
Hazus: Earthquake Global Risk Report

Region Name: PuenteHills

Earthquake Scenario: puentehillsellbgeol_m7p08_se

Print Date: April 15, 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 9 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 53,758.93 square miles and contains 5,401 census tracts. There are over 7,846 thousand households in the region which has a total population of 23,480,480 people. The distribution of population by Total Region and County is provided in Appendix B.

There are an estimated 6,630 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 272,266 and 178,921 (millions of dollars) , respectively.

Building and Lifeline Inventory

Building Inventory

Hazus estimates that there are 6,630 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 88% 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 326 hospitals in the region with a total bed capacity of 59,608 beds. There are 7,402 schools, 1,275 fire stations, 430 police stations and 117 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 451,187.00 (millions of dollars). This inventory includes over 10,885.18 miles of highways, 10,902 bridges, 226,889.89 miles of pipes.

Table 1: Transportation System Lifeline Inventory

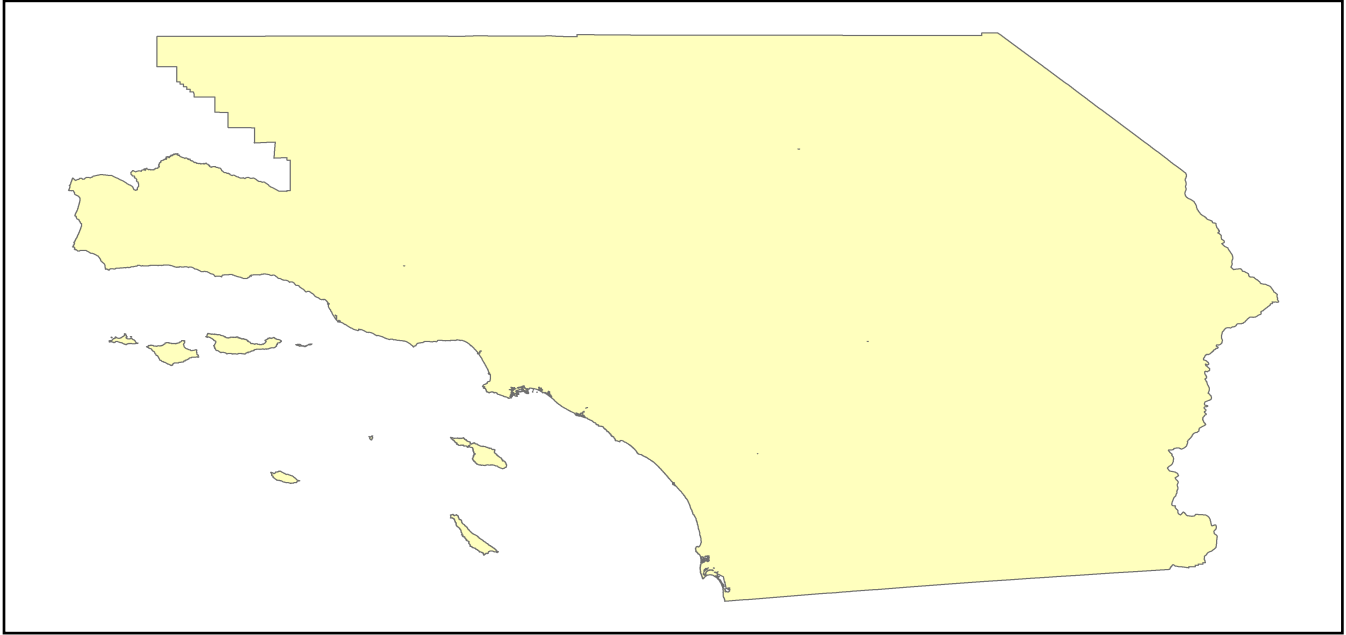
System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	10,902	65710.7145
	Segments	9,618	115510.3125
	Tunnels	62	553.5147
	Subtotal		181774.5417
Railways	Bridges	2,016	11471.0400
	Facilities	108	287.6040
	Segments	1,839	62113.0193
	Tunnels	0	0.0000
	Subtotal		73871.6633
Light Rail	Bridges	51	13.2750
	Facilities	149	3200.8000
	Segments	8	5399.1047
	Tunnels	0	0.0000
	Subtotal		8613.1797
Bus	Facilities	37	80.0981
	Subtotal		80.0981
Ferry	Facilities	22	29.2820
	Subtotal		29.2820
Port	Facilities	346	1318.8983
	Subtotal		1318.8983
Airport	Facilities	145	4691.6758
	Runways	161	1887.4908
	Subtotal		6579.1666
		Total	272,266.80

Table 2: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	4499.1310
	Facilities	51	2003.9940
	Pipelines	0	0.0000
		Subtotal	6503.1250
Waste Water	Distribution Lines	NA	2699.4786
	Facilities	125	21493.9750
	Pipelines	0	0.0000
		Subtotal	24193.4536
Natural Gas	Distribution Lines	NA	1799.6524
	Facilities	42	1475.0374
	Pipelines	322	18365.1690
		Subtotal	21639.8588
Oil Systems	Facilities	65	7.6700
	Pipelines	0	0.0000
		Subtotal	7.6700
Electrical Power	Facilities	562	126530.2471
		Subtotal	126530.2471
Communication	Facilities	401	47.3180
		Subtotal	47.3180
	Total		178,921.70

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	puentehillsellbgeol_m7p08_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	7.08
Depth (km)	NA
Rupture Length (Km)	NA
Rupture Orientation (degrees)	NA
Attenuation Function	NA

Direct Earthquake Damage

Building Damage

Hazus estimates that about 505,429 buildings will be at least moderately damaged. This is over 8.00 % of the buildings in the region. There are an estimated 20,269 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

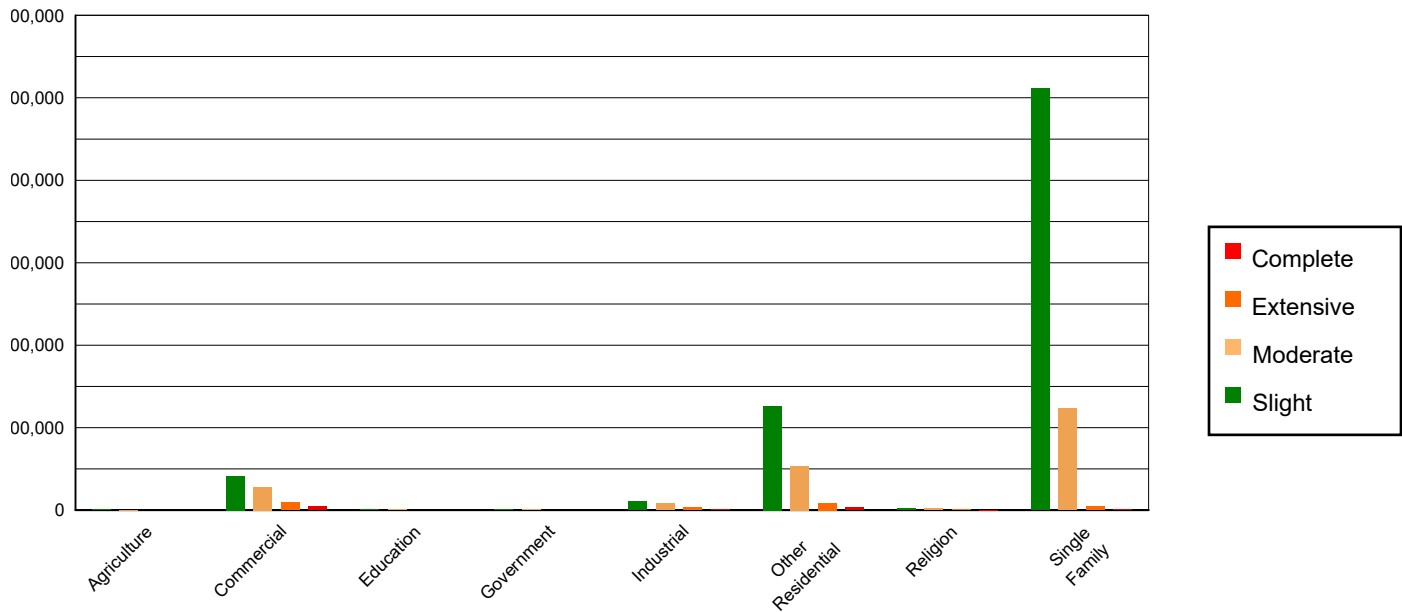


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	12652.73	0.27	1275.69	0.09	555.26	0.13	172.73	0.32	73.58	0.36
Commercial	285923.05	6.03	82888.85	5.98	56029.94	12.98	18960.05	35.52	8152.10	40.22
Education	9484.09	0.20	1899.29	0.14	957.77	0.22	202.12	0.38	96.73	0.48
Government	32211.92	0.68	1294.25	0.09	979.57	0.23	309.21	0.58	108.05	0.53
Industrial	71447.92	1.51	21123.70	1.52	16522.77	3.83	6265.24	11.74	2321.37	11.45
Other Residential	644382.87	13.60	252942.52	18.23	107014.81	24.78	17707.27	33.17	6832.53	33.71
Religion	14173.20	0.30	4083.23	0.29	3112.04	0.72	1180.68	2.21	487.86	2.41
Single Family	3667549.69	77.41	1021750.07	73.65	246606.07	57.11	8584.87	16.08	2197.29	10.84
Total	4,737,825		1,387,258		431,778		53,382		20,270	

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

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	4188441.69	88.40	1274100.58	91.84	329001.51	76.20	10655.03	19.96	852.84	4.21
Steel	70169.25	1.48	17120.97	1.23	20262.45	4.69	9424.17	17.65	4245.87	20.95
Concrete	68211.18	1.44	21670.70	1.56	17206.41	3.99	7411.40	13.88	3792.34	18.71
Precast	34439.73	0.73	9824.66	0.71	8300.90	1.92	1952.63	3.66	273.66	1.35
RM	202567.48	4.28	48604.22	3.50	37872.18	8.77	9074.25	17.00	633.35	3.12
URM	5154.32	0.11	2503.93	0.18	5223.42	1.21	8216.87	15.39	9398.41	46.37
MH	168841.83	3.56	13432.55	0.97	13911.36	3.22	6647.80	12.45	1073.05	5.29
Total	4,737,825		1,387,258		431,778		53,382		20,270	

*Note:

- RM Reinforced Masonry
- URM Unreinforced Masonry
- MH Manufactured Housing

Essential Facility Damage

Before the earthquake, the region had 59,608 hospital beds available for use. On the day of the earthquake, the model estimates that only 38,340 hospital beds (64.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 74.00% of the beds will be back in service. By 30 days, 88.00% 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	326	86	2	218
Schools	7,402	2,074	58	4,671
EOCs	117	33	0	71
PoliceStations	430	92	3	310
FireStations	1,275	211	8	970

Transportation Lifeline Damage

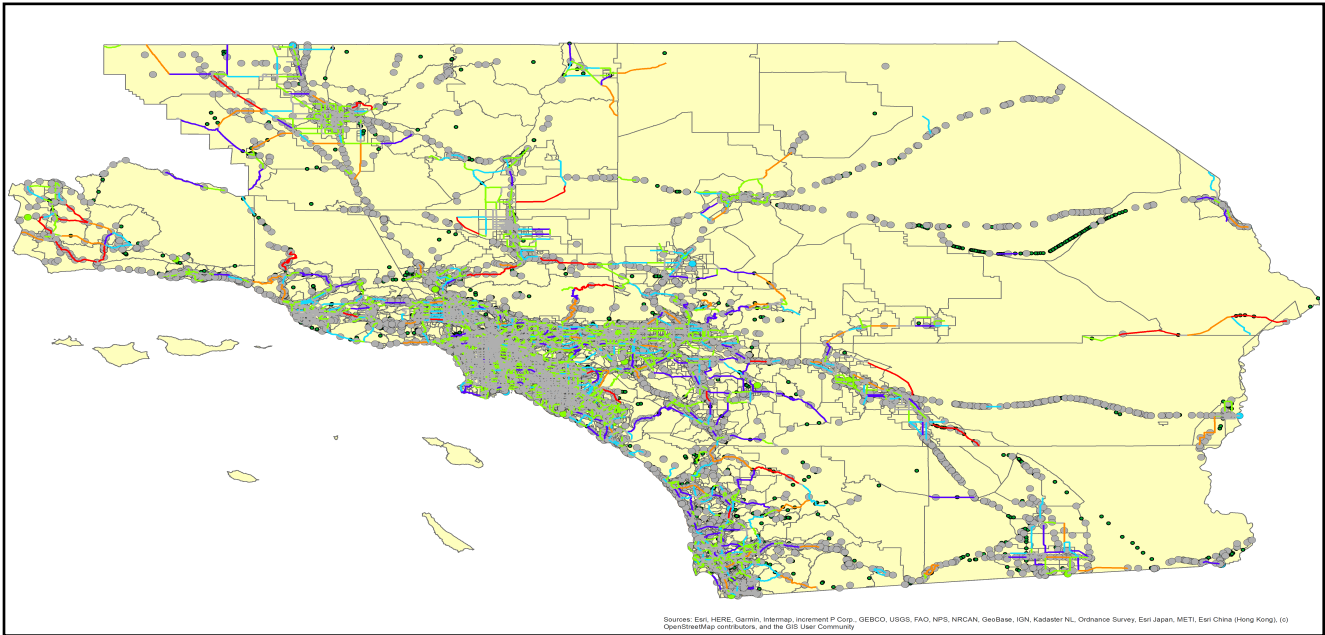


Table 6: Expected Damage to the Transportation Systems

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	9,618	0	0	9,618	9,618
	Bridges	10,902	148	7	10,756	10,823
	Tunnels	62	0	0	62	62
Railways	Segments	1,839	0	0	1,839	1,839
	Bridges	2,016	0	0	2,016	2,016
	Tunnels	0	0	0	0	0
	Facilities	108	23	0	102	108
Light Rail	Segments	8	0	0	8	8
	Bridges	51	0	0	51	51
	Tunnels	0	0	0	0	0
	Facilities	149	32	0	135	149
Bus	Facilities	37	6	0	35	37
Ferry	Facilities	22	0	0	22	22
Port	Facilities	346	0	0	346	346
Airport	Facilities	145	15	0	143	145
	Runways	161	0	0	161	161

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	7	0	44	51
Waste Water	125	7	0	102	125
Natural Gas	42	4	0	37	42
Oil Systems	65	14	0	49	60
Electrical Power	562	74	0	514	542
Communication	401	43	0	382	401

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

System	Total Pipelines Length (miles)	Number of Leaks	Number of Breaks
Potable Water	139,781	15357	3839
Waste Water	83,869	7714	1929
Natural Gas	3,240	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	7,846,232	1,065,156	1,021,497	938,390	620,957	51,891
Electric Power		1,751,746	1,231,356	588,699	77,080	2,202

Induced Earthquake Damage

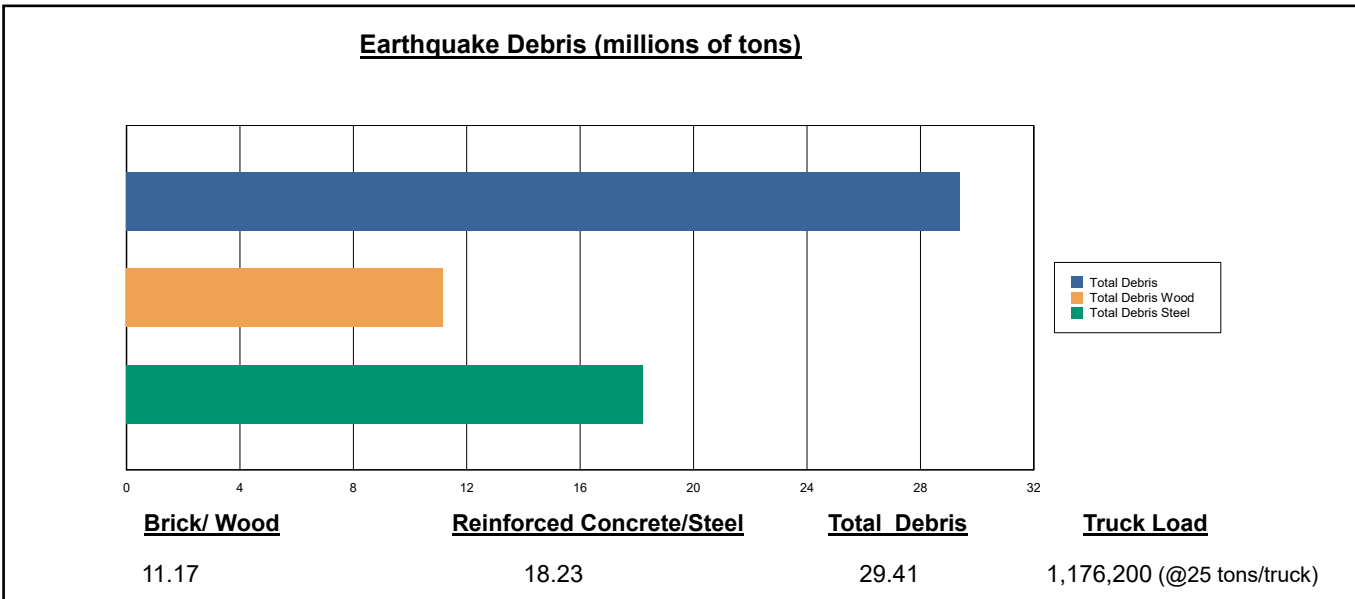
Fire Following Earthquake

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 145 ignitions that will burn about 1.98 sq. mi (0.00 % of the region's total area.) The model also estimates that the fires will displace about 25,281 people and burn about 2,857 (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.

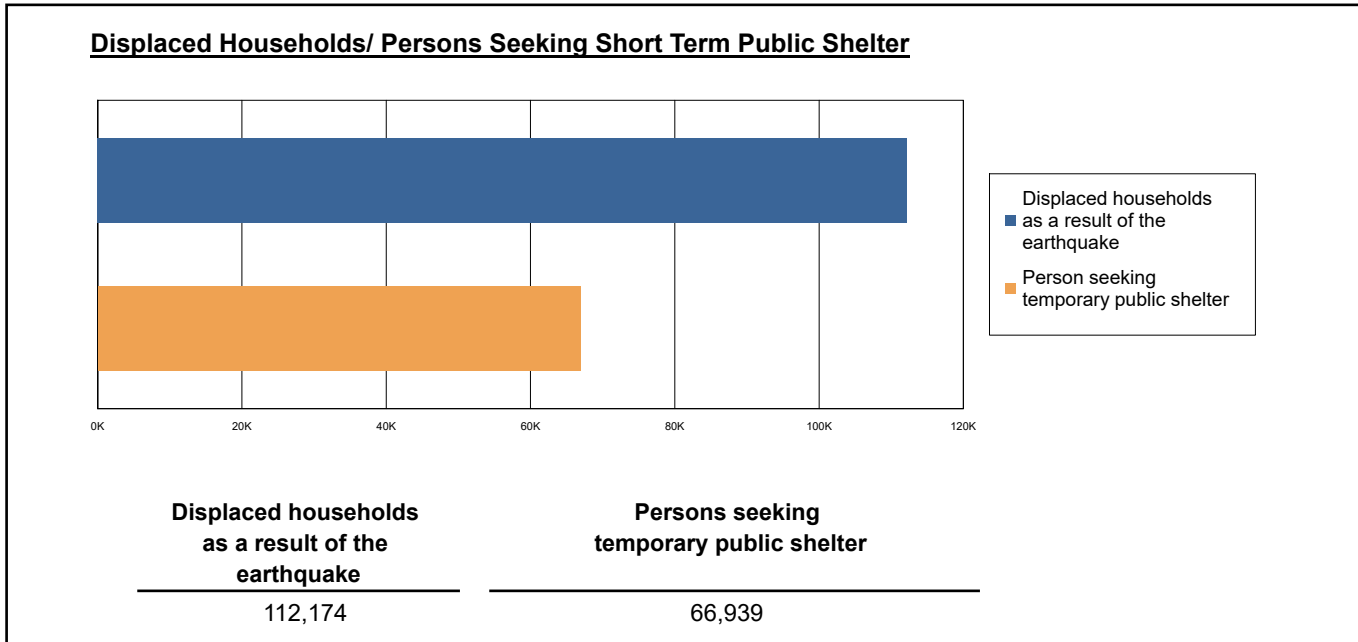
The model estimates that a total of 29,405,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 38.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 1,176,200 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



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 112,174 households to be displaced due to the earthquake. Of these, 66,939 people (out of a total population of 23,480,480) will seek temporary shelter in public shelters.



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	321.26	79.47	11.20	22.04
	Commuting	1.65	2.48	3.85	0.76
	Educational	0.00	0.00	0.00	0.00
	Hotels	12.30	2.53	0.29	0.57
	Industrial	328.73	79.15	10.78	21.12
	Other-Residential	14960.59	3588.97	500.81	986.16
	Single Family	5051.94	593.71	50.86	100.11
	Total	20,676	4,346	578	1,131
	2 PM	Commercial	21485.28	5363.57	767.10
Commuting		14.89	22.31	34.69	6.87
Educational		7006.56	1623.94	230.24	441.49
Hotels		2.37	0.49	0.06	0.11
Industrial		2429.34	588.46	81.10	156.98
Other-Residential		4931.55	1238.81	183.82	342.80
Single Family		1473.77	186.11	17.62	33.05
Total		37,344	9,024	1,315	2,475
5 PM		Commercial	15090.96	3800.25	552.99
	Commuting	292.25	438.02	681.00	134.83
	Educational	1509.71	364.51	54.02	101.92
	Hotels	3.68	0.76	0.09	0.17
	Industrial	1518.34	367.79	50.69	98.11
	Other-Residential	5911.71	1463.85	215.40	401.65
	Single Family	1915.64	237.52	22.06	41.37
	Total	26,242	6,673	1,576	1,836

Economic Loss

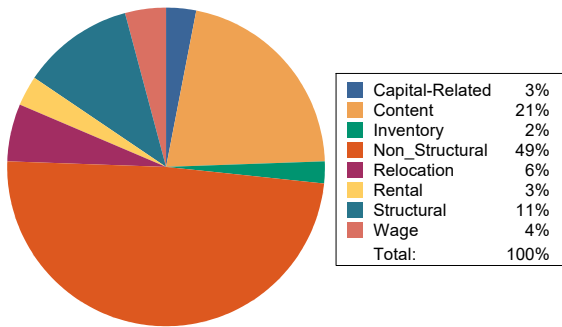
The total economic loss estimated for the earthquake is 194,250.68 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

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 180,808.12 (millions of dollars); 16 % 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 41 % 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)

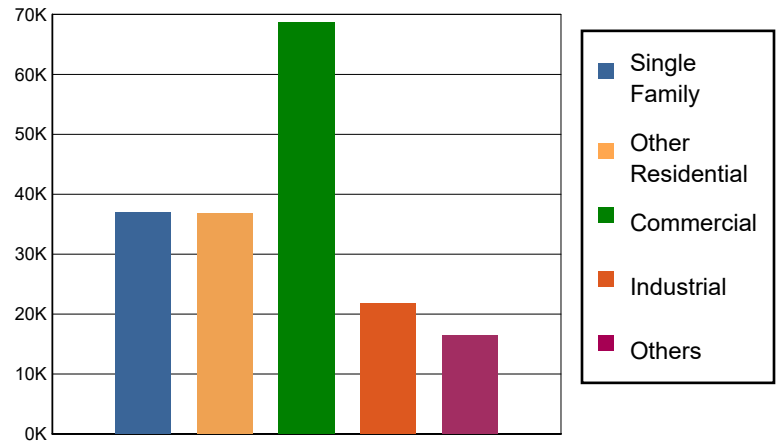


Table 11: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.0000	966.9270	5581.8205	287.1317	476.0357	7,311.9149
	Capital-Related	0.0000	411.3290	5006.9090	179.1386	149.2592	5,746.6358
	Rental	492.5402	2207.5323	2809.2073	150.6673	244.2292	5,904.1763
	Relocation	1745.4694	1424.6612	4265.3025	720.5804	2069.7494	10,225.7629
	Subtotal	2238.0096	5010.4495	17663.2393	1337.5180	2939.2735	29188.4899
Capital Stock Losses							
	Structural	4012.3439	3709.0235	8500.8972	2625.2914	1805.1262	20,652.6822
	Non_Structural	22434.7905	22439.7241	26042.8434	9850.2006	7840.6230	88,608.1816
	Content	8311.0965	5662.1511	13872.1620	6973.5876	3839.0257	38,658.0229
	Inventory	0.0000	0.0000	2626.1637	1021.0605	53.5181	3,700.7423
	Subtotal	34758.2309	31810.8987	51042.0663	20470.1401	13538.2930	151619.6290
	Total	36996.24	36821.35	68705.31	21807.66	16477.57	180808.12

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	115510.3125	0.0000	0.00
	Bridges	65710.7145	1707.8357	2.60
	Tunnels	553.5147	14.3089	2.59
	Subtotal	181774.5417	1722.1446	
Railways	Segments	62113.0193	0.0000	0.00
	Bridges	11471.0400	130.4442	1.14
	Tunnels	0.0000	0.0000	0.00
	Facilities	287.6040	49.7322	17.29
	Subtotal	73871.6633	180.1764	
Light Rail	Segments	5399.1047	0.0000	0.00
	Bridges	13.2750	0.3132	2.36
	Tunnels	0.0000	0.0000	0.00
	Facilities	3200.8000	837.6961	26.17
	Subtotal	8613.1797	838.0093	
Bus	Facilities	80.0981	11.6846	14.59
	Subtotal	80.0981	11.6846	
Ferry	Facilities	29.2820	1.9946	6.81
	Subtotal	29.2820	1.9946	
Port	Facilities	1318.8983	108.8097	8.25
	Subtotal	1318.8983	108.8097	
Airport	Facilities	4691.6758	644.5813	13.74
	Runways	1887.4908	0.0000	0.00
	Subtotal	6579.1666	644.5813	
	Total	272,266.83	3,507.40	

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	117.9661	5.89
	Distribution Lines	4499.1310	69.1085	1.54
	Subtotal	6503.1250	187.0746	
Waste Water	Pipelines	0.0000	0.0000	0.00
	Facilities	21493.9750	751.2729	3.50
	Distribution Lines	2699.4786	34.7150	1.29
	Subtotal	24193.4536	785.9879	
Natural Gas	Pipelines	18365.1690	0.0000	0.00
	Facilities	1475.0374	28.8032	1.95
	Distribution Lines	1799.6524	11.8931	0.66
	Subtotal	21639.8588	40.6963	
Oil Systems	Pipelines	0.0000	0.0000	0.00
	Facilities	7.6700	0.7896	10.29
	Subtotal	7.6700	0.7896	
Electrical Power	Facilities	126530.2471	8916.6220	7.05
	Subtotal	126530.2471	8916.6220	
Communication	Facilities	47.3180	4.0102	8.47
	Subtotal	47.3180	4.0102	
	Total	178,921.67	9,935.18	

Appendix A: County Listing for the Region

Imperial,CA

Kern,CA

Los Angeles,CA

Orange,CA

Riverside,CA

San Bernardino,CA

San Diego,CA

Santa Barbara,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	Imperial	179,702	20,945	12,603	33,548
	Kern	909,235	87,567	59,168	146,736
	Los Angeles	10,014,009	950,697	566,995	1,517,692
	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
	Santa Barbara	448,229	49,971	28,481	78,452
	Ventura	843,843	99,299	52,072	151,371
Total Region		23,480,480	2,454,221	1,379,169	3,833,392

Building Inspection Tagging (Counts)

Total Economic Loss
Total:

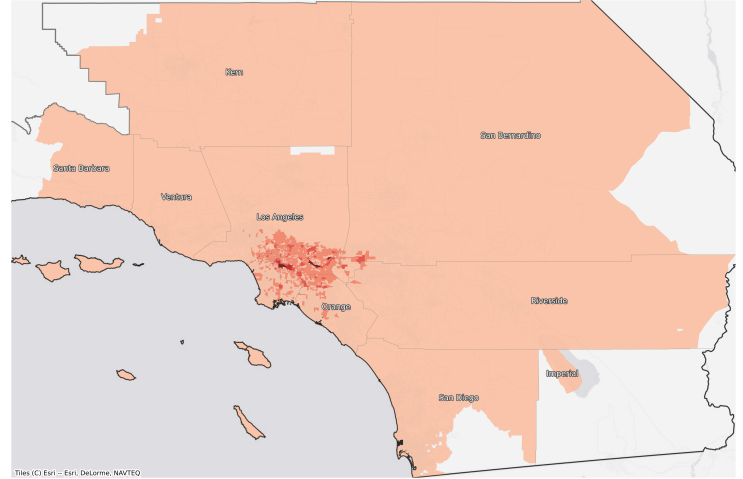
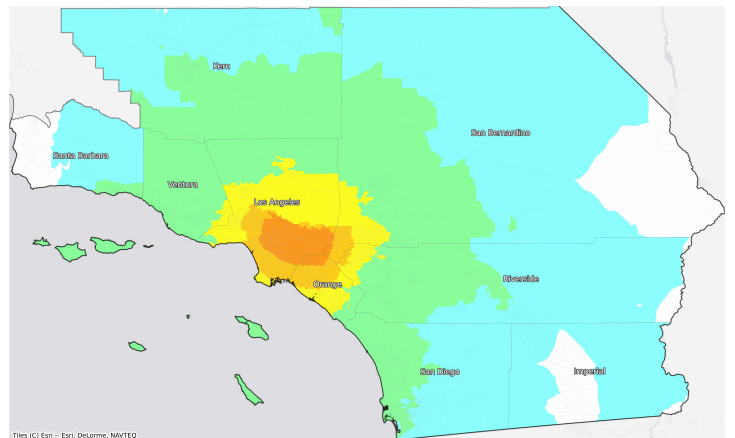
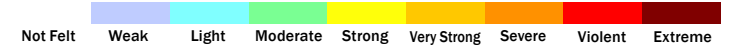
Top Counties	State	Total

Injuries & Fatalities
**Total Day:
Total Night:**

Top Counties	State	Injuries (day/night)	Fatalities (day/night)

Displaced Households & Short-Term Shelter Needs
**Total Displaced:
Total Needing Shelter:**

Top Counties	State	Displaced	Needing Shelter

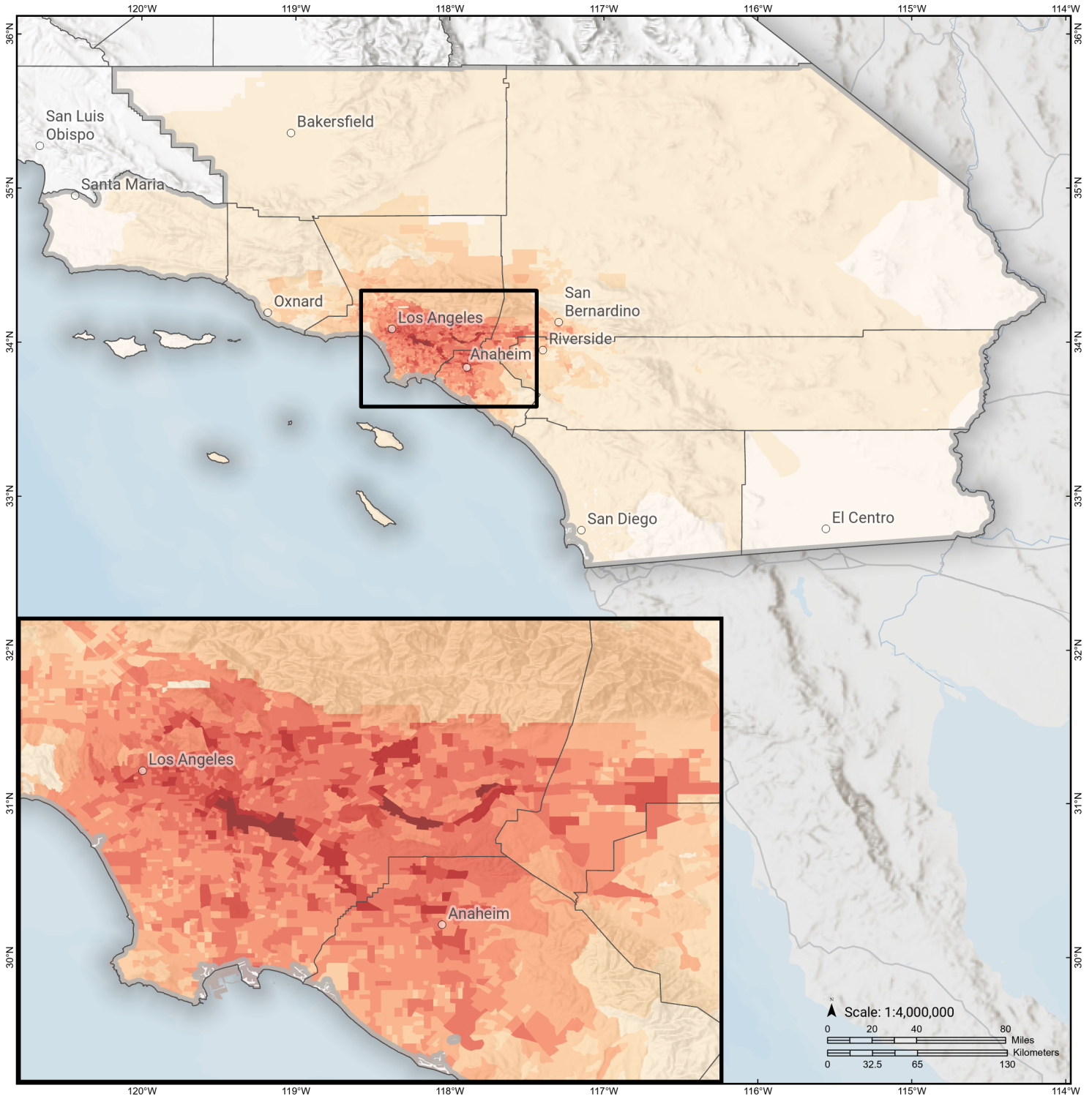
Economic Impacts by Census Tract

Ground Shaking

Debris
**Total Tons:
Total Truckloads:**

Type	Tons

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.

Puente Hills

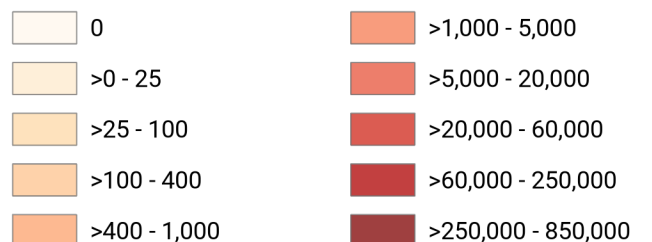
Debris Generated by Census Tract



Study Region: Puente Hills
Scenario: puentehillsellbgeol_m7p08_se

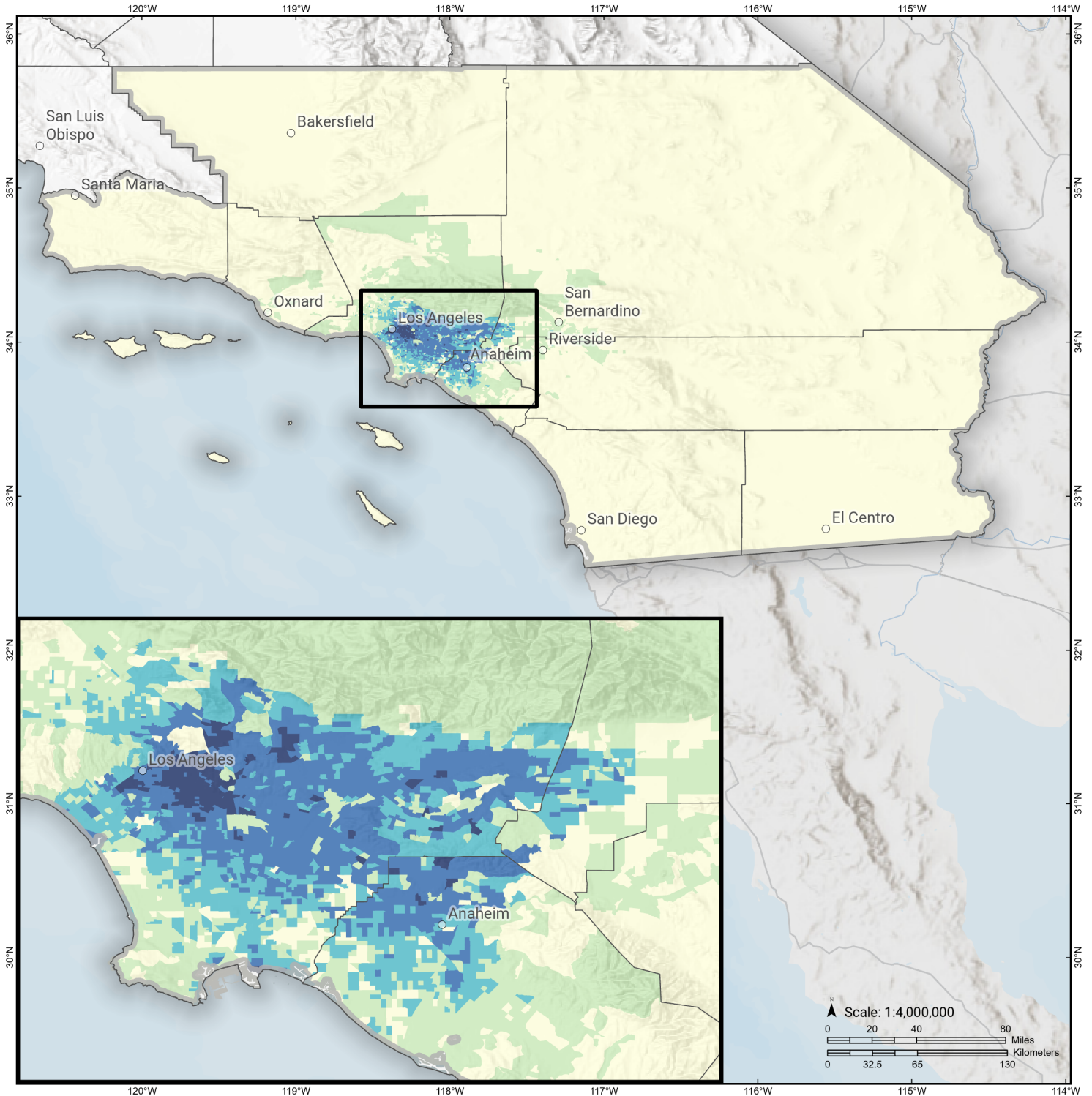


Debris Generated (in tons)



Puente Hills

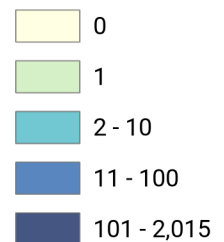
Displaced Households by Census Tract



Study Region: Puente Hills
Scenario: puentehillsellbgeol_m7p08_se

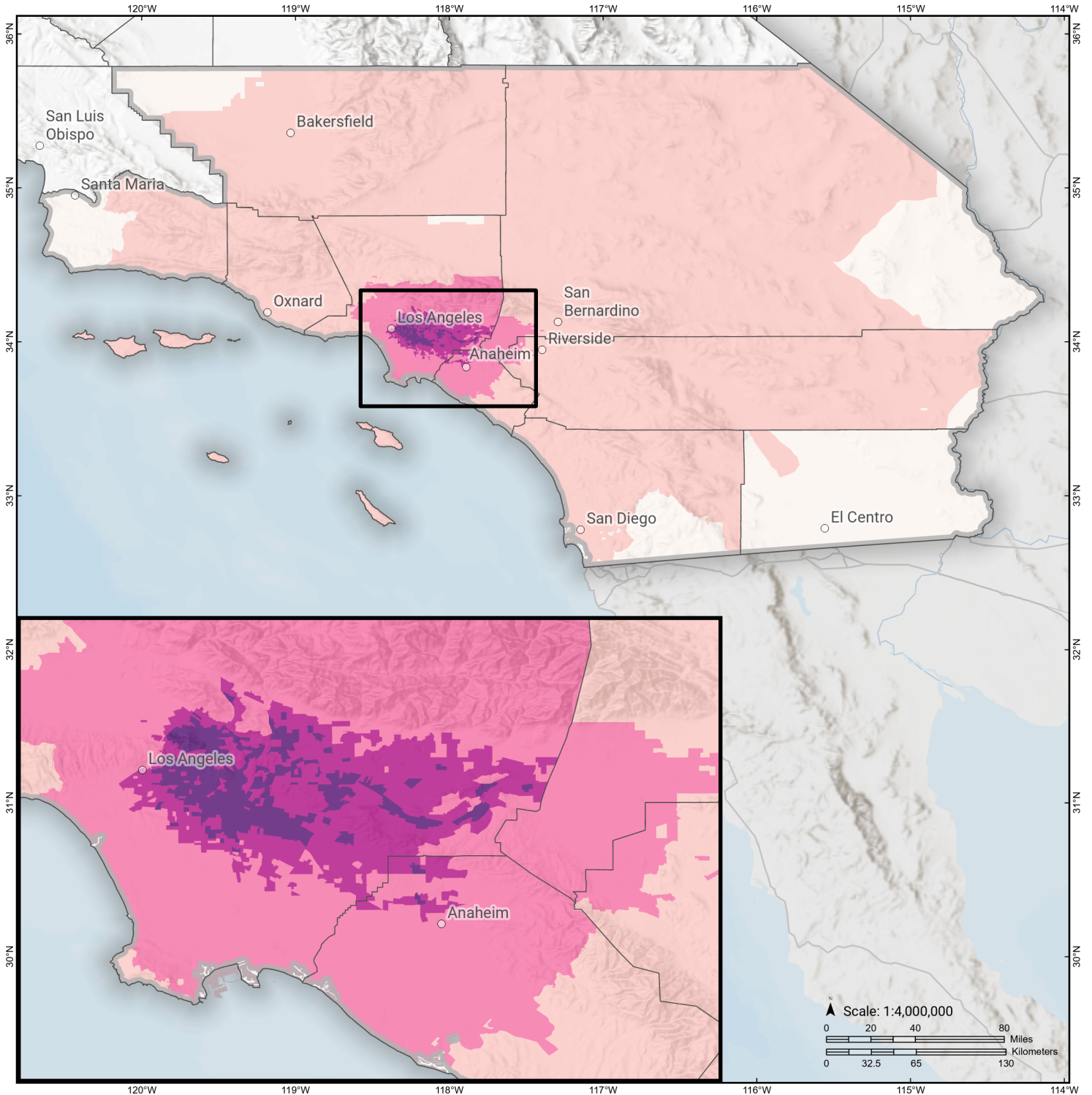


Displaced Households



Puente Hills

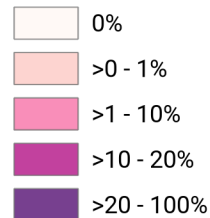
Loss Ratio by Census Tract



Study Region: Puente Hills
Scenario: puentehillsellbgeol_m7p08_se

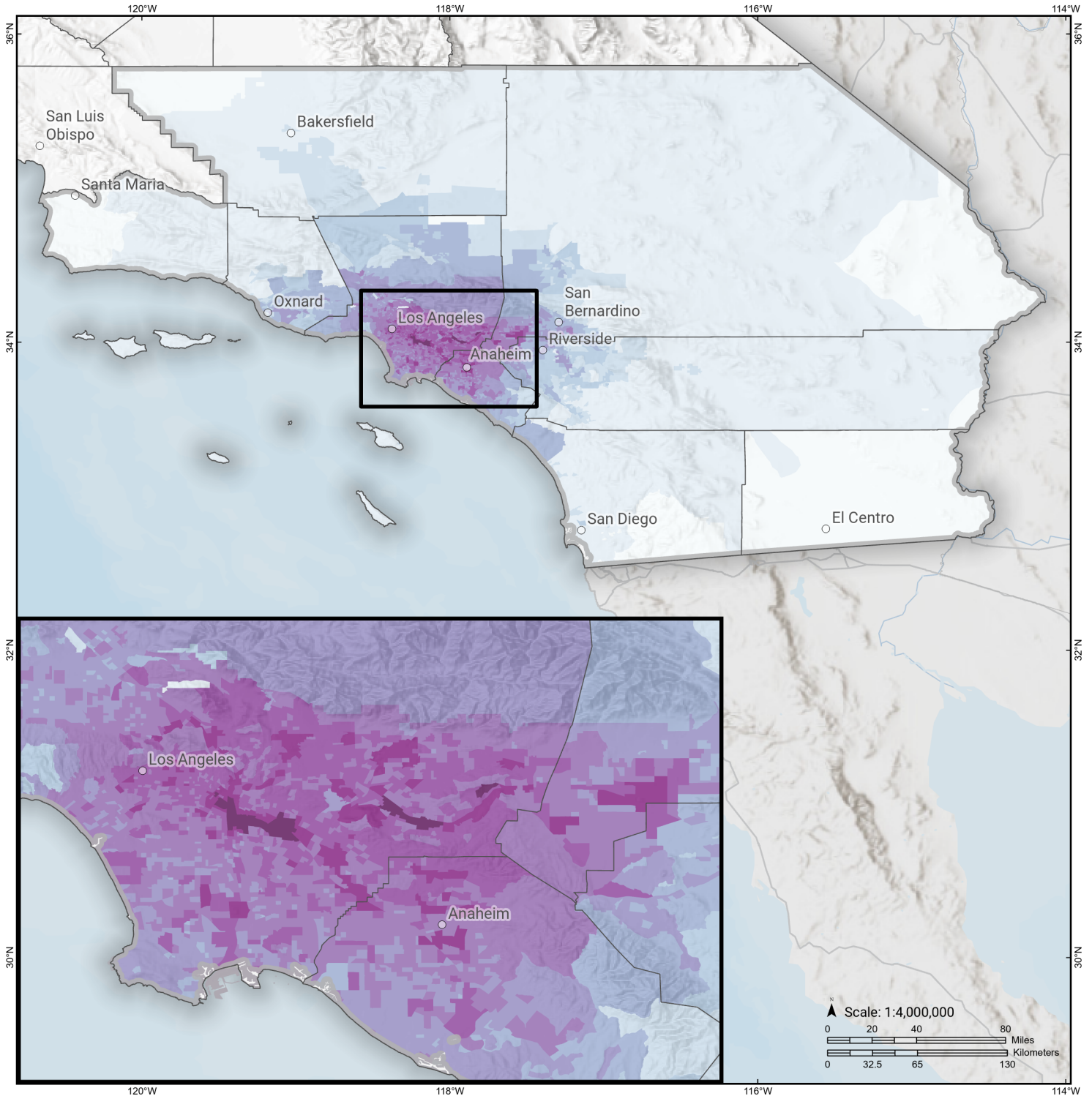


Loss Ratio (*ratio of building related economic loss to exposed value of buildings*)



Puente Hills

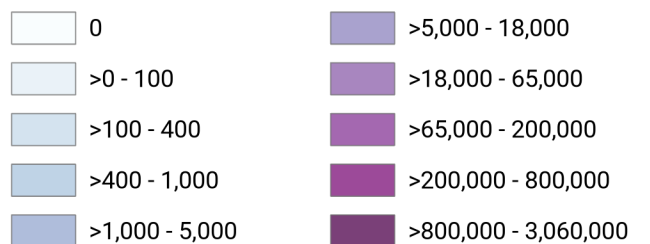
Total Building Related Economic Loss by Census Tract



Study Region: Puente Hills
Scenario: puentehillsellbgeol_m7p08_se



Economic Loss (in thousands of USD \$)



Building Damage by Count by General Occupancy

April 15, 2024

	# of Buildings					Total
	None	Slight	Moderate	Extensive	Complete	
California						
Imperial						
<i>Agriculture</i>	138	0	0	0	0	138
<i>Commercial</i>	3,646	0	0	0	0	3,646
<i>Education</i>	99	0	0	0	0	99
<i>Government</i>	202	0	0	0	0	202
<i>Industrial</i>	580	0	0	0	0	580
<i>Religion</i>	295	0	0	0	0	295
<i>Other Residential</i>	7,518	0	0	0	0	7,518
<i>Single Family</i>	35,405	0	0	0	0	35,405
Kern						
<i>Agriculture</i>	4,643	2	0	0	0	4,645
<i>Commercial</i>	15,558	8	0	0	0	15,567
<i>Education</i>	462	0	0	0	0	462
<i>Government</i>	443	0	0	0	0	443
<i>Industrial</i>	6,043	4	0	0	0	6,047
<i>Religion</i>	1,523	1	0	0	0	1,524
<i>Other Residential</i>	54,391	122	7	0	0	54,520
<i>Single Family</i>	205,109	30	0	0	0	205,139
Los Angeles						

	# of Buildings					Total
	None	Slight	Moderate	Extensive	Complete	
<i>Agriculture</i>	991	514	332	131	64	2,032
<i>Commercial</i>	62,060	57,321	46,305	17,278	7,897	190,861
<i>Education</i>	2,866	1,482	853	191	94	5,486
<i>Government</i>	962	824	849	292	105	3,031
<i>Industrial</i>	18,068	13,931	13,204	5,674	2,250	53,126
<i>Religion</i>	3,108	3,198	2,756	1,113	476	10,651
<i>Other Residential</i>	157,538	212,030	91,859	13,801	6,443	481,671
<i>Single Family</i>	846,425	726,689	219,664	8,216	2,146	1,803,140
Orange						
<i>Agriculture</i>	655	292	146	33	9	1,135
<i>Commercial</i>	40,155	17,861	8,483	1,594	247	68,340
<i>Education</i>	1,467	318	92	11	2	1,890
<i>Government</i>	370	167	93	17	3	650
<i>Industrial</i>	10,060	5,153	2,943	570	70	18,795
<i>Religion</i>	1,137	557	290	63	11	2,057
<i>Other Residential</i>	47,232	23,613	11,181	3,324	367	85,718
<i>Single Family</i>	480,971	202,270	22,610	317	44	706,212
Riverside						
<i>Agriculture</i>	1,680	31	2	0	0	1,713
<i>Commercial</i>	44,632	1,583	140	2	0	46,357
<i>Education</i>	973	16	1	0	0	990
<i>Government</i>	6,990	165	20	0	0	7,175
<i>Industrial</i>	6,109	278	21	0	0	6,409
<i>Religion</i>	1,272	43	4	0	0	1,319
<i>Other Residential</i>	117,578	4,570	638	13	0	122,799

	# of Buildings					Total
	None	Slight	Moderate	Extensive	Complete	
<i>Single Family</i>	586,975	18,217	261	3	0	605,455
San Bernardino						
<i>Agriculture</i>	1,308	423	75	8	1	1,815
<i>Commercial</i>	33,045	5,820	1,082	86	8	40,041
<i>Education</i>	893	80	12	0	0	985
<i>Government</i>	1,096	124	17	1	0	1,238
<i>Industrial</i>	7,475	1,630	345	22	2	9,474
<i>Religion</i>	1,987	266	61	5	0	2,320
<i>Other Residential</i>	82,983	11,963	3,283	568	23	98,821
<i>Single Family</i>	449,523	71,725	4,063	49	7	525,367
San Diego						
<i>Agriculture</i>	2,190	0	0	0	0	2,190
<i>Commercial</i>	62,357	12	0	0	0	62,369
<i>Education</i>	1,932	0	0	0	0	1,932
<i>Government</i>	20,922	2	0	0	0	20,924
<i>Industrial</i>	14,311	2	0	0	0	14,313
<i>Religion</i>	3,062	1	0	0	0	3,063
<i>Other Residential</i>	127,497	60	2	0	0	127,559
<i>Single Family</i>	762,992	27	0	0	0	763,020
Santa Barbara						
<i>Agriculture</i>	464	0	0	0	0	464
<i>Commercial</i>	9,819	1	0	0	0	9,820
<i>Education</i>	299	0	0	0	0	299
<i>Government</i>	239	0	0	0	0	239
<i>Industrial</i>	2,840	0	0	0	0	2,840

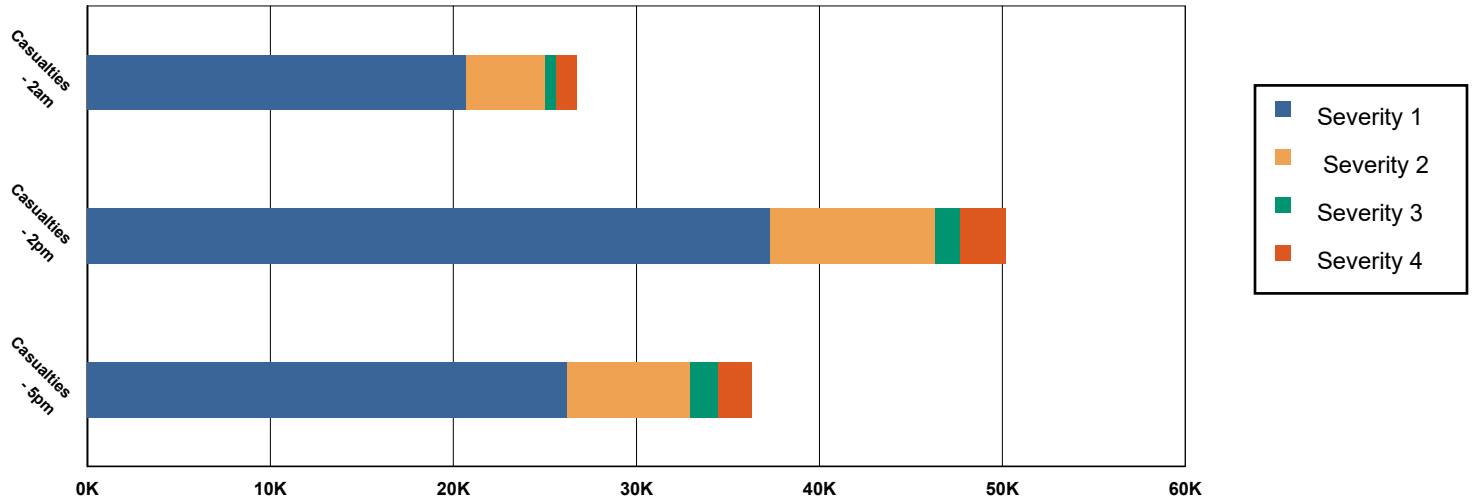
	# of Buildings					Total
	None	Slight	Moderate	Extensive	Complete	
<i>Religion</i>	621	0	0	0	0	621
<i>Other Residential</i>	24,105	6	0	0	0	24,111
<i>Single Family</i>	98,982	0	0	0	0	98,982
Ventura						
<i>Agriculture</i>	585	12	1	0	0	598
<i>Commercial</i>	14,651	283	19	0	0	14,953
<i>Education</i>	493	3	0	0	0	497
<i>Government</i>	987	13	1	0	0	1,001
<i>Industrial</i>	5,962	126	9	0	0	6,097
<i>Religion</i>	1,169	17	1	0	0	1,187
<i>Other Residential</i>	25,541	578	44	0	0	26,163
<i>Single Family</i>	201,169	2,791	8	0	0	203,968
Total	4,737,825	1,387,258	431,778	53,382	20,270	6,630,513
Region Total	4,737,825	1,387,258	431,778	53,382	20,270	6,630,513

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

April 15, 2024

Region Total Casualties



Injury Severity Level

Severity 1	Severity 2	Severity 3	Severity 4	Total
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California

Imperial

Casualties - 2am

	Severity 1	Severity 2	Severity 3	Severity 4	Total
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 - 2am	0	0	0	0	0

Casualties - 2pm

Educational	0	0	0	0	0
Industrial	0	0	0	0	0
Hotels	0	0	0	0	0
Other-Residential	0	0	0	0	0
Single Family	0	0	0	0	0
Commercial	0	0	0	0	0
Commuting	0	0	0	0	0

	Injury Severity Level				Total
	Severity 1	Severity 2	Severity 3	Severity 4	
California					
Imperial					
Total Casualties - 2pm	0	0	0	0	0
Casualties - 5pm					
Single Family	0	0	0	0	0
Other-Residential	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
Industrial	0	0	0	0	0
Total Casualties - 5pm	0	0	0	0	0
Kern					
Casualties - 2am					
Commercial	0	0	0	0	0
Commuting	0	0	0	0	0
Educational	0	0	0	0	0
Single Family	0	0	0	0	0
Other-Residential	0	0	0	0	0
Hotels	0	0	0	0	0
Industrial	0	0	0	0	0
Total Casualties - 2am	0	0	0	0	0
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	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					
Single Family	0	0	0	0	0
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
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	12	2	0	1	15

Injury Severity Level

Severity 1 Severity 2 Severity 3 Severity 4 Total

California

Los Angeles

Casualties - 2am

<i>Industrial</i>	299	75	10	20	405
<i>Educational</i>	0	0	0	0	0
<i>Single Family</i>	4,283	556	49	97	4,986
<i>Commuting</i>	1	2	3	1	8
<i>Other-Residential</i>	14,240	3,500	495	975	19,210
<i>Commercial</i>	303	77	11	21	412
Total Casualties - 2am	19,139	4,212	569	1,115	25,035

Casualties - 2pm

<i>Industrial</i>	2,214	557	78	152	3,001
<i>Other-Residential</i>	4,735	1,215	182	340	6,472
<i>Commercial</i>	20,286	5,173	746	1,453	27,658
<i>Commuting</i>	13	19	30	6	68
<i>Educational</i>	6,499	1,560	226	432	8,717
<i>Single Family</i>	1,269	175	17	32	1,494
<i>Hotels</i>	2	0	0	0	3
Total Casualties - 2pm	35,018	8,700	1,279	2,415	47,413

Casualties - 5pm

<i>Other-Residential</i>	5,646	1,431	213	397	7,687
<i>Industrial</i>	1,384	348	49	95	1,876
<i>Commuting</i>	250	376	584	116	1,325
<i>Single Family</i>	1,634	223	21	40	1,919
<i>Commercial</i>	14,233	3,663	538	1,029	19,463
<i>Hotels</i>	3	1	0	0	4
<i>Educational</i>	1,395	350	53	100	1,898
Total Casualties - 5pm	24,546	6,391	1,458	1,777	34,172

Orange

Casualties - 2am

<i>Hotels</i>	1	0	0	0	1
<i>Commuting</i>	0	0	0	0	1
<i>Educational</i>	0	0	0	0	0
<i>Industrial</i>	27	4	0	1	32
<i>Other-Residential</i>	590	79	6	11	685
<i>Commercial</i>	16	3	0	1	20
<i>Single Family</i>	578	32	1	2	614
Total Casualties - 2am	1,212	118	8	15	1,353

Casualties - 2pm

<i>Industrial</i>	197	30	3	5	235
<i>Other-Residential</i>	160	21	2	3	186
<i>Commuting</i>	2	3	4	1	10
<i>Commercial</i>	1,064	180	20	39	1,303
<i>Single Family</i>	154	9	0	1	164

	Injury Severity Level				Total
	Severity 1	Severity 2	Severity 3	Severity 4	
California					
Orange					
Casualties - 2pm					
<i>Hotels</i>	0	0	0	0	0
<i>Educational</i>	465	62	5	9	540
Total Casualties - 2pm	2,041	305	34	58	2,439
Casualties - 5pm					
<i>Hotels</i>	0	0	0	0	0
<i>Educational</i>	111	15	1	2	129
<i>Commuting</i>	39	58	91	18	206
<i>Single Family</i>	212	13	1	1	226
<i>Commercial</i>	759	129	15	28	931
<i>Other-Residential</i>	218	30	2	4	254
<i>Industrial</i>	123	19	2	3	147
Total Casualties - 5pm	1,464	263	111	56	1,894
Riverside					
Casualties - 2am					
<i>Industrial</i>	0	0	0	0	0
<i>Commercial</i>	0	0	0	0	0
<i>Other-Residential</i>	20	1	0	0	21
<i>Educational</i>	0	0	0	0	0
<i>Commuting</i>	0	0	0	0	0
<i>Single Family</i>	36	0	0	0	36
<i>Hotels</i>	0	0	0	0	0
Total Casualties - 2am	57	1	0	0	58
Casualties - 2pm					
<i>Commercial</i>	21	1	0	0	22
<i>Other-Residential</i>	6	0	0	0	7
<i>Educational</i>	7	0	0	0	8
<i>Single Family</i>	10	0	0	0	10
<i>Commuting</i>	0	0	0	0	0
<i>Hotels</i>	0	0	0	0	0
<i>Industrial</i>	3	0	0	0	3
Total Casualties - 2pm	47	2	0	0	49
Casualties - 5pm					
<i>Industrial</i>	2	0	0	0	2
<i>Other-Residential</i>	7	0	0	0	8
<i>Educational</i>	1	0	0	0	1
<i>Single Family</i>	13	0	0	0	13
<i>Hotels</i>	0	0	0	0	0
<i>Commercial</i>	15	1	0	0	16
<i>Commuting</i>	0	0	0	0	1
Total Casualties - 5pm	38	1	0	0	39

	Injury Severity Level				Total
	Severity 1	Severity 2	Severity 3	Severity 4	
California					
San Bernardino					
Casualties - 2am					
<i>Hotels</i>	0	0	0	0	0
<i>Single Family</i>	151	5	0	0	157
<i>Commercial</i>	2	0	0	0	2
<i>Commuting</i>	0	0	0	0	0
<i>Educational</i>	0	0	0	0	0
<i>Other-Residential</i>	108	9	0	0	118
<i>Industrial</i>	2	0	0	0	2
Total Casualties - 2am	263	14	0	1	278
Casualties - 2pm					
<i>Industrial</i>	15	1	0	0	16
<i>Hotels</i>	0	0	0	0	0
<i>Commuting</i>	0	0	0	0	1
<i>Other-Residential</i>	29	2	0	0	32
<i>Educational</i>	34	2	0	0	36
<i>Single Family</i>	40	1	0	0	41
<i>Commercial</i>	111	10	1	1	123
Total Casualties - 2pm	229	17	1	2	249
Casualties - 5pm					
<i>Other-Residential</i>	39	3	0	0	43
<i>Commercial</i>	81	7	0	1	90
<i>Single Family</i>	55	2	0	0	57
<i>Educational</i>	2	0	0	0	2
<i>Hotels</i>	0	0	0	0	0
<i>Commuting</i>	3	4	6	1	14
<i>Industrial</i>	9	1	0	0	10
Total Casualties - 5pm	189	18	7	2	216
San Diego					
Casualties - 2am					
<i>Commercial</i>	0	0	0	0	0
<i>Other-Residential</i>	0	0	0	0	0
<i>Commuting</i>	0	0	0	0	0
<i>Educational</i>	0	0	0	0	0
<i>Single Family</i>	0	0	0	0	0
<i>Industrial</i>	0	0	0	0	0
<i>Hotels</i>	0	0	0	0	0
Total Casualties - 2am	0	0	0	0	0
Casualties - 2pm					
<i>Hotels</i>	0	0	0	0	0
<i>Educational</i>	0	0	0	0	0
<i>Commuting</i>	0	0	0	0	0
<i>Commercial</i>	0	0	0	0	0

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

	Injury Severity Level				Total
	Severity 1	Severity 2	Severity 3	Severity 4	
California					
Santa Barbara					
Total Casualties - 5pm	0	0	0	0	0
Ventura					
Casualties - 2am					
<i>Educational</i>	0	0	0	0	0
<i>Commuting</i>	0	0	0	0	0
<i>Single Family</i>	4	0	0	0	4
<i>Hotels</i>	0	0	0	0	0
<i>Industrial</i>	0	0	0	0	0
<i>Commercial</i>	0	0	0	0	0
<i>Other-Residential</i>	2	0	0	0	2
Total Casualties - 2am	6	0	0	0	7
Casualties - 2pm					
<i>Industrial</i>	1	0	0	0	1
<i>Educational</i>	1	0	0	0	1
<i>Commuting</i>	0	0	0	0	0
<i>Hotels</i>	0	0	0	0	0
<i>Other-Residential</i>	1	0	0	0	1
<i>Commercial</i>	4	0	0	0	4
<i>Single Family</i>	1	0	0	0	1
Total Casualties - 2pm	7	0	0	0	8
Casualties - 5pm					
<i>Commuting</i>	0	0	0	0	0
<i>Other-Residential</i>	1	0	0	0	1
<i>Commercial</i>	3	0	0	0	3
<i>Hotels</i>	0	0	0	0	0
<i>Educational</i>	0	0	0	0	0
<i>Single Family</i>	2	0	0	0	2
<i>Industrial</i>	0	0	0	0	0
Total Casualties - 5pm	5	0	0	0	6
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

April 15, 2024

All values are in thousands of tons.

	Brick, Wood & Others	Concrete & Steel	Total
California			
Riverside	45	17	62
San Bernardino	262	129	391
Imperial	0	0	0
Ventura	6	3	9
Kern	0	0	0
Orange	783	1,558	2,341
San Diego	0	0	0
Los Angeles	9,974	16,628	26,601
Santa Barbara	0	0	0
Total	11,070	18,335	29,405
Region Total	11,070	18,335	29,405

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

April 15, 2024

All values are in thousands of dollars

	Capital Stock Losses				Loss Ratio %	Income Losses				Total Loss
	Cost Structural Damage	Cost Non-struct. Damage	Cost Contents Damage	Inventory Loss		Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	
California										
Imperial	0	0	0	0	0.00	0	0	0	0	0
San Bernardino	433,683	2,927,063	1,465,426	200,519	0.89	132,828	54,052	71,728	98,572	5,383,871
Riverside	79,472	671,093	330,722	26,275	0.18	13,216	9,389	9,545	16,625	1,156,337
Santa Barbara	18	998	612	70	0.00	2	3	4	6	1,713
Kern	276	4,865	2,680	385	0.00	35	24	28	46	8,340
Ventura	11,177	131,305	66,450	7,620	0.09	1,131	1,337	1,591	1,715	222,325
Orange	1,945,333	9,545,269	4,312,245	371,214	2.13	923,207	546,913	643,376	493,617	18,781,174
San Diego	225	8,299	4,769	416	0.00	20	32	48	59	13,870
Los Angeles	18,182,498	75,319,289	32,475,118	3,094,244	6.16	9,155,324	5,134,885	6,585,595	5,293,537	155,240,490

	Capital Stock Losses				Loss Ratio %	Income Losses				Total Loss
	Cost Structural Damage	Cost Non-struct. Damage	Cost Contents Damage	Inventory Loss		Relocation Loss	Capital Related Loss	Wages Losses	Rental Income Loss	
Total	20,652,683	88,608,182	38,658,023	3,700,742	1.05	10,225,763	5,746,636	7,311,915	5,904,177	180,808,121
Region Total	20,652,683	88,608,182	38,658,023	3,700,742	1.05	10,225,763	5,746,636	7,311,915	5,904,177	180,808,121

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

April 15, 2024

All values are in thousands of dollars

	Highway	Railway	Light Rail	Bus Facility	Ports	Ferries	Airport	Total
California								
Imperial								
Segments	0	0	0					0
Bridges	0	0	0					0
Tunnels	0	0	0					0
Facilities		0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Kern								
Segments	0	0	0					0
Bridges	19	0	0					19
Tunnels	0	0	0					0
Facilities		134	0	41	0	0	891	1,066
Total	19	134	0	41	0	0	891	1,085
Los Angeles								
Segments	0	0	0					0
Bridges	1,499,656	119,335	313					1,619,304
Tunnels	14,172	0	0					14,172
Facilities		38,983	829,106	10,506	96,571	1,408	533,976	1,510,550

	Highway	Railway	Light Rail	Bus Facility	Ports	Ferries	Airport	Total
Total	1,513,827	158,318	829,419	10,506	96,571	1,408	533,976	3,144,026
Orange								
Segments	0	0	0					0
Bridges	184,041	9,919	0					193,960
Tunnels	135	0	0					135
Facilities		3,740	0	0	6,223	497	52,105	62,565
Total	184,177	13,659	0	0	6,223	497	52,105	256,661
Riverside								
Segments	0	0	0					0
Bridges	3,892	80	0					3,972
Tunnels	0	0	0					0
Facilities		1,022	0	466	0	0	4,658	6,146
Total	3,892	1,102	0	466	0	0	4,658	10,118
San Bernardino								
Segments	0	0	0					0
Bridges	20,044	1,108	0					21,152
Tunnels	2	0	0					2
Facilities		5,017	0	580	0	0	42,066	47,663
Total	20,046	6,125	0	580	0	0	42,066	68,817
San Diego								
Segments	0	0	0					0
Bridges	12	0	0					12
Tunnels	0	0	0					0
Facilities		205	8,590	2	3,790	38	8,256	20,883

	Highway	Railway	Light Rail	Bus Facility	Ports	Ferries	Airport	Total
Total	12	205	8,590	2	3,790	38	8,256	20,895
Santa Barbara								
Segments	0	0	0					0
Bridges	0	0	0					0
Tunnels	0	0	0					0
Facilities		77	0	0	330	26	387	820
Total	0	77	0	0	330	26	387	820
Ventura								
Segments	0	0	0					0
Bridges	173	2	0					174
Tunnels	0	0	0					0
Facilities		554	0	89	1,894	26	2,242	4,805
Total	173	556	0	89	1,894	26	2,242	4,979
Total	1,722,145	180,176	838,009	11,685	108,810	1,995	644,581	3,507,401
Region Total	1,722,145	180,176	838,009	11,685	108,810	1,995	644,581	3,507,401

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

April 15, 2024

All values are in thousands of dollars

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
California							
Imperial							
<i>Facilities</i>	0	0	0	0	166	0	166
<i>Pipelines</i>	14	7	0	0			21
Total	14	7	0	0	166	0	187
Kern							
<i>Facilities</i>	112	369	1	132	214,053	13	214,680
<i>Pipelines</i>	389	195	0	0			585
Total	502	564	1	132	214,053	13	215,265
Los Angeles							
<i>Facilities</i>	94,459	468,224	764	19,662	6,643,901	3,361	7,230,372
<i>Pipelines</i>	54,604	27,429	0	0			82,033
Total	149,063	495,653	764	19,662	6,643,901	3,361	7,312,405
Orange							
<i>Facilities</i>	14,442	78,640	24	7,132	575,409	304	675,951

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
<i>Pipelines</i>	9,814	4,930	0	0			14,744
Total	24,256	83,570	24	7,132	575,409	304	690,696
Riverside							
<i>Facilities</i>	4,192	62,826	0	658	157,530	44	225,249
<i>Pipelines</i>	851	428	0	0			1,279
Total	5,044	63,254	0	658	157,530	44	226,529
San Bernardino							
<i>Facilities</i>	3,603	118,982	0	827	1,152,488	238	1,276,139
<i>Pipelines</i>	2,841	1,427	0	0			4,269
Total	6,445	120,409	0	827	1,152,488	238	1,280,407
San Diego							
<i>Facilities</i>	56	2,956	0	75	22,697	6	25,790
<i>Pipelines</i>	222	112	0	0			334
Total	278	3,067	0	75	22,697	6	26,124
Santa Barbara							
<i>Facilities</i>	0	738	0	151	941	2	1,832
<i>Pipelines</i>	46	23	0	0			69
Total	46	761	0	151	941	2	1,902
Ventura							
<i>Facilities</i>	1,101	18,538	0	165	149,437	42	169,284
<i>Pipelines</i>	326	164	0	0			489

	Potable Water	Waste Water	Oil Systems	Natural Gas	Electric Power	Communication	Total
Total	1,427	18,702	0	165	149,437	42	169,773
Total	187,075	785,988	790	28,803	8,916,622	4,010	9,923,287
Region Total	187,075	785,988	790	28,803	8,916,622	4,010	9,923,287

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	54.60 - 218.50
	Building Contents	7.60 - 30.00
	Business Interruption	14.60 - 58.40
Infrastructure	Lifelines Damage	
Total		90.40 - 361.60

Preliminary Damage Assessment (PDA) Estimates

Description	Residential	Commercial	Other	Total
Affected		82,900	27,300	
Minor	353,600	56,000	20,000	429,600
Major	26,300	19,000	8,100	53,400
Destroyed	9,000	8,200	3,100	20,300
Total		166,100	58,500	

Estimated Casualties : Night Time

Severity Level	Description	# Persons
Level 1	Medical Aid	10,000 - 41,000
Level 2	Hospital Care	2,000 - 9,000
Level 3	Life-threatening	300 - 1,200
Level 4	Fatalities	600 - 2,000

Estimated Shelter Needs

Type	Households	People
Displaced Households	56,000 - 224,000	140,000 - 560,000
Public Shelter	26,780	66,940

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, geotechnical, and observed ground motion data.

Earthquake Information

Location :

Origin Time:

Magnitude : 7.08

Epicenter Latitude/Longitude :
/

Depth & Type : /U

Name :
NA

Ground Motion /Attenuation :

Maximum PGA: 1.00

Information Sources:

Comments :

Population and Building Exposure

Population: 23,480,480

Building Exposure : (\$ Millions)

Residential	
Commercial	793,699
Other	585,473
Total	

Counties :

Major Metro Area :

Hazus Quick Assessment Report

Estimated Economic Loss (\$ Billions)

Category	Description	Range
General Building Stock	Building Damage	54.60 - 218.50
	Building Contents	7.60 - 30.00
	Business Interruption	14.60 - 58.40
Infrastructure	Lifelines Damage	
Total		90.40 - 361.60

Preliminary Damage Assessment (PDA) Estimates

Description	Residential	Commercial	Other	Total
Affected		82,900	27,300	
Minor	353,600	56,000	20,000	429,600
Major	26,300	19,000	8,100	53,400
Destroyed	9,000	8,200	3,100	20,300
Total		166,100	58,500	

Estimated Casualties : Day Time

Severity Level	Description	# Persons
Level 1	Medical Aid	19,000 - 75,000
Level 2	Hospital Care	5,000 - 18,000
Level 3	Life-threatening	700 - 3,000
Level 4	Fatalities	1,200 - 5,000

Estimated Shelter Needs

Type	Households	People
Displaced Households	56,000 - 224,000	140,000 - 560,000
Public Shelter	26,780	66,940

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.

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Earthquake Information

Location :

Origin Time:

Magnitude : 7.08

Epicenter Latitude/Longitude :
/

Depth & Type : /U

Name :
NA

Ground Motion /Attenuation :

Maximum PGA: 1.00

Information Sources:

Comments :

Population and Building Exposure

Population: 23,480,480

Building Exposure : (\$ Millions)

Residential	
Commercial	793,699
Other	585,473
Total	

Counties :

Major Metro Area :

Hazus Quick Assessment Report

Estimated Economic Loss (\$ Billions)

Category	Description	Range
General Building Stock	Building Damage	54.60 - 218.50
	Building Contents	7.60 - 30.00
	Business Interruption	14.60 - 58.40
Infrastructure	Lifelines Damage	
Total		90.40 - 361.60

Preliminary Damage Assessment (PDA) Estimates

Description	Residential	Commercial	Other	Total
Affected		82,900	27,300	
Minor	353,600	56,000	20,000	429,600
Major	26,300	19,000	8,100	53,400
Destroyed	9,000	8,200	3,100	20,300
Total		166,100	58,500	

Estimated Casualties : Commute Time

Severity Level	Description	# Persons
Level 1	Medical Aid	13,000 - 52,000
Level 2	Hospital Care	3,000 - 13,000
Level 3	Life-threatening	800 - 3,000
Level 4	Fatalities	900 - 4,000

Estimated Shelter Needs

Type	Households	People
Displaced Households	56,000 - 224,000	140,000 - 560,000
Public Shelter	26,780	66,940

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.

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Earthquake Information

Location :

Origin Time:

Magnitude : 7.08

Epicenter Latitude/Longitude :
/

Depth & Type : /U

Name :
NA

Ground Motion /Attenuation :

Maximum PGA: 1.00

Information Sources:

Comments :

Population and Building Exposure

Population: 23,480,480

Building Exposure : (\$ Millions)

Residential	
Commercial	793,699
Other	585,473
Total	

Counties :

Major Metro Area :

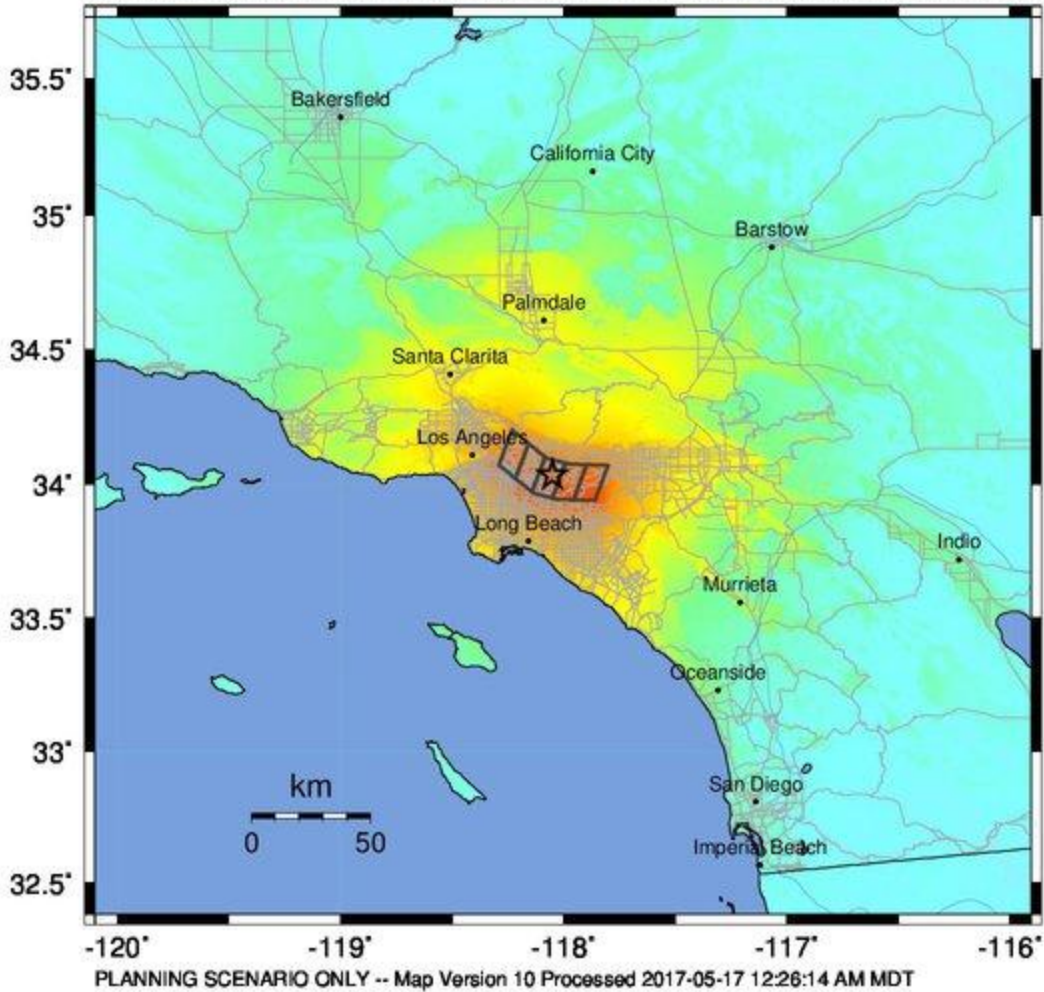
Shelter Summary Report

April 15, 2024

	# of Displaced Households	# of People Needing Short Term Shelter
California		
Riverside	3	3
San Bernardino	625	381
Imperial	0	0
Ventura	0	0
Kern	0	0
Orange	4,281	2,533
San Diego	0	0
Los Angeles	107,265	64,023
Santa Barbara	0	0
Total	112,174	66,940
Region Total	112,174	66,940

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-- Earthquake Planning Scenario --
ShakeMap for Puente Hills - Median ground motions Scenario
 Scenario Date: May 16, 2017 08:32:00 AM MDT M 7.1 N34.04 W118.05 Depth: 10.1km



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)