

# Economics of Cannabis and Demand for Farm Labor

California Agriculture and Farm Labor 2017

April 14, 2017

**Daniel A. Sumner and William A. Matthews**

Director University of California Agricultural Issues Center and  
Frank Buck, Jr. Distinguished Professor in the  
Department of Agricultural and Resource Economics, UC Davis

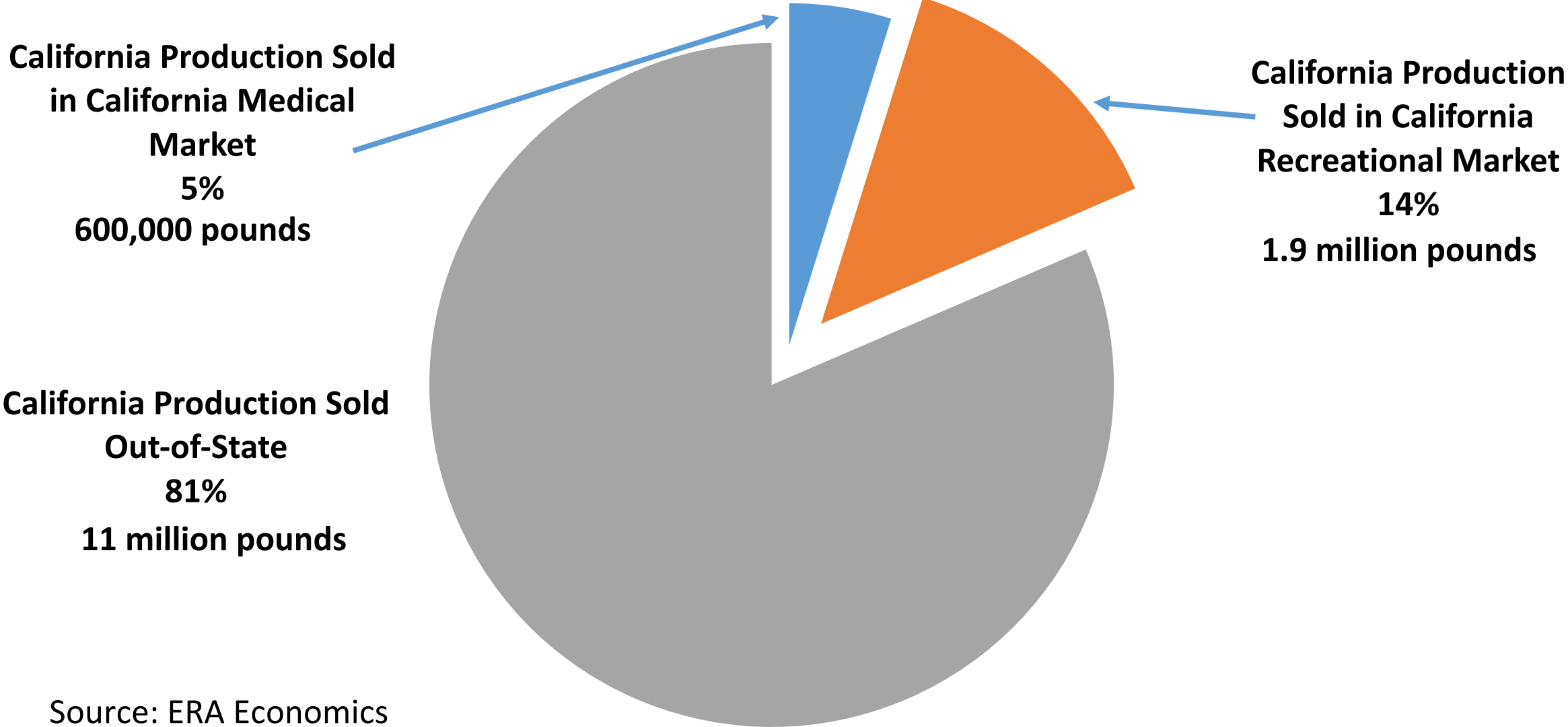
# Motivation, Orientation, and Overview

- Law has changed for cannabis: Legalization for consumption now and new taxes and regulations in 2018
- Cannabis cultivation is a large industry using much labor, mostly will remain illegal because it is for shipment out of state
- Legal adult use in California will not likely change production much and shift consumption from medical in the state
- Labor use for farms brought into the legal system is moderate relative to the size of the whole industry

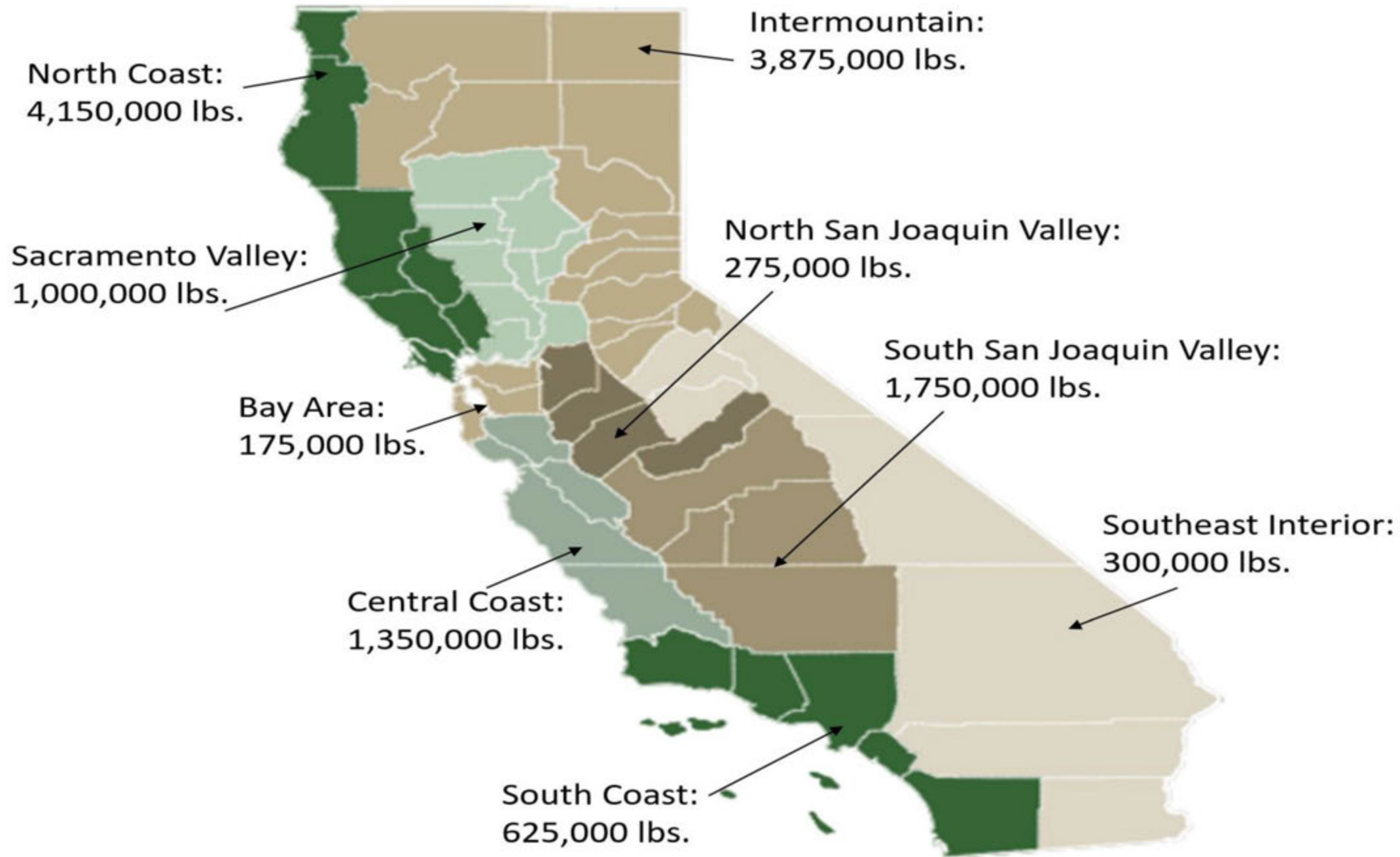
# What has remained, what has recently changed and what is coming

- New California law requires regulation of the 20 year old medical cannabis system to start in 2018.
- The 2016 proposition (passed on Nov 8) legalized the possession for adult use on Nov. 9 2016 and sets legal sale and regulations for 2018
- California will regulate security and safety and tax both medical and “adult use”
  - State will collect a special 15% excise tax at retail and an additional \$148 per pound of flower at the farm
  - Counties and municipalities are allowed to further regulate and tax commercial cannabis operations in their jurisdiction.
- Regulation (and new laws) are still being developed
- Track and trace from the farm to consumer and tight pesticide residue tests are a part of the new system

# California Produced 13.5 million Pounds of Cannabis in 2016



Source: ERA Economics



# Farm Production, Price and Value by Cultivation Type for California in 2016

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	<b>Cannabis Production</b> <i>(in million pounds)</i>	<b>Share of Total Production</b>	<b>Price</b> <i>(\$/lb)</i>	<b>Total Revenue</b> <i>(in \$billion)</i>
<b>Outdoor</b>	8.1	60%	\$1,402	\$11.4
<b>Indoor</b>	3.2	24%	\$2,275	\$7.3
<b>Mixed Light</b>	2.2	16%	\$1,575	\$3.5
<b>Totals for California</b>	13.5	100%	\$1,637 <sup>1</sup>	\$22.2

Source: ERA Economics

<sup>1</sup> Total price per pound is weighted average of three cultivation types

# Average Labor Use for Cannabis per farm by Cultivation Type

<b>Production and Labor Measure</b>	<b>Outdoor</b>	<b>Indoor</b>	<b>Mixed Light</b>
Average pounds produced annually	211	346	238
Total hours annually to trim cannabis flowers	2,000	3,400	2,300
Average Non-trim FTE workers <sup>1,2</sup>	2.3	2.6	2
Average FTE equivalent trim workers	1	1.7	1
Total hours of employment (includes trimmers)	6,600	8,600	6,400
Total hours of employment per pound produced	31.3	24.9	26.9

Source: ERA Economics

1. FTE = One full-time equivalent worker at 2,000 hours annually.

2. Includes farmer/operator

# Total Labor Requirements for Cannabis Cultivation in California by Cultivation Type

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<b>Production and Labor Measure</b>	<b>Outdoor</b>	<b>Indoor</b>	<b>Mixed Light</b>
Total pounds of cannabis produced in California (in million)	8.1	3.2	2.2
Total hours (include farmer time) per pound produced	31.3	24.9	26.9
Total hours in California (in million)	250	80	60
Total number of FTE* worker for California	127,000	40,000	30,000

Source: ERA Economics

\*FTE = One full-time equivalent worker at 2,000 hours annually.



# Labor Costs for All Cannabis Cultivation in California by Cultivation Type

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Labor Cost Measure	Outdoor	Indoor	Mixed Light
Example cost per hour for labor	\$20	\$20	\$20
Hours of trim worker per pound of flower	9.5	9.8	9.7
Labor cost trim per pound produced	\$190	\$197	\$193
Total trim labor in California (in \$billions)*	\$1.53	\$0.43	\$0.62

**Total wages for trim \$2.58 billion**

# Labor for Cannabis Consumed in California

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<b>Labor Cost Measure</b>	<b>Outdoor</b>	<b>Indoor</b>	<b>Mixed Light</b>
Labor cost per pound produced (trim and non-trim)	\$626	\$497	\$538
Pounds of cannabis consumed in California (in millions)	1.5	0.4	0.6
Number of FTE workers	23,460	4,971	8,067
Total direct labor income in California (in \$millions) (@\$20/hour)	\$938	\$199	\$323

FTE workers 34,500 and \$1.5 billion

# Labor for Legal Cannabis\* Consumed in California

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<b>Labor Cost Measure</b>	<b>Outdoor</b>	<b>Indoor</b>	<b>Mixed Light</b>
Labor cost per pound produced (trim and non-trim)	\$626	\$497	\$538
Pounds of legal cannabis consumed in California (in millions)	1.05	0.28	0.42
Number of FTE workers	16,422	3,480	5,647
Total direct labor income in California (in \$millions) (@\$20/hour)	\$657	\$139	\$226

Number FTE to 25,550 and \$1 billion.

\* Legal cannabis is assumed to be 70 percent of total cannabis consumed in California

# Labor and Cannabis

1. Large industry outside the legal system will remain to ship out of state
2. Illegal sales in California will remain (maybe 1/3 of sales and maybe much more)
3. The fully legal track and trace -- seed to smoke -- is a small share of total (maybe 15% of total California production)
4. Current farm size is tiny and non-harvest/management labor is high per farm
5. Transport costs are high using substantial labor
6. Efficiencies in labor use for out door cultivation seems low
7. Legality and regulation will mean lower wages Social security, taxes, worker compensation will be added benefits for labor and costs to growers.



**Thank you**

