

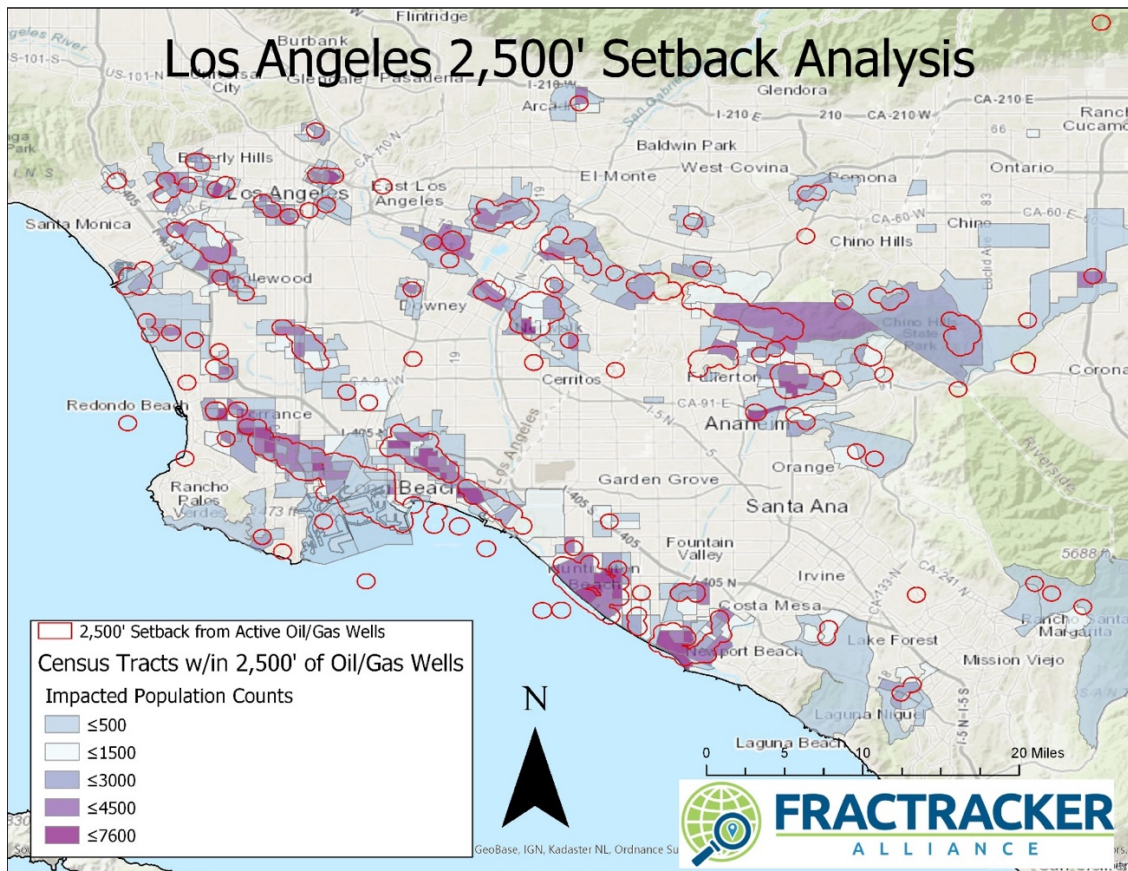


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Can Californians escape oil and gas pollution? Residents within 2,500 feet of oil and gas wells

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Executive Summary

The city of Los Angeles is considering a 2,500-foot setback safety buffer between residences and oil and gas wells. While Los Angeles would benefit the most from any type of setback regulation due to the county and city's high population density, the rest of the state would also benefit from the same. FracTracker Alliance conducted an assessment of the number of California citizens living proximal to active oil and gas production wells to see who all would be affected by such a change. Population counts were estimated for individuals living within 2,500 feet of an oil and gas production well for the entire state. The total number of California residents living within 2,500 feet of an active oil and gas well is 859,699, 45% of which are non-white, and 40% Hispanic.

Introduction

Living near oil and gas extraction activities, specifically actively producing wells, has been shown in the literature to increase risks of various health impacts, including asthma and other respiratory diseases, cardiovascular disease, cancer, birth defects, nervous disorders and dermal irritation, among others.¹ The city of Los Angeles is considering a 2,500-foot setback safety buffer between residences and oil and gas wells. While Los Angeles would benefit the most from any type of setback regulation due to the county and city's high population density, the rest of the state would also benefit from the same. An assessment of the number of California citizens living proximal to active oil and gas production wells was, therefore, conducted. Population counts were estimated for individuals living within 2,500' of an oil and gas production well.

Methods

Since the focus of this assessment was the potential for impacts to public health, the analysis was limited to oil and gas wells identified as active; meaning they are producing or are viable to produce oil and/or natural gas. This limitation on the dataset was justified to remain conservative to the most viable modes of exposure to contaminants from well sites. Under the assumption that "plugged", "buried", or "idle" wells that are not producing (or at least reporting production figures to DOGGR) do not purvey a risk of air emissions, the main route of transport for pollutants to the

¹ Shonkoff, Seth B.C.; Hays, Jake. 2015. Toward an understanding of the environmental and public health impacts of shale gas development: an analysis of the peer-reviewed scientific literature, 2009-2014. PSE Healthy Energy. http://www.psehealthyenergy.org/data/Database_Analysis_2015.1_.27_1.pdf

surrounding communities is via air emissions from “producing” oil and gas wells. The status of wells was taken from DOGGR’s “AllWells.zip” dataset (downloaded 3/7/18).

The first step of this analysis is to identify oil and gas wells in California affected by 2,500’ and shorter setbacks from occupied dwellings. To achieve this the footprints of occupied dwellings were identified, and where there was not a data source available the footprints were digitized. Using GIS tools, 2,500’ buffers were generated from the boundary of the occupied dwellings and a subset of active oil and gas wells located within the buffer zone were generated. A combination of county and city zoning data and county parcel data was used to direct the selection of building footprint GIS data and the generation of additional building footprint data. Building footprint data is readily available for a number of California cities, but was not available for rural areas. Existing footprint data was vetted using zoning codes. Areas located within 2,500’ of well-heads were prioritized for screening satellite imagery in areas zoned for residential use.

Buildings and facilities housing vulnerable populations were also included. Vulnerable populations include sensitive receptors such as children, the elderly, and the immunocompromised. These areas pose an elevated risk for sensitive populations when they are near hazardous sites, such as oil fields in LA. A variety of these types of sites were included in the GIS analysis, including schools and healthcare facilities.

GIS techniques were used to buffer active oil and gas wells at 2,500’. GIS shapefiles and 2010 Decennial census data was downloaded from American Fact Finder via Census.gov for the entire state of California at the census block level². Census block GIS layers were clipped to the 2,500’ buffers. Population data found in Summary File 1 for the 2010 census was attached to the clipped census block GIS layers. Adjusted population counts were calculated according to the proportion of the area of the census block falling within the 2,500’ buffer.

Results

The analysis calculated the number of California residents living within 2,500’ of an active (producing) oil and gas well. Results showed:

- 859,699 individuals in California live within 2,500’ of an active oil and gas well
- Of the total, 385,067 are “Non-white” (45%)
- Of the total, 341,231 are “Hispanic” (40%) [as defined by the U.S. Census Bureau]²

² U.S. Census Bureau. 2010 Census Summary File 1. (Accessed 12/1/14)

https://www.census.gov/mp/www/cat/decennial_census_2010/summary_file_1_1.html

Population counts within the setbacks were calculated for smaller census designated areas including counties and census tracts. The results of the calculations are presented in Table 1, and the analysis is shown in the maps in Figures 1 and 2 below.

Data for the City of Los Angeles was also aggregated. Results showed:

- 215,624 individuals in the City of Los Angeles live within 2,500' of an active oil and gas well
- Of this, a total of 114,593 are "Non-white" (53%)
- Of this, a total of 119,563 are "Hispanic" (55%) *[as defined by the U.S. Census Bureau]

Table 1. Population Counts by County

County	Total Pop.	Impacted Pop.	Impacted % Non-white	Impacted % Hispanic
Los Angeles	9,818,605	541,818	0.54	0.46
Orange	3,010,232	202,450	0.25	0.19
Kern	839,631	71,506	0.34	0.43
Santa Barbara	423,895	8,821	0.44	0.71
Ventura	823,318	8,555	0.37	0.59
San Bernardino	2,035,210	6,900	0.42	0.59
Riverside	2,189,641	5,835	0.46	0.33
Fresno	930,450	2,477	0.34	0.50
San Joaquin	685,306	2,451	0.55	0.42
Solano	413,344	2,430	0.15	0.15
Colusa	21,419	1,920	0.39	0.70
Contra Costa	1,049,025	1,174	0.35	0.30

The table above presents the counts of individuals living within 2,500' of an active oil and gas well, aggregated by county. The top 12 counties with the highest population counts in California are shown. "Impacted Population" is the count of individuals estimated to live within 2,500' of an oil and gas well. The "% Non-white" and "% Hispanic" columns report the estimated percentage of the impacted population of said demographic.

Discussion

From the analysis, we find that the majority of California citizens living near active production wells are located in Los Angeles County. This amounts to 61% of the total count of individuals within 2,500' in the full state. Additionally, the well sample population is limited to only wells that are reported with an *active* status. Including wells identified as *idle* or *support wells*, such as Class II injection or EOR wells, would increase both the counts and the demographical percentages because of the high population density in Los Angeles.

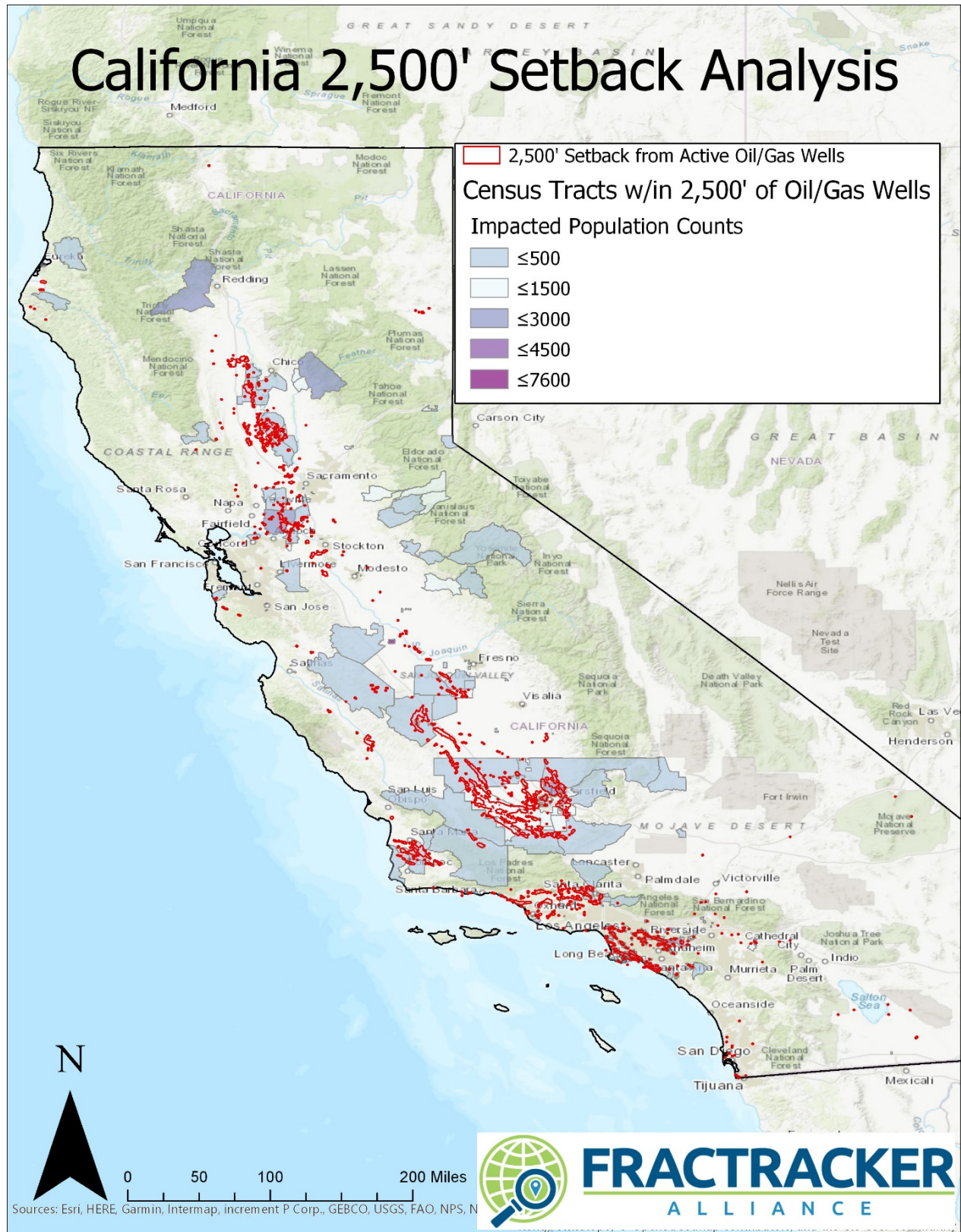


Figure 1. Map of impacted census tracts for a 2,500' setback in California. The map shows areas of California that would be impacted by a 2,500' setback from active oil and gas wells in California.

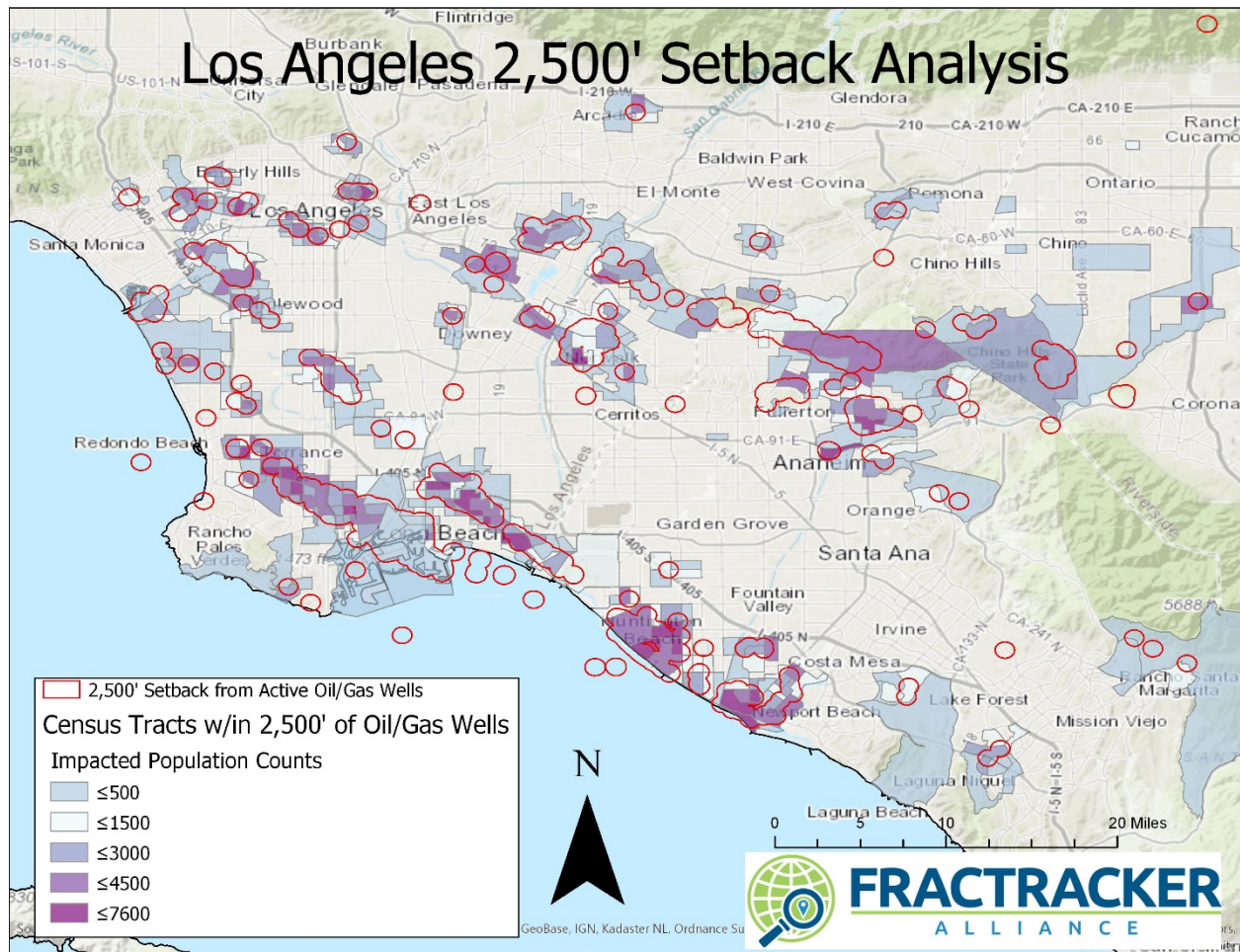


Figure 2. Map of impacted census tracts for a 2,500' setback in Los Angeles. The map shows areas of California that would be impacted by a 2,500' setback from active oil and gas wells in Los Angeles.



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FracTracker Alliance studies, maps, and communicates the risks of oil and gas development to protect our planet and support the renewable energy transformation.

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