) for California. The analysis file includes all SEDD records, which capture ED visits that do not result in admission to the same hospital, and a subset of SID records, those which indicate ED visits that result in admission to the same hospital. Together, this encompasses 3.6 million ED visits in California between September and November 2017. Additional information on HCUP is available in Appendix A.

The data were aggregated by county of patient residence, as assigned from patient ZIP Code, with the following exceptions:

- Hospital county was used if the patient was homeless, foreign, or the ZIP Code was missing/invalid.
- Hospital county was used for out-of-state patients if their ZIP Code was greater than 250 miles away from the ZIP Code of the California hospital. This excludes those living near the California border but includes patients who were most likely traveling to California during the time of the fire.

Conditions of Interest

ED visits were selected based on six condition groups of interest. The condition groups are not mutually exclusive; a patient with multiple conditions will be counted in each category. Condition groups were defined using all-listed International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) diagnosis codes (i.e., both principal diagnosis and secondary diagnoses). The ICD-10-CM coding definitions for each condition are available in Appendix B.

- Fire-specific ED visits: (1) Smoke inhalation and (2) initial encounter for exposure/toxic effect of fire/smoke
- General condition ED visits: (3) initial encounter for burns (including but not limited to fire burns), (4) all respiratory conditions other than smoke inhalation, (5) initial encounter for injury (including burns), and (6) all ED visits.

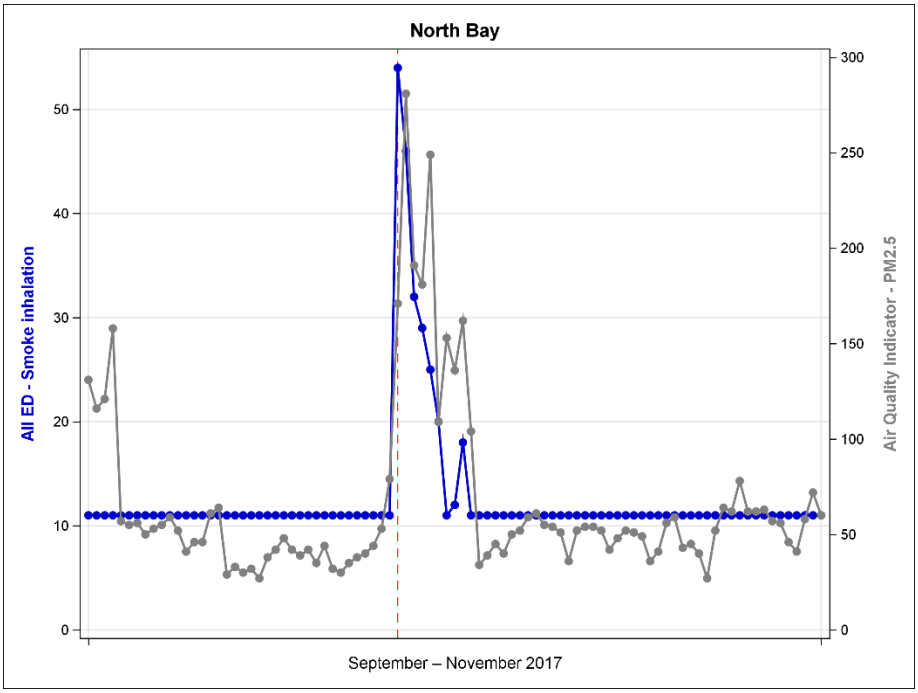
RESULTS

The descriptive analysis includes a series of trend graphs comparing daily PM2.5 air quality index measures with daily ED utilization. Each figure presents a single condition measure across five separate county groupings. The three Bay Area county groups are always included. For each condition, two county groupings outside the Bay Area were included for comparison. All figures depicting a condition employ the same scale for y-axis values for the number of daily ED visits. The blue line indicates the daily ED utilization for residents of the county group, with y-axis values to the left of the graph. The gray line indicates the daily air quality index value for the Bay Area county groups or the baseline air quality index value for the county groups outside the Bay Area, with y-axis values to the right of the graph. The scale for the air quality indicator is identical across all figures, regardless of condition. The red vertical line indicates October 9th, 2017. All values smaller than 11 were set to '11' to protect patient confidentiality.

Smoke Inhalation

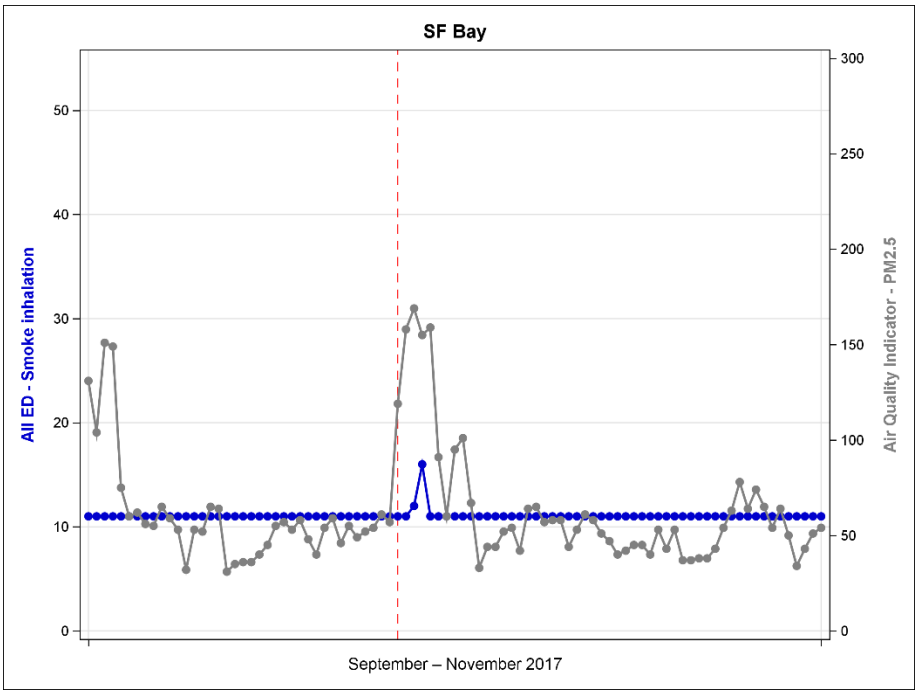
Figures 4a–4e present ED visits for smoke inhalation in the following California county groups: North Bay, San Francisco Bay, South Bay, East Central, and Greater Los Angeles. The scale for the y-axis indicating ED visits for smoke inhalation ranges from 0 to a maximum of 55.

Figure 4a: Air Quality Indicator and Emergency Department Visits for Smoke Inhalation, North Bay, California, September–November 2017



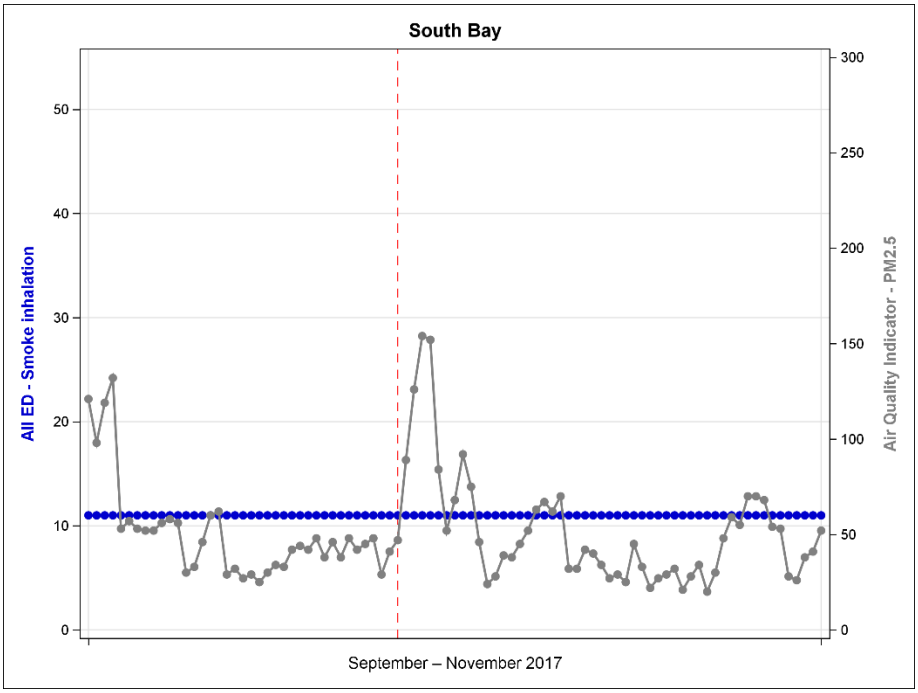
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 4b: Air Quality Indicator and Emergency Department Visits for Smoke Inhalation, San Francisco Bay, California, September–November 2017



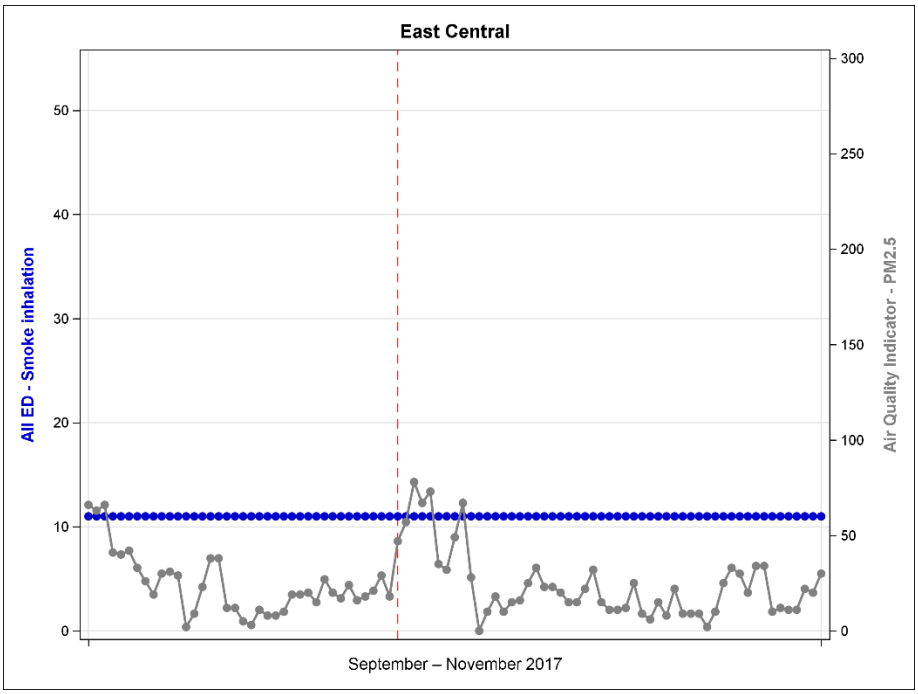
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 4c: Air Quality Indicator and Emergency Department Visits for Smoke Inhalation, South Bay, California, September–November 2017



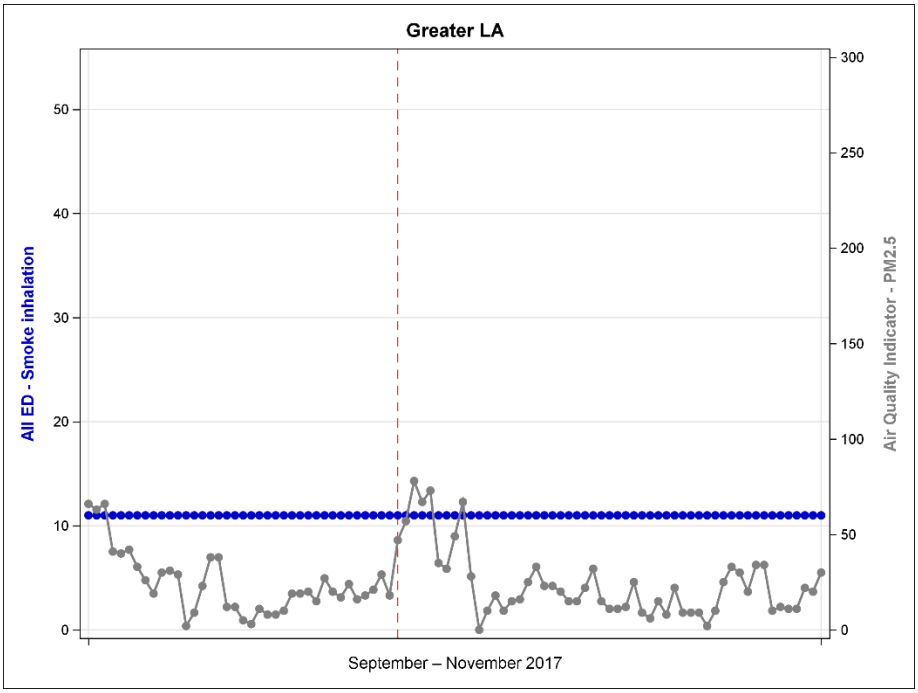
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 4d: Air Quality Indicator and Emergency Department Visits for Smoke Inhalation, East Central California, September–November 2017



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 4e: Air Quality Indicator and Emergency Department Visits for Smoke Inhalation, Greater Los Angeles Area, California, September–November 2017

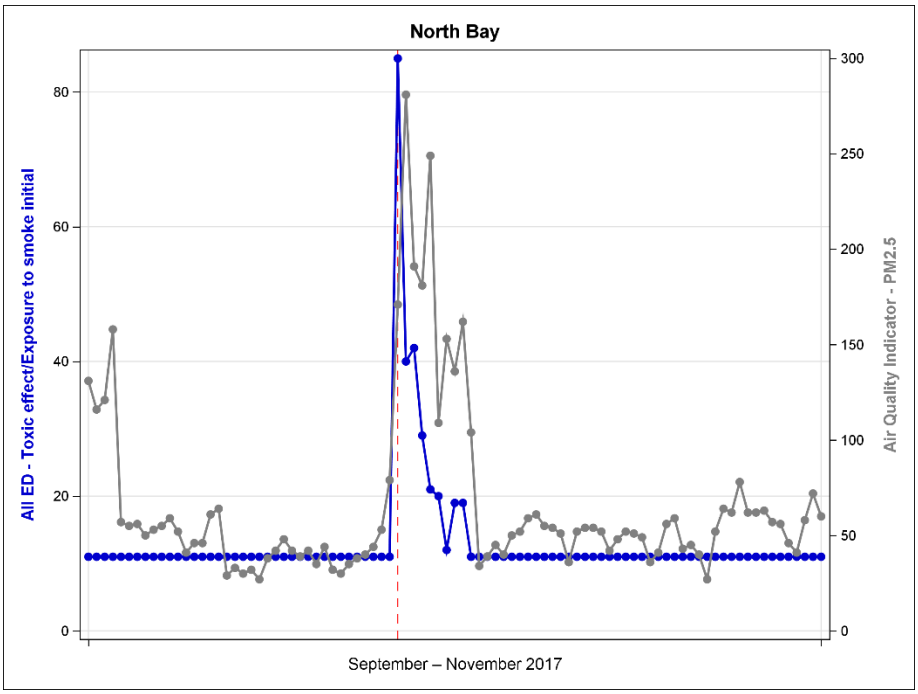


Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Initial Encounter for Exposure or Toxic Effect of Fire and Smoke

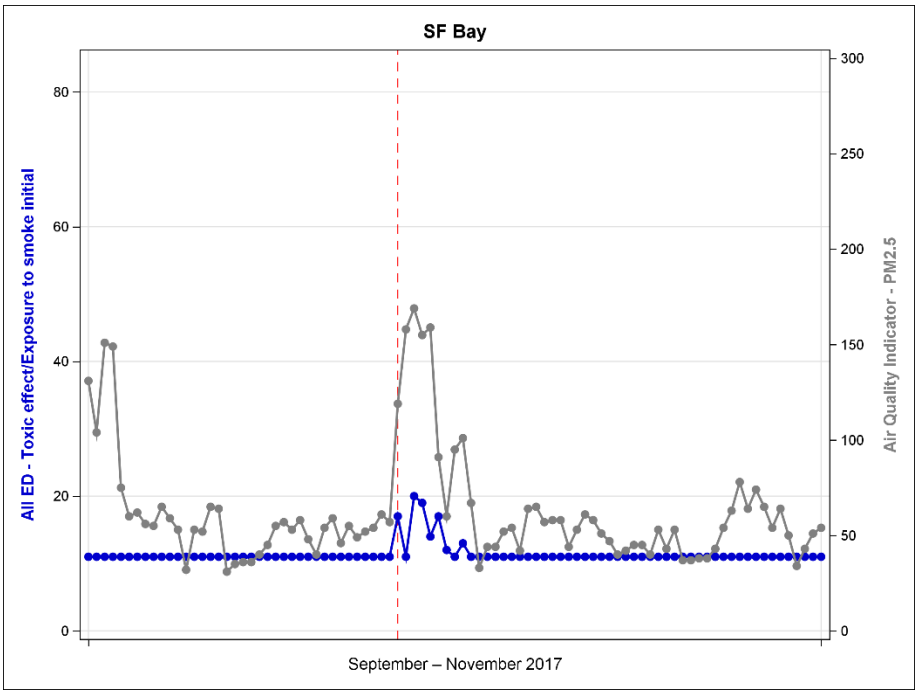
Figures 5a–5e present ED visits for the initial encounter of exposure or toxic effect of fire and smoke in the following California county groups: North Bay, San Francisco Bay, South Bay, North West, and South East. The scale for the y-axis indicating ED visits ranges from 0 to a maximum of 85.

Figure 5a: Air Quality Indicator and Emergency Department Visits for Initial Encounter of Exposure/Toxic Effect of Fire/Smoke, North Bay, California, September–November 2017



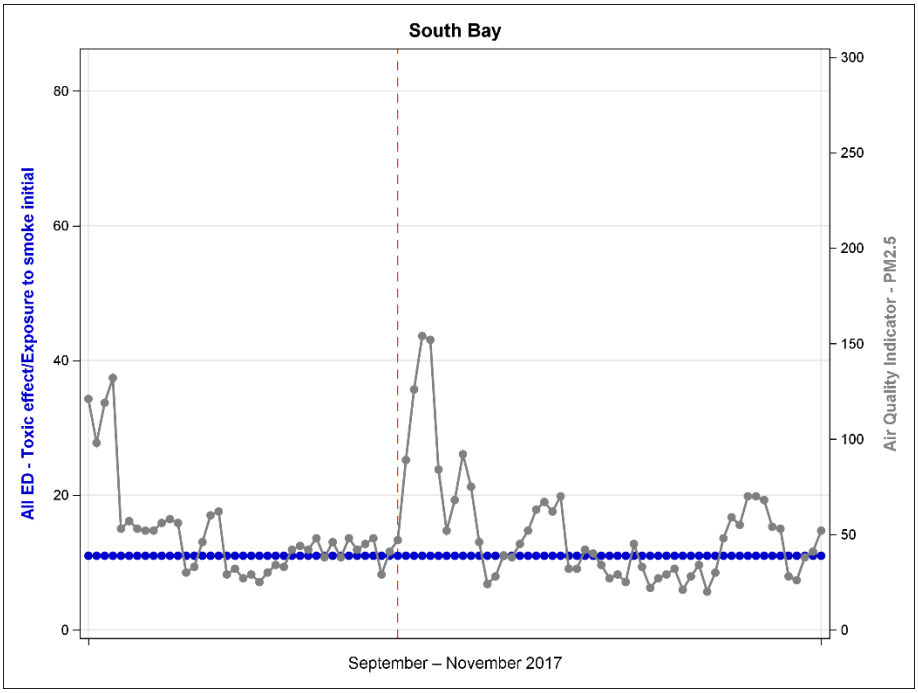
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 5b: Air Quality Indicator and Emergency Department Visits for Initial Encounter of Exposure/Toxic Effect of Fire/Smoke, San Francisco Bay, California, September–November 2017



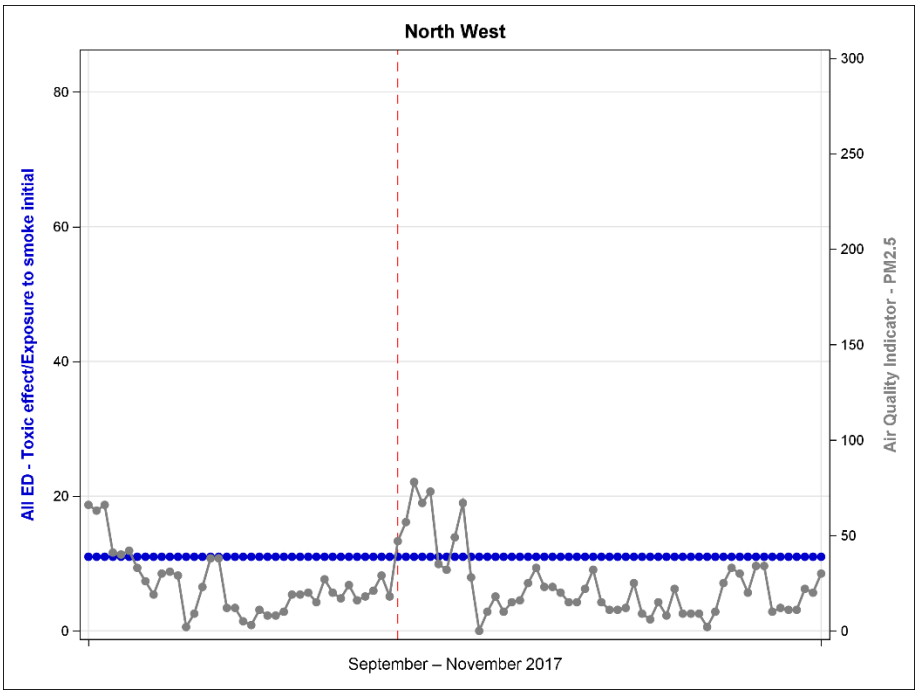
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 5c: Air Quality Indicator and Emergency Department Visits for Initial Encounter of Exposure/Toxic Effect of Fire/Smoke, South Bay, California, September–November 2017



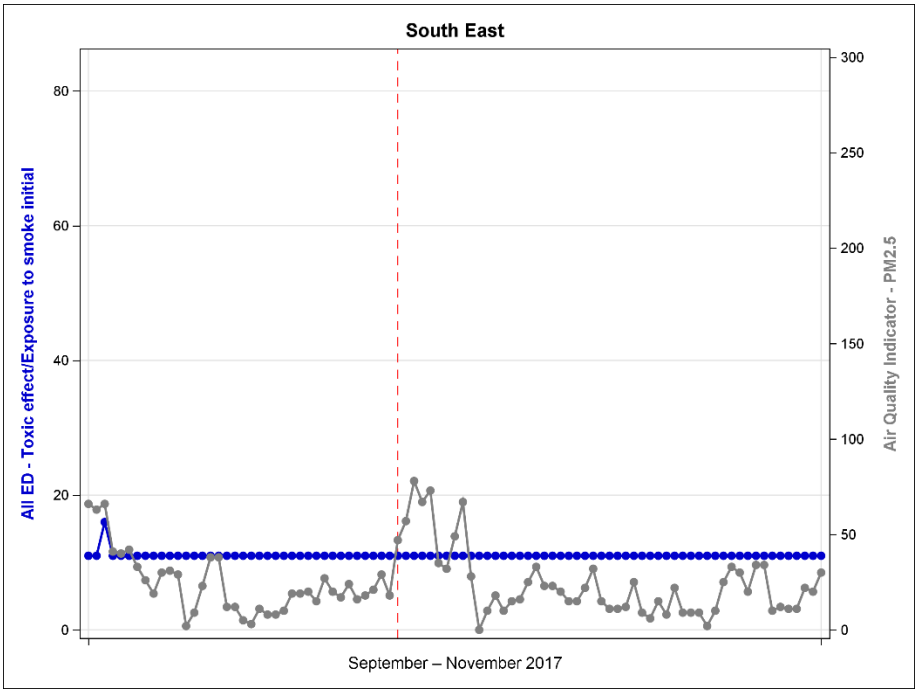
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 5d: Air Quality Indicator and Emergency Department Visits for Initial Encounter of Exposure/Toxic Effect of Fire/Smoke, North West California, September–November 2017



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 5e: Air Quality Indicator and Emergency Department Visits for Initial Encounter of Exposure/Toxic Effect of Fire/Smoke, South East California, September–November 2017

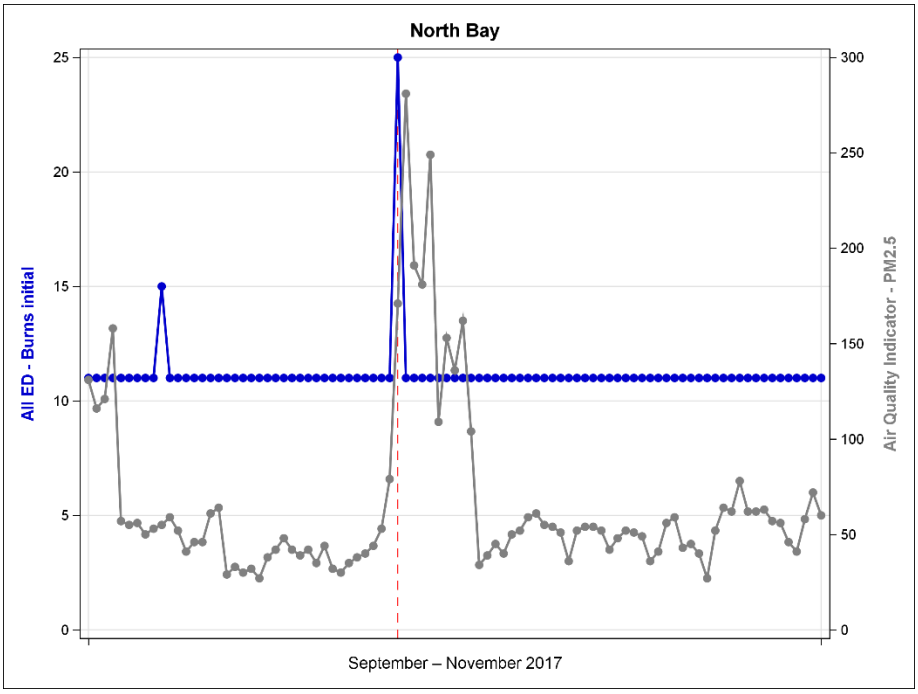


Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Initial Encounter for Burns (Including but not Limited to Fire Burns)

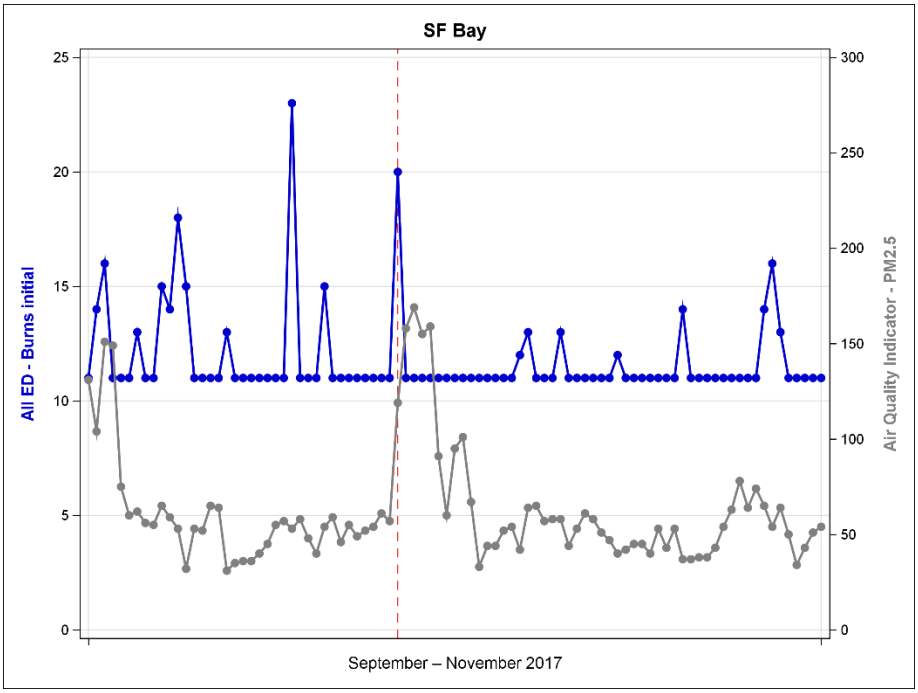
Figures 6a–6e present ED visits for the initial encounter of burns (including but not limited to fire burns) in the following California county groups: North Bay, San Francisco Bay, South Bay, North West, and Southern Border. The scale for the y-axis indicating ED visits for burns ranges from 0 to a maximum of 25.

Figure 6a: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Burns, North Bay, California, September–November 2017



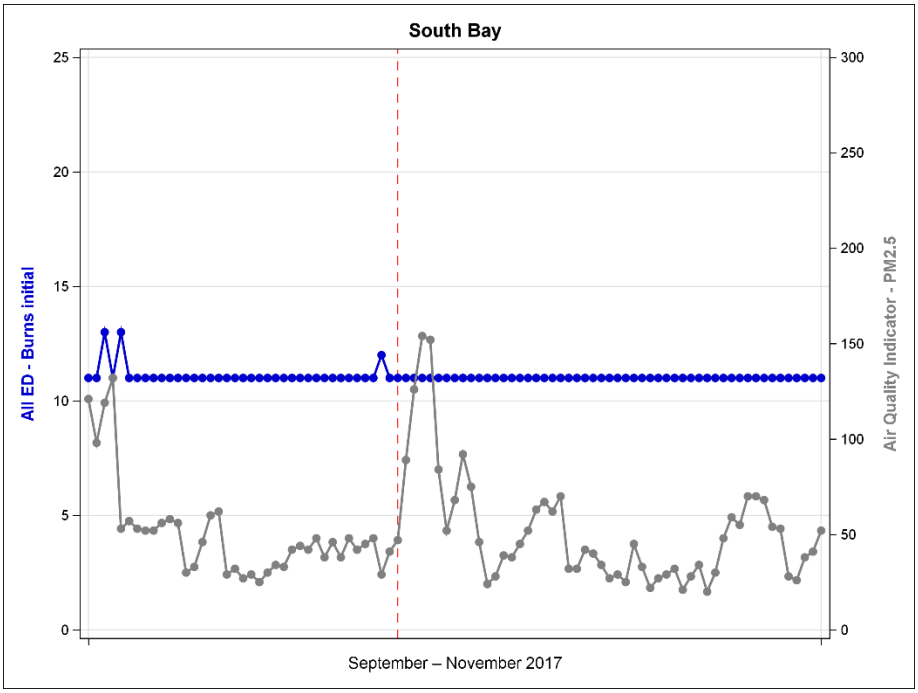
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 6b: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Burns, San Francisco Bay, California, September–November 2017



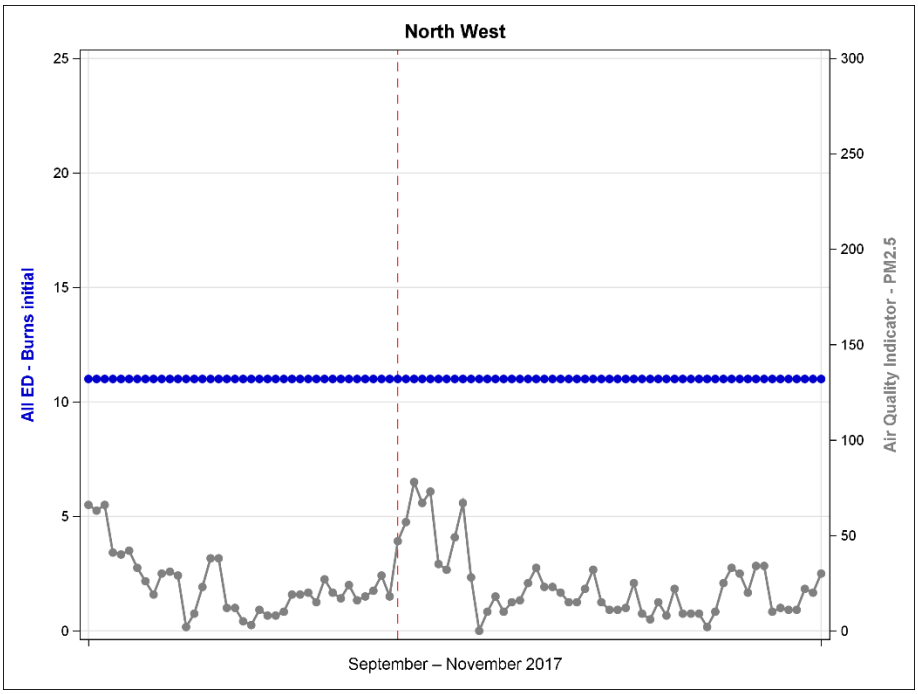
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 6c: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Burns, South Bay, California, September–November 2017



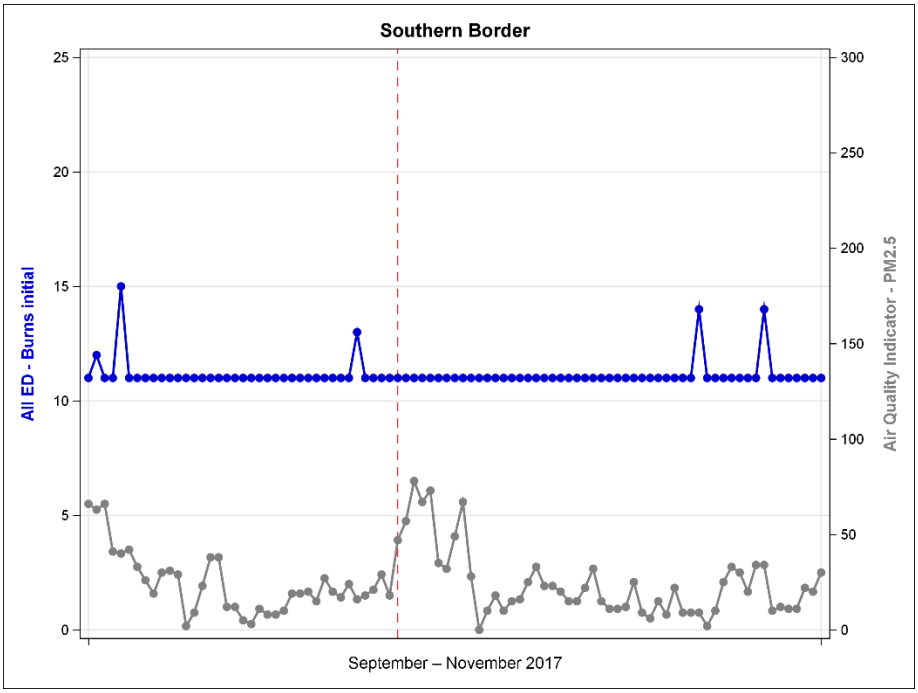
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 6d: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Burns, North West California, September–November 2017



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 6e: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Burns, Southern Border of California, September–November 2017

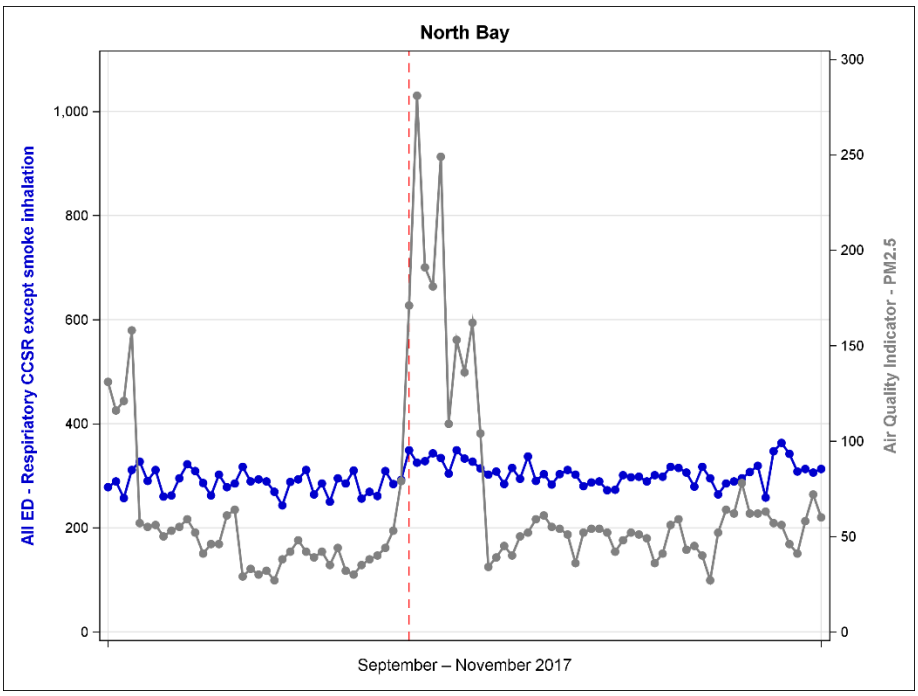


Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Respiratory Conditions Other than Smoke Inhalation

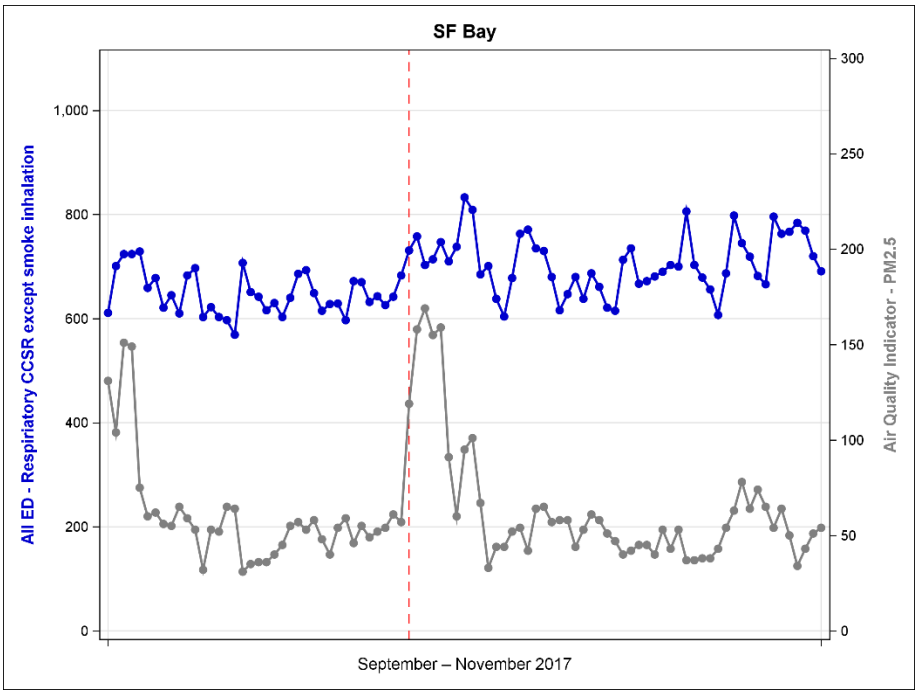
Figures 7a–7e present emergency department visits for all respiratory conditions except for smoke inhalation in the following California county groups: North Bay, San Francisco Bay, South Bay, East Central, and Central Valley. The scale for the y-axis indicating ED visits for smoke inhalation ranges from 0 to a maximum of 1,100.

Figure 7a: Air Quality Indicator and Emergency Department Visits for Respiratory Conditions (Other than Smoke Inhalation), North Bay, California, September–November 2017



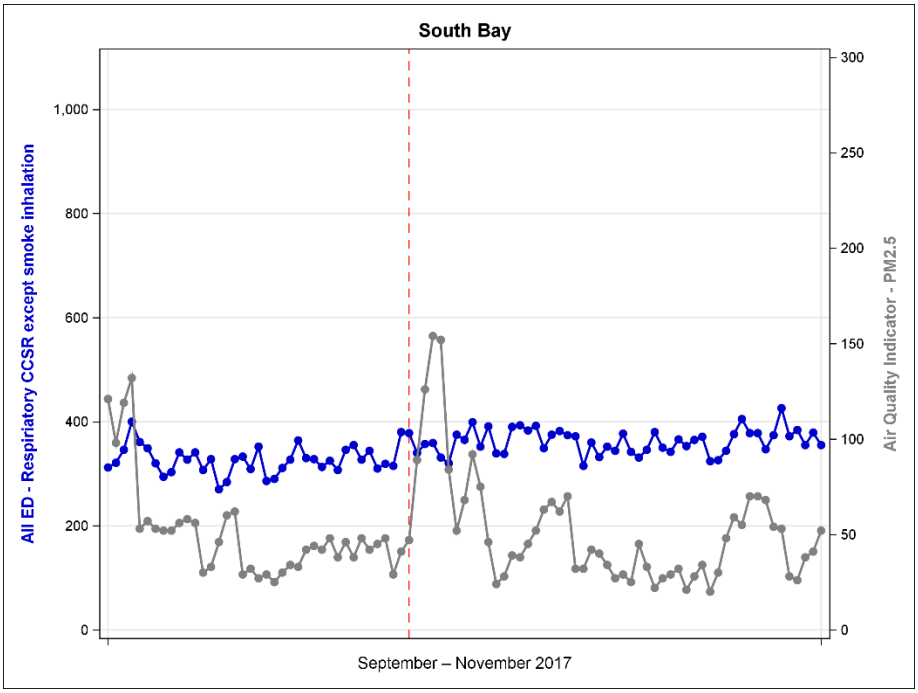
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 7b: Air Quality Indicator and Emergency Department Visits for Respiratory Conditions (Other than Smoke Inhalation), San Francisco Bay, California, September–November 2017



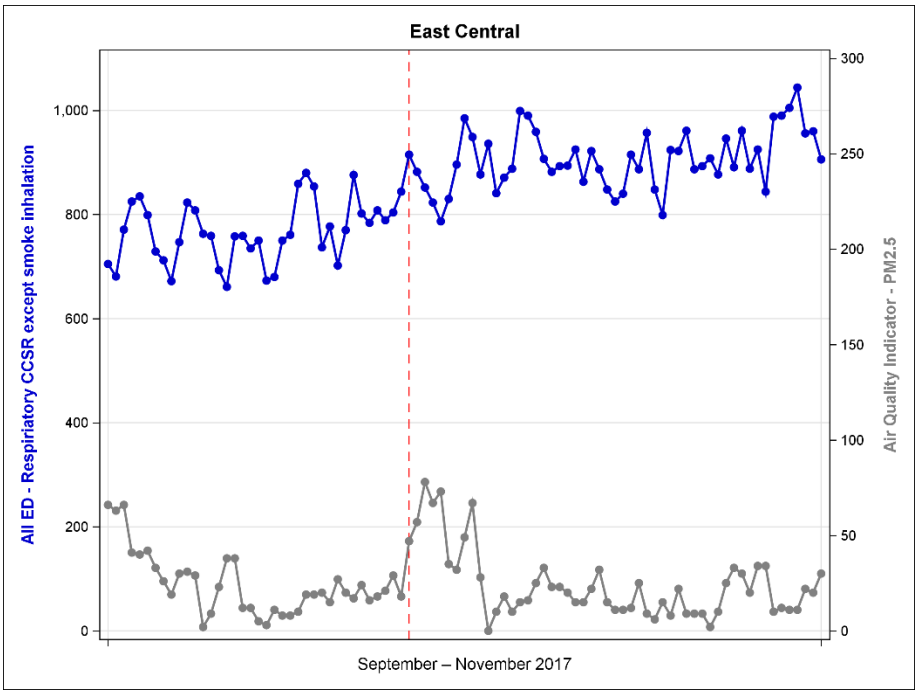
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 7c: Air Quality Indicator and Emergency Department Visits for Respiratory Conditions (Other than Smoke Inhalation), South Bay, California, September–November 2017



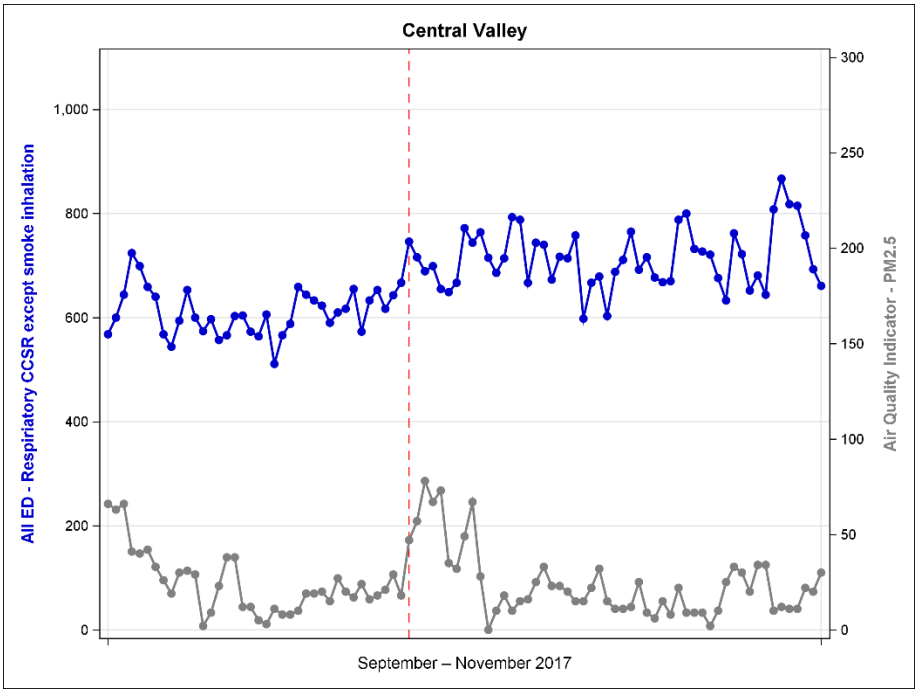
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 7d: Air Quality Indicator and Emergency Department Visits for Respiratory Conditions (Other than Smoke Inhalation), East Central California, September–November 2017



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 7e: Air Quality Indicator and Emergency Department Visits for Respiratory Conditions (Other than Smoke Inhalation), Central Valley California, September–November 2017

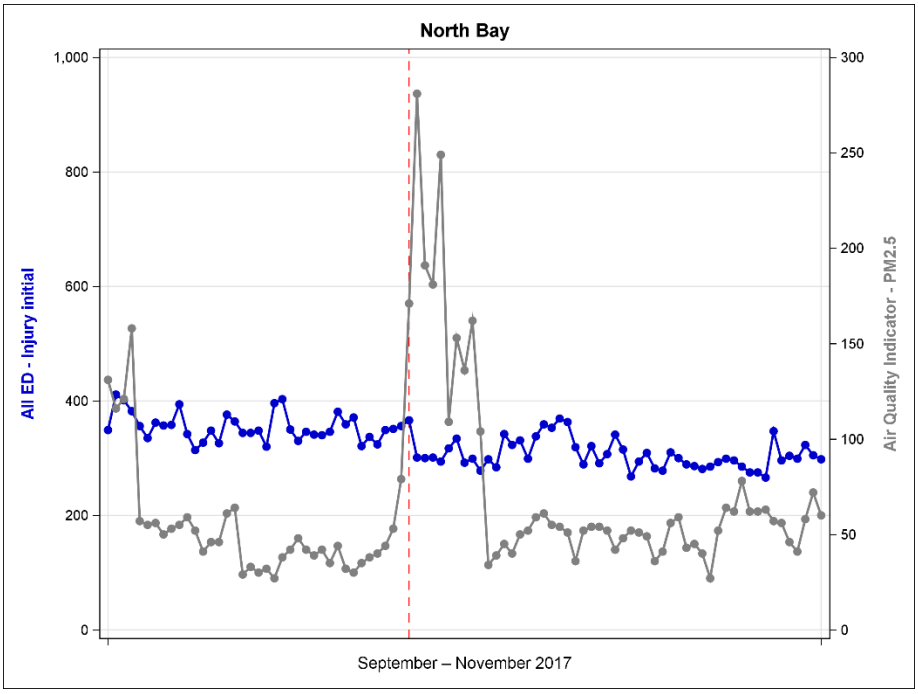


Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Initial Encounter for Injury (Including Burns)

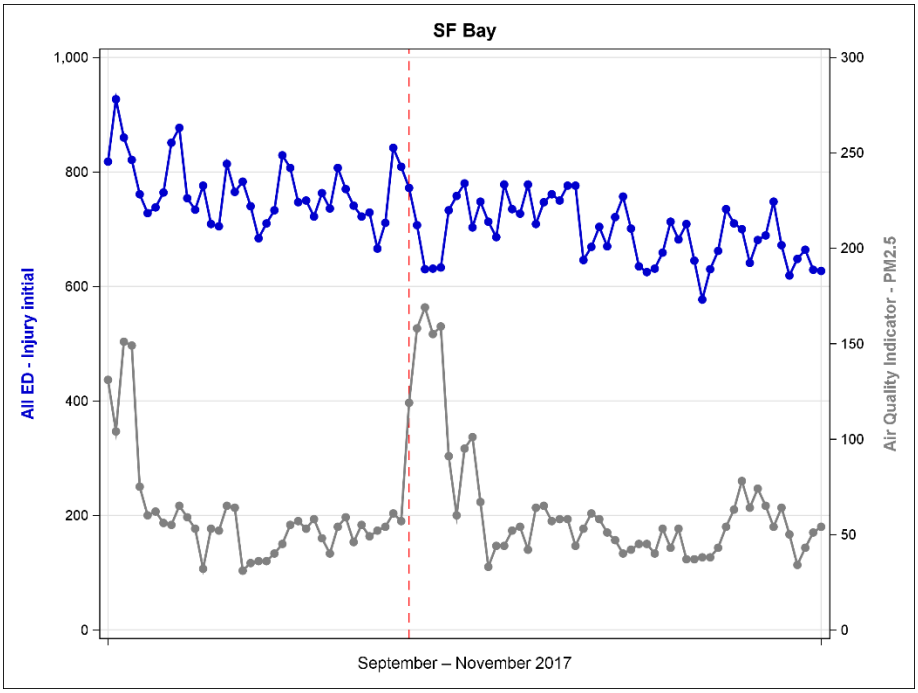
Figures 8a–8e present emergency department visits for the initial encounter of injuries (including burns) in the following California county groups: North Bay, San Francisco Bay, South Bay, East Central, and South West. The scale for the y-axis indicating ED visits for injuries ranges from 0 to a maximum of 1,000.

Figure 8a: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Injury, North Bay, California, September–November 2017



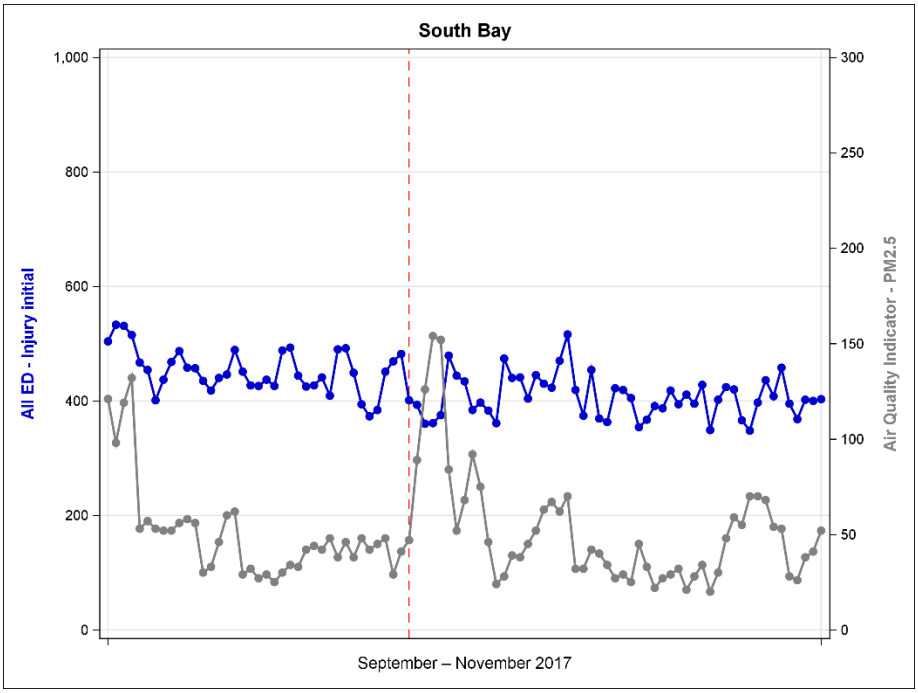
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 8b: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Injury, San Francisco Bay, California, September–November 2017



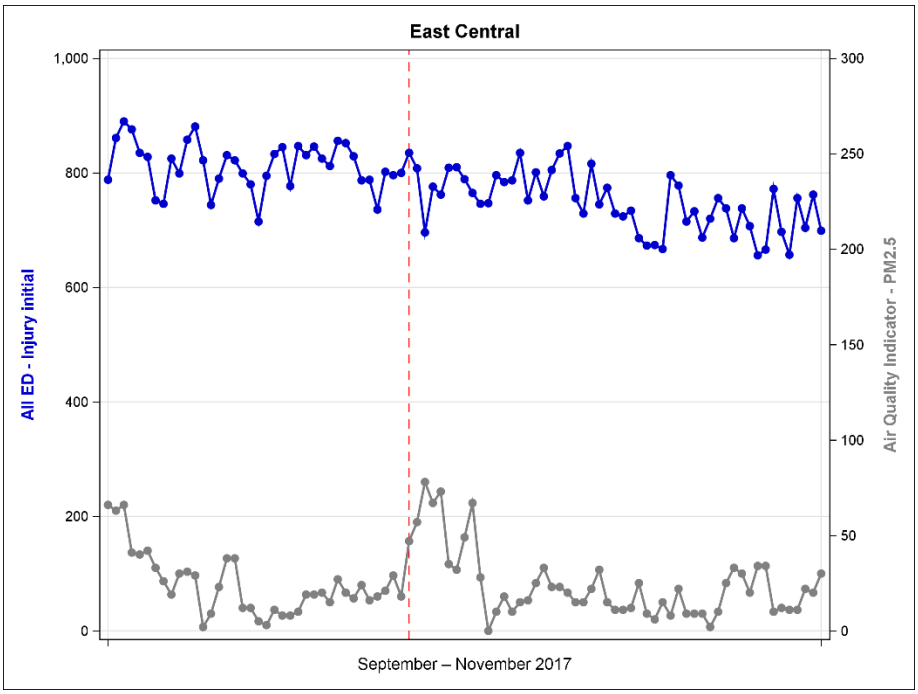
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 8c: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Injury, South Bay, California, September–November 2017



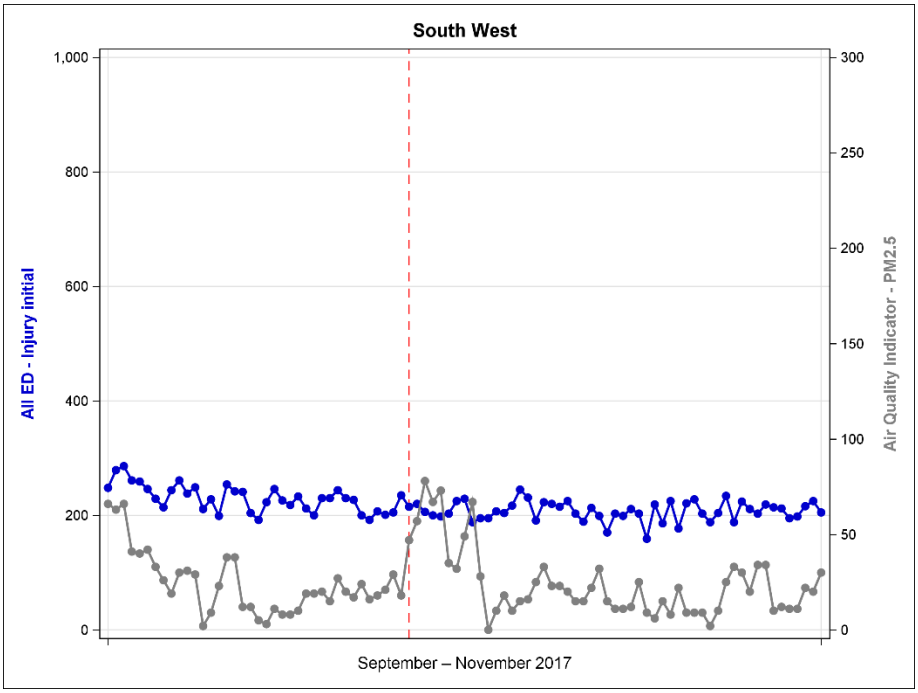
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 8d: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Injury, East Central California, September–November 2017



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 8e: Air Quality Indicator and Emergency Department Visits for Initial Encounter for Injury, South West California, September–November 2017

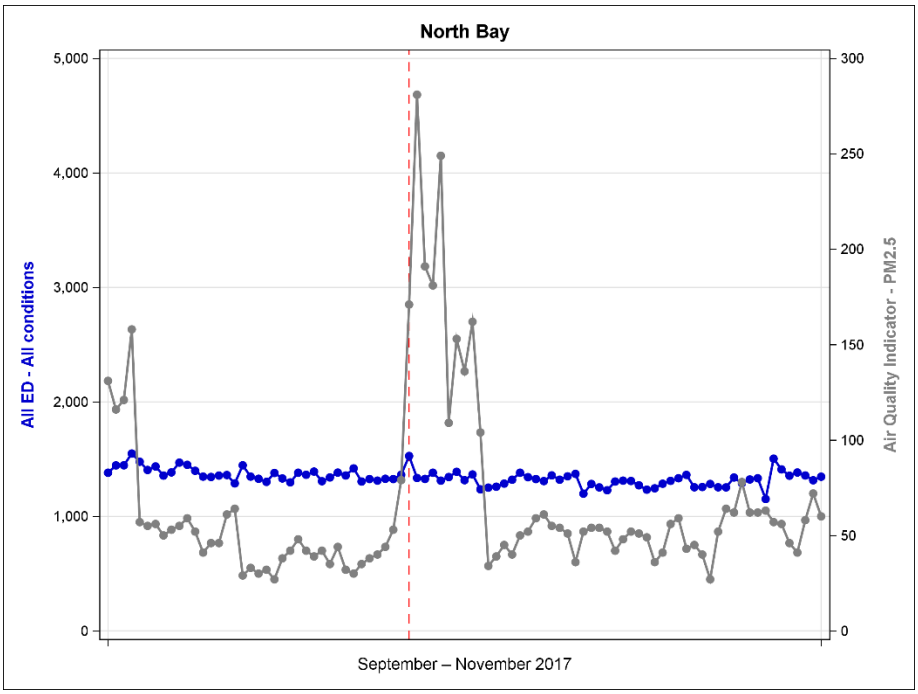


Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

All Conditions

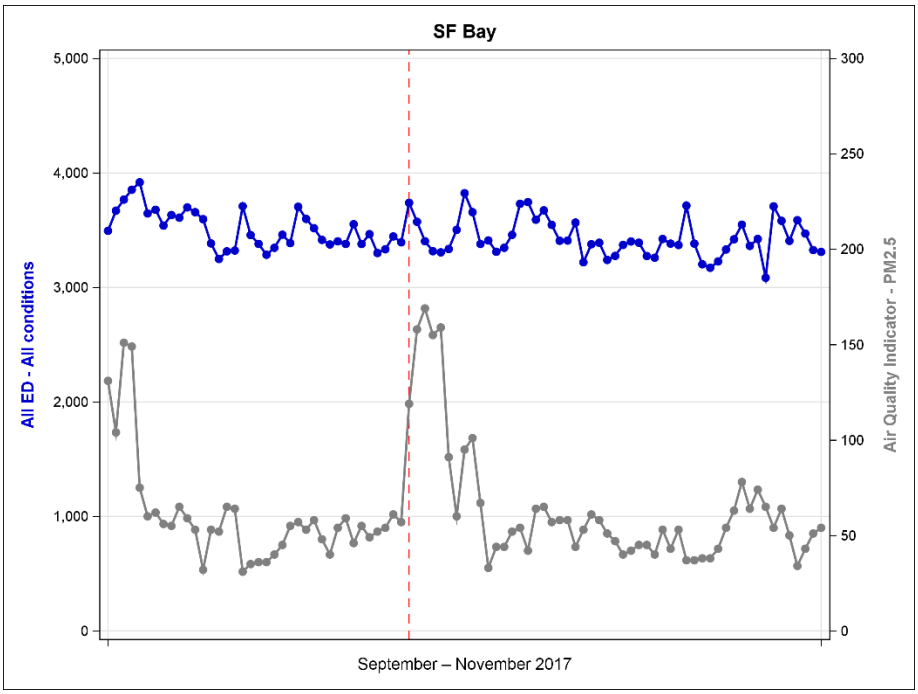
Figures 9a–9e present emergency department visits for any reason in the following California county groups: North Bay, San Francisco Bay, South Bay, East Central, and North East. The scale for the y-axis indicating ED visits ranges from 0 to a maximum of 5,000.

Figure 9a: Air Quality Indicator and Emergency Department Visits for All Conditions, North Bay, California, September–November 2017



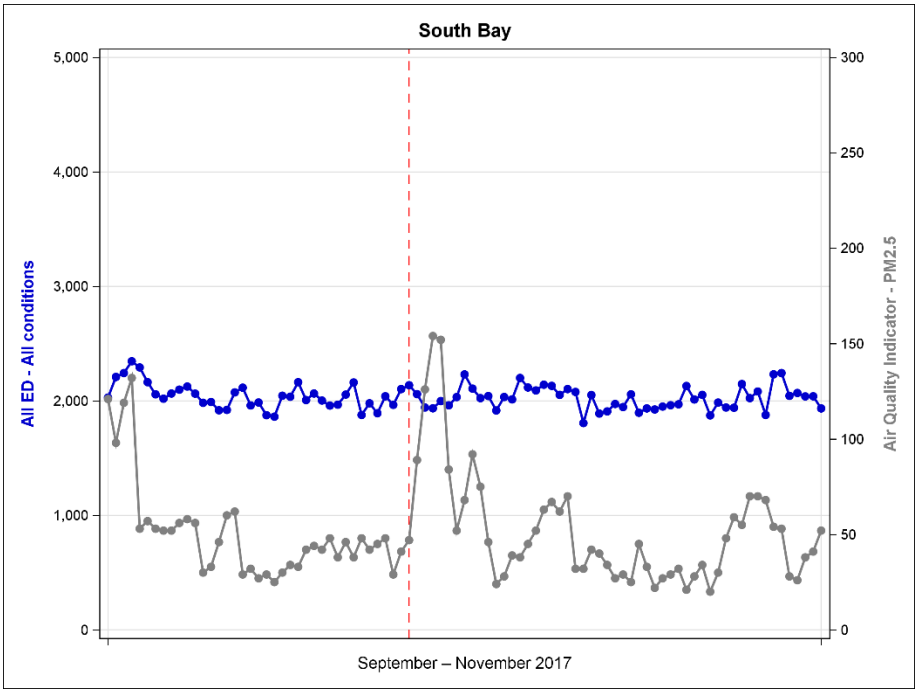
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 9b: Air Quality Indicator and Emergency Department Visits for All Conditions, San Francisco Bay, California, September–November 2017



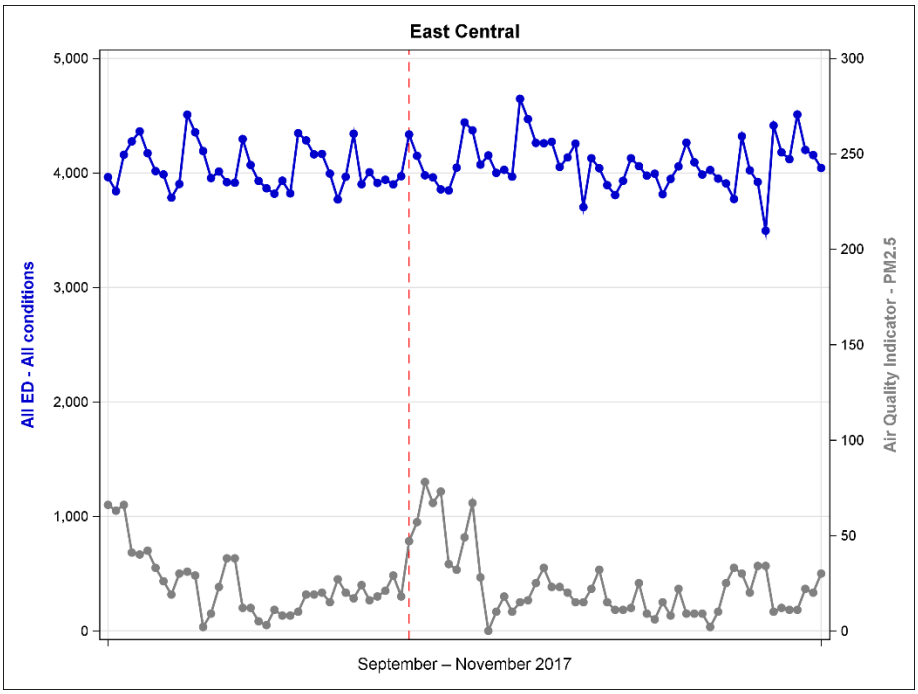
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 9c: Air Quality Indicator and Emergency Department Visits for All Conditions, South Bay, California, September–November 2017



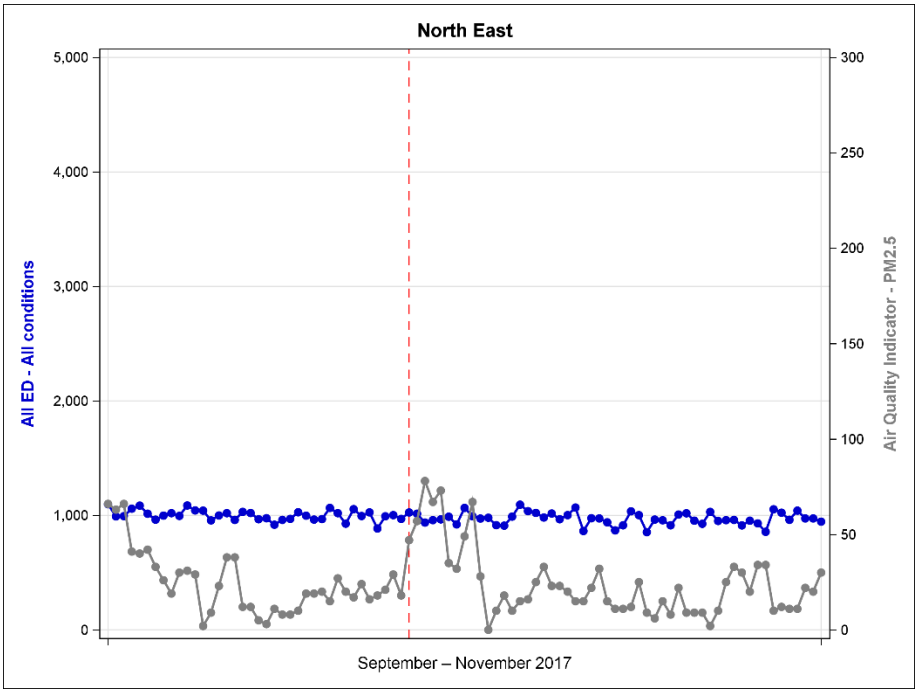
Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 9d: Air Quality Indicator and Emergency Department Visits for All Conditions, East Central California, September–November 2017



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

Figure 9e: Air Quality Indicator and Emergency Department Visits for All Conditions, North East California, September–November 2017



Source: Agency for Healthcare Research and Quality (AHRQ), Healthcare Cost and Utilization Project (HCUP), State Inpatient Databases (SID) and State Emergency Department Databases (SEDD), California, 2017

APPENDIX A. HEALTHCARE COST AND UTILIZATION PROJECT (HCUP) STATE INPATIENT DATABASES (SID) AND STATE EMERGENCY DEPARTMENT DATABASES (SEDD)

The Healthcare Cost and Utilization Project is a family of health care databases and related software tools and products developed through a Federal-State-Industry partnership and sponsored by the Agency for Healthcare Research and Quality (AHRQ). HCUP databases bring together the data collection efforts of State data organizations, hospital associations, and private data organizations (HCUP Partners) and the Federal government to create a national information resource of encounter-level health care data. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. These databases enable research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to health care programs, and outcomes of treatments at the national, State, and local market levels.

The HCUP State Inpatient Databases (SID) contain the universe of the inpatient discharge abstracts from data organizations participating in HCUP, translated into a uniform format to facilitate multistate comparisons and analyses. The SID capture information on inpatient stays for patients seen in the emergency room and then admitted to the hospital, in addition to patients transferred to the hospital or directly admitted.

The HCUP State Emergency Department Databases (SEDD) include information from hospital-owned emergency departments (EDs) from data organizations participating in HCUP, translated into a uniform format to facilitate multistate comparisons and analyses. The SEDD capture information on ED visits that do not result in an admission to the same hospital (i.e., patients who are treated in the ED and then discharged, transferred to another hospital, left against medical advice, or died).

Researchers and policymakers use the HCUP SID and SEDD to investigate questions unique to one State, to compare data from two or more States, to conduct market area research or small variation analyses, and to identify State-specific trends in inpatient and ED care. The SID and SEDD contain more than 100 clinical and nonclinical data elements included in a hospital abstract, such as:

- Patient demographics characteristics (e.g., sex, age, and, for some States, race/ethnicity)
- Principal (first-listed) and secondary diagnoses and procedures
- Admission and discharge status
- Expected payment source
- Total charges
- Length of stay.

More information is available on the HCUP User Support Web site (www.hcup-us.ahrq.gov).

APPENDIX B. CLINICAL CODING DEFINITIONS

Condition groups were defined using all-listed International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) diagnosis codes (i.e., both principal diagnosis and secondary diagnoses).

Smoke Inhalation

ICD-10-CM Code	Smoke Inhalation Code Description
J680	Bronchitis and pneumonitis due to chemicals, gases, fumes and vapors
J681	Pulmonary edema due to chemicals, gases, fumes and vapors
J682	Upper respiratory inflammation due to chemicals, gases, fumes and vapors, not elsewhere classified
J683	Other acute and subacute respiratory conditions due to chemicals, gases, fumes and vapors
J684	Chronic respiratory conditions due to chemicals, gases, fumes and vapors
J688	Other respiratory conditions due to chemicals, gases, fumes and vapors
J689	Unspecified respiratory condition due to chemicals, gases, fumes and vapors
J705	Respiratory conditions due to smoke inhalation

Initial Encounter for Exposure or Toxic Effect of Fire and Smoke

Qualifying codes required to have a 7th character of A indicating an initial encounter.

ICD-10-CM Code Range	Exposure/Toxic Effect Code Range Description
External cause codes (excludes controlled fire codes X02 and X03	
X00-	Exposure to uncontrolled fire in building or structure
X01-	Exposure to uncontrolled fire, not in building or structure
X04-	Exposure to ignition of highly flammable material
X05-	Exposure to ignition or melting of nightwear
X06-	Exposure to ignition or melting of other clothing or apparel
X08-	Exposure to other specified smoke, fire and flames
X14-	Contact with other hot air and other hot gases
X19-	Contact with other heat and hot substances
Toxic effect codes	
T5981-	Toxic effect of smoke
T5989-	Toxic effect of other specified gases, fumes and vapors
T599-	Toxic effect of unspecified gases, fumes and vapors

Initial Encounter for Burns (Including but not Limited to Fire Burns)

Qualifying codes required to have a 7th character of A indicating an initial encounter.

ICD-10-CM Code Range	Burn Code Range Description
T200- to T2039-	Burn of head, face, and neck
T210- to T2139-	Burn of the trunk
T220- to T22399-	Burn of shoulder and upper limb, except wrist and hand
T230- to T23399-	Burn of wrist and hand
T240- to T24399-	Burn of lower limb, except ankle and foot
T250- to T25399	Burn of ankle and foot
T260- to T2642-	Burn confined to eye and adnexa
T270- to T273-	Burn of respiratory tract
T280- to T2849-	Burn of other internal organs
T300-	Burn of unspecified body region, unspecified degree
T310- to T3199	Burns classified according to extent of body surface involved

All Respiratory Conditions Other Than Smoke Inhalation

ICD-10-CM Code	Respiratory Code Description
A0103	Typhoid pneumonia
A0222	Salmonella pneumonia
A065	Amebic lung abscess
A155	Tuberculosis of larynx, trachea and bronchus
A156	Tuberculous pleurisy
A157	Primary respiratory tuberculosis
A158	Other respiratory tuberculosis
A159	Respiratory tuberculosis unspecified
A202	Pneumonic plague
A212	Pulmonary tularemia
A221	Pulmonary anthrax
A310	Pulmonary mycobacterial infection
A360	Pharyngeal diphtheria
A361	Nasopharyngeal diphtheria
A362	Laryngeal diphtheria
A3701	Whooping cough due to Bordetella pertussis with pneumonia
A3711	Whooping cough due to Bordetella parapertussis with pneumonia
A3781	Whooping cough due to other Bordetella species with pneumonia
A3791	Whooping cough, unspecified species with pneumonia
A430	Pulmonary nocardiosis
A481	Legionnaires' disease
A5003	Early congenital syphilitic pharyngitis
A5004	Early congenital syphilitic pneumonia
A5005	Early congenital syphilitic rhinitis
A5272	Syphilis of lung and bronchus

ICD-10-CM Code	Respiratory Code Description
A5273	Symptomatic late syphilis of other respiratory organs
A545	Gonococcal pharyngitis
A5484	Gonococcal pneumonia
A564	Chlamydial infection of pharynx
B002	Herpesviral gingivostomatitis and pharyngotonsillitis
B012	Varicella pneumonia
B052	Measles complicated by pneumonia
B0681	Rubella pneumonia
B085	Enteroviral vesicular pharyngitis
B250	Cytomegaloviral pneumonitis
B371	Pulmonary candidiasis
B380	Acute pulmonary coccidioidomycosis
B381	Chronic pulmonary coccidioidomycosis
B382	Pulmonary coccidioidomycosis, unspecified
B390	Acute pulmonary histoplasmosis capsulati
B391	Chronic pulmonary histoplasmosis capsulati
B392	Pulmonary histoplasmosis capsulati, unspecified
B400	Acute pulmonary blastomycosis
B401	Chronic pulmonary blastomycosis
B402	Pulmonary blastomycosis, unspecified
B410	Pulmonary paracoccidioidomycosis
B420	Pulmonary sporotrichosis
B440	Invasive pulmonary aspergillosis
B441	Other pulmonary aspergillosis
B450	Pulmonary cryptococcosis
B460	Pulmonary mucormycosis
B583	Pulmonary toxoplasmosis
B59	Pneumocystosis
B671	Echinococcus granulosus infection of lung
B7781	Ascariasis pneumonia
J00	Acute nasopharyngitis [common cold]
J0100	Acute maxillary sinusitis, unspecified
J0101	Acute recurrent maxillary sinusitis
J0110	Acute frontal sinusitis, unspecified
J0111	Acute recurrent frontal sinusitis
J0120	Acute ethmoidal sinusitis, unspecified
J0121	Acute recurrent ethmoidal sinusitis
J0130	Acute sphenoidal sinusitis, unspecified
J0131	Acute recurrent sphenoidal sinusitis
J0140	Acute pansinusitis, unspecified
J0141	Acute recurrent pansinusitis
J0180	Other acute sinusitis
J0181	Other acute recurrent sinusitis
J0190	Acute sinusitis, unspecified
J0191	Acute recurrent sinusitis, unspecified
J020	Streptococcal pharyngitis

ICD-10-CM Code	Respiratory Code Description
J028	Acute pharyngitis due to other specified organisms
J029	Acute pharyngitis, unspecified
J0300	Acute streptococcal tonsillitis, unspecified
J0301	Acute recurrent streptococcal tonsillitis
J0380	Acute tonsillitis due to other specified organisms
J0381	Acute recurrent tonsillitis due to other specified organisms
J0390	Acute tonsillitis, unspecified
J0391	Acute recurrent tonsillitis, unspecified
J040	Acute laryngitis
J0410	Acute tracheitis without obstruction
J0411	Acute tracheitis with obstruction
J042	Acute laryngotracheitis
J0430	Supraglottitis, unspecified, without obstruction
J0431	Supraglottitis, unspecified, with obstruction
J050	Acute obstructive laryngitis [croup]
J0510	Acute epiglottitis without obstruction
J0511	Acute epiglottitis with obstruction
J060	Acute laryngopharyngitis
J069	Acute upper respiratory infection, unspecified
J09X1	Influenza due to identified novel influenza A virus with pneumonia
J09X1	Influenza due to identified novel influenza A virus with pneumonia
J09X2	Influenza due to identified novel influenza A virus with other respiratory manifestations
J09X3	Influenza due to identified novel influenza A virus with gastrointestinal manifestations
J09X9	Influenza due to identified novel influenza A virus with other manifestations
J1000	Influenza due to other identified influenza virus with unspecified type of pneumonia
J1000	Influenza due to other identified influenza virus with unspecified type of pneumonia
J1001	Influenza due to other identified influenza virus with the same other identified influenza virus pneumonia
J1001	Influenza due to other identified influenza virus with the same other identified influenza virus pneumonia
J1008	Influenza due to other identified influenza virus with other specified pneumonia
J1008	Influenza due to other identified influenza virus with other specified pneumonia
J101	Influenza due to other identified influenza virus with other respiratory manifestations
J102	Influenza due to other identified influenza virus with gastrointestinal manifestations
J1081	Influenza due to other identified influenza virus with encephalopathy
J1082	Influenza due to other identified influenza virus with myocarditis
J1089	Influenza due to other identified influenza virus with other manifestations
J1100	Influenza due to unidentified influenza virus with unspecified type of pneumonia
J1100	Influenza due to unidentified influenza virus with unspecified type of pneumonia
J1108	Influenza due to unidentified influenza virus with specified pneumonia
J1108	Influenza due to unidentified influenza virus with specified pneumonia

ICD-10-CM Code	Respiratory Code Description
J111	Influenza due to unidentified influenza virus with other respiratory manifestations
J112	Influenza due to unidentified influenza virus with gastrointestinal manifestations
J1181	Influenza due to unidentified influenza virus with encephalopathy
J1182	Influenza due to unidentified influenza virus with myocarditis
J1183	Influenza due to unidentified influenza virus with otitis media
J1189	Influenza due to unidentified influenza virus with other manifestations
J120	Adenoviral pneumonia
J121	Respiratory syncytial virus pneumonia
J122	Parainfluenza virus pneumonia
J123	Human metapneumovirus pneumonia
J1281	Pneumonia due to SARS-associated coronavirus
J1289	Other viral pneumonia
J129	Viral pneumonia, unspecified
J13	Pneumonia due to Streptococcus pneumoniae
J14	Pneumonia due to Hemophilus influenzae
J150	Pneumonia due to Klebsiella pneumoniae
J151	Pneumonia due to Pseudomonas
J1520	Pneumonia due to staphylococcus, unspecified
J15211	Pneumonia due to Methicillin susceptible Staphylococcus aureus
J15212	Pneumonia due to Methicillin resistant Staphylococcus aureus
J1529	Pneumonia due to other staphylococcus
J153	Pneumonia due to streptococcus, group B
J154	Pneumonia due to other streptococci
J155	Pneumonia due to Escherichia coli
J156	Pneumonia due to other Gram-negative bacteria
J157	Pneumonia due to Mycoplasma pneumoniae
J158	Pneumonia due to other specified bacteria
J159	Unspecified bacterial pneumonia
J160	Chlamydial pneumonia
J168	Pneumonia due to other specified infectious organisms
J17	Pneumonia in diseases classified elsewhere
J180	Bronchopneumonia, unspecified organism
J181	Lobar pneumonia, unspecified organism
J182	Hypostatic pneumonia, unspecified organism
J188	Other pneumonia, unspecified organism
J189	Pneumonia, unspecified organism
J200	Acute bronchitis due to Mycoplasma pneumoniae
J201	Acute bronchitis due to Hemophilus influenzae
J202	Acute bronchitis due to streptococcus
J203	Acute bronchitis due to coxsackievirus
J204	Acute bronchitis due to parainfluenza virus
J205	Acute bronchitis due to respiratory syncytial virus
J206	Acute bronchitis due to rhinovirus
J207	Acute bronchitis due to echovirus
J208	Acute bronchitis due to other specified organisms
J209	Acute bronchitis, unspecified

ICD-10-CM Code	Respiratory Code Description
J210	Acute bronchiolitis due to respiratory syncytial virus
J211	Acute bronchiolitis due to human metapneumovirus
J218	Acute bronchiolitis due to other specified organisms
J219	Acute bronchiolitis, unspecified
J22	Unspecified acute lower respiratory infection
J300	Vasomotor rhinitis
J301	Allergic rhinitis due to pollen
J302	Other seasonal allergic rhinitis
J305	Allergic rhinitis due to food
J3081	Allergic rhinitis due to animal (cat) (dog) hair and dander
J3089	Other allergic rhinitis
J309	Allergic rhinitis, unspecified
J310	Chronic rhinitis
J311	Chronic nasopharyngitis
J312	Chronic pharyngitis
J320	Chronic maxillary sinusitis
J321	Chronic frontal sinusitis
J322	Chronic ethmoidal sinusitis
J323	Chronic sphenoidal sinusitis
J324	Chronic pansinusitis
J328	Other chronic sinusitis
J329	Chronic sinusitis, unspecified
J330	Polyp of nasal cavity
J331	Polypoid sinus degeneration
J338	Other polyp of sinus
J339	Nasal polyp, unspecified
J340	Abscess, furuncle and carbuncle of nose
J341	Cyst and mucocele of nose and nasal sinus
J342	Deviated nasal septum
J343	Hypertrophy of nasal turbinates
J3481	Nasal mucositis (ulcerative)
J3489	Other specified disorders of nose and nasal sinuses
J349	Unspecified disorder of nose and nasal sinuses
J3501	Chronic tonsillitis
J3502	Chronic adenoiditis
J3503	Chronic tonsillitis and adenoiditis
J351	Hypertrophy of tonsils
J352	Hypertrophy of adenoids
J353	Hypertrophy of tonsils with hypertrophy of adenoids
J358	Other chronic diseases of tonsils and adenoids
J359	Chronic disease of tonsils and adenoids, unspecified
J36	Peritonsillar abscess
J370	Chronic laryngitis
J371	Chronic laryngotracheitis
J3800	Paralysis of vocal cords and larynx, unspecified
J3801	Paralysis of vocal cords and larynx, unilateral

ICD-10-CM Code	Respiratory Code Description
J3802	Paralysis of vocal cords and larynx, bilateral
J381	Polyp of vocal cord and larynx
J382	Nodules of vocal cords
J383	Other diseases of vocal cords
J384	Edema of larynx
J385	Laryngeal spasm
J386	Stenosis of larynx
J387	Other diseases of larynx
J390	Retropharyngeal and parapharyngeal abscess
J391	Other abscess of pharynx
J392	Other diseases of pharynx
J393	Upper respiratory tract hypersensitivity reaction, site unspecified
J398	Other specified diseases of upper respiratory tract
J399	Disease of upper respiratory tract, unspecified
J40	Bronchitis, not specified as acute or chronic
J410	Simple chronic bronchitis
J411	Mucopurulent chronic bronchitis
J418	Mixed simple and mucopurulent chronic bronchitis
J42	Unspecified chronic bronchitis
J430	Unilateral pulmonary emphysema [MacLeod's syndrome]
J431	Panlobular emphysema
J432	Centrilobular emphysema
J438	Other emphysema
J439	Emphysema, unspecified
J440	Chronic obstructive pulmonary disease with acute lower respiratory infection
J441	Chronic obstructive pulmonary disease with (acute) exacerbation
J449	Chronic obstructive pulmonary disease, unspecified
J4520	Mild intermittent asthma, uncomplicated
J4521	Mild intermittent asthma with (acute) exacerbation
J4522	Mild intermittent asthma with status asthmaticus
J4530	Mild persistent asthma, uncomplicated
J4531	Mild persistent asthma with (acute) exacerbation
J4532	Mild persistent asthma with status asthmaticus
J4540	Moderate persistent asthma, uncomplicated
J4541	Moderate persistent asthma with (acute) exacerbation
J4542	Moderate persistent asthma with status asthmaticus
J4550	Severe persistent asthma, uncomplicated
J4551	Severe persistent asthma with (acute) exacerbation
J4552	Severe persistent asthma with status asthmaticus
J45901	Unspecified asthma with (acute) exacerbation
J45902	Unspecified asthma with status asthmaticus
J45909	Unspecified asthma, uncomplicated
J45990	Exercise induced bronchospasm
J45991	Cough variant asthma
J45998	Other asthma
J470	Bronchiectasis with acute lower respiratory infection

ICD-10-CM Code	Respiratory Code Description
J471	Bronchiectasis with (acute) exacerbation
J479	Bronchiectasis, uncomplicated
J60	Coalworker's pneumoconiosis
J61	Pneumoconiosis due to asbestos and other mineral fibers
J620	Pneumoconiosis due to talc dust
J628	Pneumoconiosis due to other dust containing silica
J630	Aluminosis (of lung)
J631	Bauxite fibrosis (of lung)
J632	Berylliosis
J633	Graphite fibrosis (of lung)
J634	Siderosis
J635	Stannosis
J636	Pneumoconiosis due to other specified inorganic dusts
J64	Unspecified pneumoconiosis
J65	Pneumoconiosis associated with tuberculosis
J660	Byssinosis
J661	Flax-dressers' disease
J662	Cannabinosis
J668	Airway disease due to other specific organic dusts
J670	Farmer's lung
J671	Bagassosis
J672	Bird fancier's lung
J673	Suberosis
J674	Maltworker's lung
J675	Mushroom-worker's lung
J676	Maple-bark-stripper's lung
J677	Air conditioner and humidifier lung
J678	Hypersensitivity pneumonitis due to other organic dusts
J679	Hypersensitivity pneumonitis due to unspecified organic dust
J690	Pneumonitis due to inhalation of food and vomit
J691	Pneumonitis due to inhalation of oils and essences
J691	Pneumonitis due to inhalation of oils and essences
J698	Pneumonitis due to inhalation of other solids and liquids
J698	Pneumonitis due to inhalation of other solids and liquids
J700	Acute pulmonary manifestations due to radiation
J701	Chronic and other pulmonary manifestations due to radiation
J702	Acute drug-induced interstitial lung disorders
J703	Chronic drug-induced interstitial lung disorders
J704	Drug-induced interstitial lung disorders, unspecified
J708	Respiratory conditions due to other specified external agents
J709	Respiratory conditions due to unspecified external agent
J80	Acute respiratory distress syndrome
J810	Acute pulmonary edema
J811	Chronic pulmonary edema
J82	Pulmonary eosinophilia, not elsewhere classified
J8401	Alveolar proteinosis

ICD-10-CM Code	Respiratory Code Description
J8402	Pulmonary alveolar microlithiasis
J8403	Idiopathic pulmonary hemosiderosis
J8409	Other alveolar and parieto-alveolar conditions
J8410	Pulmonary fibrosis, unspecified
J84111	Idiopathic interstitial pneumonia, not otherwise specified
J84112	Idiopathic pulmonary fibrosis
J84113	Idiopathic non-specific interstitial pneumonitis
J84114	Acute interstitial pneumonitis
J84115	Respiratory bronchiolitis interstitial lung disease
J84116	Cryptogenic organizing pneumonia
J84117	Desquamative interstitial pneumonia
J8417	Other interstitial pulmonary diseases with fibrosis in diseases classified elsewhere
J842	Lymphoid interstitial pneumonia
J8481	Lymphangioleiomyomatosis
J8482	Adult pulmonary Langerhans cell histiocytosis
J8483	Surfactant mutations of the lung
J84841	Neuroendocrine cell hyperplasia of infancy
J84842	Pulmonary interstitial glycogenosis
J84843	Alveolar capillary dysplasia with vein misalignment
J84848	Other interstitial lung diseases of childhood
J8489	Other specified interstitial pulmonary diseases
J849	Interstitial pulmonary disease, unspecified
J851	Abscess of lung with pneumonia
J852	Abscess of lung without pneumonia
J853	Abscess of mediastinum
J860	Pyothorax with fistula
J869	Pyothorax without fistula
J90	Pleural effusion, not elsewhere classified
J910	Malignant pleural effusion
J918	Pleural effusion in other conditions classified elsewhere
J920	Pleural plaque with presence of asbestos
J929	Pleural plaque without asbestos
J930	Spontaneous tension pneumothorax
J9311	Primary spontaneous pneumothorax
J9312	Secondary spontaneous pneumothorax
J9381	Chronic pneumothorax
J9382	Other air leak
J9383	Other pneumothorax
J939	Pneumothorax, unspecified
J940	Chylous effusion
J941	Fibrothorax
J942	Hemothorax
J948	Other specified pleural conditions
J949	Pleural condition, unspecified
J954	Chemical pneumonitis due to anesthesia
J95811	Postprocedural pneumothorax

ICD-10-CM Code	Respiratory Code Description
J95821	Acute postprocedural respiratory failure
J95822	Acute and chronic postprocedural respiratory failure
J95851	Ventilator associated pneumonia
J9600	Acute respiratory failure, unspecified whether with hypoxia or hypercapnia
J9601	Acute respiratory failure with hypoxia
J9602	Acute respiratory failure with hypercapnia
J9610	Chronic respiratory failure, unspecified whether with hypoxia or hypercapnia
J9611	Chronic respiratory failure with hypoxia
J9612	Chronic respiratory failure with hypercapnia
J9620	Acute and chronic respiratory failure, unspecified whether with hypoxia or hypercapnia
J9621	Acute and chronic respiratory failure with hypoxia
J9622	Acute and chronic respiratory failure with hypercapnia
J9690	Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia
J9691	Respiratory failure, unspecified with hypoxia
J9692	Respiratory failure, unspecified with hypercapnia
J9801	Acute bronchospasm
J9809	Other diseases of bronchus, not elsewhere classified
J9811	Atelectasis
J9819	Other pulmonary collapse
J982	Interstitial emphysema
J983	Compensatory emphysema
J984	Other disorders of lung
J985	Diseases of mediastinum, not elsewhere classified
J9851	Mediastinitis
J9859	Other diseases of mediastinum, not elsewhere classified
J986	Disorders of diaphragm
J988	Other specified respiratory disorders
J989	Respiratory disorder, unspecified
J99	Respiratory disorders in diseases classified elsewhere
M0510	Rheumatoid lung disease with rheumatoid arthritis of unspecified site
M05111	Rheumatoid lung disease with rheumatoid arthritis of right shoulder
M05112	Rheumatoid lung disease with rheumatoid arthritis of left shoulder
M05119	Rheumatoid lung disease with rheumatoid arthritis of unspecified shoulder
M05121	Rheumatoid lung disease with rheumatoid arthritis of right elbow
M05122	Rheumatoid lung disease with rheumatoid arthritis of left elbow
M05129	Rheumatoid lung disease with rheumatoid arthritis of unspecified elbow
M05131	Rheumatoid lung disease with rheumatoid arthritis of right wrist
M05132	Rheumatoid lung disease with rheumatoid arthritis of left wrist
M05139	Rheumatoid lung disease with rheumatoid arthritis of unspecified wrist
M05141	Rheumatoid lung disease with rheumatoid arthritis of right hand
M05142	Rheumatoid lung disease with rheumatoid arthritis of left hand
M05149	Rheumatoid lung disease with rheumatoid arthritis of unspecified hand
M05151	Rheumatoid lung disease with rheumatoid arthritis of right hip
M05152	Rheumatoid lung disease with rheumatoid arthritis of left hip
M05159	Rheumatoid lung disease with rheumatoid arthritis of unspecified hip

ICD-10-CM Code	Respiratory Code Description
M05161	Rheumatoid lung disease with rheumatoid arthritis of right knee
M05162	Rheumatoid lung disease with rheumatoid arthritis of left knee
M05169	Rheumatoid lung disease with rheumatoid arthritis of unspecified knee
M05171	Rheumatoid lung disease with rheumatoid arthritis of right ankle and foot
M05172	Rheumatoid lung disease with rheumatoid arthritis of left ankle and foot
M05179	Rheumatoid lung disease with rheumatoid arthritis of unspecified ankle and foot
M0519	Rheumatoid lung disease with rheumatoid arthritis of multiple sites
O29011	Aspiration pneumonitis due to anesthesia during pregnancy, first trimester
O29012	Aspiration pneumonitis due to anesthesia during pregnancy, second trimester
O29013	Aspiration pneumonitis due to anesthesia during pregnancy, third trimester
O29019	Aspiration pneumonitis due to anesthesia during pregnancy, unspecified trimester
O740	Aspiration pneumonitis due to anesthesia during labor and delivery
O8901	Aspiration pneumonitis due to anesthesia during the puerperium
P230	Congenital pneumonia due to viral agent
P231	Congenital pneumonia due to Chlamydia
P232	Congenital pneumonia due to staphylococcus
P233	Congenital pneumonia due to streptococcus, group B
P234	Congenital pneumonia due to Escherichia coli
P235	Congenital pneumonia due to Pseudomonas
P236	Congenital pneumonia due to other bacterial agents
P238	Congenital pneumonia due to other organisms
P239	Congenital pneumonia, unspecified
P251	Pneumothorax originating in the perinatal period
P252	Pneumomediastinum originating in the perinatal period
P285	Respiratory failure of newborn
Q341	Congenital cyst of mediastinum
R0901	Asphyxia
R091	Pleurisy
R092	Respiratory arrest

Initial Encounter for Injury (Including Burns)

Qualifying codes required to have a 7th character of A, B, C or missing indicating an initial encounter.

ICD-10-CM Code Range	Injury Code Range Description
S00- to S99	Injuries head, neck, thorax, abdomen, lower back, lumbar spine, pelvis, shoulder, arm, elbow, forearm, wrist, hand, hip, thigh, knee, leg, ankle, and foot
T07- to T14-	Injuries involving multiple body regions or unspecified body regions
T15- to T19-	Effects of foreign body entering through natural orifice
T20- to T34-	Burns and frostbite
T36- to T50- with a 6th character of 1, 2, 3, or 4 (Exceptions: T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9 with a 5th character of 1, 2, 3, or 4)	Poisoning by, adverse effect of drugs, medicaments and biological substances
T51- to T65-	Toxic effects of substances chiefly nonmedicinal as to source (non-drug poisoning)
T66- to T70-	Radiation, effects of health and light, hypothermia, other effects of reduced temperature, effects of air and water pressure
T71-	Asphyxiation
T72- to T76-	Effects of other deprivation, abuse, neglect, maltreatment and other/unspecified effects of other external causes and adverse effects
T79-	Certain early complications of trauma
T8404-	Periprosthetic fracture around internal prosthetic joint (valid until September 30, 2016)
M97-	Periprosthetic fracture around internal prosthetic joint (valid starting October 1, 2016)
O9A2-	Injury, poisoning and certain other consequences of external causes complicating pregnancy, childbirth and the puerperium and
O9A5-	Psychological abuse complicating pregnancy, childbirth and the puerperium