Hazus: Earthquake Global Risk Report

Region Name: SanCayetano

Earthquake Scenario: sancayetanoellbgeol_m7p16_se

Print Date: June 20, 2024

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

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General Description of the Region

Hazus-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 14 county(ies) from the following state(s):

California

Note:
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 78,388.94 square miles and contains 5,898 census tracts. There are over 8,547 thousand households in the region which has a total population of 25,675,510 peopleF. The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 7,327 thousand buildings in the region with a total building replacement value (excluding contents) of (millions of dollars). Approximately 90.00 % of the buildings (and % of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 305,371 and 212,612 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 7,327 thousand buildings in the region which have an aggregate total replacement value of (millions of dollars) . Appendix B provides a general distribution of the building value by Total Region and County.

In terms of building construction types found in the region, wood frame construction makes up 87% of the building inventory. The remaining percentage is distributed between the other general building types.

Critical Facility Inventory

Hazus breaks critical facilities into two (2) groups: essential facilities and high potential loss facilities (HPL). Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 366 hospitals in the region with a total bed capacity of 67,819 beds. There are 8,313 schools, 1,505 fire stations, 512 police stations and 133 emergency operation facilities. With respect to high potential loss facilities (HPL), there are no dams identified within the inventory. The inventory also includes no hazardous material sites, no military installations and no nuclear power plants.

Transportation and Utility Lifeline Inventory

Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 1 and 2.

The total value of the lifeline inventory is over 517,983.00 (millions of dollars). This inventory includes over 13,566.39 miles of highways, 12,952 bridges, 291,736.79 miles of pipes.

Table 1: Transportation System Lifeline Inventory

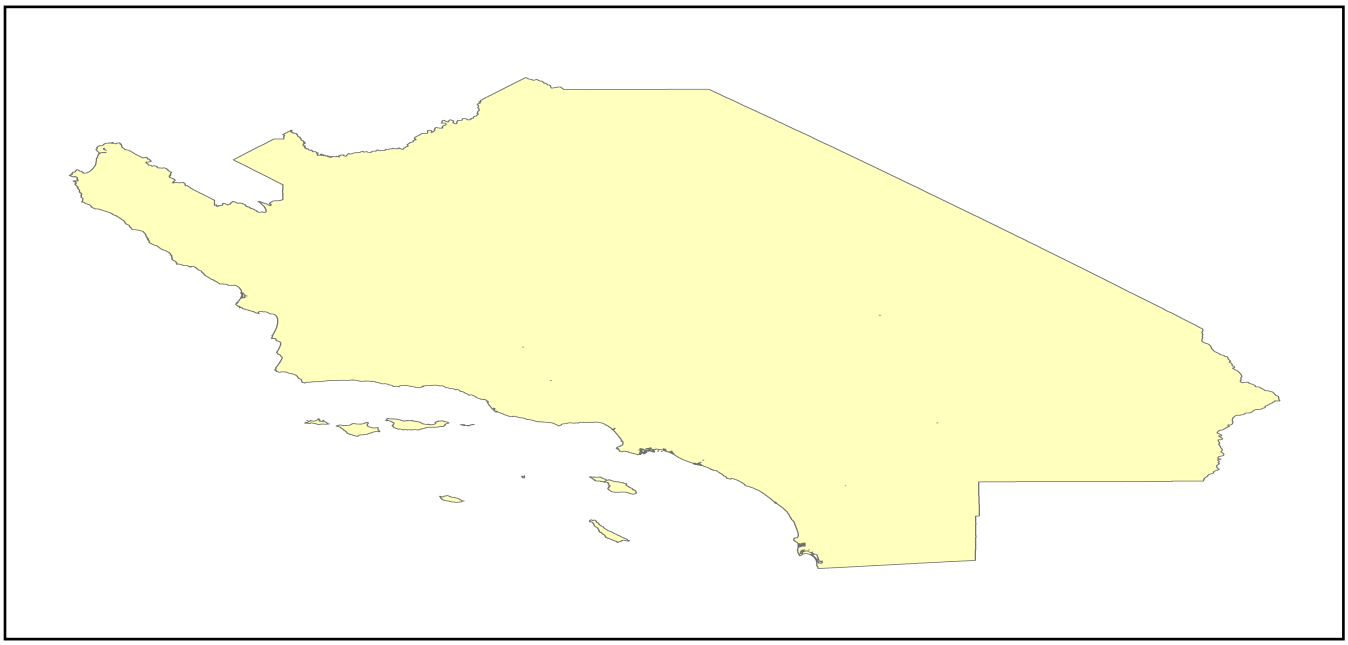
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	12,952	71159.7595
	Segments	10,658	136219.2418
	Tunnels	65	586.0681
		Subtotal	**207965.0694**
Railways	Bridges	1,908	10856.5200
	Facilities	123	327.5490
	Segments	2,077	68986.3226
	Tunnels	0	0.0000
		Subtotal	**80170.3916**
Light Rail	Bridges	51	13.2750
	Facilities	149	3200.8000
	Segments	8	5399.1047
	Tunnels	0	0.0000
		Subtotal	**8613.1797**
Bus	Facilities	55	119.7095
		Subtotal	**119.7095**
Ferry	Facilities	22	29.2820
		Subtotal	**29.2820**
Port	Facilities	357	1360.8285
		Subtotal	**1360.8285**
Airport	Facilities	175	4965.9538
	Runways	197	2146.6905
		Subtotal	**7112.6443**
		Total	**305,371.10**

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	5794.9970
	Facilities	51	2003.9940
	Pipelines	0	0.0000
		Subtotal	**7798.9910**
Waste Water	Distribution Lines	NA	3476.9982
	Facilities	134	23041.5412
	Pipelines	0	0.0000
		Subtotal	**26518.5394**
Natural Gas	Distribution Lines	NA	2317.9988
	Facilities	45	1617.5273
	Pipelines	450	20801.5169
		Subtotal	**24737.0430**
Oil Systems	Facilities	69	8.1420
	Pipelines	0	0.0000
		Subtotal	**8.1420**
Electrical Power	Facilities	647	153485.2604
		Subtotal	**153485.2604**
Communication	Facilities	545	64.3100
		Subtotal	**64.3100**
		Total	**212,612.30**

Earthquake Scenario

Hazus uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.



Scenario Name	sancayetanoellbgeol_m7p16_se
Type of Earthquake	User-defined
Fault Name	NA
Historical Epicenter ID #	NA
Probabilistic Return Period	NA
Longitude of Epicenter	NA
Latitude of Epicenter	NA
Earthquake Magnitude	7.16
Depth (km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Direct Earthquake Damage

Building Damage

Hazus estimates that about 14,843 buildings will be at least moderately damaged. This is over 0.00 % of the buildings in the region. There are an estimated 230 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus technical manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 below summarizes the expected damage by general building type.

Damage Categories by General Occupancy Type

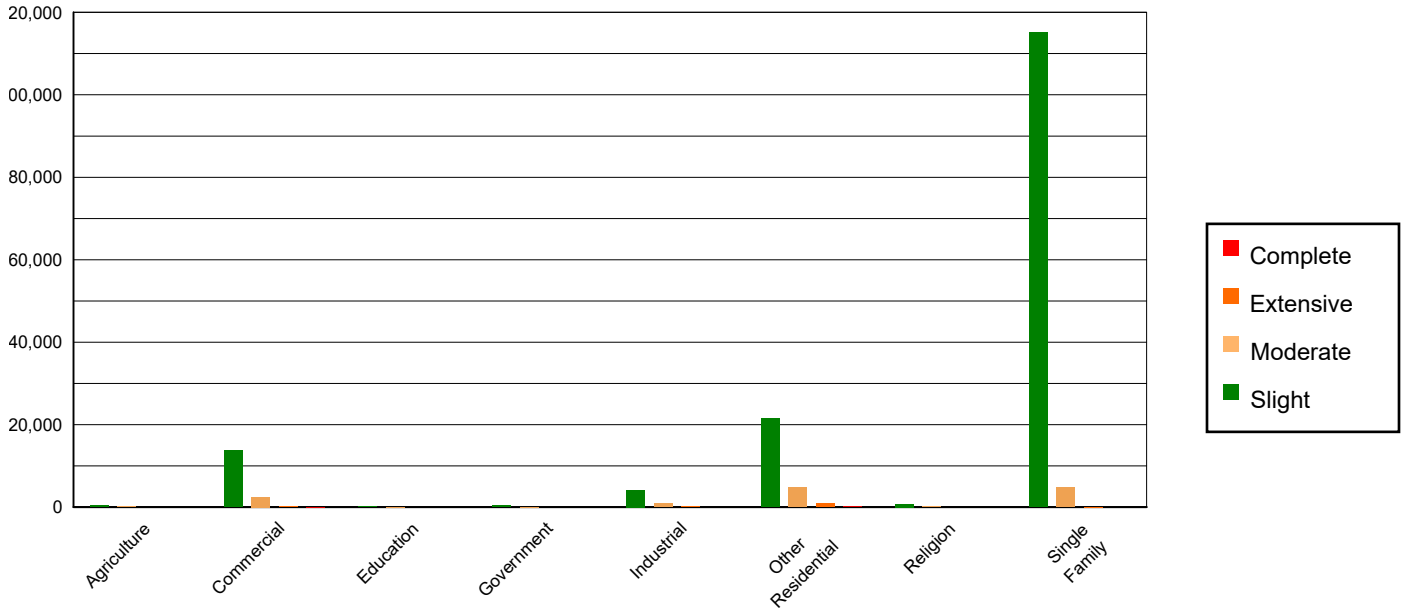


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	23687.72	0.33	352.03	0.23	89.41	0.67	10.25	0.82	2.58	1.12
Commercial	483358.99	6.75	13759.56	8.80	2472.82	18.51	238.48	18.98	65.15	28.22
Education	13752.70	0.19	188.14	0.12	33.73	0.25	2.36	0.19	0.07	0.03
Government	35593.17	0.50	331.49	0.21	63.37	0.47	6.36	0.51	1.61	0.70
Industrial	124588.45	1.74	4154.24	2.66	931.57	6.97	114.03	9.08	26.71	11.57
Other Residential	1103584.81	15.42	21528.72	13.77	4708.61	35.25	820.02	65.28	131.84	57.10
Religion	25242.77	0.35	806.94	0.52	202.93	1.52	27.97	2.23	2.39	1.03
Single Family	5346869.26	74.71	115187.05	73.69	4854.41	36.34	36.73	2.92	0.55	0.24
Total	**7,156,678**		**156,308**		**13,357**		**1,256**		**231**	

Table 4: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	6272709.88	87.65	128682.13	82.33	5434.93	40.69	53.95	4.29	2.26	0.98
Steel	131154.87	1.83	5379.99	3.44	1562.16	11.70	186.38	14.84	52.73	22.84
Concrete	130659.19	1.83	4692.94	3.00	814.78	6.10	176.48	14.05	60.05	26.01
Precast	63147.72	0.88	2543.83	1.63	669.94	5.02	41.91	3.34	3.07	1.33
RM	314123.59	4.39	5051.48	3.23	861.70	6.45	53.75	4.28	1.66	0.72
URM	27474.69	0.38	4151.89	2.66	892.07	6.68	100.57	8.01	55.49	24.03
MH	217407.93	3.04	5805.90	3.71	3121.27	23.37	643.18	51.20	55.63	24.09
Total	**7,156,678**		**156,308**		**13,357**		**1,256**		**231**	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 67,819 hospital beds available for use. On the day of the earthquake, the model estimates that only 66,270 hospital beds (98.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 99.00% of the beds will be back in service. By 30 days, 100.00% will be operational.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	366	0	0	362
Schools	8,313	15	0	8,259
EOCs	133	0	0	131
PoliceStations	512	0	0	508
FireStations	1,505	0	0	1,494

Transportation Lifeline Damage

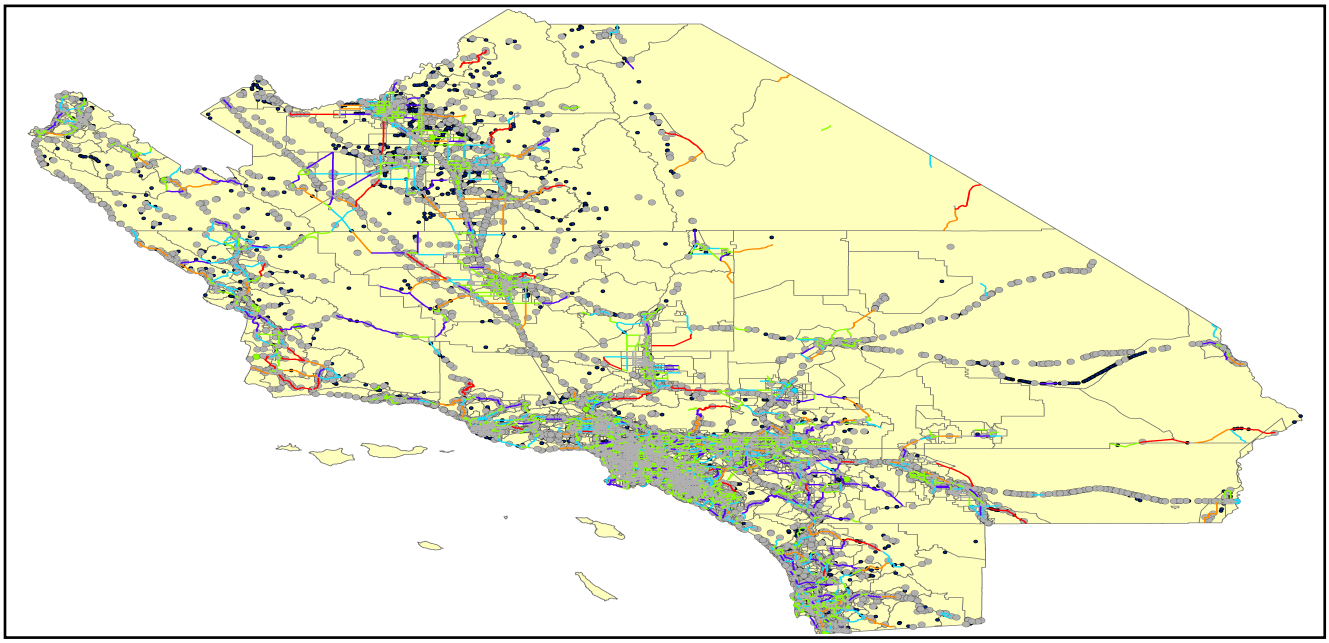


Table 6: Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	10,658	0	0	10,658	10,658
	Bridges	12,952	1	0	12,951	12,951
	Tunnels	65	0	0	65	65
Railways	Segments	2,077	0	0	2,077	2,077
	Bridges	1,908	0	0	1,908	1,908
	Tunnels	0	0	0	0	0
	Facilities	123	0	0	123	123
Light Rail	Segments	8	0	0	8	8
	Bridges	51	0	0	51	51
	Tunnels	0	0	0	0	0
	Facilities	149	0	0	149	149
Bus	Facilities	55	0	0	55	55
Ferry	Facilities	22	0	0	22	22
Port	Facilities	357	0	0	357	357
Airport	Facilities	175	0	0	175	175
	Runways	197	0	0	197	197

Table 6 provides damage estimates for the transportation system.

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 7-9 provide information on the damage to the utility lifeline systems. Table 7 provides damage to the utility system facilities. Table 8 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 9 provides a summary of the system performance information.

Table 7 : Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	51	0	0	49	51
Waste Water	134	1	0	125	134
Natural Gas	45	1	0	42	45
Oil Systems	69	0	0	69	69
Electrical Power	647	5	0	642	647
Communication	545	7	0	543	545

Table 8 : Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	180,042	2915	729
Waste Water	108,025	1464	366
Natural Gas	3,670	0	0
Oil	0	0	0

Table 9: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	8,547,197	41,695	31,388	14,090	0	0
Electric Power		22,441	14,135	5,796	579	30

Induced Earthquake Damage

Fire Following Earthquake

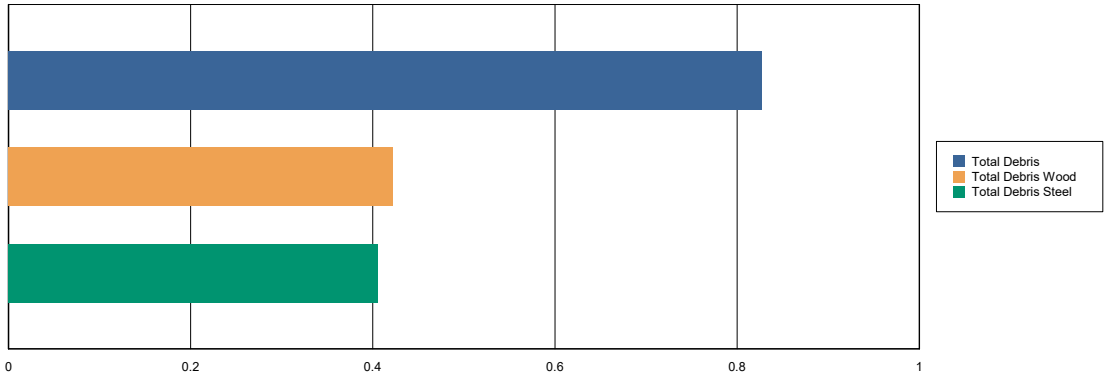
Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. Hazus uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 55 ignitions that will burn about 0.28 sq. mi 0.00 % of the region's total area.) The model also estimates that the fires will displace about 4,114 people and burn about 569 (millions of dollars) of building value.

Debris Generation

Hazus estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 827,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 51.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 33,080 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

Earthquake Debris (millions of tons)



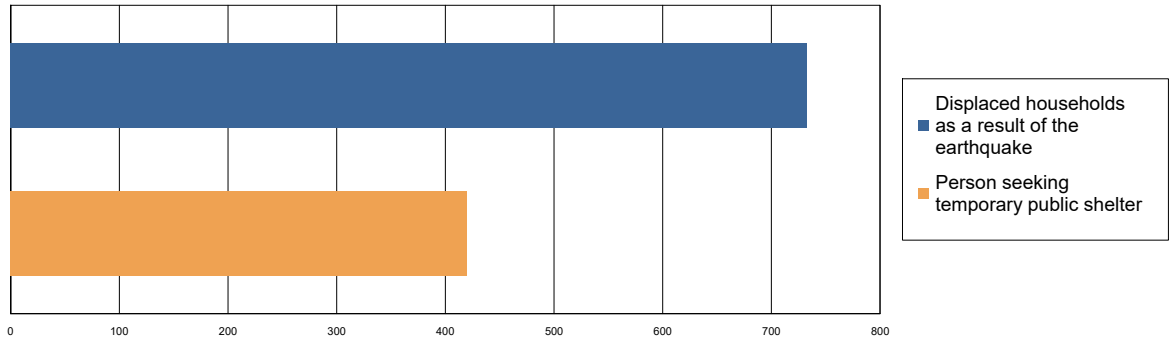
Brick/ Wood	Reinforced Concrete/Steel	Total Debris	Truck Load
0.42	0.41	0.83	33,080 (@25 tons/truck)

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 733 households to be displaced due to the earthquake. Of these, 420 people (out of a total population of 25,675,510) will seek temporary shelter in public shelters.

Displaced Households/ Persons Seeking Short Term Public Shelter



Displaced households as a result of the earthquake	Persons seeking temporary public shelter
733	420

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 10 provides a summary of the casualties estimated for this earthquake

Table 10: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	5.27	0.63	0.06	0.13
	Commuting	0.03	0.05	0.08	0.02
	Educational	0.00	0.00	0.00	0.00
	Hotels	0.31	0.02	0.00	0.00
	Industrial	6.91	0.85	0.08	0.16
	Other-Residential	241.41	27.58	2.68	5.17
	Single Family	212.99	4.51	0.02	0.02
	Total	**467**	**34**	**3**	**6**
2 PM	Commercial	363.58	46.32	5.07	9.80
	Commuting	0.31	0.47	0.73	0.14
	Educational	125.42	13.51	1.22	2.36
	Hotels	0.06	0.00	0.00	0.00
	Industrial	50.55	6.26	0.63	1.21
	Other-Residential	67.67	7.64	0.75	1.41
	Single Family	56.36	1.24	0.01	0.01
	Total	**664**	**75**	**8**	**15**
5 PM	Commercial	268.23	36.78	4.24	8.07
	Commuting	6.00	8.87	13.92	2.75
	Educational	20.76	1.19	0.01	0.01
	Hotels	0.09	0.01	0.00	0.00
	Industrial	31.59	3.91	0.39	0.76
	Other-Residential	89.37	10.65	1.09	2.03
	Single Family	76.59	1.72	0.01	0.01
	Total	**493**	**63**	**20**	**14**

Economic Loss

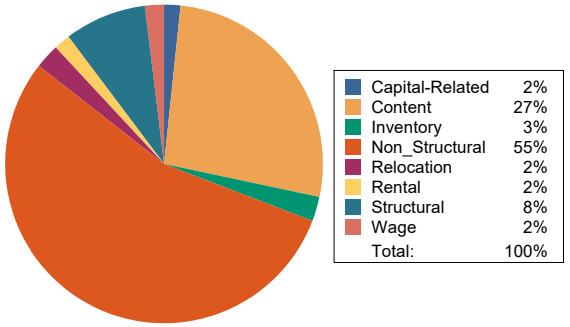
The total economic loss estimated for the earthquake is 18,917.56 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 9,304.80 (millions of dollars); 8 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 46 % of the total loss. Table 11 below provides a summary of the losses associated with the building damage.

Earthquake Losses by Loss Type ($ millions)



Earthquake Losses by Occupancy Type ($ millions)

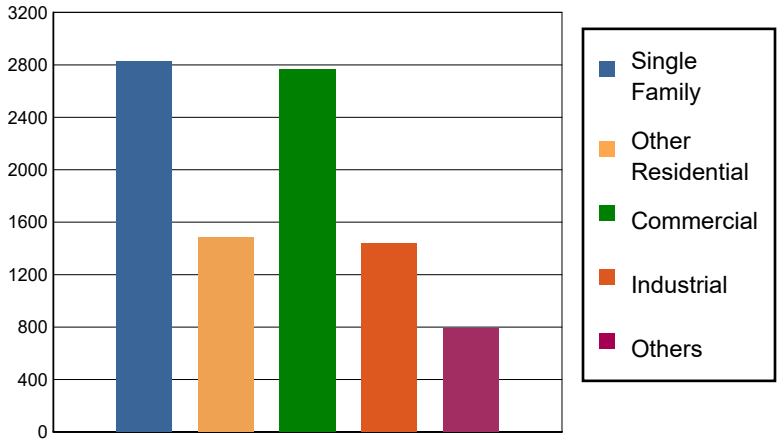


Table 11: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	16.9651	138.4797	9.0366	16.6280	181.1094
	Capital-Related	0.0000	7.2154	128.9226	5.6687	5.0133	146.8200
	Rental	16.2677	52.1732	91.5674	6.1813	5.7460	171.9356
	Relocation	33.9874	33.2178	93.5875	26.0026	39.9501	226.7454
	Subtotal	**50.2551**	**109.5715**	**452.5572**	**46.8892**	**67.3374**	**726.6104**
Capital Stock Losses							
	Structural	258.6754	116.5445	214.9453	111.4589	63.0906	764.7147
	Non_Structural	1826.1725	959.5574	1194.6168	694.9668	404.4408	5,079.7543
	Content	692.7254	296.7677	759.9604	500.8406	235.3990	2,485.6931
	Inventory	0.0000	0.0000	144.6176	82.0842	21.3258	248.0276
	Subtotal	**2777.5733**	**1372.8696**	**2314.1401**	**1389.3505**	**724.2562**	**8578.1897**
	Total	**2827.83**	**1482.44**	**2766.70**	**1436.24**	**791.59**	**9304.80**

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Tables 12 & 13 provide a detailed breakdown in the expected lifeline losses.

Table 12: Transportation System Economic Losses
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	136219.2418	0.0000	0.00
	Bridges	71159.7595	51.5370	0.07
	Tunnels	586.0681	0.1879	0.03
	Subtotal	**207965.0694**	**51.7249**	
Railways	Segments	68986.3226	0.0000	0.00
	Bridges	10856.5200	1.8946	0.02
	Tunnels	0.0000	0.0000	0.00
	Facilities	327.5490	8.5182	2.60
	Subtotal	**80170.3916**	**10.4128**	
Light Rail	Segments	5399.1047	0.0000	0.00
	Bridges	13.2750	0.0001	0.00
	Tunnels	0.0000	0.0000	0.00
	Facilities	3200.8000	92.5071	2.89
	Subtotal	**8613.1797**	**92.5072**	
Bus	Facilities	119.7095	2.0636	1.72
	Subtotal	**119.7095**	**2.0636**	
Ferry	Facilities	29.2820	0.5034	1.72
	Subtotal	**29.2820**	**0.5034**	
Port	Facilities	1360.8285	32.6065	2.40
	Subtotal	**1360.8285**	**32.6065**	
Airport	Facilities	4965.9538	133.3085	2.68
	Runways	2146.6905	0.0000	0.00
	Subtotal	**7112.6443**	**133.3085**	
	Total	**305,371.11**	**323.13**	

Table 13: Utility System Economic Losses

(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.0000	0.0000	0.00
	Facilities	2003.9940	35.1499	1.75
	Distribution Lines	5794.9970	13.1175	0.23
	Subtotal	**7798.9910**	**48.2674**	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	23041.5412	303.7167	1.32
	Distribution Lines	3476.9982	6.5893	0.19
	Subtotal	**26518.5394**	**310.3060**	
Natural Gas	Pipelines	20801.5169	0.0000	0.00
	Facilities	1617.5273	33.4035	2.07
	Distribution Lines	2317.9988	2.2574	0.10
	Subtotal	**24737.0430**	**35.6609**	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	8.1420	0.0688	0.85
	Subtotal	**8.1420**	**0.0688**	
Electrical Power	Facilities	153485.2604	8894.4383	5.79
	Subtotal	**153485.2604**	**8894.4383**	
Communication	Facilities	64.3100	0.8958	1.39
	Subtotal	**64.3100**	**0.8958**	
	Total	**212,612.29**	**9,289.64**	

Appendix A: County Listing for the Region

Fresno,CA

Inyo,CA

Kern,CA

Kings,CA

Los Angeles,CA

Monterey,CA

Orange,CA

Riverside,CA

San Bernardino,CA

San Diego,CA

San Luis Obispo,CA

Santa Barbara,CA

Tulare,CA

Ventura,CA

Appendix B: Regional Population and Building Value Data

State	County Name	Population	Building Value (millions of dollars)		
			Residential	Non-Residential	Total
California					
	Fresno	1,008,654	98,532	61,772	160,304
	Inyo	19,016	2,951	1,970	4,921
	Kern	909,235	87,567	59,168	146,736
	Kings	152,486	13,719	7,861	21,581
	Los Angeles	10,014,009	950,697	566,995	1,517,692
	Monterey	439,035	47,655	28,750	76,405
	Orange	3,186,989	363,381	176,806	540,188
	Riverside	2,418,185	281,482	137,249	418,731
	San Bernardino	2,181,654	225,045	152,557	377,602
	San Diego	3,298,634	375,834	193,238	569,072
	San Luis Obispo	282,424	41,720	20,896	62,616
	Santa Barbara	448,229	49,971	28,481	78,452
	Tulare	473,117	43,262	31,210	74,472
	Ventura	843,843	99,299	52,072	151,371
Total Region		**25,675,510**	**2,681,115**	**1,519,025**	**4,200,143**

San Cayetano

Building Inspection Tagging (Counts)

Inspected		Restricted		Unsafe	
Residential	9.56K	Residential	857	Residential	132
Commercial	2.47K	Commercial	238	Commercial	65.2
Industrial	932	Industrial	114	Industrial	26.7
Agricultural	89.4	Agricultural	10.3	Agricultural	2.58
Educational	33.7	Educational	2.36	Educational	0.074
Government	63.4	Government	6.36	Government	1.61
Religious	203	Religious	28	Religious	2.39

Total Economic Loss

Total: $9.3B

Top Counties	State	Total
Los Angeles	CA	$4.87B
Ventura	CA	$4.05B
Santa Barbara	CA	$129M
Kern	CA	$118M
Orange	CA	$118M
San Bernardino	CA	$12.6M
Riverside	CA	$3.04M

Injuries & Fatalities

Total Day: 763
Total Night: 509

Top Counties	State	Injuries (day/night)	Fatalities (day/night)
Ventura	CA	447/283	14.7/5.43
Los Angeles	CA	287/209	0.226/0.0784
Orange	CA	5.14/3.86	0.000839/0.000245
Santa Barbara	CA	4.56/3.49	0.000775/0.000225
Kern	CA	4.24/3.76	0.00109/0.000329
San Bernardino	CA	0.207/0.251	0.000076/0.000039
Riverside	CA	0.0448/0.0451	0.000021/0.00002

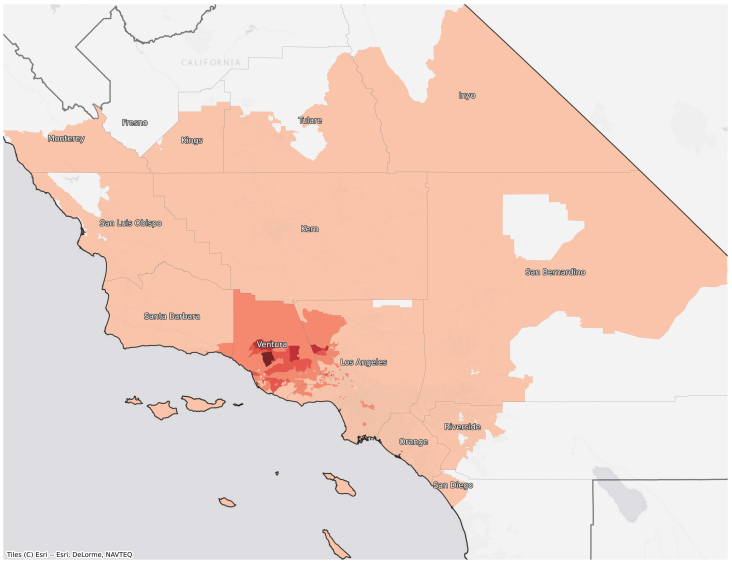
Displaced Households & Short-Term Shelter Needs

Total Displaced: 733
Total Needing Shelter: 420

Top Counties	State	Displaced	Needing Shelter
Ventura	CA	670	388
Los Angeles	CA	61.6	31.6
Santa Barbara	CA	0.838	0.401
Kern	CA	0.318	0.243
Orange	CA	0.089	0.0606
Fresno	CA	0	0
Inyo	CA	0	0

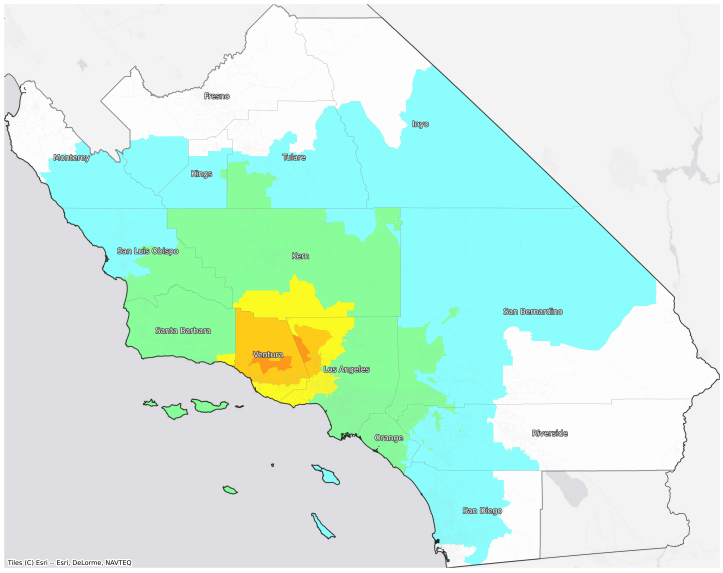
Economic Impacts by Census Tract (4.43K Tracts with Losses)

$0-7.89M | $7.89M-40.5M | $40.5M-127M | $127M-312M



Ground Shaking

Not Felt | Weak | Light | Moderate | Strong | Very Strong | Severe | Violent | Extreme



Debris

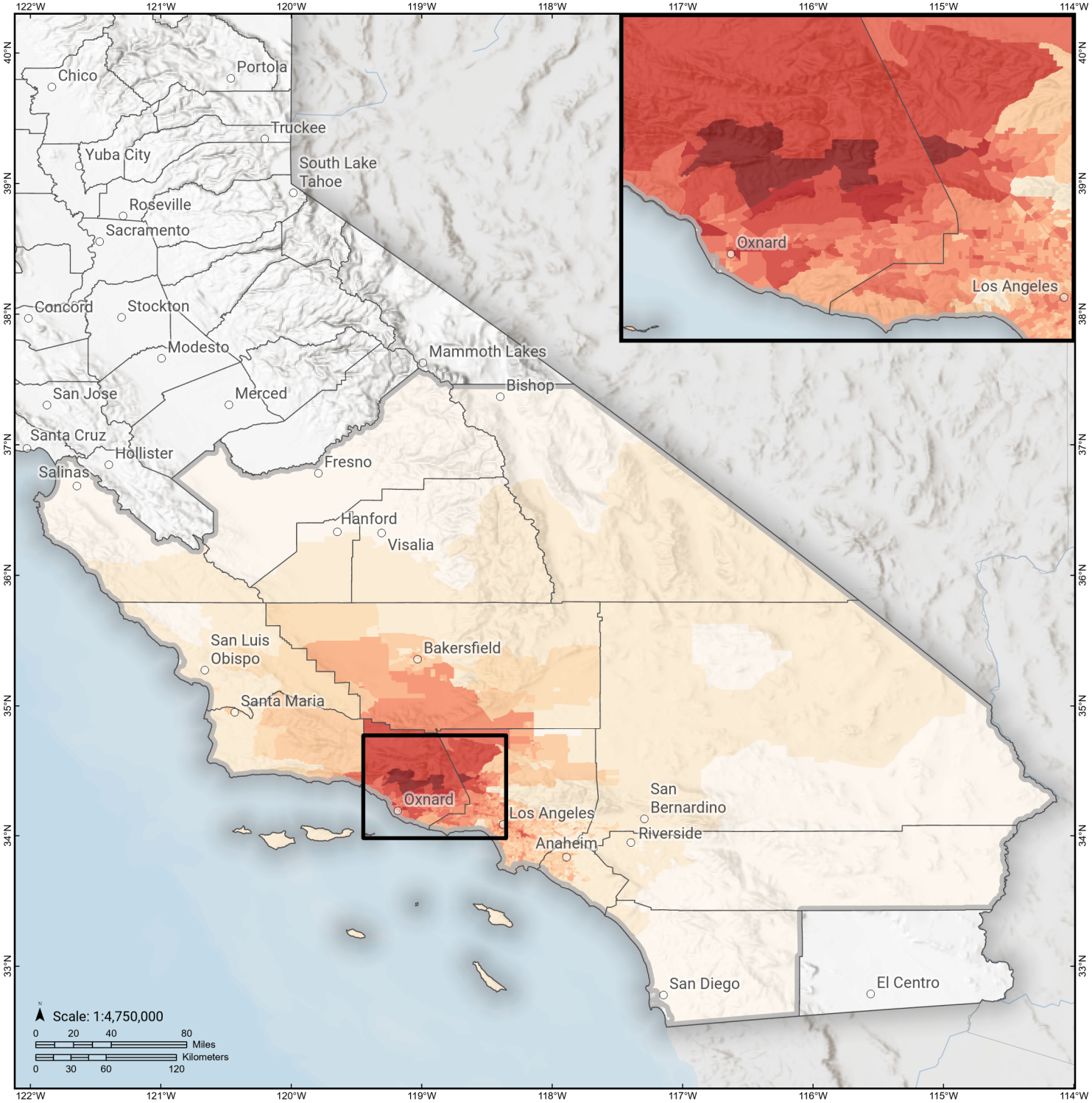
Total Tons: 827K
Total Truckloads: 33.1K

Type	Tons
Brick, Wood, and Other	419K
Concrete & Steel	408K

San Cayetano

Debris Generated by Census Tract

California Department of Conservation
California Geological Survey



Study Region: San Cayetano
Scenario: sancayetanoellbgeol_m7p16_se

Debris Generated *(in tons)*

- 0
- >0 - 5
- >5 - 10
- >10 - 50
- >50 - 150
- >150 - 500
- >500 - 2,000
- >2,000 - 5,000
- >5,000 - 10,000
- >10,000 - 86,100

San Cayetano

Displaced Households by Census Tract

Study Region: San Cayetano
Scenario: sancayetanoellbgeol_m7p16_se

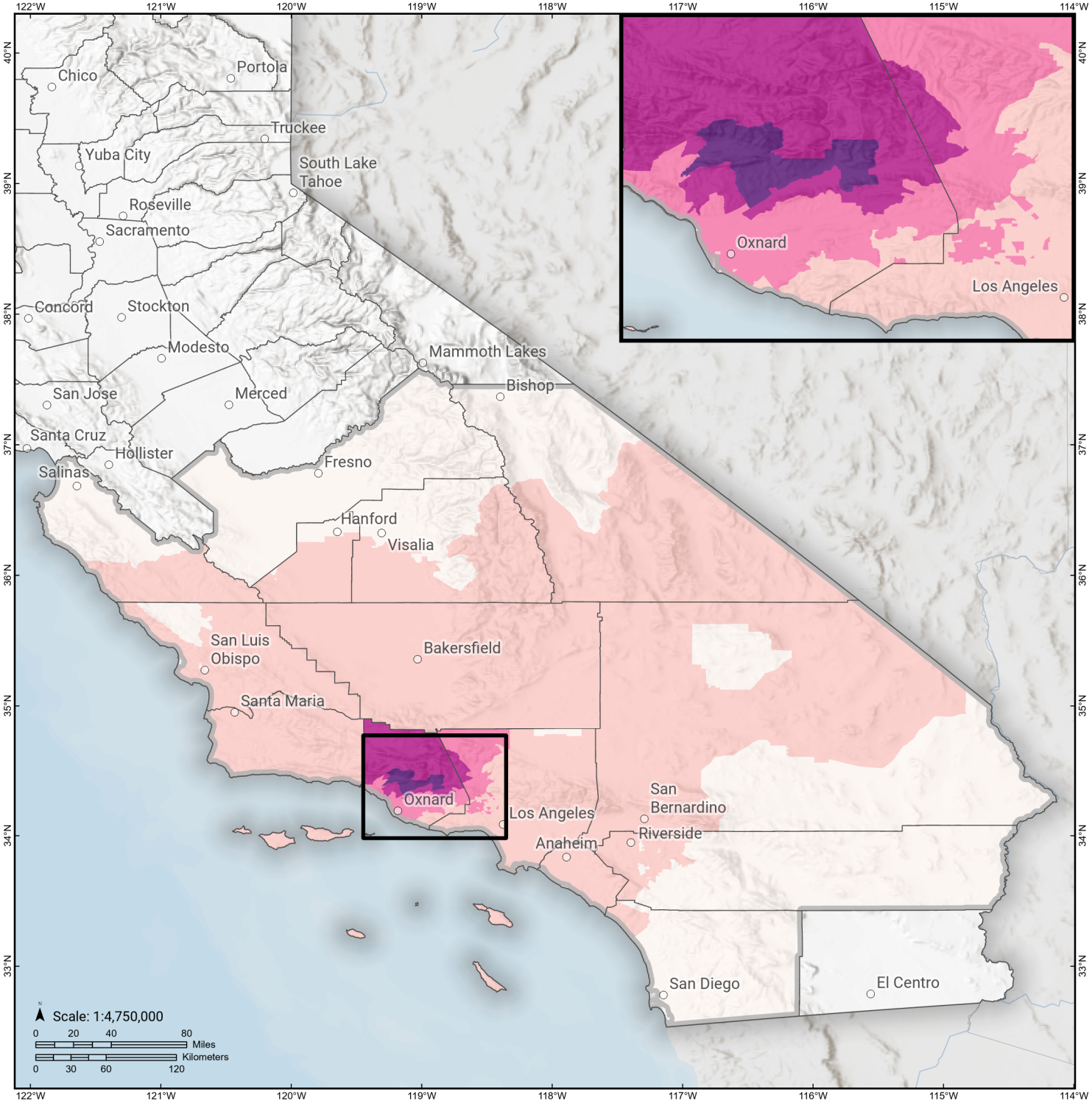
Displaced Households

- 0
- 1
- 2 - 10
- 11 - 50
- 51 - 125

San Cayetano

Loss Ratio by Census Tract

California Department of Conservation
California Geological Survey



Study Region: San Cayetano
Scenario: sancayetanoellbgeol_m7p16_se

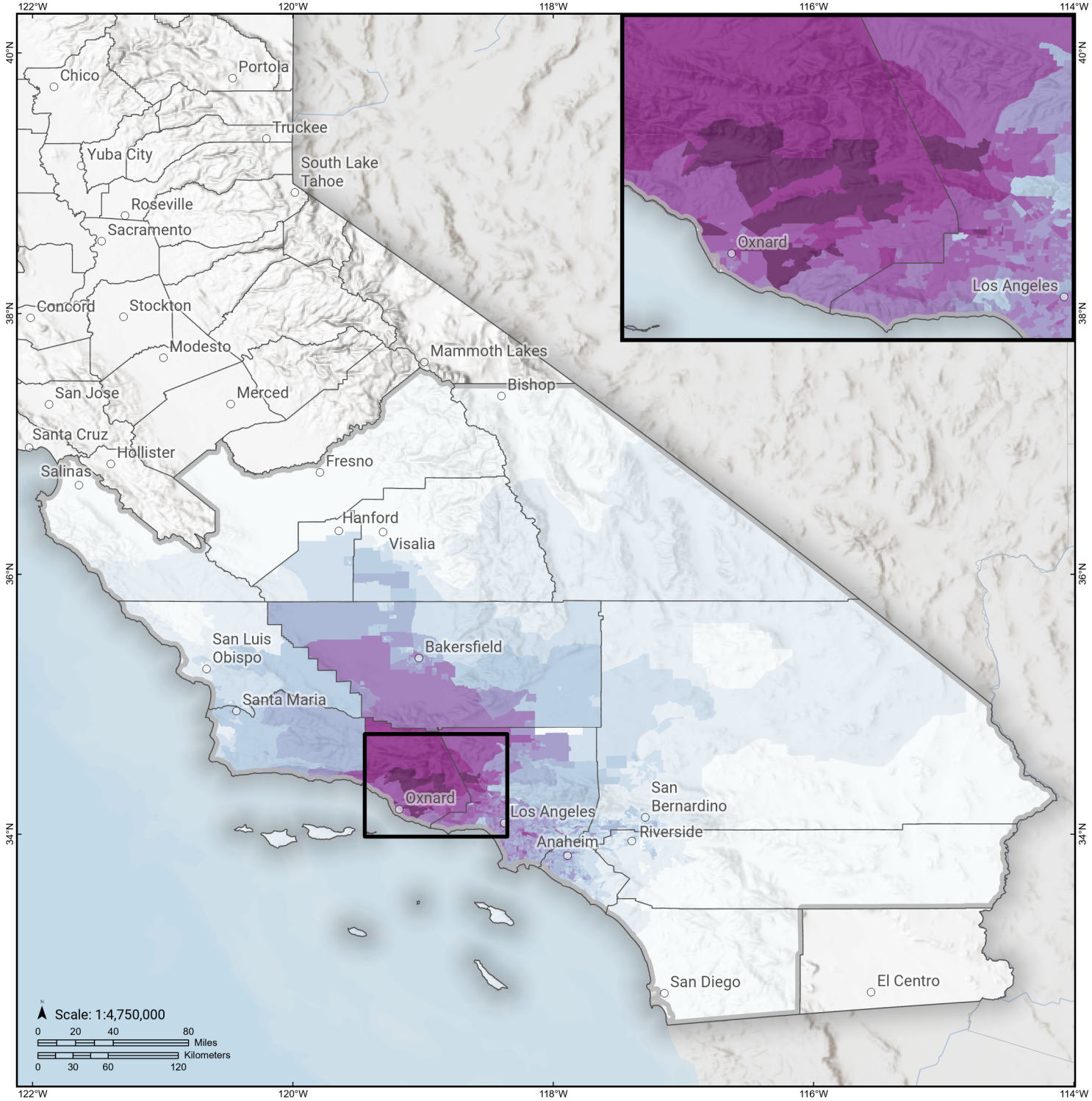
Loss Ratio *(ratio of building related economic loss to exposed value of buildings)*

- 0%
- >0 - 1%
- >1 - 5%
- >5 - 10%
- >10 - 20%

San Cayetano

Total Building Related Economic Loss by Census Tract

California Department of Conservation
California Geological Survey



Study Region: San Cayetano
Scenario: sancayetanoellbgeol_m7p16_se

Economic Loss *(in thousands of USD $)*

- 0
- >0 - 10
- >10 - 40
- >40 - 140
- >140 - 500
- >500 - 2,000
- >2,000 - 6,000
- >6,000 - 25,000
- >25,000 - 50,000
- >50,000 - 311,700

Building Damage by Count by General Occupancy

RiskMAP
Increasing Resilience Together

June 20, 2024

	# of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
California						
Fresno						
Agriculture	3,421	0	0	0	0	3,421
Commercial	21,054	0	0	0	0	21,054
Education	602	0	0	0	0	602
Government	291	0	0	0	0	291
Industrial	5,348	0	0	0	0	5,348
Religion	1,507	0	0	0	0	1,507
Other Residential	40,973	0	0	0	0	40,973
Single Family	226,425	0	0	0	0	226,425
Inyo						
Agriculture	32	0	0	0	0	32
Commercial	721	0	0	0	0	721
Education	41	0	0	0	0	41
Government	101	0	0	0	0	101
Industrial	257	0	0	0	0	257
Religion	57	0	0	0	0	57
Other Residential	4,050	0	0	0	0	4,050
Single Family	4,446	0	0	0	0	4,446
Kern						

		# of Buildings					
		None	Slight	Moderate	Extensive	Complete	Total
	Agriculture	*4,580*	*59*	*6*	*0*	*0*	*4,645*
	Commercial	*15,402*	*152*	*13*	*0*	*0*	*15,567*
	Education	*461*	*1*	*0*	*0*	*0*	*462*
	Government	*440*	*3*	*0*	*0*	*0*	*443*
	Industrial	*5,975*	*67*	*5*	*0*	*0*	*6,047*
	Religion	*1,503*	*19*	*2*	*0*	*0*	*1,524*
	Other Residential	*53,466*	*952*	*101*	*0*	*0*	*54,520*
	Single Family	*204,058*	*1,078*	*3*	*0*	*0*	*205,139*
Kings							
	Agriculture	*306*	*0*	*0*	*0*	*0*	*306*
	Commercial	*2,318*	*0*	*0*	*0*	*0*	*2,318*
	Education	*103*	*0*	*0*	*0*	*0*	*103*
	Government	*72*	*0*	*0*	*0*	*0*	*72*
	Industrial	*555*	*0*	*0*	*0*	*0*	*555*
	Religion	*210*	*0*	*0*	*0*	*0*	*210*
	Other Residential	*4,342*	*0*	*0*	*0*	*0*	*4,342*
	Single Family	*36,245*	*0*	*0*	*0*	*0*	*36,245*
Los Angeles							
	Agriculture	*1,902*	*109*	*20*	*1*	*0*	*2,032*
	Commercial	*180,014*	*9,480*	*1,336*	*31*	*1*	*190,861*
	Education	*5,367*	*106*	*13*	*0*	*0*	*5,486*
	Government	*2,888*	*127*	*16*	*0*	*0*	*3,031*
	Industrial	*50,429*	*2,304*	*382*	*11*	*0*	*53,126*
	Religion	*10,127*	*460*	*62*	*2*	*0*	*10,651*
	Other Residential	*468,518*	*11,685*	*1,370*	*93*	*4*	*481,671*

	# of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Single Family	*1,742,718*	*59,133*	*1,283*	*6*	*0*	*1,803,140*
Monterey						
Agriculture	*1,815*	*0*	*0*	*0*	*0*	*1,815*
Commercial	*9,246*	*0*	*0*	*0*	*0*	*9,246*
Education	*239*	*0*	*0*	*0*	*0*	*239*
Government	*185*	*0*	*0*	*0*	*0*	*185*
Industrial	*1,850*	*0*	*0*	*0*	*0*	*1,850*
Religion	*580*	*0*	*0*	*0*	*0*	*580*
Other Residential	*19,809*	*0*	*0*	*0*	*0*	*19,809*
Single Family	*90,876*	*0*	*0*	*0*	*0*	*90,876*
Orange						
Agriculture	*1,130*	*5*	*0*	*0*	*0*	*1,135*
Commercial	*68,067*	*259*	*13*	*0*	*0*	*68,340*
Education	*1,888*	*2*	*0*	*0*	*0*	*1,890*
Government	*646*	*4*	*0*	*0*	*0*	*650*
Industrial	*18,705*	*85*	*5*	*0*	*0*	*18,795*
Religion	*2,047*	*9*	*1*	*0*	*0*	*2,057*
Other Residential	*85,060*	*621*	*37*	*0*	*0*	*85,718*
Single Family	*705,379*	*831*	*2*	*0*	*0*	*706,212*
Riverside						
Agriculture	*1,713*	*0*	*0*	*0*	*0*	*1,713*
Commercial	*46,355*	*2*	*0*	*0*	*0*	*46,357*
Education	*990*	*0*	*0*	*0*	*0*	*990*
Government	*7,175*	*0*	*0*	*0*	*0*	*7,175*
Industrial	*6,409*	*0*	*0*	*0*	*0*	*6,409*

	# of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Religion	*1,319*	*0*	*0*	*0*	*0*	*1,319*
Other Residential	*122,789*	*10*	*0*	*0*	*0*	*122,799*
Single Family	*605,451*	*3*	*0*	*0*	*0*	*605,455*
San Bernardino						
Agriculture	*1,814*	*1*	*0*	*0*	*0*	*1,815*
Commercial	*40,028*	*13*	*1*	*0*	*0*	*40,041*
Education	*985*	*0*	*0*	*0*	*0*	*985*
Government	*1,238*	*0*	*0*	*0*	*0*	*1,238*
Industrial	*9,472*	*2*	*0*	*0*	*0*	*9,474*
Religion	*2,319*	*1*	*0*	*0*	*0*	*2,320*
Other Residential	*98,729*	*89*	*3*	*0*	*0*	*98,821*
Single Family	*525,325*	*42*	*1*	*0*	*0*	*525,367*
San Diego						
Agriculture	*2,190*	*0*	*0*	*0*	*0*	*2,190*
Commercial	*62,369*	*0*	*0*	*0*	*0*	*62,369*
Education	*1,932*	*0*	*0*	*0*	*0*	*1,932*
Government	*20,924*	*0*	*0*	*0*	*0*	*20,924*
Industrial	*14,313*	*0*	*0*	*0*	*0*	*14,313*
Religion	*3,063*	*0*	*0*	*0*	*0*	*3,063*
Other Residential	*127,559*	*0*	*0*	*0*	*0*	*127,559*
Single Family	*763,020*	*0*	*0*	*0*	*0*	*763,020*
San Luis Obispo						
Agriculture	*421*	*0*	*0*	*0*	*0*	*421*
Commercial	*9,374*	*1*	*0*	*0*	*0*	*9,375*
Education	*182*	*0*	*0*	*0*	*0*	*182*

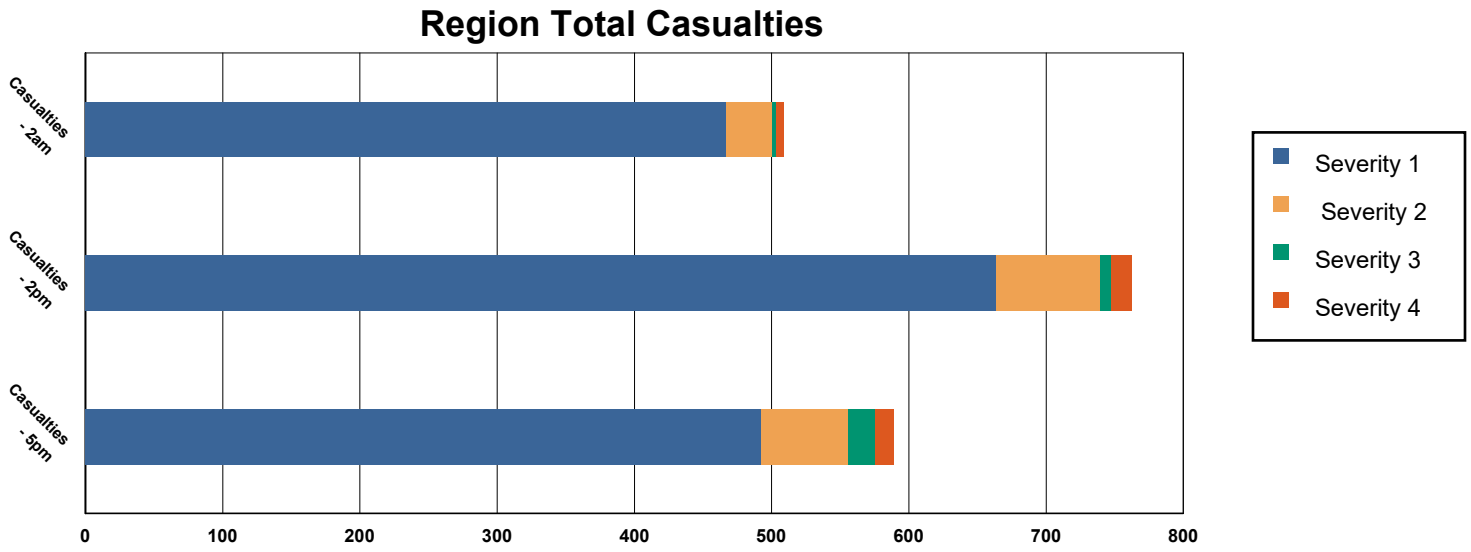
	# of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Government	*185*	*0*	*0*	*0*	*0*	*185*
Industrial	*2,556*	*0*	*0*	*0*	*0*	*2,556*
Religion	*360*	*0*	*0*	*0*	*0*	*360*
Other Residential	*20,209*	*7*	*0*	*0*	*0*	*20,216*
Single Family	*85,639*	*0*	*0*	*0*	*0*	*85,639*
Santa Barbara						
Agriculture	*456*	*8*	*1*	*0*	*0*	*464*
Commercial	*9,603*	*195*	*21*	*0*	*0*	*9,820*
Education	*297*	*2*	*0*	*0*	*0*	*299*
Government	*235*	*3*	*0*	*0*	*0*	*239*
Industrial	*2,765*	*65*	*10*	*0*	*0*	*2,840*
Religion	*610*	*10*	*1*	*0*	*0*	*621*
Other Residential	*23,331*	*684*	*95*	*1*	*0*	*24,111*
Single Family	*97,998*	*976*	*8*	*0*	*0*	*98,982*
Tulare						
Agriculture	*3,555*	*0*	*0*	*0*	*0*	*3,555*
Commercial	*8,873*	*0*	*0*	*0*	*0*	*8,873*
Education	*269*	*0*	*0*	*0*	*0*	*269*
Government	*461*	*0*	*0*	*0*	*0*	*461*
Industrial	*2,148*	*0*	*0*	*0*	*0*	*2,148*
Religion	*827*	*0*	*0*	*0*	*0*	*827*
Other Residential	*20,019*	*3*	*0*	*0*	*0*	*20,022*
Single Family	*112,034*	*0*	*0*	*0*	*0*	*112,034*
Ventura						
Agriculture	*353*	*171*	*62*	*9*	*3*	*598*

	# of Buildings					
	None	Slight	Moderate	Extensive	Complete	Total
Commercial	*9,936*	*3,657*	*1,089*	*207*	*64*	*14,953*
Education	*397*	*77*	*21*	*2*	*0*	*497*
Government	*753*	*194*	*47*	*6*	*2*	*1,001*
Industrial	*3,807*	*1,631*	*530*	*103*	*27*	*6,097*
Religion	*714*	*307*	*137*	*26*	*2*	*1,187*
Other Residential	*14,731*	*7,477*	*3,102*	*726*	*127*	*26,163*
Single Family	*147,255*	*53,124*	*3,558*	*31*	*0*	*203,968*
Total	**7,156,678**	**156,308**	**13,357**	**1,256**	**231**	**7,327,830**
Region Total	**7,156,678**	**156,308**	**13,357**	**1,256**	**231**	**7,327,830**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Casualties Summary Report

June 20, 2024



	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Fresno					
Casualties - 2am					
Hotels	0	0	0	0	0
Educational	0	0	0	0	0
Industrial	0	0	0	0	0
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Single Family	0	0	0	0	0
Commuting	0	0	0	0	0
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Industrial	0	0	0	0	0
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Fresno					
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Single Family	0	0	0	0	0
Other-Residential	0	0	0	0	0
Commercial	0	0	0	0	0
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
Inyo					
Casualties - 2am					
Single Family	0	0	0	0	0
Commercial	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Other-Residential	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Industrial	0	0	0	0	0
Hotels	0	0	0	0	0
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Single Family	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Other-Residential	0	0	0	0	0
Single Family	0	0	0	0	0
Commercial	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Commuting	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
Kern					
Casualties - 2am					
Commercial	0	0	0	0	0

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Kern					
Casualties - 2am					
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Single Family	1	0	0	0	1
Other-Residential	2	0	0	0	2
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2am	**4**	**0**	**0**	**0**	**4**
Casualties - 2pm					
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Other-Residential	1	0	0	0	1
Commercial	2	0	0	0	2
Industrial	0	0	0	0	0
Total Casualties - 2pm	**4**	**0**	**0**	**0**	**4**
Casualties - 5pm					
Single Family	0	0	0	0	0
Commercial	2	0	0	0	2
Other-Residential	1	0	0	0	1
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 5pm	**3**	**0**	**0**	**0**	**3**
Kings					
Casualties - 2am					
Industrial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Commercial	0	0	0	0	0
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Single Family	0	0	0	0	0
Other-Residential	0	0	0	0	0
Commercial	0	0	0	0	0
Educational	0	0	0	0	0
Commuting	0	0	0	0	0

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Kings					
Casualties - 2pm					
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Single Family	0	0	0	0	0
Commercial	0	0	0	0	0
Commuting	0	0	0	0	0
Other-Residential	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
Los Angeles					
Casualties - 2am					
Hotels	0	0	0	0	0
Industrial	2	0	0	0	3
Educational	0	0	0	0	0
Single Family	100	1	0	0	101
Commuting	0	0	0	0	0
Other-Residential	98	4	0	0	102
Commercial	2	0	0	0	2
Total Casualties - 2am	**203**	**6**	**0**	**0**	**209**
Casualties - 2pm					
Industrial	18	1	0	0	19
Other-Residential	29	1	0	0	30
Commercial	149	8	0	0	157
Commuting	0	0	0	0	0
Educational	51	2	0	0	54
Single Family	26	0	0	0	27
Hotels	0	0	0	0	0
Total Casualties - 2pm	**274**	**13**	**0**	**0**	**287**
Casualties - 5pm					
Other-Residential	36	2	0	0	37
Industrial	11	1	0	0	12
Commuting	1	2	3	1	6
Single Family	36	0	0	0	36
Commercial	100	5	0	0	106
Hotels	0	0	0	0	0
Educational	13	1	0	0	14
Total Casualties - 5pm	**198**	**10**	**3**	**1**	**212**

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Monterey					
Casualties - 2am					
Other-Residential	0	0	0	0	0
Commuting	0	0	0	0	0
Commercial	0	0	0	0	0
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Educational	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Commuting	0	0	0	0	0
Commercial	0	0	0	0	0
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Educational	0	0	0	0	0
Industrial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Industrial	0	0	0	0	0
Hotels	0	0	0	0	0
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	0	0	0	0	0
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
Orange					
Casualties - 2am					
Hotels	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Industrial	0	0	0	0	0
Other-Residential	2	0	0	0	2
Commercial	0	0	0	0	0
Single Family	2	0	0	0	2
Total Casualties - 2am	**4**	**0**	**0**	**0**	**4**
Casualties - 2pm					
Industrial	1	0	0	0	1
Other-Residential	1	0	0	0	1
Commuting	0	0	0	0	0
Commercial	3	0	0	0	3

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Orange					
Casualties - 2pm					
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Educational	1	0	0	0	1
Total Casualties - 2pm	**5**	**0**	**0**	**0**	**5**
Casualties - 5pm					
Hotels	0	0	0	0	0
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	1	0	0	0	1
Commercial	2	0	0	0	2
Other-Residential	1	0	0	0	1
Industrial	0	0	0	0	0
Total Casualties - 5pm	**4**	**0**	**0**	**0**	**4**
Riverside					
Casualties - 2am					
Industrial	0	0	0	0	0
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Educational	0	0	0	0	0
Single Family	0	0	0	0	0
Commuting	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Industrial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Educational	0	0	0	0	0
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Commercial	0	0	0	0	0
Commuting	0	0	0	0	0

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Riverside					
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
San Bernardino					
Casualties - 2am					
Hotels	0	0	0	0	0
Single Family	0	0	0	0	0
Commercial	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Other-Residential	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Industrial	0	0	0	0	0
Hotels	0	0	0	0	0
Commuting	0	0	0	0	0
Other-Residential	0	0	0	0	0
Educational	0	0	0	0	0
Single Family	0	0	0	0	0
Commercial	0	0	0	0	0
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Other-Residential	0	0	0	0	0
Commercial	0	0	0	0	0
Single Family	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Commuting	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
San Diego					
Casualties - 2am					
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Single Family	0	0	0	0	0
Industrial	0	0	0	0	0
Hotels	0	0	0	0	0
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Hotels	0	0	0	0	0

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
San Diego					
Casualties - 2pm					
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Single Family	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Other-Residential	0	0	0	0	0
Commercial	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
San Luis Obispo					
Casualties - 2am					
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Industrial	0	0	0	0	0
Single Family	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Single Family	0	0	0	0	0
Educational	0	0	0	0	0
Other-Residential	0	0	0	0	0
Hotels	0	0	0	0	0
Commuting	0	0	0	0	0
Commercial	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Industrial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	0	0	0	0	0
Commercial	0	0	0	0	0

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
San Luis Obispo					
Casualties - 5pm					
Hotels	0	0	0	0	0
Educational	0	0	0	0	0
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
Santa Barbara					
Casualties - 2am					
Industrial	0	0	0	0	0
Commercial	0	0	0	0	0
Other-Residential	2	0	0	0	2
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Single Family	1	0	0	0	1
Hotels	0	0	0	0	0
Total Casualties - 2am	**3**	**0**	**0**	**0**	**3**
Casualties - 2pm					
Commercial	2	0	0	0	2
Single Family	0	0	0	0	0
Other-Residential	1	0	0	0	1
Commuting	0	0	0	0	0
Educational	1	0	0	0	1
Hotels	0	0	0	0	0
Industrial	0	0	0	0	1
Total Casualties - 2pm	**4**	**0**	**0**	**0**	**5**
Casualties - 5pm					
Other-Residential	1	0	0	0	1
Single Family	0	0	0	0	0
Commercial	1	0	0	0	1
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Industrial	0	0	0	0	0
Hotels	0	0	0	0	0
Total Casualties - 5pm	**3**	**0**	**0**	**0**	**3**
Tulare					
Casualties - 2am					
Commercial	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	0	0	0	0	0
Educational	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Other-Residential	0	0	0	0	0

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Tulare					
Total Casualties - 2am	**0**	**0**	**0**	**0**	**0**
Casualties - 2pm					
Industrial	0	0	0	0	0
Hotels	0	0	0	0	0
Commercial	0	0	0	0	0
Other-Residential	0	0	0	0	0
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	0	0	0	0	0
Total Casualties - 2pm	**0**	**0**	**0**	**0**	**0**
Casualties - 5pm					
Other-Residential	0	0	0	0	0
Commercial	0	0	0	0	0
Single Family	0	0	0	0	0
Hotels	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 5pm	**0**	**0**	**0**	**0**	**0**
Ventura					
Casualties - 2am					
Educational	0	0	0	0	0
Commuting	0	0	0	0	0
Single Family	109	3	0	0	112
Hotels	0	0	0	0	0
Industrial	4	1	0	0	5
Commercial	3	1	0	0	3
Other-Residential	137	23	3	5	168
Total Casualties - 2am	**252**	**28**	**3**	**5**	**288**
Casualties - 2pm					
Industrial	31	5	1	1	39
Educational	72	11	1	2	86
Commuting	0	0	1	0	1
Hotels	0	0	0	0	0
Other-Residential	37	6	1	1	45
Commercial	207	38	5	10	260
Single Family	29	1	0	0	30
Total Casualties - 2pm	**376**	**62**	**8**	**15**	**461**
Casualties - 5pm					
Commuting	5	7	11	2	25
Other-Residential	51	9	1	2	63

	Injury Severity Level				
	Severity 1	Severity 2	Severity 3	Severity 4	Total
California					
Ventura					
Casualties - 5pm					
Commercial	163	31	4	8	206
Hotels	0	0	0	0	0
Educational	7	1	0	0	7
Single Family	39	1	0	0	40
Industrial	20	3	0	1	24
Total Casualties - 5pm	**285**	**53**	**17**	**13**	**367**
Region Total	NA	NA	NA	NA	NA

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Debris Summary Report

June 20, 2024

All values are in thousands of tons.

	Brick, Wood & Others	Concrete & Steel	Total
California			
Fresno	0	0	0
Inyo	0	0	0
Kern	4	2	6
Kings	0	0	0
Los Angeles	233	120	353
Monterey	0	0	0
Orange	4	2	6
Riverside	0	0	0
San Bernardino	1	0	1
San Diego	0	0	0
San Luis Obispo	0	0	0
Santa Barbara	4	4	8
Tulare	0	0	0
Ventura	173	281	453
Total	**419**	**408**	**827**
Region Total	**419**	**408**	**827**

	Brick, Wood & Others	Concrete & Steel	Total

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Direct Economic Losses For Buildings

June 20, 2024

All values are in thousands of dollars

	Capital Stock Losses					Income Losses				
	Cost Structural Damage	Cost Non-struct. Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	Total Loss
California										
Inyo	0	1	0	0	0.00	0	0	0	0	1
San Bernardino	296	7,364	4,175	588	0.00	32	30	33	70	12,589
Riverside	38	1,735	1,143	97	0.00	4	6	6	13	3,042
Fresno	0	0	0	0	0.00	0	0	0	0	0
Kings	2	99	66	11	0.00	0	0	0	0	177
San Luis Obispo	12	318	189	26	0.00	1	2	2	3	554
Tulare	11	432	307	105	0.00	0	1	1	1	857
Santa Barbara	7,214	71,494	38,464	6,189	0.10	1,815	1,014	1,210	1,742	129,142
Kern	6,237	65,814	36,079	6,513	0.05	937	674	794	961	118,009

Study Region : SanCayetano

Scenario : sancayetanoellbgeol_m7p16_se

	Capital Stock Losses					Income Losses				
	Cost Structural Damage	Cost Non-struct. Damage	Cost Contents Damage	Inventory Loss	Loss Ratio %	Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	Total Loss
Ventura	393,276	2,164,080	996,665	107,880	1.69	132,927	77,831	97,821	79,352	4,049,832
Monterey	0	1	0	0	0.00	0	0	0	0	2
Orange	5,480	68,841	35,298	3,895	0.01	668	940	1,043	1,436	117,603
San Diego	0	0	0	0	0.00	0	0	0	0	0
Los Angeles	352,149	2,699,576	1,373,309	122,724	0.20	90,361	66,323	80,199	88,355	4,872,994
Total	**764,715**	**5,079,754**	**2,485,693**	**248,028**	**0.15**	**226,746**	**146,820**	**181,110**	**171,936**	**9,304,802**
Region Total	**764,715**	**5,079,754**	**2,485,693**	**248,028**	**0.15**	**226,746**	**146,820**	**181,110**	**171,936**	**9,304,802**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Direct Economic Loss For Transportation

June 20, 2024

All values are in thousands of dollars

	Highway	Railway	Light Rail	Bus Facility	Ports	Ferries	Airport	Total
California								
Fresno								
Segments	0	0	0					0
Bridges	0	0	0					0
Tunnels	0	0	0					0
Facilities		0	0	0	0	0	6	6
Total	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**6**
Inyo								
Segments	0	0	0					0
Bridges	0	0	0					0
Tunnels	0	0	0					0
Facilities		0	0	0	0	0	6	6
Total	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**6**
Kern								
Segments	0	0	0					0
Bridges	447	1	0					448
Tunnels	0	0	0					0
Facilities		430	0	150	0	0	2,002	2,582

	Highway	Railway	Light Rail	Bus Facility	Ports	Ferries	Airport	Total
Total	**447**	**431**	**0**	**150**	**0**	**0**	**2,002**	**3,030**
Kings								
Segments	0	0	0					0
Bridges	0	0	0					0
Tunnels	0	0	0					0
Facilities		26	0	0	0	0	0	26
Total	**0**	**26**	**0**	**0**	**0**	**0**	**0**	**26**
Los Angeles								
Segments	0	0	0					0
Bridges	22,252	108	0					22,361
Tunnels	77	0	0					77
Facilities		4,701	91,750	1,431	22,557	170	114,697	235,307
Total	**22,329**	**4,809**	**91,750**	**1,431**	**22,557**	**170**	**114,697**	**257,744**
Monterey								
Segments	0	0	0					0
Bridges	0	0	0					0
Tunnels	0	0	0					0
Facilities		0	0	2	0	0	6	8
Total	**0**	**0**	**0**	**2**	**0**	**0**	**6**	**8**
Orange								
Segments	0	0	0					0
Bridges	101	0	0					101
Tunnels	0	0	0					0
Facilities		205	0	0	587	51	4,217	5,061

	Highway	Railway	Light Rail	Bus Facility	Ports	Ferries	Airport	Total
Total	**101**	**205**	**0**	**0**	**587**	**51**	**4,217**	**5,162**
Riverside								
Segments	0	0	0					0
Bridges	1	0	0					1
Tunnels	0	0	0					0
Facilities		103	0	51	0	0	394	547
Total	**1**	**103**	**0**	**51**	**0**	**0**	**394**	**549**
San Bernardino								
Segments	0	0	0					0
Bridges	4	0	0					4
Tunnels	0	0	0					0
Facilities		464	0	62	0	0	2,609	3,135
Total	**4**	**464**	**0**	**62**	**0**	**0**	**2,609**	**3,139**
San Diego								
Segments	0	0	0					0
Bridges	2	0	0					2
Tunnels	0	0	0					0
Facilities		9	757	0	53	0	120	939
Total	**2**	**9**	**757**	**0**	**53**	**0**	**120**	**941**
San Luis Obispo								
Segments	0	0	0					0
Bridges	1	0	0					1
Tunnels	0	0	0					0
Facilities		31	0	23	196	0	315	565

	Highway	Railway	Light Rail	Bus Facility	Ports	Ferries	Airport	Total
Total	**1**	**31**	**0**	**23**	**196**	**0**	**315**	**567**
Santa Barbara								
Segments	0	0	0					0
Bridges	104	5	0					109
Tunnels	0	0	0					0
Facilities		471	0	82	1,299	80	1,879	3,811
Total	**104**	**476**	**0**	**82**	**1,299**	**80**	**1,879**	**3,921**
Tulare								
Segments	0	0	0					0
Bridges	1	0	0					1
Tunnels	0	0	0					0
Facilities		0	0	23	0	0	102	125
Total	**1**	**0**	**0**	**23**	**0**	**0**	**102**	**126**
Ventura								
Segments	0	0	0					0
Bridges	28,623	1,780	0					30,403
Tunnels	111	0	0					111
Facilities		2,079	0	239	7,914	202	6,957	17,390
Total	**28,733**	**3,859**	**0**	**239**	**7,914**	**202**	**6,957**	**47,904**
Total	**51,725**	**10,413**	**92,507**	**2,064**	**32,607**	**503**	**133,308**	**323,127**
Region Total	**51,725**	**10,413**	**92,507**	**2,064**	**32,607**	**503**	**133,308**	**323,127**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Direct Economic Loss For Utilities

June 20, 2024

All values are in thousands of dollars

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
California							
Fresno							
Facilities	0	0	0	0	17	0	17
Pipelines	27	14	0	0			41
Total	27	14	0	0	17	0	58
Inyo							
Facilities	0	0	0	0	64	0	64
Pipelines	22	11	0	0			33
Total	22	11	0	0	64	0	96
Kern							
Facilities	1,393	4,573	7	1,751	844,763	53	852,540
Pipelines	929	467	0	0			1,396
Total	2,323	5,040	7	1,751	844,763	53	853,936
Kings							
Facilities	0	0	0	4	1,511	0	1,515

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
Pipelines	55	28	0	0			83
Total	55	28	0	4	1,511	0	1,598
Los Angeles							
Facilities	20,461	79,623	47	22,918	7,345,012	146	7,468,207
Pipelines	3,683	1,850	0	0			5,533
Total	24,144	81,473	47	22,918	7,345,012	146	7,473,739
Monterey							
Facilities	0	0	0	0	8	0	8
Pipelines	23	11	0	0			34
Total	23	11	0	0	8	0	43
Orange							
Facilities	84	1,107	0	62	8,284	2	9,539
Pipelines	193	97	0	0			290
Total	277	1,204	0	62	8,284	2	9,829
Riverside							
Facilities	143	1,114	0	75	3,088	1	4,421
Pipelines	138	69	0	0			207
Total	281	1,183	0	75	3,088	1	4,627
San Bernardino							
Facilities	112	1,478	0	150	74,652	5	76,398
Pipelines	349	175	0	0			524

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
Total	461	1,653	0	150	74,652	5	76,921
San Diego							
Facilities	1	26	0	3	914	0	943
Pipelines	51	25	0	0			76
Total	51	51	0	3	914	0	1,019
San Luis Obispo							
Facilities	0	502	0	0	16,499	1	17,002
Pipelines	124	62	0	0			186
Total	124	564	0	0	16,499	1	17,187
Santa Barbara							
Facilities	0	17,941	0	1,553	10,005	38	29,536
Pipelines	192	96	0	0			288
Total	192	18,037	0	1,553	10,005	38	29,825
Tulare							
Facilities	0	0	0	0	2,751	1	2,752
Pipelines	68	34	0	0			102
Total	68	34	0	0	2,751	1	2,854
Ventura							
Facilities	12,955	197,353	15	6,888	586,872	649	804,732
Pipelines	7,265	3,649	0	0			10,915
Total	20,220	201,003	15	6,888	586,872	649	815,647

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
Total	48,267	310,306	69	33,404	8,894,438	896	9,287,380
Region Total	48,267	310,306	69	33,404	8,894,438	896	9,287,380

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

Hazus Quick Assessment Report

Estimated Economic Loss ($ Billions)

Category	Description	Range
General Building Stock	Building Damage	2.90 - 11.70
	Building Contents	0.50 - 2.00
	Business Interruption	0.40 - 1.50
Infrastructure	Lifelines Damage	
	Total	4.70 - 18.60

Preliminary Damage Assessment (PDA) Estimates

Description	Residential	Commercial	Other	Total
Affected	136,700	13,800	5,400	155,900
Minor	9,600	2,500	1,200	13,300
Major	860	240	160	1,260
Destroyed	130	70	30	230
Total	147,290	16,610	6,790	170,690

Estimated Casualties : Night Time

Severity Level	Description	# Persons
Level 1	Medical Aid	200 - 900
Level 2	Hospital Care	20 - 70
Level 3	Life-threatening	< 10
Level 4	Fatalities	< 10

Estimated Shelter Needs

Type	Households	People
Displaced Households	400 - 1,500	1,000 - 3,750
Public Shelter	170	420

Comments :

**Hazus damage estimates are presented using FEMA Preliminary Damage Assessment (PDA) categories. These estimates should be used for planning purposes and may not reflect actual observed damages from the PDA process.*

Disclaimer:

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, goetechnical, and observed ground motion data.

Earthquake Information

Location :

Origin Time:

Magnitude : 7.16

Epicenter Latitude/Longitude :

/

Depth & Type : /U

Name :
NA

Ground Motion /Attenuation :

Maximum PGA: 1.00

Information Sources:

Comments :

Population and Building Exposure

Population: 25,675,510

Building Exposure : ($ Millions)

Residential	
Commercial	867,094
Other	651,938
Total	

Counties : See Appendix

Major Metro Area :

Time of report: June 20, 2024 10:34 am

Hazus Quick Assessment Report

Estimated Economic Loss ($ Billions)

Category	Description	Range
General Building Stock	Building Damage	2.90 - 11.70
	Building Contents	0.50 - 2.00
	Business Interruption	0.40 - 1.50
Infrastructure	Lifelines Damage	
	Total	4.70 - 18.60

Preliminary Damage Assessment (PDA) Estimates

Description	Residential	Commercial	Other	Total
Affected	136,700	13,800	5,400	155,900
Minor	9,600	2,500	1,200	13,300
Major	860	240	160	1,260
Destroyed	130	70	30	230
Total	147,290	16,610	6,790	170,690

Estimated Casualties : Day Time

Severity Level	Description	# Persons
Level 1	Medical Aid	300 - 1,300
Level 2	Hospital Care	40 - 150
Level 3	Life-threatening	0 - 20
Level 4	Fatalities	10 - 30

Estimated Shelter Needs

Type	Households	People
Displaced Households	400 - 1,500	1,000 - 3,750
Public Shelter	170	420

Comments :

**Hazus damage estimates are presented using FEMA Preliminary Damage Assessment (PDA) categories. These estimates should be used for planning purposes and may not reflect actual observed damages from the PDA process.*

Disclaimer:

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, goetechnical, and observed ground motion data.

Earthquake Information

Location :

Origin Time:

Magnitude : 7.16

Epicenter Latitude/Longitude :

/

Depth & Type : /U

Name :
NA

Ground Motion /Attenuation :

Maximum PGA: 1.00

Information Sources:

Comments :

Population and Building Exposure

Population: 25,675,510

Building Exposure : ($ Millions)

Residential	
Commercial	867,094
Other	651,938
Total	

Counties : See Appendix

Major Metro Area :

Time of report: June 20, 2024 10:35 am

Hazus Quick Assessment Report

Estimated Economic Loss ($ Billions)

Category	Description	Range
General Building Stock	Building Damage	2.90 - 11.70
	Building Contents	0.50 - 2.00
	Business Interruption	0.40 - 1.50
Infrastructure	Lifelines Damage	
	Total	4.70 - 18.60

Preliminary Damage Assessment (PDA) Estimates

Description	Residential	Commercial	Other	Total
Affected	136,700	13,800	5,400	155,900
Minor	9,600	2,500	1,200	13,300
Major	860	240	160	1,260
Destroyed	130	70	30	230
Total	147,290	16,610	6,790	170,690

Estimated Casualties : Commute Time

Severity Level	Description	# Persons
Level 1	Medical Aid	200 - 1,000
Level 2	Hospital Care	30 - 130
Level 3	Life-threatening	10 - 40
Level 4	Fatalities	10 - 30

Estimated Shelter Needs

Type	Households	People
Displaced Households	400 - 1,500	1,000 - 3,750
Public Shelter	170	420

Comments :

**Hazus damage estimates are presented using FEMA Preliminary Damage Assessment (PDA) categories. These estimates should be used for planning purposes and may not reflect actual observed damages from the PDA process.*

Disclaimer:

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, goetechnical, and observed ground motion data.

Earthquake Information

Location :

Origin Time:

Magnitude : 7.16

Epicenter Latitude/Longitude :

/

Depth & Type : /U

Name :
NA

Ground Motion /Attenuation :

Maximum PGA: 1.00

Information Sources:

Comments :

Population and Building Exposure

Population: 25,675,510

Building Exposure : ($ Millions)

Residential	
Commercial	867,094
Other	651,938
Total	

Counties : See Appendix

Major Metro Area :

Time of report: June 20, 2024 10:35 am

HAZUS™

FEMA

RiskMAP
Increasing Resilience Together

Shelter Summary Report

June 20, 2024

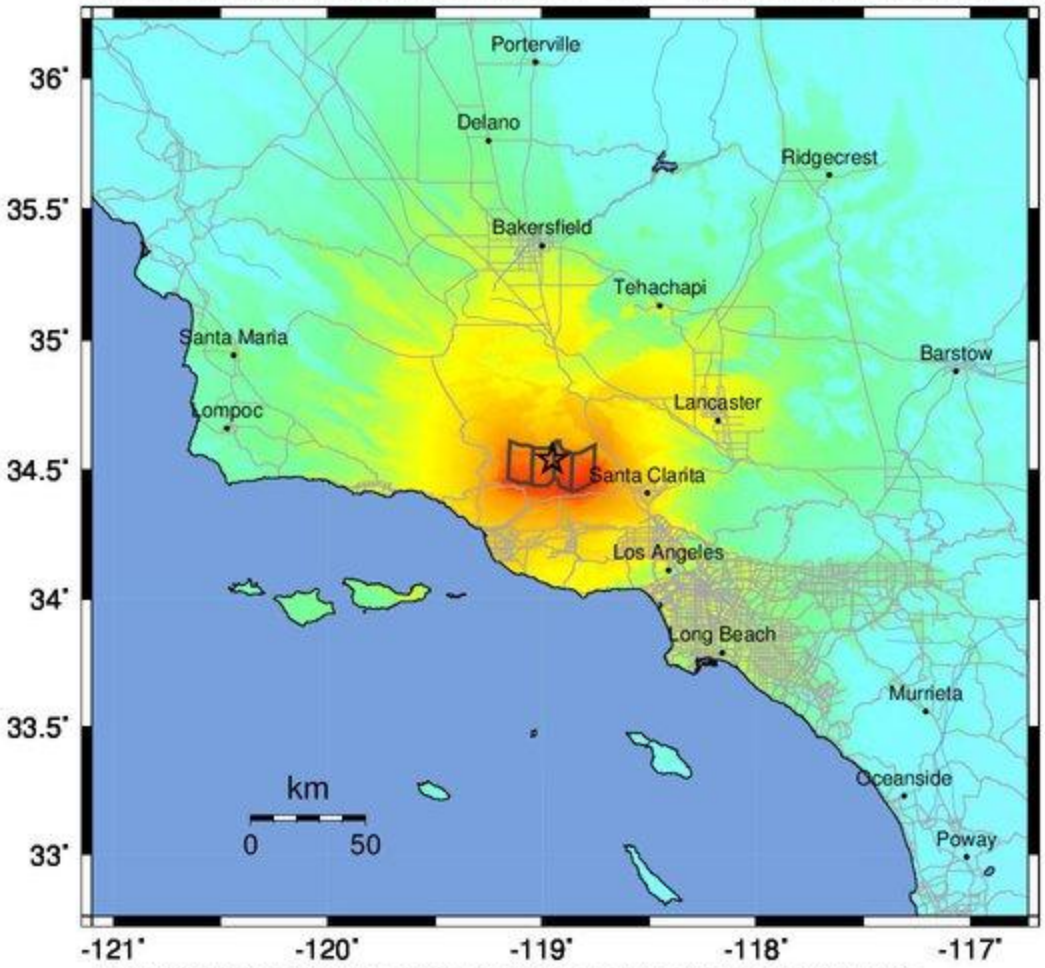
	# of Displaced Households	# of People Needing Short Term Shelter
California		
Fresno	0	0
Inyo	0	0
Kern	0	0
Kings	0	0
Los Angeles	62	32
Monterey	0	0
Orange	0	0
Riverside	0	0
San Bernardino	0	0
San Diego	0	0
San Luis Obispo	0	0
Santa Barbara	1	0
Tulare	0	0
Ventura	670	388
Total	**733**	**420**
Region Total	**733**	**420**

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/states were selected at the time of study region creation.

-- Earthquake Planning Scenario --

ShakeMap for San Cayetano - Median ground motions Scenario

Scenario Date: May 16, 2017 08:31:51 AM MDT M 7.2 N34.54 W118.95 Depth: 10.2km



PLANNING SCENARIO ONLY -- Map Version 10 Processed 2017-05-17 02:10:19 AM MDT

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	*<0.02*	*0.1*	*1.4*	*4.7*	*9.6*	*20*	*41*	*86*	*>178*
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)