

Will Weed put America to Work?

An empirical analysis of the relationship between the legal cannabis industry and employment levels in the U.S.

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ECON 481

A brief history of cannabis in the U.S.

- ▶ In 1937, the Marijuana Tax Act prohibits cannabis use at the federal level (still legal medicinally) (Pascula, 2002)
- ▶ In 1970, the Controlled Substances Act prohibits cannabis for any use
- ▶ In 1973, States take upon themselves to begin decriminalizing cannabis (OR, TX, AK, ME, CO, CA, OH, MN) (Anderson, 1981)
- ▶ In 1978, NM passed the Controlled Substances Therapeutic Research Act, recognizing the medical value of cannabis (Anderson, 1981)
- ▶ In 1996, California passed the Compassionate Use Act of 1996, legalizing cannabis medicinally in the U.S. (Balzar, 1996)
- ▶ In 2012, the paramount legalization of cannabis for adult use occurred in Colorado and Washington (Coffman, 2012)

Legal Cannabis Industry Projections

New Frontier's Annual Cannabis report predicts more than a quarter of a million jobs will be created by the marijuana industry by 2020.



Literature Review

- ▶ Marijuana Policy Group Cannabis Impact Model for Colorado
- ▶ Cannabis industry is highly-localized
- ▶ \$1 spent on Marijuana retail generates \$2.40 in state output
- ▶ Cannabis industry created 18,005 Full-Time jobs in CO
- ▶ Cannabis has increased demand in other industries



Has the cannabis industry had an affect on the employment levels in the U.S.?



Data & Methods

- ▶ Variables:
- ▶ Real GDP (Millions of 2017 U.S. Dollars)
- ▶ Minimum Wage (2017 U.S. dollars)
- ▶ Unemployment Insurance Claims
- ▶ Inflation Rate

- ▶ Effect on Employment Levels



Data & Methods

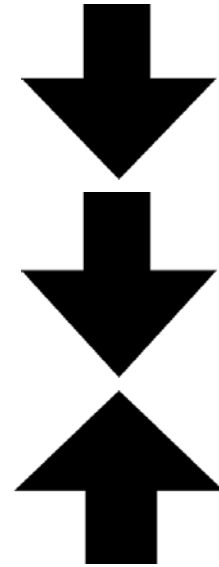
▶ Demographic Variables:

▶ Black

▶ Hispanic

▶ Male

▶ Effect on Employment Levels:



Data & Methods

- ▶ Cannabis Variables:
- ▶ Cannabis Licenses Issued
- ▶ Legal (Dummy Variable; 0 or 1)
- ▶ Adult-use (Dummy Variable: 0 or 1)

- ▶ Effect on Employment Levels



Cannabis Licenses Issued in U.S.

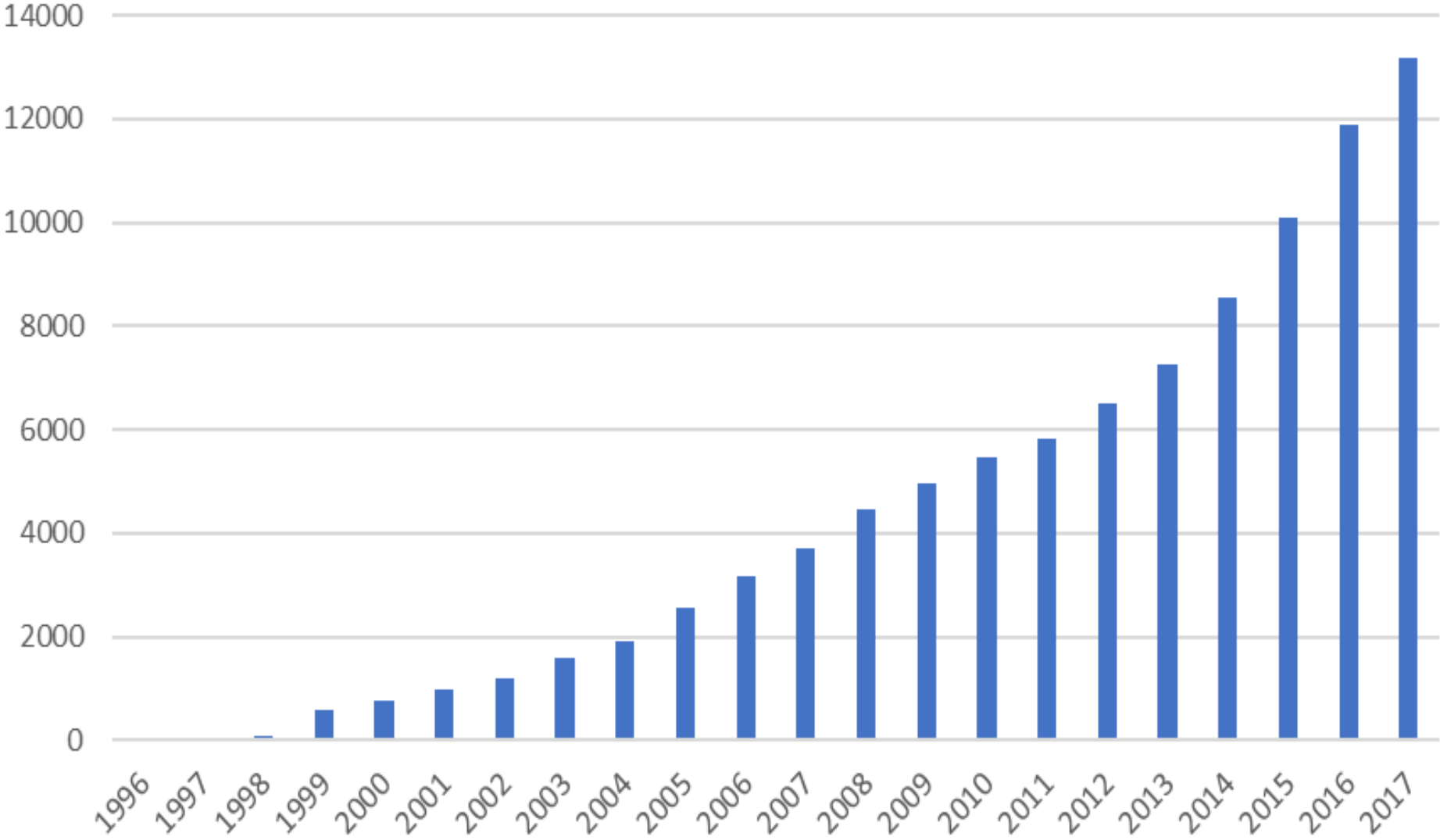


Table: Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
1996-2017					
EMP	1122	2846383	3094881	50916	18232800
ADULTUSE	1122	0.25	0.15	0	1
LEGAL	1222	0.26	0.441373	0	1
UNEMPINS	1122	56404.94	77934.84	1954	784443
MINWAGE	1122	\$7.52	1.26	\$2.21	\$16.40
LIC	1222	84	453.85	0	5364
REALGDP	1222	\$287234.9	335503.0	\$19545	\$2658118
INF	1122	2.09%	1.11	-.35 %	3.83%
2010-2016					
MALE	357	49.32%	0.806	47.2%	52.4%
BLACK	357	11.12%	10.90	0.4%	52.9%
HISPANIC	357	10.77%	9.85	1.10%	47.8%

Model

$$\begin{aligned} \text{EMP}_{it} = & \beta_0 + \beta_1(\text{ADULTUSE})_{it} + \beta_2(\text{LEGAL})_{it} + \beta_3(\text{UNEMPINS})_{it} + \\ & \beta_4(\text{MINWAGE})_{it} + \beta_5(\text{LIC})_{it} + \beta_5(\text{REALGDP})_{it} + \beta_6(\text{INF})_{it} \\ & + \beta_7(\text{ADULTUSE})_{it} + \\ & \beta_8(\text{MALE})_{it} + \beta_9(\text{BLACK})_{it} + \beta_8(\text{HISPANIC})_{it} + \varepsilon_{it} \end{aligned}$$

Results :
Employment
levels w/ no
demographics
1996-2017

Variable	Model 1	Model 2	Model 3	Model 4
REALGDP	4.885661 (0.0006)*	4.918104 (0.0005)*	4.955600 (0.0001)*	4.913371 (0.0005)*
MINWAGE	-157472.1 (0.0008)*	-206792.3 (0.0005)*	-201634.8 (0.0003)*	-198159.6 (0.0005)*
INF	16685.39 (0.0036)*	16317.50 (0.9090)	16547.83 (0.0002)*	16490.60 (0.0003)*
UNEMPINS	11.58992 (0.018)*	11.72558 (0.0452)*	12.48537 (0.0147)*	11.53545 (0.0002)*
CONSTANT	-1784629 (0.0022)	-1422866 (0.0002)	-1551378 (0.0058)	-1511239 (0.0065)
ADULTUSE	229939.1 (0.3695)	240049.4 (0.3503)	524512.2 (.0202)*	
LEGAL	-246531.1 (0.0187)*			
LIC	296.75 (0.0057)*	238.5364 (0.0227)*		285.8524 (0.0018)*
N	1122	1122	1122	1122
Adjusted R ²	.87	.87	.87	.87

The * indicates significant figures. The figures with parentheses are probabilities.

Results: Employment Levels w/ demographics 2010-2016

Variable	Model 1	Model 2	Model 3	Model 4
REALGDP	6.786615 (0.0005)*	6.754057 (0.0005)*	6.958267 (0.0005)*	6.933347 (0.0001)*
MINWAGE	-127716.6 (0.0025)*	-131047.4 (0.005)*	-194915.8 (0.005)*	-204883.5 (0.0001)*
INF	4409.307 (0.3452)	3614.67 (0.4395)	4607.138 (0.9090)	-782.6807 (.8653)
UNEMPINS	2.408056 (0.0117)*	1.8697 (0.0425)*	1.919881 (0.0452)*	1.218640 (0.1857)
BLACK	-2239.472 (0.5377)	-1937.269 (0.5953)	-1057.273 (0.7737)	-584.6872 (.8744)
HISPANIC	7052.616 (0.0566)	6811.945 (0.0667)	2889.003 (0.4163)	2232.536 (0.5317)
MALE	-83733.33 (0.1063)	-99794.41 (0.0529)*	-771112.43 (0.4136)	-96191.33 (0.0669)
ADULTUSE	182583.5 (0.2330)	55034.60 (0.6956)	176080 (0.2577)	19428.92 (.8919)
LEGAL	-261684.7 (0.0005)	-280274.3 (0.0002)		
LIC	-142.2478 (0.0390)*		-171.5278 (0.0137)*	
N	357	357	357	357
R ²	.97	.97	.97	.97

The * indicates significant figures. The figures with parentheses are probabilities

Conclusion



In this Dec. 27, 2013 file photo, employees trim away leaves from marijuana plants to be packaged and sold at a dispensary in Denver. (AP Photo/Brennan Linsley)



Workers trim plants at a cannabis farm outside of Salinas, Calif., Tuesday, April 25, 2017. Many workers who were in the cut flower business, which has perished, are now in the cannabis business, which is growing. (Patrick Tehan/Bay Area News Group)

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