Doing an exploration on recent disaster tweets for a disaster category

```python
In [1]:  import pandas as pd
         import pickle

         import spacy
         from spacy import displacy
         import matplotlib.pyplot as plt
         import seaborn as sns
         import altair as alt
         import networkx as nx
         import nx_altair as nxa
         from collections import Counter
         import warnings

         from tools import extract_assign_location, disaster_title, topNlocations, top_locations, \
                          sampleNtweets, top_locations_tweets, show_top_locations, get_top_locations_flatten,
                          get_location_graph_data, build_network, get_layout, plot_disaster_mentions, is_inter
                          show_tweets_locations, top_location_pairs

         warnings.filterwarnings('ignore')
         pd.set_option('display.max_colwidth', 280)
```

Define any upstream dependencies

```python
In [2]:  upstream = [
             'vectorizer',
             'category_classification_models',
             'recent_tweets_wildfire',
             'recent_tweets_earthquake',
             'recent_tweets_flood',
             'recent_tweets_hurricane'
         ]
         random_seed = None
         disaster_kind = None
```

```python
In [3]:  # Parameters
         random_seed = 42
         disaster_kind = "recent_tweets_wildfire"
         upstream = {
             "recent_tweets_earthquake": {
                 "nb": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/recent_tweets_eart
                 "file": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/recent_tweets_ea
             },
             "vectorizer": {
                 "nb": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/vectorizer.ipynb",
                 "vectorizer": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/vectorizer
                 "vocab": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/vocab.pkl",
             },
             "recent_tweets_wildfire": {
                 "nb": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/recent_tweets_wild
                 "file": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/recent_tweets_wi
             },
             "recent_tweets_flood": {
                 "nb": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/recent_tweets_floo
                 "file": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/recent_tweets_fl
             },
             "category_classification_models": {
                 "nb": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/category_classific
                 "model_lr": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/model_lr.pkl
                 "model_rf": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/model_rf.pkl
                 "model_nb": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/model_nb.csv
                 "model_votingc": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/model_v
             },
             "recent_tweets_hurricane": {
                 "nb": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/recent_tweets_hurr
                 "file": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/recent_tweets_hu
             },
         }
         product = {
             "nb": "/Users/mboussarov/_umsi/Capstone/umads_697_data_medics/pipeline/output/tweets_timeline_fire.i
         }
```

In [4]: `print('Disaster kind: ', disaster_title(disaster_kind))`

```
Disaster kind:  Wildfire
```

Load the sample of recent tweets

In [5]:
```python
df_tweets = pd.read_csv(upstream[disaster_kind]['file'])
df_tweets.sample(5)
```

Out[5]:

	author_id	tweet_text	created_at	hashtags	users
30003	1296525708269740032	RT @nytimes: Lind, a small town in Washington State, was temporarily evacuated after a fast-moving wildfire destroyed at least six homes an…	2022-08-05 18:17:05+00:00	[]	['nytimes']
125097	821668175494451203	RT @axios: The McKinney Fire, California's largest wildfire this year, remained 0% contained as of this morning. So far, it has burned near…	2022-08-01 15:43:24+00:00	[]	['axios']
100692	16688247	Two more bodies have been found within the burn zone of a huge Northern California wildfire. https://t.co/iFpMn984Or	2022-08-02 17:40:10+00:00	[]	[]
61332	15557891	RT @Reuters: In six years, more than 85% of giant sequoia groves burned in wildfires, compared with 25% in the 100 years prior, the Nationa…	2022-08-03 23:11:55+00:00	[]	['Reuters']
52278	18228178	New fire burning near The Dalles closes part of Interstate 84. Watch live here.\n\nhttps://t.co/tfUN5dt6Bb	2022-08-04 18:08:23+00:00	[]	[]

Extract the locations from the tweet sample

In [6]:
```python
%%time
df_tweets, df_locs_most_common = extract_assign_location(df_tweets, number_most_common=10)

df_tweets.sample(5)
```

143881it [15:13, 157.45it/s]

CPU times: user 17min 22s, sys: 19.5 s, total: 17min 42s
Wall time: 18min 7s

Out[6]:

	author_id	tweet_text	created_at	hashtags	users	location
140369	2966294049	RT @NBCNews: Sunlight magnified by glass bottles in an open garbage can ignited paper trash, starting a 500-acre North Texas wildfire that…	2022-08-01 01:12:05+00:00	[]	['NBCNews']	[North Texas]
24301	1303684640067125250	RT @GlobalBC: No more campfires in Banff National Park in Alberta and Yoho and Kootenay national parks for now due to the high risk of wild…	2022-08-05 20:02:43+00:00	[]	['GlobalBC']	[Banff National Park, Alberta, Yoho, Kootenay]
82518	211234069	RT @luissinco: The burn zone is surreal. #McKinneyFire chars more than 55,000 acres in the Siskiyou Mountains, but rain has slowed the prog…	2022-08-03 07:24:30+00:00	['McKinneyFire']	['luissinco']	[Siskiyou Mountains]
72665	226482959	RT @MikeHudema: The McKinney wildfire in Northern California grew to more than 51,000 acres in two days forcing evacuations in rural neighb…	2022-08-03 20:37:00+00:00	[]	['MikeHudema']	[Northern California]
81006	3028904879	RT @KTLA: Who among us https://t.co/FNDleti6Cg	2022-08-03 04:47:24+00:00	[]	['KTLA']	[]

In [7]: `df_locs_most_common`

Out[7]:

	location	count
0	California	19750
1	Utah	10058
2	Northern California	7988
3	Klamath National Forest	4293
4	Oregon	3476
5	Northern Cali	3165
6	Washington	2591
7	California's	2161
8	McKinney Fire	1906
9	Texas	1437

Predict the class labels

In [8]:
```python
# Get the vectorizer
with open(upstream["vectorizer"]["vectorizer"], 'rb') as f:
    vectorizer = pickle.load(f)
```

In [9]:
```python
# Get the classification model
with open(upstream["category_classification_models"]["model_lr"], 'rb') as f:
    classifier = pickle.load(f)
```

In [10]:
```python
%%time
# Predict the class labels
class_label = classifier.predict(vectorizer.transform(df_tweets['tweet_text']))
df_tweets['class_label'] = class_label

df_tweets.sample(5)
```

CPU times: user 1min 9s, sys: 745 ms, total: 1min 9s
Wall time: 1min 47s

Out[10]:

	author_id	tweet_text	created_at	hashtags	users	location	class_label
58513	3909450376	Utah man arrested for starting wildfire told authorities he was trying to kill a spider with a lighter https://t.co/OaaiTfy5Me via @theoldreader	2022-08-04 07:40:09+00:00	[]	['TheOldReader']	[Utah]	not_humanitarian
97284	161025876	Search teams found two more bodies in separate homes within the McKinney Fire perimeter, bringing the total to four, authorities say. https://t.co/y27q9JwpHP	2022-08-02 19:03:44+00:00	[]	[]	[]	injured_or_dead_people
16330	61924942	RT @davidmryder: Lind, WA one day after #wildfire caused the evacuation of the entire town. Crews contained the fire after 12 structures we…	2022-08-06 00:48:42+00:00	['wildfire']	['davidmryder']	[]	displaced_people_and_evacuations
34166	1319908298	RT @DailyCaller: Man With Jar Of Weed Allegedly Started Utah Blaze Trying To Burn A Spider https://t.co/Qb4XSSdJOU	2022-08-05 11:18:13+00:00	[]	['DailyCaller']	[]	other_relevant_information
10719	4661058807	viable in the soil for more than 50 years. Germination is often triggered after a wildfire. Fire suppression has contributed to the plant's scarcity, especially in the eastern US. https://t.co/peCZjjlQgm	2022-08-05 21:50:07+00:00	[]	[]	[US]	rescue_volunteering_or_donation_effort

Plot the intensity for each catagory, and for a particular location

Prepare the time series grouped by disaster class label

```
In [11]: df_tweets['created_at'] = pd.to_datetime(df_tweets['created_at'], errors='coerce')
         df_plot = df_tweets.copy()

         df_plot['created_at'] = df_plot['created_at'].dt.floor('8H') # Round to 8 hours
         df_plot['count'] = 1
         df_group_plot = df_plot[['created_at', 'class_label', 'count']].groupby(['created_at', 'class_label']).c
         df_group_plot['created_at'] = pd.to_datetime(df_group_plot['created_at'])
         df_group_plot.head()
```

Out[11]:

	created_at	class_label	count
0	2022-07-31 08:00:00+00:00	caution_and_advice	74
1	2022-07-31 08:00:00+00:00	displaced_people_and_evacuations	70
2	2022-07-31 08:00:00+00:00	infrastructure_and_utility_damage	41
3	2022-07-31 08:00:00+00:00	not_humanitarian	43
4	2022-07-31 08:00:00+00:00	other_relevant_information	948

Prepare the time series grouped by location label

In [12]:
```python
df_explode = df_tweets.copy()

most_common10 = df_locs_most_common.head(10)['location'].tolist()

df_explode = df_explode.explode('location').reset_index(drop=True)
df_explode.dropna(inplace=True)
df_explode['created_at'] = df_explode['created_at'].dt.floor('8H') # Round to 8 hours
df_explode['count'] = 1
df_group_explode = df_explode[['created_at', 'location', 'count']].groupby(
    ['created_at', 'location']
).count().reset_index()
df_group_explode = df_group_explode[df_group_explode['location'].isin(most_common10)]
df_group_explode.head()
```

Out[12]:

	created_at	location	count
7	2022-07-31 08:00:00+00:00	California	294
9	2022-07-31 08:00:00+00:00	California's	2
29	2022-07-31 08:00:00+00:00	Klamath National Forest	6
36	2022-07-31 08:00:00+00:00	McKinney Fire	3
52	2022-07-31 08:00:00+00:00	Northern California	12

Find the top 10 locations in the tweets sample

```
In [13]: top10_locs = list(df_group_explode['location'].unique())
         top10_locs
```

```
Out[13]: ['California',
          'California's',
          'Klamath National Forest',
          'McKinney Fire',
          'Northern California',
          'Oregon',
          'Texas',
          'Washington',
          'Utah',
          'Northern Cali']
```

In [43]:
```python
chart = alt.Chart(df_group_explode[df_group_explode['location'].isin(top10_locs)]).mark_line(size=2).enc
    x='created_at:T',
    y='count:Q',
    color='location:N',
    tooltip=['location', 'count', 'created_at:T']
)

chart.properties(
    width=500,
    height=500
).properties(
    title=disaster_title(disaster_kind) + ' disasters in the world, interactive chart'
).interactive()
```

Out[43]:

Wildfire disasters in the world, interactive chart
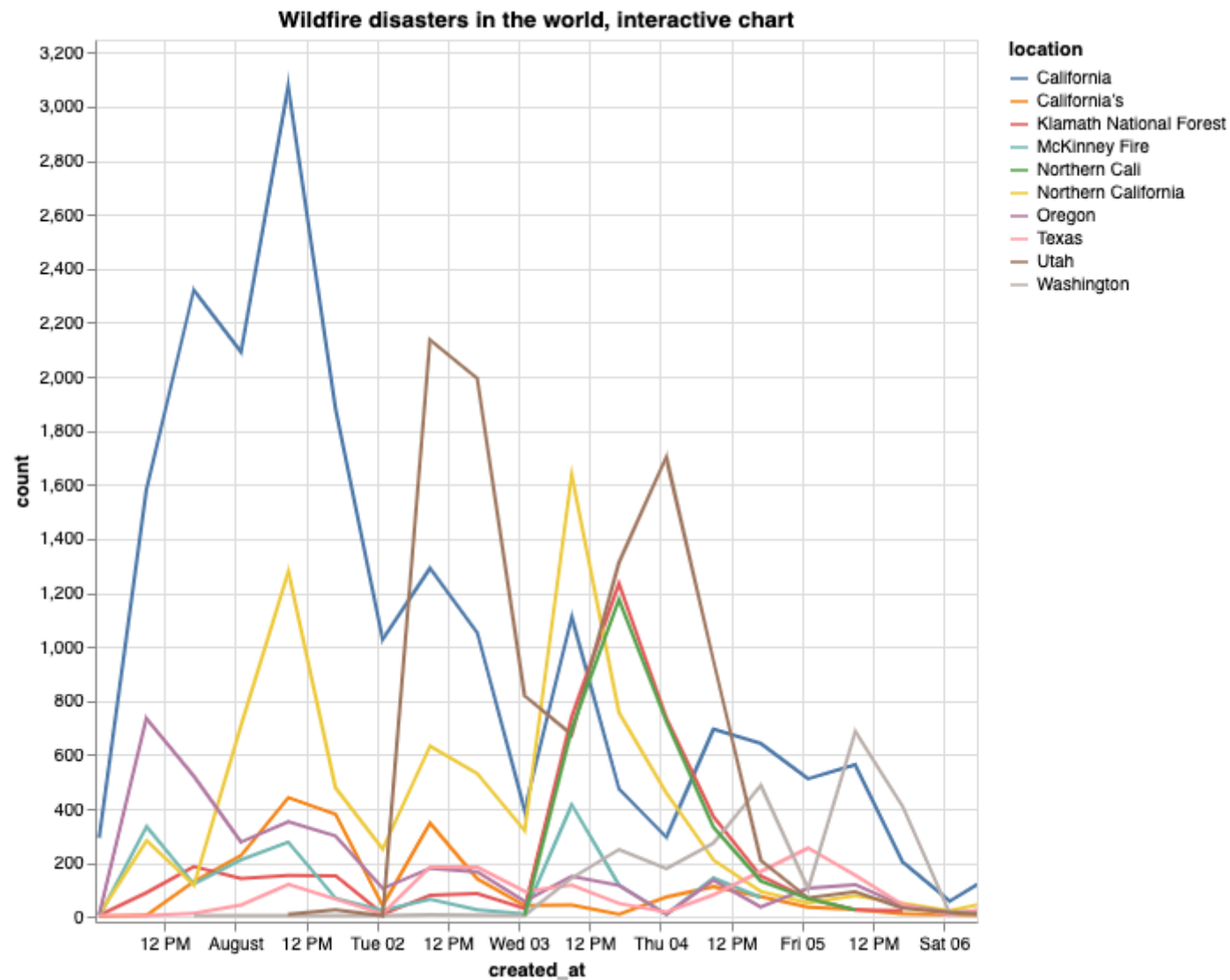
Combine the most important locations per category

In [15]:
```python
df_top_locations = top_locations(df_tweets, top10_locs)
df_top_locations.sample(5)
```

Out[15]:

	created_at	class_label	locations	count
173	2022-08-02 20:00:00+00:00	not_humanitarian	[Utah]	511
306	2022-08-04 18:00:00+00:00	not_humanitarian	[Utah]	279
320	2022-08-05 00:00:00+00:00	displaced_people_and_evacuations	[California, Washington]	55
282	2022-08-04 10:00:00+00:00	displaced_people_and_evacuations	[California, Northern California, Texas]	67
175	2022-08-02 20:00:00+00:00	rescue_volunteering_or_donation_effort	[California, McKinney Fire, Northern California]	61

Define the class labels we are interested in

In [16]:
```python
class_labels = [
    'displaced_people_and_evacuations',
    'injured_or_dead_people',
    'rescue_volunteering_or_donation_effort',
    'requests_or_urgent_needs',
    'sympathy_and_support',
    'infrastructure_and_utility_damage',
    'caution_and_advice'
]
```

In [44]:
```python
chart = alt.Chart(df_top_locations[df_top_locations['class_label'].isin(class_labels)]).mark_line(size=2
    x='created_at:T',
    y='count:Q',
    color='class_label:N',
    tooltip=['class_label:N', 'locations', 'count', 'created_at:T']
)

chart.properties(
    width=500,
    height=500
).properties(
    title=disaster_title(disaster_kind) + ' disasters in the world, interactive chart'
)
```

Out[44]:

Wildfire disasters in the world, interactive chart

class_label
- caution_and_advice
- displaced_people_and_evacuations
- infrastructure_and_utility_damage
- injured_or_dead_people
- rescue_volunteering_or_donation...
- sympathy_and_support
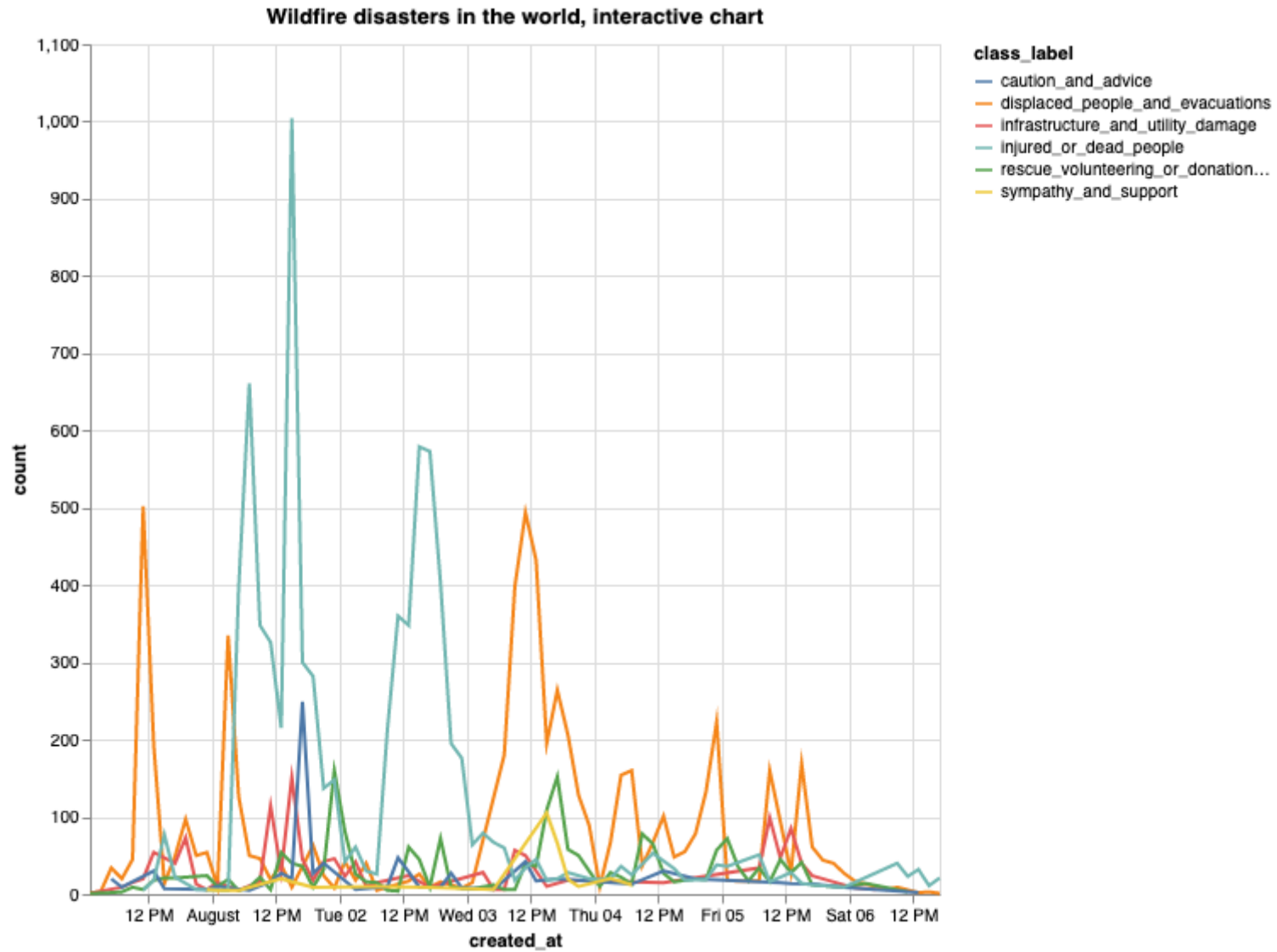
Show sample tweets per most important locations above

In [ ]:

In [18]:
```python
1  df_top_location_tweets = top_locations_tweets(df_tweets, top10_locs)
2  df_top_location_tweets.sample(5)
```

Out[18]:

	created_at	class_label	tweet_text	locations	count
187	2022-08-03 00:00:00+00:00	rescue_volunteering_or_donation_effort	[RT @CA_DWR: There are ways you can conserve water & help protect your home from wildfires during CA's #extremedrought. @CAL_FIRE, @CA_DWR…, Crews continue fighting a wildfire burning in the Black Hills National Forest in Wyoming. Crews from South Dakota are assisting wi...	[California]	9
319	2022-08-04 22:00:00+00:00	rescue_volunteering_or_donation_effort	[RT @nwa: Tommy 'Wildfire' Rich is coming to NWA 74 and NIGHT 1 of the Fan Fest! Fire it up!🔥 \n\nFan Fest Includes:\n💥 30 minute Q&A with Willi…, Let's all take a moment to thank these brave men and women on the front lines during another devastating and challenging fire ...	[Texas]	16
104	2022-08-01 22:00:00+00:00	displaced_people_and_evacuations	[Ground crews and aerial resources have been actioning the fire since it's discovery on July 29. This afternoon, due to an increase in fire behaviour driven by winds and high temperatures, ground crews have been evacuated from the wildfire area., The Elmo fire in #Montana has...	[California]	9
272	2022-08-04 06:00:00+00:00	displaced_people_and_evacuations	[RT @MikeHudema: The McKinney wildfire in Northern California grew to more than 51,000 acres in two days forcing evacuations in rural neighb…, Wildfire updates: New fire brings evacuations near Lake Billy Chinook, fires reported in Central Oregon - Statesman Journal https://t...	[Northern California]	89
379	2022-08-06 00:00:00+00:00	injured_or_dead_people	[RT @eurekaTS: McKinney Fire: Two found dead in burned car as California's biggest wildfire rages, thousands flee https://t.co/uGmkKNHToo, RT @DirectRelief: Wildfire effects extend far beyond their burn perimeter, with an estimated 2 in 3 people in the US experiencing at least…]	[California's]	12

In [19]:

```
1  show_top_locations(df_top_location_tweets, class_labels, disaster_kind)
```

Out[19]:
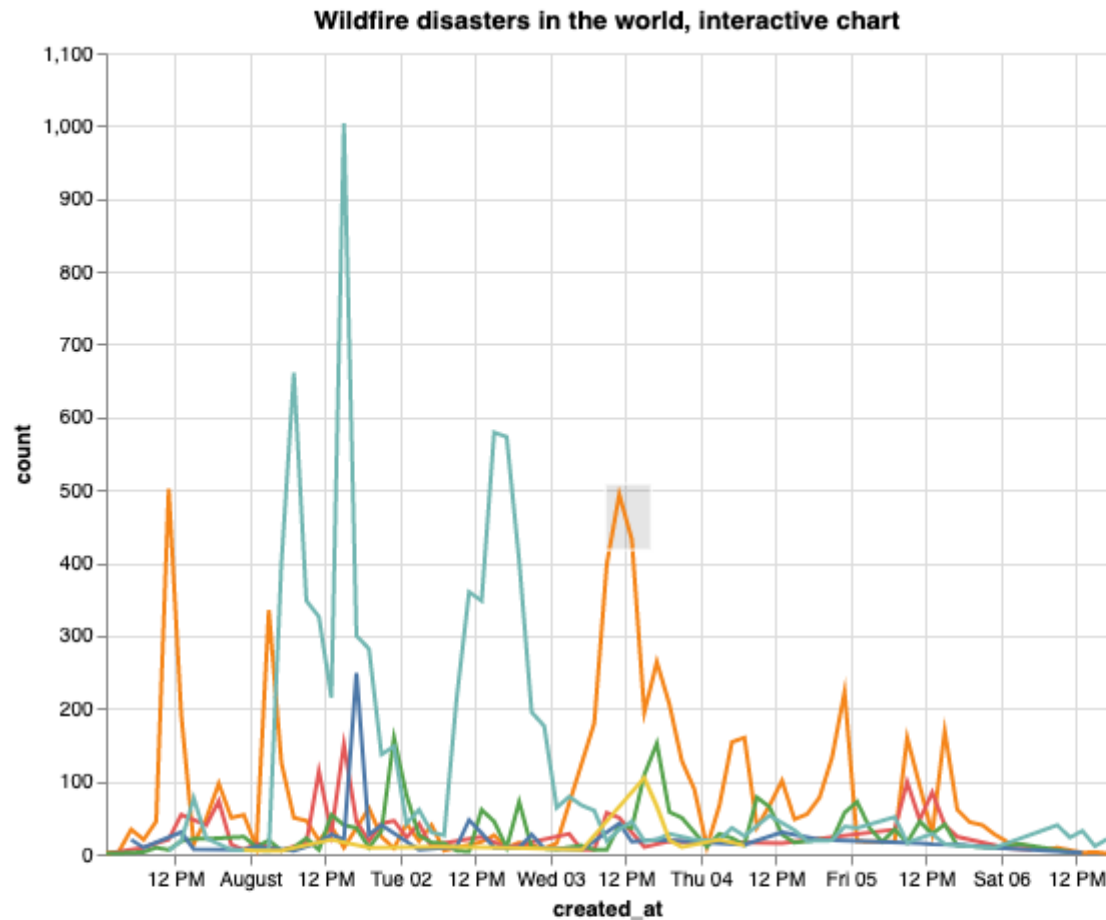
Wildfire disasters in the world, interactive chart

Tweets from the selected time period

RT @MikeHudema: The McKinney wildfire in Northern California grew to more than 51,000 acres in two days forcing evacuations in rural neighb
The BC Wildfire Service says the Connell Ridge wildfire south of Cranbrook has grown to 500 hectares. Six properties south of Mount Baker alor
The BC Wildfire Service says the Connell Ridge wildfire south of Cranbrook has grown to 500 hectares. Six properties south of Mount Baker alor
RT @CCCNewsTD: DODGE FIRE: Wildfire near Maupin and Tygh Valley, 75+ Acres, L2 Evacuations issued for Tygh Valley   https://t.co/R7MJZ
Unfortunately, it's #wildfire season. It seems like August 1 for the past several years has marked the time to be on the lookout for smokey skies a
Cal Fire stops forward spread of blaze in Fresno County foothills; some evacuations remain https://t.co/vNn5ShA1ok via @Yahoo

RT @MikeHudema: The McKinney wildfire in Northern California grew to more than 51,000 acres in two days forcing evacuations in rural neighb
RT @GuardianUS: Evacuations ordered in northern California after new wildfire breaks out https://t.co/vcj8nnWQMg
RT @KATUNews: Evacuations ordered, governor invokes emergency act in Wasco County Miller Road/Dodge Fire https://t.co/KOqqYpAK5P
RT @BCGovFireInfo: Airtankers remain available to respond if needed to meet objectives. An Evacuation Alert has been issued by the @RDEa:
RT @France24_en: 🇺🇸 👩‍🚒 4 people have died in Californian wildfire.   Authorities are urging residents to evacuate their homes as #America's…

Visualize the locations and relationship between them as a network

Select the top 20 locations for this disaster

```
In [20]: loc20 = get_top_locations_flatten(df_tweets, 20)
         loc20
```

```
Out[20]: ['California',
          'Utah',
          'Northern California',
          'Klamath National Forest',
          'Oregon',
          'Northern Cali',
          'Washington',
          'California's',
          'McKinney Fire',
          'Texas',
          'Keremeos Creek',
          'US',
          'New Mexico',
          'North Texas',
          'Kamloops',
          'Kentucky',
          'Lind',
          'Siskiyou County',
          'U.S.',
          'grants f…']
```

Get the tweets for just the top 20 locations

```
In [21]: df_loc_graph = get_location_graph_data(df_tweets, loc20)
         df_loc_graph.sample(10)
```

Out[21]:

	class_label	location_x	location_y	count
88	other_relevant_information	Washington	Lind	200
25	infrastructure_and_utility_damage	US	Northern California	9
97	rescue_volunteering_or_donation_effort	Siskiyou County	California	83
48	injured_or_dead_people	U.S.	Northern California	17
63	other_relevant_information	Northern California	California	216
51	not_humanitarian	Klamath National Forest	California	9
43	injured_or_dead_people	Siskiyou County	Klamath National Forest	128
32	injured_or_dead_people	McKinney Fire	California's	15
95	rescue_volunteering_or_donation_effort	Oregon	California	33
87	other_relevant_information	Washington	California's	11

In [22]: `plot_disaster_mentions(df_loc_graph, 'caution_and_advice', 'Caution And Advice')`

Out[22]:
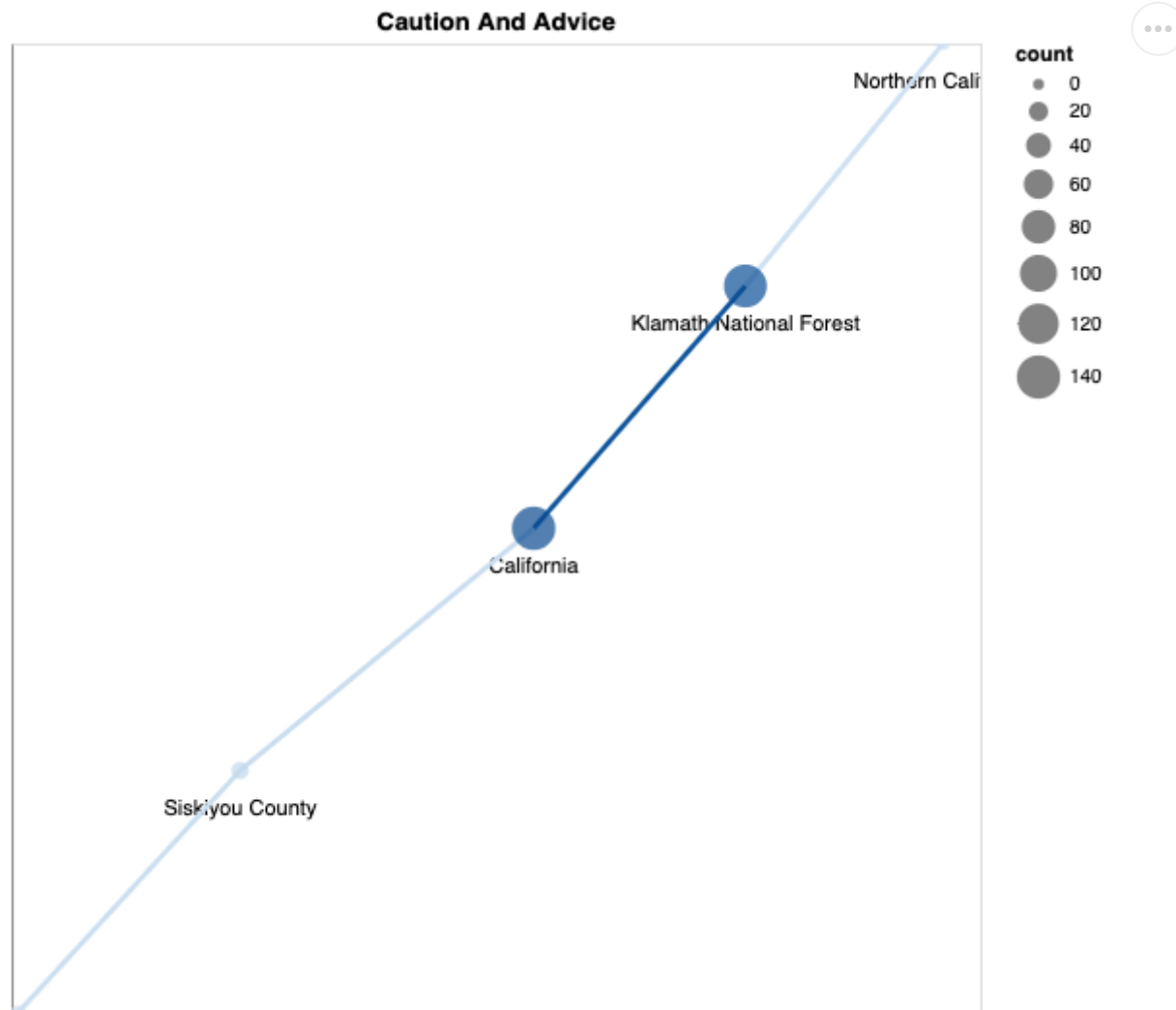
Caution And Advice

Get the most frequent location pair

```
In [23]:  loc_pairs = top_location_pairs(df_loc_graph, 'caution_and_advice', top_pairs_count=1)
          loc_pairs
```

```
Out[23]:  [['Klamath National Forest', 'California']]
```
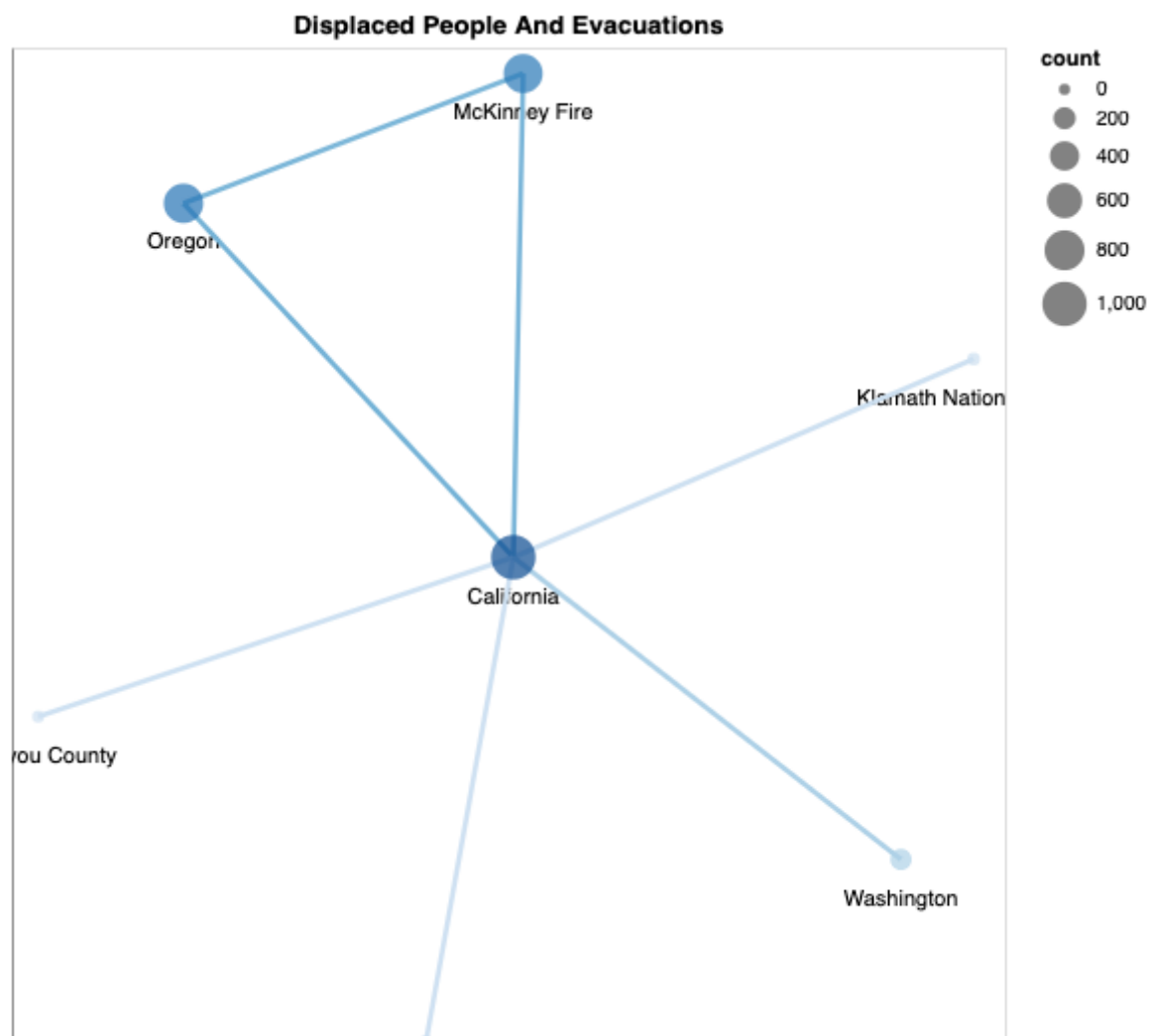
Show a sample for this location pair

```
In [24]:  show_tweets_locations(df_tweets, class_label='caution_and_advice' , locations=loc_pairs[0], sample=5)
```

Out[24]:

	tweet_text	location
0	RT @NBCNightlyNews: California is in a state of emergency as the McKinney Fire rips through the Klamath National Forest and expanded rapidl…	[California, Klamath National Forest]
1	RT @NBCNightlyNews: California is in a state of emergency as the McKinney Fire rips through the Klamath National Forest and expanded rapidl…	[California, Klamath National Forest]
2	RT @NBCNightlyNews: California is in a state of emergency as the McKinney Fire rips through the Klamath National Forest and expanded rapidl…	[California, Klamath National Forest]
3	RT @NBCNightlyNews: California is in a state of emergency as the McKinney Fire rips through the Klamath National Forest and expanded rapidl…	[California, Klamath National Forest]
4	RT @NBCNightlyNews: California is in a state of emergency as the McKinney Fire rips through the Klamath National Forest and expanded rapidl…	[California, Klamath National Forest]

In [25]: `plot_disaster_mentions(df_loc_graph, 'displaced_people_and_evacuations', 'Displaced People And Evacuatio`

Out[25]:

Displaced People And Evacuations

count
- 0
- 200
- 400
- 600
- 800
- 1,000

McKinney Fire

Oregon

Klamath Nation

California

you County

Washington

Get the most frequent location pair

In [26]:
```python
loc_pairs = top_location_pairs(df_loc_graph, 'displaced_people_and_evacuations', top_pairs_count=1)
loc_pairs
```

Out[26]: `[['Oregon', 'California']]`

Show a sample for this location pair

In [27]:
```python
show_tweets_locations(df_tweets, class_label='displaced_people_and_evacuations' , locations=loc_pairs[0]
```

Out[27]:

	tweet_text	location
0	RT @ReutersScience: The fast-moving McKinney Fire in northern California near the Oregon border has forced 2,000 residents to evacuate and…	[McKinney Fire, California, Oregon]
1	RT @Reuters: The fast-moving McKinney Fire in northern California near the Oregon border forced 2,000 residents to evacuate and destroyed h…	[McKinney Fire, California, Oregon]
2	RT @Reuters: The fast-moving McKinney Fire in northern California near the Oregon border has forced 2,000 residents to evacuate to a Red Cr…	[McKinney Fire, California, Oregon]
3	RT @inquirerdotnet: The fast-moving McKinney Fire in northern California near the Oregon border has forced 2,000 residents to evacuate and…	[McKinney Fire, California, Oregon]
4	RT @Reuters: The fast-moving McKinney Fire in northern California near the Oregon border has forced 2,000 residents to evacuate to a Red Cr…	[McKinney Fire, California, Oregon]

In [28]: `plot_disaster_mentions(df_loc_graph, 'injured_or_dead_people', 'Injured Or Dead People')`

Out[28]:

Injured Or Dead People
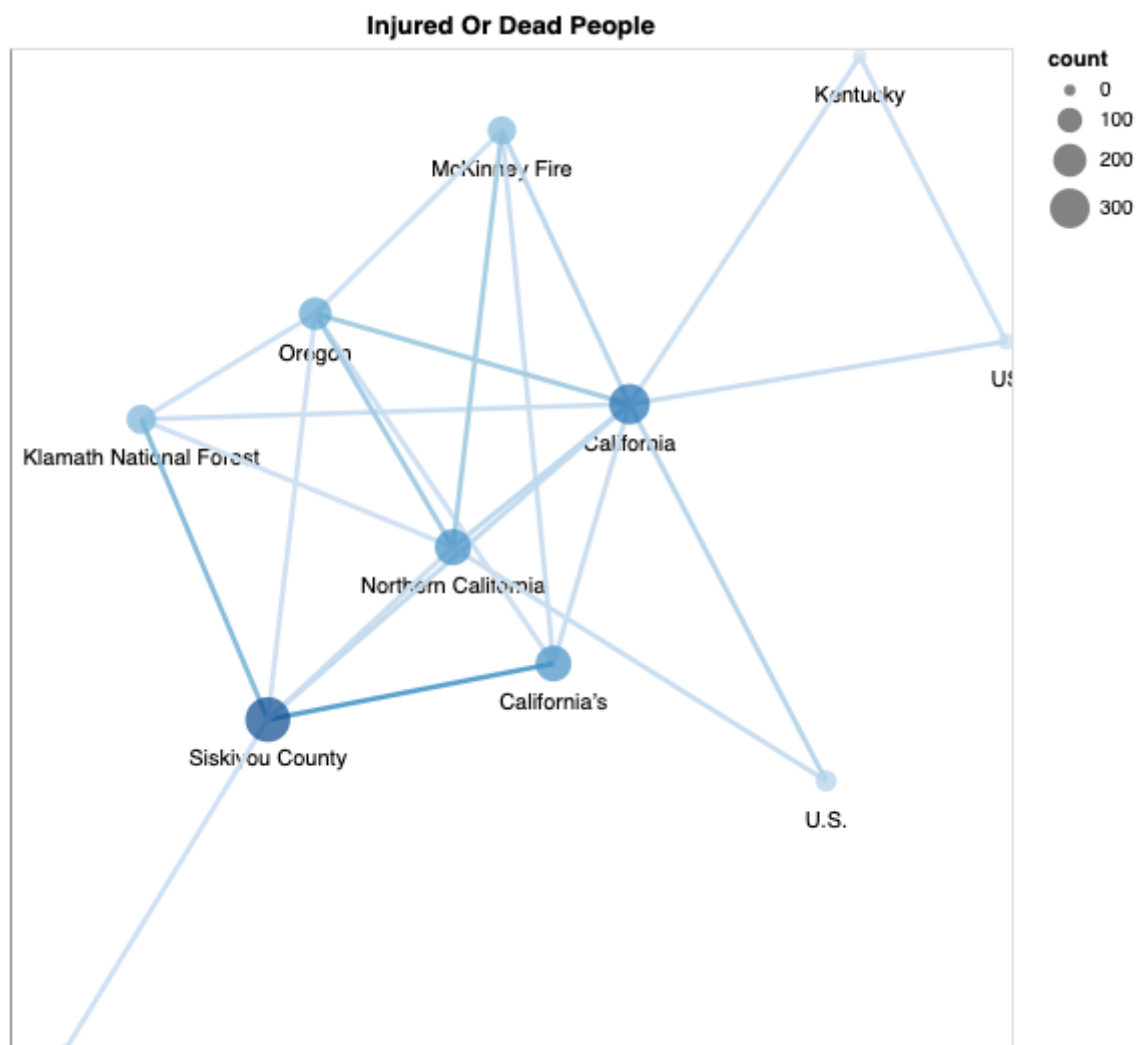
Get the most frequent location pair

```
In [29]:   loc_pairs = top_location_pairs(df_loc_graph, 'injured_or_dead_people', top_pairs_count=1)
           loc_pairs
```

Out[29]:   [['Siskiyou County', 'California's']]
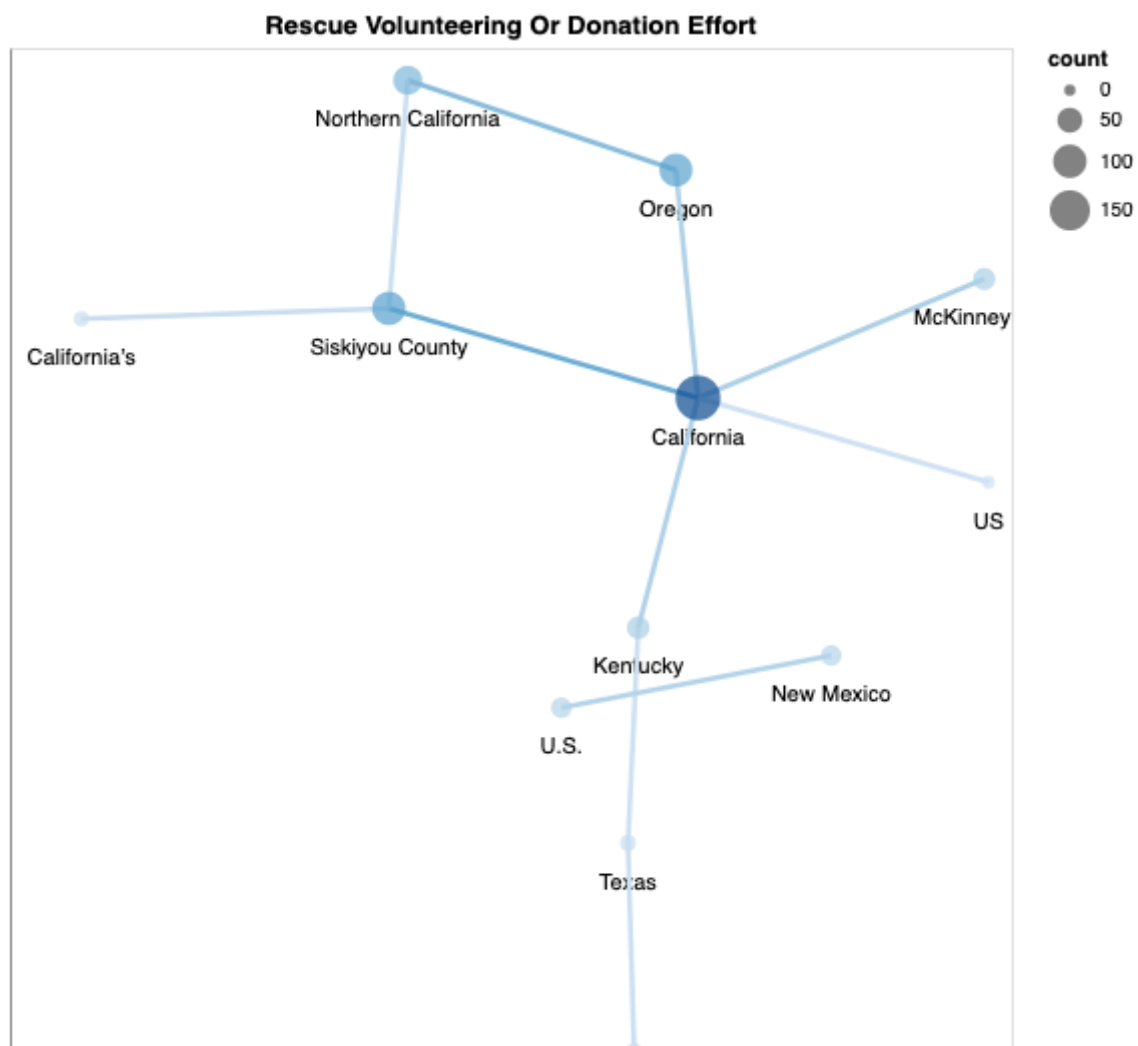
Show a sample for this location pair

```
In [30]:   show_tweets_locations(df_tweets, class_label='injured_or_dead_people' , locations=loc_pairs[0], sample=!
```

Out[30]:

	tweet_text	location
0	RT @NBCNews: Two people were found dead in a burned-out vehicle by firefighters battling California's largest wildfire, the Siskiyou County…	[California's, Siskiyou County]
1	RT @NBCNews: Two people were found dead in a burned-out vehicle by firefighters battling California's largest wildfire, the Siskiyou County…	[California's, Siskiyou County]
2	RT @NBCNews: Two people were found dead in a burned-out vehicle by firefighters battling California's largest wildfire, the Siskiyou County…	[California's, Siskiyou County]
3	RT @NBCNews: Two people were found dead in a burned-out vehicle by firefighters battling California's largest wildfire, the Siskiyou County…	[California's, Siskiyou County]
4	RT @NBCNews: Two people were found dead in a burned-out vehicle by firefighters battling California's largest wildfire, the Siskiyou County…	[California's, Siskiyou County]

In [31]:
```
plot_disaster_mentions(df_loc_graph, 'rescue_volunteering_or_donation_effort',
                       'Rescue Volunteering Or Donation Effort')
```

Out[31]:

Get the most frequent location pair

```
In [32]: loc_pairs = top_location_pairs(df_loc_graph, 'rescue_volunteering_or_donation_effort', top_pairs_count=1
         loc_pairs
```

Out[32]: [['Siskiyou County', 'California']]

Show a sample for this location pair

```
In [33]: show_tweets_locations(df_tweets, class_label='rescue_volunteering_or_donation_effort',
                               locations=loc_pairs[0], sample=5)
```

Out[33]:

	tweet_text	location
0	RT @Earth42morrow: California Fire: McKinney Fire in Siskiyou County explodes to over 18,000 acres \n\n#California #Wildfire #McKinney #Siski…	[Siskiyou County, California]
1	RT @Earth42morrow: California Fire: McKinney Fire in Siskiyou County explodes to over 18,000 acres \n\n#California #Wildfire #McKinney #Siski…	[Siskiyou County, California]
2	RT @Earth42morrow: California Fire: McKinney Fire in Siskiyou County explodes to over 18,000 acres \n\n#California #Wildfire #McKinney #Siski…	[Siskiyou County, California]
3	RT @Earth42morrow: California Fire: McKinney Fire in Siskiyou County explodes to over 18,000 acres \n\n#California #Wildfire #McKinney #Siski…	[Siskiyou County, California]
4	RT @Earth42morrow: California Fire: McKinney Fire in Siskiyou County explodes to over 18,000 acres \n\n#California #Wildfire #McKinney #Siski…	[Siskiyou County, California]

```
In [34]: plot_disaster_mentions(df_loc_graph, 'requests_or_urgent_needs',
                                'requests_or_urgent_needs')
```

Out[34]: 'No records found for class requests_or_urgent_needs'

Get the most frequent location pair

```
In [35]: loc_pairs = top_location_pairs(df_loc_graph, 'requests_or_urgent_needs', top_pairs_count=1)
         loc_pairs
```

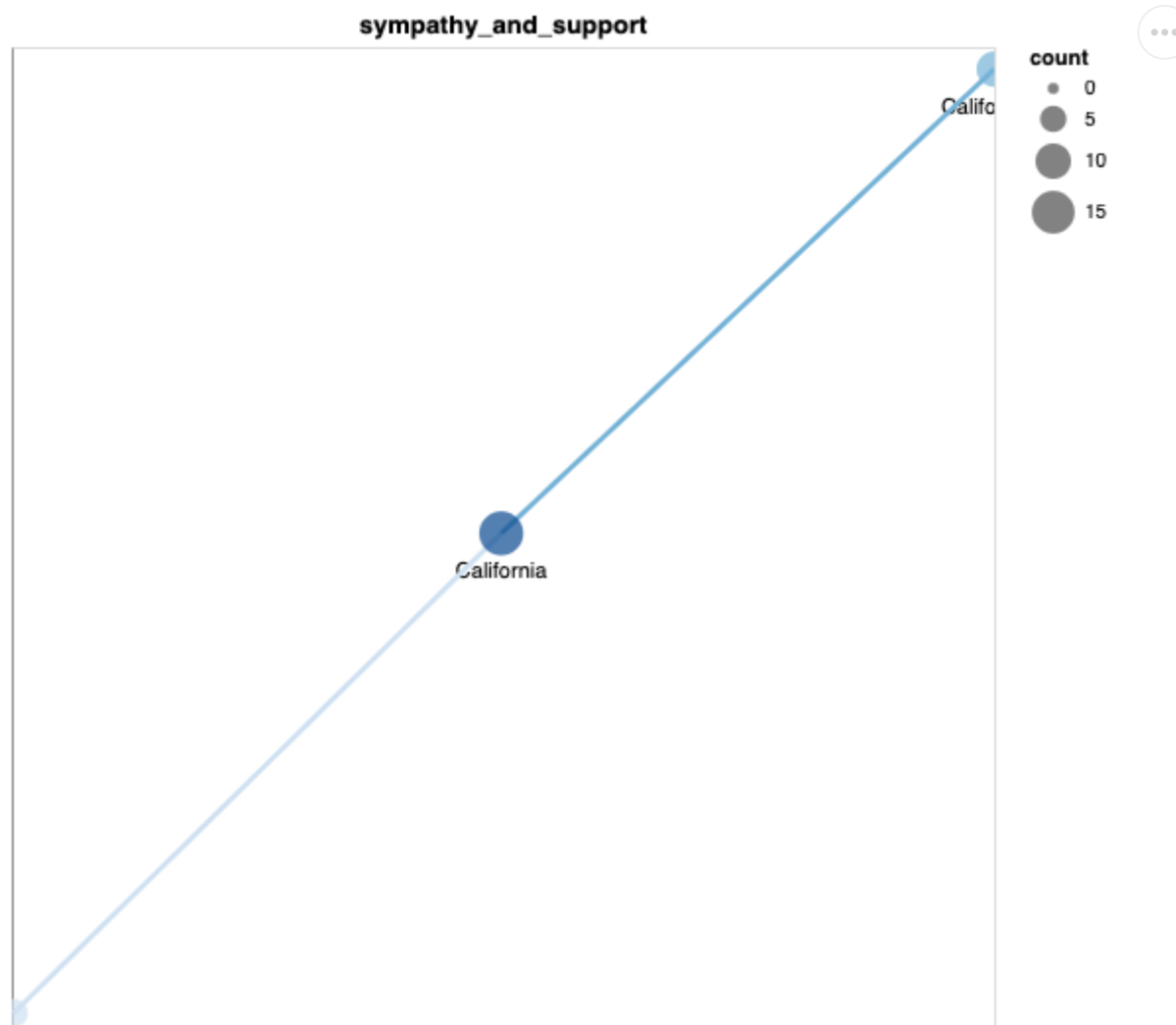Out[35]: [[]]

Show a sample for this location pair

```
In [36]:  show_tweets_locations(df_tweets, class_label='requests_or_urgent_needs',
                                 locations=loc_pairs[0], sample=5)
```

Out[36]: 'No location pairs provided'

```
In [37]:  plot_disaster_mentions(df_loc_graph, 'sympathy_and_support',
                                 'sympathy_and_support')
```

Out[37]:

Get the most frequent location pair

```
In [38]: loc_pairs = top_location_pairs(df_loc_graph, 'sympathy_and_support', top_pairs_count=1)
         loc_pairs
```

Out[38]: [['California's', 'California']]
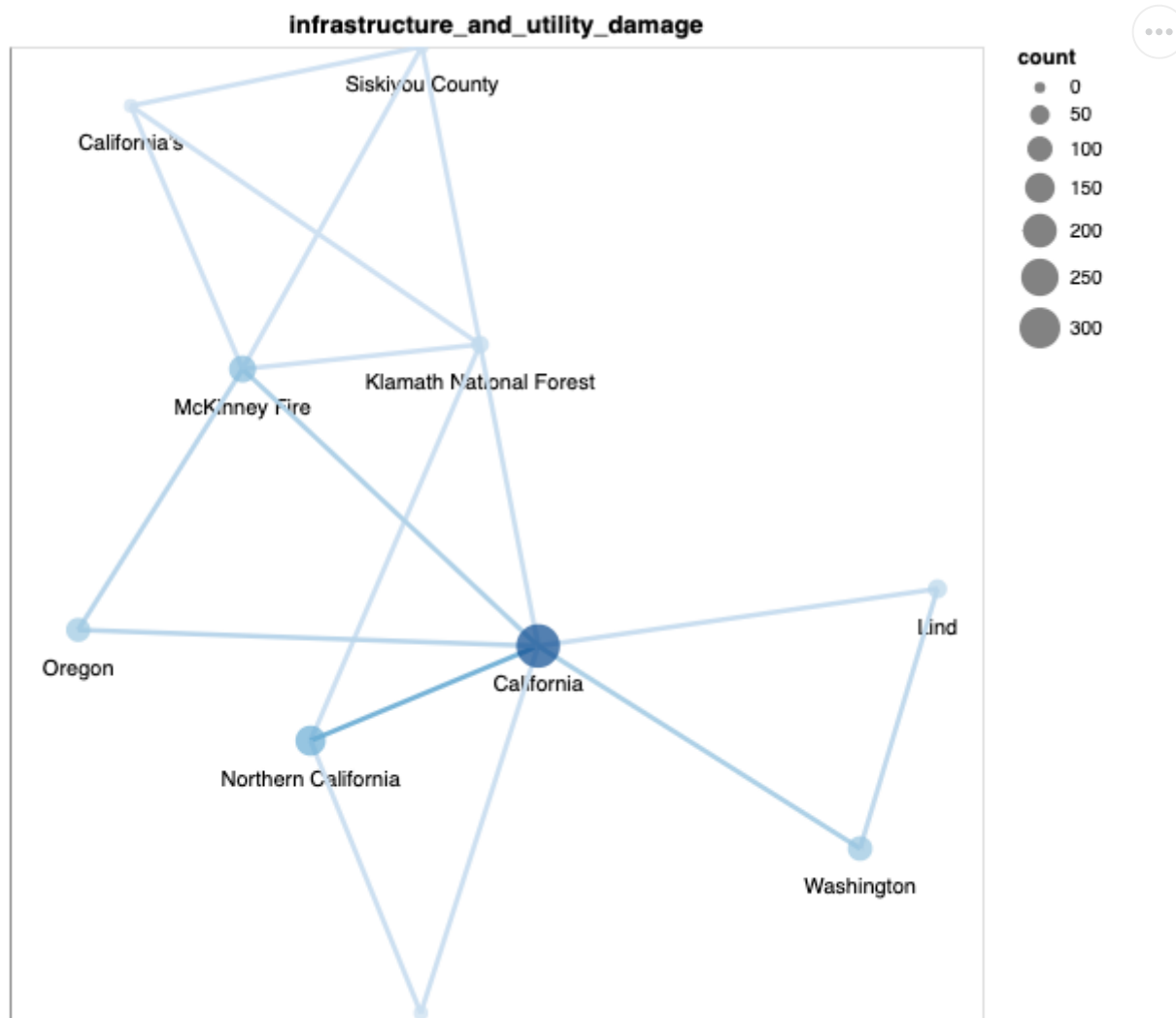
Show a sample for this location pair

```
In [39]: show_tweets_locations(df_tweets, class_label='sympathy_and_support',
                               locations=loc_pairs[0], sample=5)
```

Out[39]:

	tweet_text	location
0	Heartbreaking images of the #McKinneyFire, now California's largest #wildfire of 2022, and the #OakFire near #Yosemite. They say the Oak Fire fire is near 70% containment…God speed to all the firefighters in Northern #California today. Sending love to all. https://t.co/2zzQVO…	[California's, Oak Fire, Northern, California]
1	Heartbreaking images of the #McKinneyFire, now California's largest #wildfire of 2022, and the #OakFire near #Yosemite. They say the Oak Fire fire is near 70% containment…God speed to all the firefighters in Northern #California today. Sending love to all. https://t.co/2zzQVO…	[California's, Oak Fire, Northern, California]
2	Heartbreaking images of the #McKinneyFire, now California's largest #wildfire of 2022, and the #OakFire near #Yosemite. They say the Oak Fire fire is near 70% containment…God speed to all the firefighters in Northern #California today. Sending love to all. https://t.co/2zzQVO…	[California's, Oak Fire, Northern, California]
3	Heartbreaking images of the #McKinneyFire, now California's largest #wildfire of 2022, and the #OakFire near #Yosemite. They say the Oak Fire fire is near 70% containment…God speed to all the firefighters in Northern #California today. Sending love to all. https://t.co/2zzQVO…	[California's, Oak Fire, Northern, California]
4	Heartbreaking images of the #McKinneyFire, now California's largest #wildfire of 2022, and the #OakFire near #Yosemite. They say the Oak Fire fire is near 70% containment…God speed to all the firefighters in Northern #California today. Sending love to all. https://t.co/2zzQVO…	[California's, Oak Fire, Northern, California]

In [40]: ```python
plot_disaster_mentions(df_loc_graph, 'infrastructure_and_utility_damage',
                       'infrastructure_and_utility_damage')
```

Out[40]:

**infrastructure_and_utility_damage**

## Get the most frequent location pair

```
In [41]: loc_pairs = top_location_pairs(df_loc_graph, 'infrastructure_and_utility_damage', top_pairs_count=1)
         loc_pairs
```

Out[41]: [['Northern California', 'California']]

Show a sample for this location pair

```
In [42]: show_tweets_locations(df_tweets, class_label='infrastructure_and_utility_damage',
                              locations=loc_pairs[0], sample=5)
```

Out[42]:

	tweet_text	location
0	RT @dwnews: California's largest wildfire of the year has left a long trail of destruction.\n\nThe McKinney Fire in Northern California erupt…	[California, Northern California]
1	RT @dwnews: California's largest wildfire of the year has left a long trail of destruction.\n\nThe McKinney Fire in Northern California erupt…	[California, Northern California]
2	RT @dwnews: California's largest wildfire of the year has left a long trail of destruction.\n\nThe McKinney Fire in Northern California erupt…	[California, Northern California]
3	RT @dwnews: California's largest wildfire of the year has left a long trail of destruction.\n\nThe McKinney Fire in Northern California erupt…	[California, Northern California]
4	RT @dwnews: California's largest wildfire of the year has left a long trail of destruction.\n\nThe McKinney Fire in Northern California erupt…	[California, Northern California]

In [ ]: