



Same-Sex Marriage Legalization Reduces Depression: Evidence From Global Investigation

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Introduction

- **Depression** is a prevalent mental health disorder that affects individuals worldwide, with particularly high rates among gender minorities, such as LGBT+ individuals.
- As estimated 35 countries **legalize same-sex marriage**, which is a typical policy of anti-bias against homosexuality. Little is known about the global impacts of the policy to the common mental health disease.

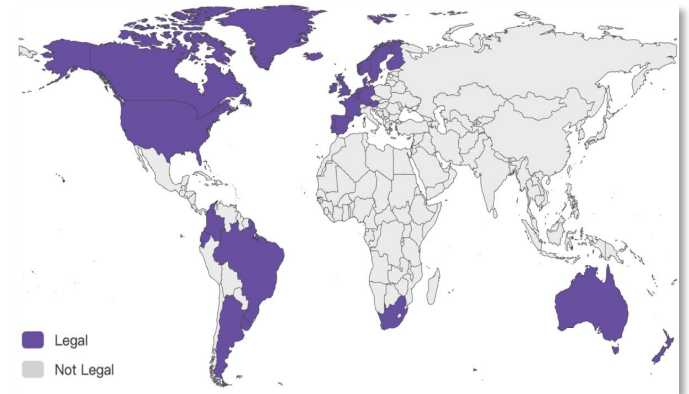


Fig. 1| Global legalization of same-sex marriage as of 2019

Robustness test

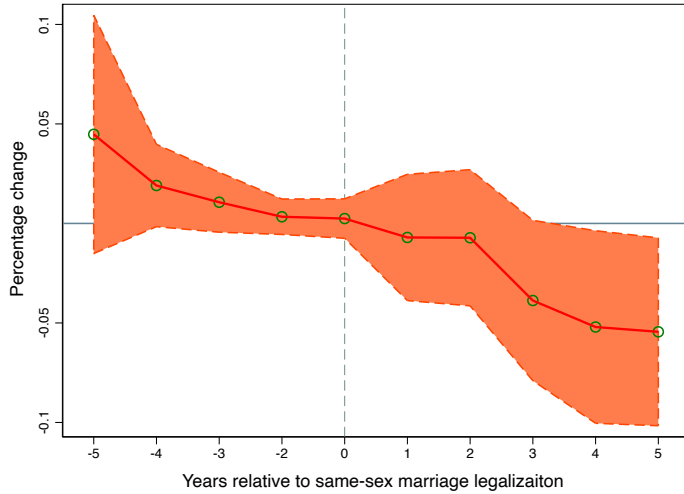


Fig. 2 | Parallel trend test

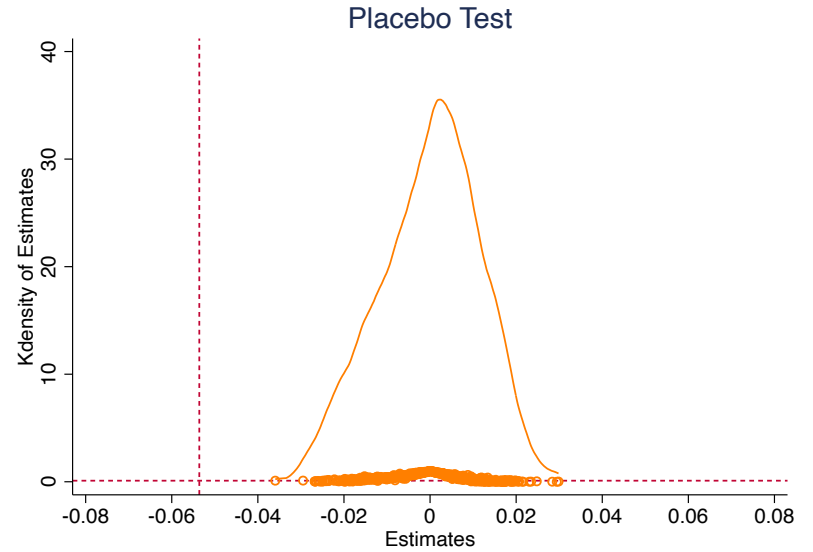


Fig. 3 | Placebo test

Robustness test

- Referring to the method proposed by Andrew Goodman-Bacon, we conduct the goodman-bacon decomposition to correct the traditional difference-in-difference (DID) and enhance the robustness of the results.
- The above results suggest that the baseline results using difference-in-difference (DID) is plausible and the coefficient of estimate is significantly negative.

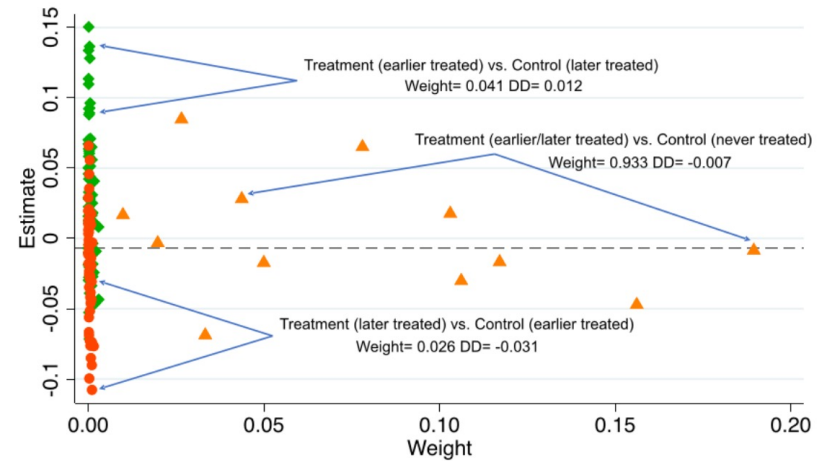


Fig. 4 | Goodman-bacon decomposition for SSML and depression

Results: Same-Sex Marriage Reduces Depression

Table 1 | Effects of SSML on Depression

Variables	Depression (1)	Depression (2)	Depression (3)	Depression (4)
SSML	-0.0515** (-2.05)	-0.0538** (-2.07)	-0.0514** (-2.04)	-0.0536** (-2.06)
GDP	-0.0113*** (-3.02)	-0.00875 (-1.49)	-0.0113*** (-2.99)	-0.00867 (-1.41)
ODA	-0.00251* (-1.77)	-0.00217 (-1.48)	-0.00261* (-1.83)	-0.00227 (-1.52)
HE	-0.00355 (-0.26)	-0.00243 (-0.17)	-0.00335 (-0.24)	-0.00220 (-0.15)
SR	0.0343*** (3.33)	0.0362*** (3.33)	0.0342*** (3.33)	0.0361*** (3.27)
Constant	1.606*** (11.55)	1.532*** (7.85)	1.618*** (11.67)	1.540*** (7.72)
Observations	2152	2152	2152	2152
Number of Countries	135	135	135	135
R-squared	0.186	0.209	0.186	0.209
Country FE	NO	NO	YES	YES
Year FE	NO	YES	NO	YES

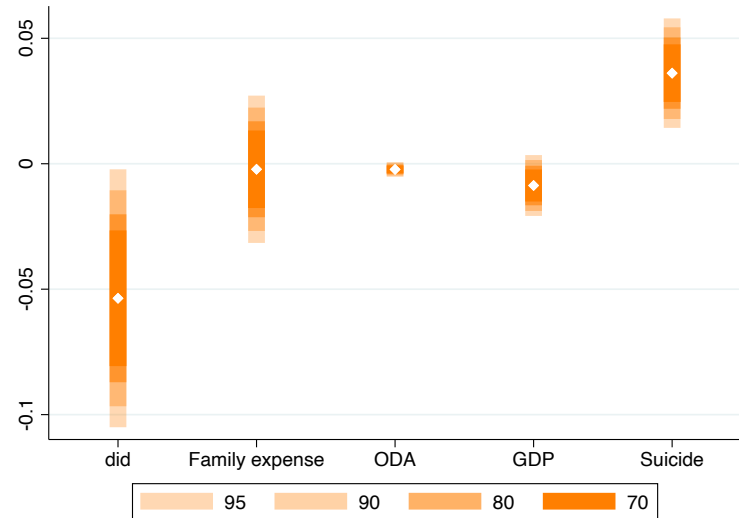


Fig. 5 | baseline result

Results: Same-Sex Marriage Reduces Depression

Table 2 | Mediation effect

Variables	(1)	(2)	(3)
	<i>Depression</i>	<i>Employment</i>	<i>Depression</i>
<i>SSML_{it}</i>	-0.0542*** (-9.06)	1.8466*** (3.59)	-0.0531*** (-8.85)
<i>Employment</i>			-0.0006** (-2.46)
<i>Control Variables</i>	YES	YES	YES
<i>Observations</i>	2106	2106	2106
<i>Number of Countries</i>	132	132	132
<i>R²</i>	0.991	0.976	0.991
<i>Country FE</i>	YES	YES	YES
<i>Year FE</i>	YES	YES	YES
<i>Sobel Test</i>	-0.0012	z=-2.029	p=0.0425
<i>Goodman Test</i>	-0.0012	z=-2.084	p=0.0371

Proportion of total effect that is mediated: 0.022

Ratio of indirect to direct effect: 0.023

Ratio of total to direct effect: 1.023

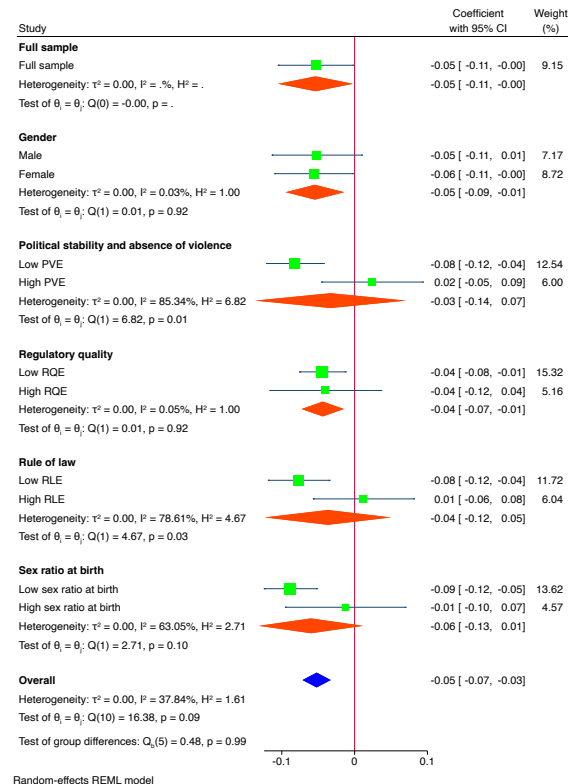


Fig. 5 | Forest plots of effects of SSML on depression prevalence