

Land Use and Ownership

General statistics on the use and ownership of land appear in this section. Information on specific use or ownership categories, such as farms, parks, or military land, is given elsewhere.

Out of 4,050,176 acres on the six largest islands of the State, only 155,705 are in urban use. The largest uses are grazing (1,150,534 acres), forest reserve (1,190,954), and *pali* or other barren land (503,308).

Approximately half of the 55,000 acres in Honolulu were unused open space when last surveyed in 1964; the second largest category at that time was residential use, with over 7,700 acres. Approximately 10 percent of the land in the State is owned by the Federal government, 39 percent by State government, 47 percent by major private owners (those with 1,000 or more acres), and less than 6 percent by small landowners.

Reports of the Congressional Committee on Government Operations, University of Hawaii Land Study Bureau and Legislative Reference Bureau, and Oahu Transportation Study provided the data for this section. Statistics for the Mainland are available in Sections 7 and 23 of the *Statistical Abstract of the United States: 1969*.

Table 38. -- LAND USE ACREAGES, BY ISLAND: 1968

Land use	Six islands						
	Kauai	Oahu	Molokai	Lanai	Maui	Hawaii	
All uses	4,050,176	354,112	388,928	167,104	89,280	466,432	2,584,320
Pineapple	69,276	2,699	18,987	17,276	16,236	14,078	--
Sugar cane	262,377	58,927	40,852	4	--	47,819	114,775
Nonplantation agriculture..	1,197,688	55,311	51,741	90,072	--	180,511	820,053
Vegetable.....	6,708	339	2,102	845	--	1,506	1,916
Orchard	24,294	455	1,670	104	--	536	21,529
Grazing	1,150,534	53,637	38,608	86,850	--	176,810	794,629
Other ¹	2,567	547	1,434	2	--	331	253
Idle agricultural land ..	13,585	333	7,927	2,271	--	1,328	1,726
Forest	289,039	38,716	30,033	2,037	5,926	14,504	197,823
Forest reserve	1,190,954	157,555	118,766	48,338	--	156,035	710,260
Recreation ²	334,256	11,244	5,184	415	66,683	18,980	334,256
Military	38,048	1,886	35,055	316	--	--	791
Urban	155,705	4,550	56,850	1,091	435	6,204	86,575
Civilian.....	61,233	4,400	36,957	1,091	435	6,204	12,146
Military	17,658	150	<u>17,508</u>	--	--	--	--
Undeveloped subdivision	76,814	--	2,385	--	--	--	74,429
Pali and barren land	503,308	22,235	23,799	7,477	--	27,852	421,945
Quarry	1,462	23	1,077	30	--	85	247
Water	8,063	966	6,584	48	--	364	101

1. Includes water crop (974), forage (423), dairy (738), poultry (275), swine (103), feed lot (38), and salt bed (16).

2. Includes game management areas (87,585), national parks (229,423), and other recreation areas (17,248).

Source: A. Y. Ching and T. Sahara, *Land Use and Productivity Rating, State of Hawaii, 1968*, Land Study Bureau Circular No. 15 (University of Hawaii, Land Study Bureau, July 1969).

Table 39. -- LAND USE SUMMARY, FOR OAHU: 1964

Land use	Area (in acres)		
	Oahu	Honolulu	Rest of Oahu
Total area ¹	381,310	54,561	326,749
Residential	22,157	7,766	14,391
Industrial	6,352	2,377	3,975
Commercial	1,450	899	551
Hotel	73	70	3
Public buildings	4,741	2,469	2,272
Public open spaces	7,861	3,339	4,522
Highways and streets	7,405	3,320	4,085
Agriculture	94,474	1,343	93,131
Military	<u>48,633</u>	5,003	43,630
Unused open space	188,164	27,975	160,189

Footnotes and source follow next table.

Table 40. -- LAND AND FLOOR AREA IN COMMERCIAL AND HOTEL USE, FOR OAHU: 1964

Land use	No. of establish.	Land area (acres)	Floor area (square feet)	
			Total	Per estab.
Retailing	3,746	1,016	10,986,345	2,933
Services, exc. hotels	4,862	434	9,146,100	1,881
Hotels	60	73	5,001,017	83,350

1. Later revised to 379,328 for Oahu, 53,504 for Honolulu, and 325,824 for the rest of Oahu.

Source: State of Hawaii and City and County of Honolulu, Oahu Transportation Study, Vol. I, Economic, Population, and Land Use (1967), pp. IV-A-1, IV-A-2, and IV-A-3.

Table 41. -- LAND OWNERSHIP, BY ISLAND: 1964
(In acres)

Island	All owners ¹	Government		Private	
		Federal ²	State ³	Major ⁴	Other
All islands ⁵	4,105,600	401,482	1,590,532	1,923,183	224,193
Hawaii	2,573,440	210,984	1,126,121	1,052,582	183,753
Kahoolawe	28,800	28,770	--	--	30
Maui	465,920	17,181	204,400	230,496	13,843
Lanai	90,240	8	--	88,792	1,440
Molokai	165,760	353	51,400	110,444	3,563
Oahu ⁵	380,800	139,925	56,672	217,851	--
Kauai	352,640	2,200	151,939	176,953	21,549
Niihau	46,080	--	--	46,065	15
Other islands ⁵	1,920	2,062	--	--	--
PERCENT DISTRIBUTION					
All islands ⁵	100.0	9.8	38.7	46.8	5.5
Hawaii	100.0	8.2	43.8	40.9	7.1
Kahoolawe	100.0	99.9	--	--	0.1
Maui	100.0	3.7	43.9	49.5	3.0
Lanai	100.0	0.0	--	98.4	1.6
Molokai	100.0	0.2	31.0	66.6	2.1
Oahu ⁴	100.0	6.7	14.9	57.2	--
Kauai	100.0	0.6	43.1	50.2	6.1
Niihau	100.0	--	--	100.0	0.0
Other islands	100.0	100.0	--	--	--

1. For more recent estimates of total land area, see table 38.

2. Includes fee simple and ceded land.

3. Includes State land managed by Hawaiian Homes Commission or County governments.

4. Owners with 1,000 acres or more in the State.

5. See source for explanation of apparent discrepancies.

Source: Robert H. Horwitz and Judith B. Finn, Public Land Policy in Hawaii: Major Landowners (Legislative Reference Bureau, University of Hawaii, Report No. 3, 1967), p. 99.

Table 42. -- LAND OWNERSHIP, PUBLIC AND PRIVATE, BY COUNTY: 1965

Subject	The State ¹	Hawaii County	Honolulu County	Kauai County	Maui County
NUMBER OF ACRES					
All land	4,105,600	2,573,440	382,720	398,720	750,720
Government lands	1,220,239	814,001	103,464	102,559	200,216
United States	310,064	212,276	49,005	2,288	46,495
State of Hawaii ¹	823,588	565,944	43,641	88,699	125,304
Hawaiian Homes.....	71,632	34,122	895	9,281	27,334
Counties	14,955	1,659	9,923	2,291	1,083
Private lands ¹	2,885,361	1,759,439	279,256	296,161	550,504
PERCENT DISTRIBUTION					
All land	100.0	100.0	100.0	100.0	100.0
Government lands	29.7	31.6	27.0	25.7	26.7
United States	7.6	8.2	12.8	0.6	6.2
State of Hawaii ¹	20.1	22.0	11.4	22.2	16.7
Hawaiian Homes	1.7	1.3	0.2	2.3	3.6
Counties	0.4	0.1	2.6	0.6	0.1
Private lands ¹	70.3	68.4	73.0	74.3	73.3

1. State-owned land leased to private industry is included with private lands for statistical purposes.

Source: Hawaii Department of Taxation, records.

Table 43. -- FEDERALLY OWNED PROPERTY: 1960 AND 1968

Subject	June 30, 1960	June 30, 1968
Number of installations	167	142
Land (acres), total	234,074.1	397,278.9
Urban	23,530.2	55,233.4
Rural	210,543.9	342,045.5
Number of buildings	11,506	11,590
Cost (\$1,000), total	877,162	1,051,246
Land	21,910	25,374
Buildings	407,478	514,262
Structures and facilities	447,774	511,610

Source: Committee on Government Operations, U. S. House of Representatives, Federal Real and Personal Property Inventory (Civilian and Military) of the United States Government Covering Its Properties Located in the United States, in the Territories, and Overseas (biennial report).

Table 33. -- AEROMETRIC SURVEY DATA FOR DOWNTOWN HONOLULU: 1968
 (Aerometric survey conducted from the fourth floor lanai of the State Health Department Bldg., 1250 Punchbowl St., Honolulu, for 30-minute periods between 7:30 and 8:30 a.m., representing morning traffic peaks. In parts per million.)

Pollutant	Average			Range	
	Annual	Lowest month	Highest month	Lowest	Highest
Oxidant potassium iodine	0.003	0	0.009	0	0.040
Nitrogen dioxide	0.030	0.022	0.043	0.004	0.080
Sulphur dioxide	0.011	0.006	0.017	0	0.096
Carbon monoxide	2.7	1.	5.	T	15.

Source: Hawaii State Department of Health, Air Sanitation Branch, records. Based on data for 239 days.

Table 34. -- WATER QUALITY DATA FOR OAHU BEACHES: 1960 TO 1968

Beach	Coliform per 100 milliliters (logarithmic average)		
	1968	1967	1960
Ala Moana Park	14	1.6	11
Fort DeRussy	25	18.7	7
Kuhio Beach	12	12.7	6
Hanauma Bay	6	6.3	2
Kailua Beach	12	37.3	6
Punaluu Park	20	49.5	157
Haleiwa Park	21	11.0	81
Waianae Park	52	10.4	3
Ewa Beach	6	5.9	9

Source: Annual Report, Department of Health, State of Hawaii, Statistical Supplement for 1960 (p. 86), 1967 (p.87), and 1968 (p. 87).

Table 35. -- AVERAGE BETA RADIOACTIVITY CONCENTRATION IN AIR, 1961 TO 1967, AND AIR QUALITY, 1966-1967, FOR HONOLULU

Year	Ave. Beta concentration ¹	Pollutant	Minimum	Maximum	Arithmetic average
1961	1.0	Suspended particulate			
1962	2.3	matter, 1967 ²	22	83	38
1963	2.6	Benzene - soluble organic			
1964	0.6	matter, 1967 ²	1.9	2.7	2.5
1965	0.2	Radioactivity, 1966 ¹	0.0	1.8	0.2
1966	0.2				
1967	0.3				

1. In micromicrocuries per cubic meter.

2. Micrograms per cubic meter.

Source: U. S. Public Health Service, as cited in Statistical Abstract of the United States: 1969, pp. 170 and 172.

Table 36. -- CLIMATIC DATA FOR SELECTED PLACES

Island and station ¹	Ground elevation (feet)	Normal average temperature (°F.)		Extreme temperature of record (°F.)		Normal precipitation (inches)	Ave. ann. percent possible sunshine
		Coolest month	Warmest month	Lowest	Highest		
Hawaii:							
Hilo Airport	27	70.6	75.8	53	94	136.62	38
National Park Hdq.	3,971	57.9	63.6	37	85	98.45	--
Kona Airport	17	70.6	77.2	56	92	24.27	--
Puako (Mahukona)	11	73.9	80.4	52	97	9.46	--
Kamuela	2,670	62.0	66.5	34	90	37.90	--
Maui:							
Hana	120	71.3	76.8	50	90	70.32	--
Haleakala Summit	9,960	42.9	50.8	14	73	42.62	--
Kihei (Puunene A.P.)	90	71.1	78.5	49	98	12.33	--
Kahului Airport	48	71.7	79.0	48	95	16.33	69
Lahaina	45	71.3	77.8	52	93	13.59	--
Molokai:							
Kaunakakai	12	--	--	--	--	13.92	--
Molokai Airport	450	70.0	77.5	48	90	27.36	--
Oahu:							
Honolulu Int. Airport	7	72.5	80.6	52	93	21.89	69
Honolulu Federal Bldg. ² ..	12	71.9	78.4	57	88	23.96	65
Waikiki ³	10	72.1	81.1	53	93	36.16	--
Laie (Kahuku)	25	71.4	78.3	49	95	49.17	--
Waianae	20	71.8	80.3	45	96	19.64	--
Kauai:							
Hanalei (Kilauea Pt.)	180	70.7	78.4	47	93	85.00	--
Wailua (Kealia)	9	71.0	78.8	44	93	42.71	--
Lihue Airport	103	70.7	78.4	50	90	43.00	56
Poipu (Makahuena Pt.) ...	52	72.0	79.2	50	93	34.82	--
Kokee (Kanalohuluhulu) ...	3,600	56.1	63.4	27	83	70.80	--
Waialeale	5,075	--	--	--	--	486.1	--

1. Temperature data are not available for Puako, Kihei, Laie, Hanalei, Wailua, Poipu and Kokee, and are accordingly based on data for the stations given in parentheses.

2. Temperature sensors are 80 feet above the ground.

3. Located at Honolulu Zoo. Available for only four years. The rainfall average in particular is thought to be well above the long term average. Average water temperatures off Waikiki Beach range from 75° F. in late February to 79° in late September.

Source: Weather Bureau Pacific Region, Environmental Science Services Administration, May 8, 1969 and May 19, 1969.

Table 37. -- CLIMATIC EXTREMES, EARTHQUAKES, VOLCANIC ERUPTIONS, AND TSUNAMIS

Subject	Date	Place	Magnitude
CLIMATE (VARYING PERIODS)			
Lowest monthly average temperature (°F.) ...	February	Mauna Loa Obs.	39.8
Highest monthly average temperature (°F.)...	August	Honolulu Airport	82.3
Lowest temperature of record (°F.)	Jan. 2, 1961	Haleakala Summit	14.0
Highest temperature of record (°F.)	April 27, 1931	Pahala	100.0
Lowest average annual rainfall (in.)	--	N. of Kawaihae	5.7
Highest average annual rainfall (in.)	--	Waialeale	486.1
Lowest annual rainfall of record (in.)	1953	Kawaihae	0.2
Highest annual rainfall of record (in.)	1947-1948	Waialeale	624.1
Highest wind speed of record (m.p.h.)	Jan. 17-18, 1959	Mauna Loa Obs.	105+
EARTHQUAKES, 1838-1969			
Greatest Richter magnitude	Mar. 27, 1868	Hawaii	7-1/2
Second greatest Richter magnitude	Jan. 23, 1938	Hawaii	6-3/4
VOLCANIC ERUPTIONS, 1832-1969			
Longest duration (days)	1873-1874	Mauna Loa	547
	1919	Kilauea	294
Greatest area covered (square mi.)	1950	Mauna Loa	35.0
	1840	Kilauea	6.0
Greatest lava volume (million cubic yds.) ...	1859, 1950	Mauna Loa	600
	1840	Kilauea	281
TSUNAMIS (1819-1969)			
Greatest wave height (meters)	April 2, 1868	S. E. Hawaii	20
Greatest damage (\$1,000)	April 1, 1946	All islands	26,000
Most deaths	April 1, 1946	All islands	173

Source: Hawaii State Department of Planning and Economic Development, Geographic Statistics of Hawaii (Statistical Report 67, July 1, 1969), and underlying data.