

# **Secular Competition and Religious Education in American History: Results Tables and Graphs**

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December 2010

**TABLE 1: University Characteristics in 1900, by University Control Type**

	Religious	Secular	Public	(1) – (3) t-stat	(2) – (3) t-stat
	(1)	(2)	(3)	(4)	(5)
Students	255 (305)	554 (753)	805 (795)	8.28 [0.000]	1.65 [0.102]
Faculty	212 (27)	567 (88)	62 (59)	7.30 [0.000]	0.33 [0.742]
Students per Faculty	12.9 (6.0)	13.2 (8.5)	13.2 (5.6)	0.28 [0.782]	-0.03 [0.974]
Tuition Revenue per Student (1900\$)	46.2 (47.0)	52.4 (45.6)	23.9 (26.6)	-0.52 [0.600]	-2.93 [0.004]
Endowment Income per Student (1900\$)	27.6 (47.7)	61.6 (124.1)	35.5 (41.6)	0.92 [0.356]	-1.31 [0.194]
Scientific Equipment per Student (1900\$)	48.3 (78.0)	87.6 (121.2)	119.5 (87.5)	5.38 [0.000]	1.47 [0.145]
Number of Universities	288	68	41		

Source: Data are from U.S. Commissioner of Education, *Annual Report* (1900).

Notes: Columns (1)-(3) report the mean as the main entry and the standard deviation in parentheses of the indicated population indicated. Entries in columns (4)-(5) report the t-statistic of hypothesis test of differences between the columns indicated with the p-value of the test in square brackets.

**TABLE 2: University and State Characteristics in 1900, Public University Market Share and University Control Type**

	Public University Market Share 1900		
	Low	High	(1) – (2) t-stat
	(1)	(2)	(3)
<i>Panel A. Religious University Characteristics</i>			
Students	195 (136)	279 (348)	-2.13 [0.034]
Faculty	17 (13)	24 (31)	-1.93 [0.055]
Students per Faculty	12.8 (6.1)	12.9 (6.0)	-0.17 [0.868]
Tuition Revenue per Student (1900\$)	34.0 (28.1)	51.8 (52.5)	-2.74 [0.007]
Endowment Income per Student (1900\$)	31.8 (53.5)	18.3 (30.0)	-2.01 [0.045]
Scientific Equipment per Student (1900\$)	51.2 (84.4)	41.2 (65.6)	-0.99 [0.325]
Number of Universities	205	83	
<i>Panel B. Secular University Characteristics</i>			
Students	236 (160)	660 (841)	-2.06 [0.501]
Faculty	21 (21)	68 (99)	1.96 [0.054]
Students per Faculty	14.8 (11.6)	12.7 (7.3)	0.91 [0.364]
Tuition Revenue per Student (1900\$)	31.5 (18.7)	60.0 (50.1)	2.28 [0.026]
Endowment Income per Student (1900\$)	66.4 (149)	48.6 (63.8)	-0.50 [0.616]
Scientific Equipment per Student (1900\$)	92.6 (121.1)	72.7 (124.2)	-0.58 [0.561]
Number of Universities	51	17	
<i>Panel C. State Characteristics</i>			
College Age Population	277331 (137476)	128254 (47676)	-15.20 [0.000]
School Enrollment Rate (%)	72 (8)	74 (9)	2.61 [0.009]
Population Urban (%)	40 (22)	19 (10)	-12.92 [0.000]
Manufacturing Workers Per Capita	0.06 (0.03)	0.03 (0.02)	-9.26 [0.000]
Average Annual Manufacturing Wage	522 (106)	438 (88)	-9.90 [0.000]

Sources: Data are from U.S. Commissioner of Education, *Annual Report* (1900), the Decennial Census of 1900, and the Biennial Survey of Education (1928), Volume 2, p.48.

Notes: Column (1) reports the mean as the main entry and the standard deviation in parentheses of the indicated variable for universities in states with above median public college market share in 1900. Column (2) reports the mean as the main entry and the standard deviation in parentheses of the indicated variable for universities in states with below median public college market share in 1900. Entries in column (3) report the t-statistic of the hypothesis test of differences between the columns (1) and (2) with the p-value of the test in square brackets. Panel A reports results for religious universities, panel B reports results for secular universities, and panel reports results for state-level variables.

**TABLE 3: Estimated Changes in Students per Faculty, by State Competition Change**

Dependent Variable = Log(Students per Faculty)

<i>LG Expand Effect:</i>		High $\Delta$ Competition	Low $\Delta$ Competition	Difference
		(1)	(2)	(3)
1901		0.09 (0.06)	-0.03* (0.02)	0.13** (0.06)
1902		-0.15 (0.08)	-0.20*** (0.03)	0.05 (0.09)
1903		-0.11 (0.07)	-0.19*** (0.03)	0.09 (0.07)
1904		-0.02 (0.07)	0.08** (0.03)	0.05 (0.08)
1905		-0.10 (0.07)	-0.13 (0.04)	0.03 (0.08)
1906		0.11* (0.06)	0.02 (0.03)	0.09 (0.06)
1907	<i>LG Expand Phase In</i>	0.19** (0.07)	0.04 (0.04)	0.15* (0.08)
1908		0.29*** (0.07)	0.03 (0.03)	0.25*** (0.07)
1909		0.22*** (0.05)	0.04 (0.04)	0.17** (0.06)
1910		0.14* (0.06)	0.04 (0.04)	0.10 (0.07)
1911		0.19** (0.07)	0.02 (0.03)	0.17** (0.07)
1912		0.15*** (0.05)	-0.00 (0.03)	0.15** (0.06)
1913	<i>LG Expand Full</i>	0.00 (0.06)	-0.13*** (0.02)	0.13** (0.06)
1914		0.20** (0.06)	0.09** (0.04)	0.10 (0.07)
R <sup>2</sup>		0.59	0.53	0.55
Observations		866	3395	4261

Source: Data are from U.S. Commissioner of Education, *Annual Report* (1900-1914).

Notes: The estimates presented are for alternative versions of equation (3). The unit of observation is at the institution-year level. Each column reports the results from one regression. Entries in the table report the coefficient estimates in the main entries of columns (1) - (6) and the standard errors of the coefficient clustered at the state level are in parentheses.

\* indicates significantly different from zero at the 10% level of significance;

\*\* indicates significantly different from zero at the 5% level of significance;

\*\*\* indicates significantly different from zero at 1% level of significance.

**TABLE 4: Effects of Changes of Public Competition on Students and Faculty in Religious Universities**

<i>Dependent Variable:</i>	Log(Students Per Faculty)	Log(Students)	Log(Faculty)
	(1)	(2)	(3)
LG Expand *	0.09***	0.13***	0.03
Large Public Spending $\Delta$	(0.03)	(0.03)	(0.03)
R <sup>2</sup>	0.55	0.84	0.83
Observations	4261	4266	4262

Source: Data are from U.S. Commissioner of Education, *Annual Report* (1900-1914).

Notes: The estimates presented are for alternative versions of equation (2) for the population and outcome variable indicated. The unit of observation is at the institution-year level. Each column reports the results from one regression. Entries in the table report the coefficient estimates in the main entries of columns (1) - (6) and the standard errors of the coefficient clustered at the state level are in parentheses.

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**TABLE 5: Effects of Changes of Public Competition on Prices, Endowment Income, and Scientific Equipment in Religious Universities**

<i>Dependent Variable:</i>	Log(Tuition Revenue per Student)	Log(Endowment Income Per Student)	Log(Scientific Equipment Per Student)
	(1)	(2)	(3)
LG Expand *	-0.19*	-0.22*	-0.30**
Large Public Spending $\Delta$	(0.10)	(0.12)	(0.12)
R <sup>2</sup>	0.66	0.81	0.67
Observations	3719	2605	1793

Source: Data are from U.S. Commissioner of Education, *Annual Report* (1900-1914).

Notes: The estimates presented are for alternative versions of equation (2). The unit of observation is at the institution-year level. Each column reports the results from one regression. Entries in the table report the coefficient estimates in the main entries of columns (1) - (6) and the standard errors of the coefficient clustered at the state level are in parentheses.

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**TABLE 6: Effects of Changes of Public Competition on Students per Faculty, by State Competition Change and Religious Control Type**

Dependent Variable = Log(Students per Faculty)

<i>Religious Control Type:</i>	Catholic	Anglican	Reformed	Other
	(1)	(2)	(3)	(4)
LG Expand *	0.28**	0.23***	-0.12*	0.15
Large Public Spending $\Delta$	(0.11)	(0.06)	(0.06)	(0.15)
R <sup>2</sup>	0.54	0.53	0.58	0.78
Observations	718	1147	1643	754
<u>Students Per Faculty in 1900:</u>				
Mean	11.1	13.2	13.5	12.9
[Standard Deviation]	[4.4]	[7.1]	[5.6]	[6.3]

Source: Data are from U.S. Commissioner of Education, *Annual Report* (1900-1914).

Notes: The estimates presented are for alternative versions of equation (2). The unit of observation is at the institution-year level. Each column reports the results from one regression. The sample for each regression is the population of religiously controlled universities indicated. Entries in columns (1) - (4) of the table report the coefficient estimates in the main entries and the standard errors of the coefficient clustered at the state level are in parentheses.

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**TABLE 7: Estimated Changes in Students per Faculty, by State Competition Change**

Dependent Variable = Log(Students per Faculty)

<i>LG Expand Effect:</i>		High $\Delta$ Competition	Low $\Delta$ Competition	Difference
		(1)	(2)	(3)
1901		-0.00 (0.05)	-0.01 (0.03)	0.01 (0.06)
1902		-0.13* (0.06)	-0.12* (0.06)	-0.01 (0.08)
1903		-0.13* (0.7)	-0.04 (0.06)	-0.09 (0.09)
1904		-0.08 (0.11)	-0.07 (0.05)	-0.01 (0.12)
1905		-0.11 (0.07)	-0.11 (0.06)	-0.01 (0.09)
1906		-0.03 (0.08)	-0.04 (0.04)	0.01 (0.09)
1907	<i>LG Expand Phase In</i>	-0.03 (0.11)	0.00 (0.05)	-0.03 (0.12)
1908		-0.07 (0.13)	-0.02 (0.05)	-0.05 (0.13)
1909		-0.06 (0.13)	-0.04 (0.05)	-0.02 (0.13)
1910		-0.09 (0.13)	0.01 (0.07)	-0.10 (0.14)
1911		-0.06 (0.12)	-0.10** (0.06)	0.04 (0.13)
1912	<i>LG Expand Full</i>	-0.14 (0.14)	-0.07 (0.06)	-0.07 (0.15)
1913		-0.27** (0.12)	-0.14** (0.06)	-0.13 (0.13)
1914		-0.04 (0.13)	-0.04 (0.07)	0.00 (0.14)
R <sup>2</sup>		0.78	0.63	0.68
Observations		285	899	1184

Source: Data are from U.S. Commissioner of Education, *Annual Report* (1900-1914).

Notes: The estimates presented are for alternative versions of equation (3). The unit of observation is at the institution-year level. Each column reports the results from one regression. Entries in the table report the coefficient estimates in the main entries of columns (1) - (6) and the standard errors of the coefficient clustered at the state level are in parentheses.

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**TABLE 8: Effects of Changes of Public Competition on Students and Faculty in Secular Universities**

<i>Dependent Variable:</i>	Log(Students Per Faculty)	Log(Students)	Log(Faculty)
	(1)	(2)	(3)
LG Expand *	-0.03	0.08	0.11
Large Public Spending $\Delta$	(0.09)	(0.09)	(0.07)
R <sup>2</sup>	0.67	0.94	0.94
Observations	1184	1185	1185

Source: Data are from U.S. Commissioner of Education, *Annual Report* (1900-1914).

Notes: The estimates presented are for alternative versions of equation (2) for the population and outcome variable indicated. The unit of observation is at the institution-year level. Each column reports the results from one regression. Entries in the table report the coefficient estimates in the main entries of columns (1) - (6) and the standard errors of the coefficient clustered at the state level are in parentheses.

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**TABLE 9: Effects of Changes of Public Competition on Prices, Endowment Income and Scientific Equipment in Secular Universities**

<i>Dependent Variable:</i>	Log(Tuition Revenue per Student)	Log(Endowment Income Per Student)	Log(Scientific Equipment Per Student)
	(1)	(2)	(3)
LG Expand *	0.07	0.17*	0.36*
Large Public Spending $\Delta$	(0.09)	(0.09)	(0.20)
R <sup>2</sup>	0.67	0.87	0.82
Observations	1089	886	519

Source: Data are from U.S. Commissioner of Education, *Annual Report* (1900-1914).

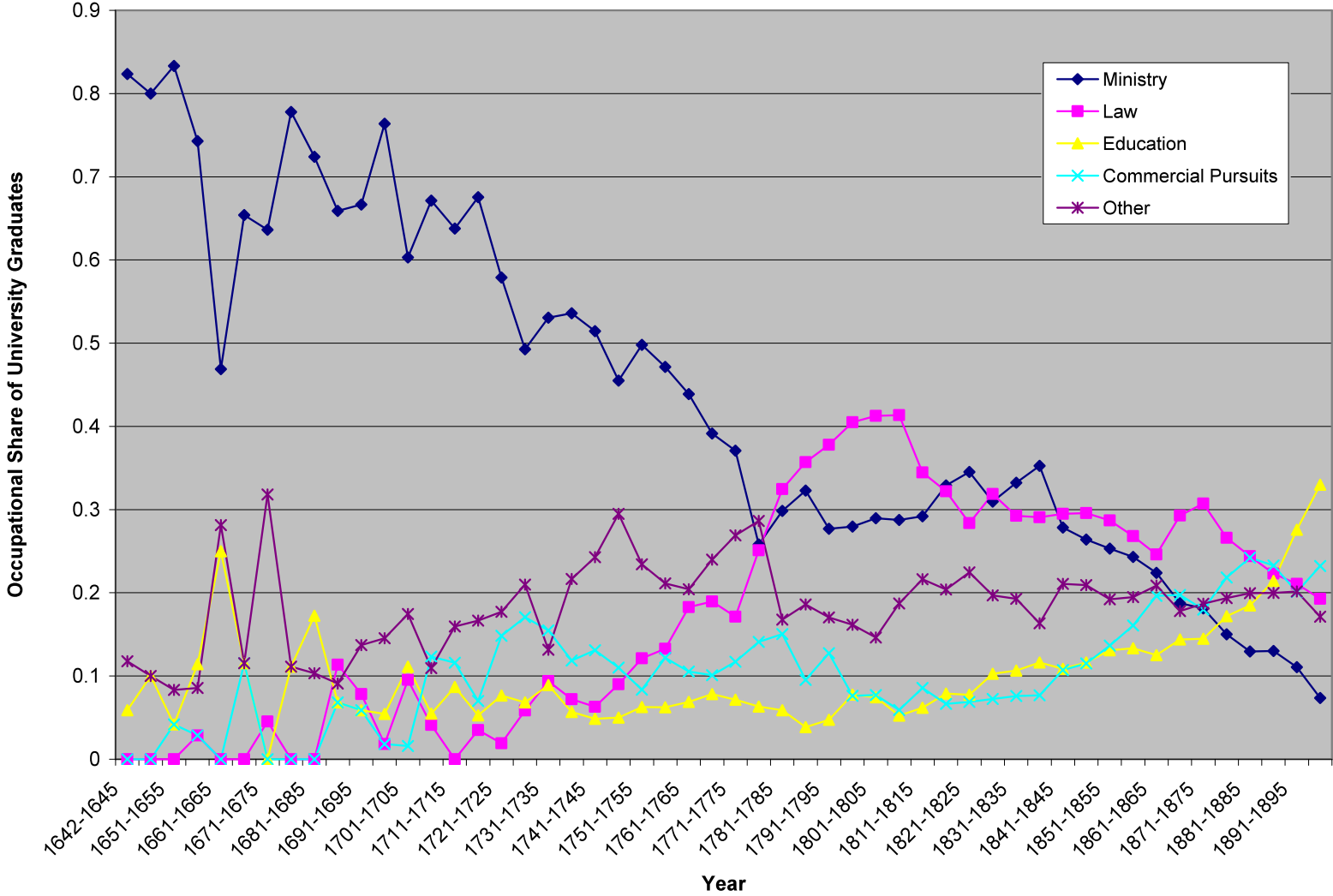
Notes: The estimates presented are for alternative versions of equation (2). The unit of observation is at the institution-year level. Each column reports the results from one regression. Entries in the table report the coefficient estimates in the main entries of columns (1) - (6) and the standard errors of the coefficient clustered at the state level are in parentheses.

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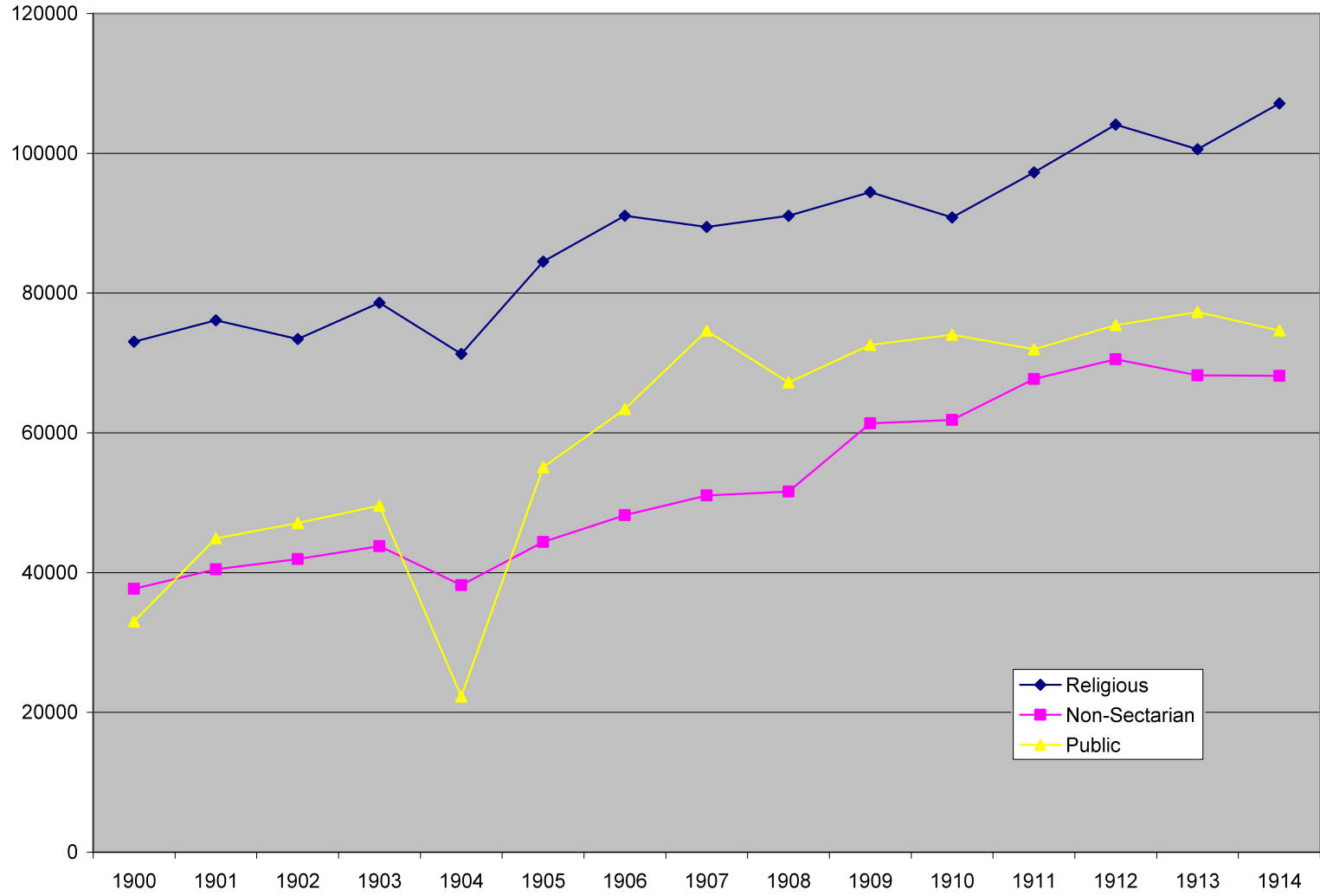
\*\*\* indicates significantly different from zero at 1% level of significance.

FIGURE 1: University Graduate Occupation Shares, 1642-1900



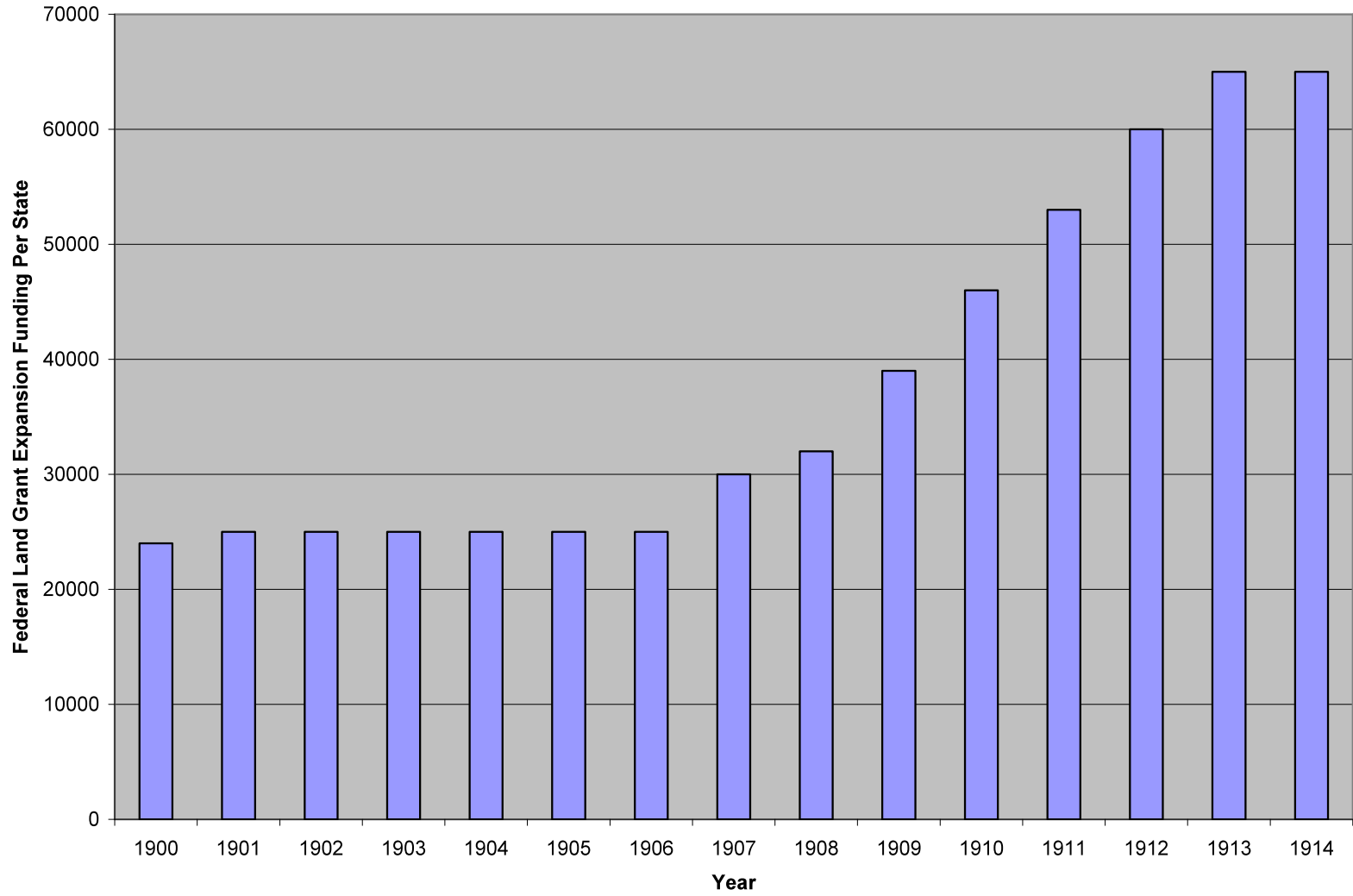
Source: Burritt, Bailey (1912) "Professional Distribution of College and University Graduates", Bureau of Education, Bulletin 1912, No.19 (491) Government Printing Office, Washington, DC.

**FIGURE 2: Student Enrollment by University Control Type, 1900-1914**



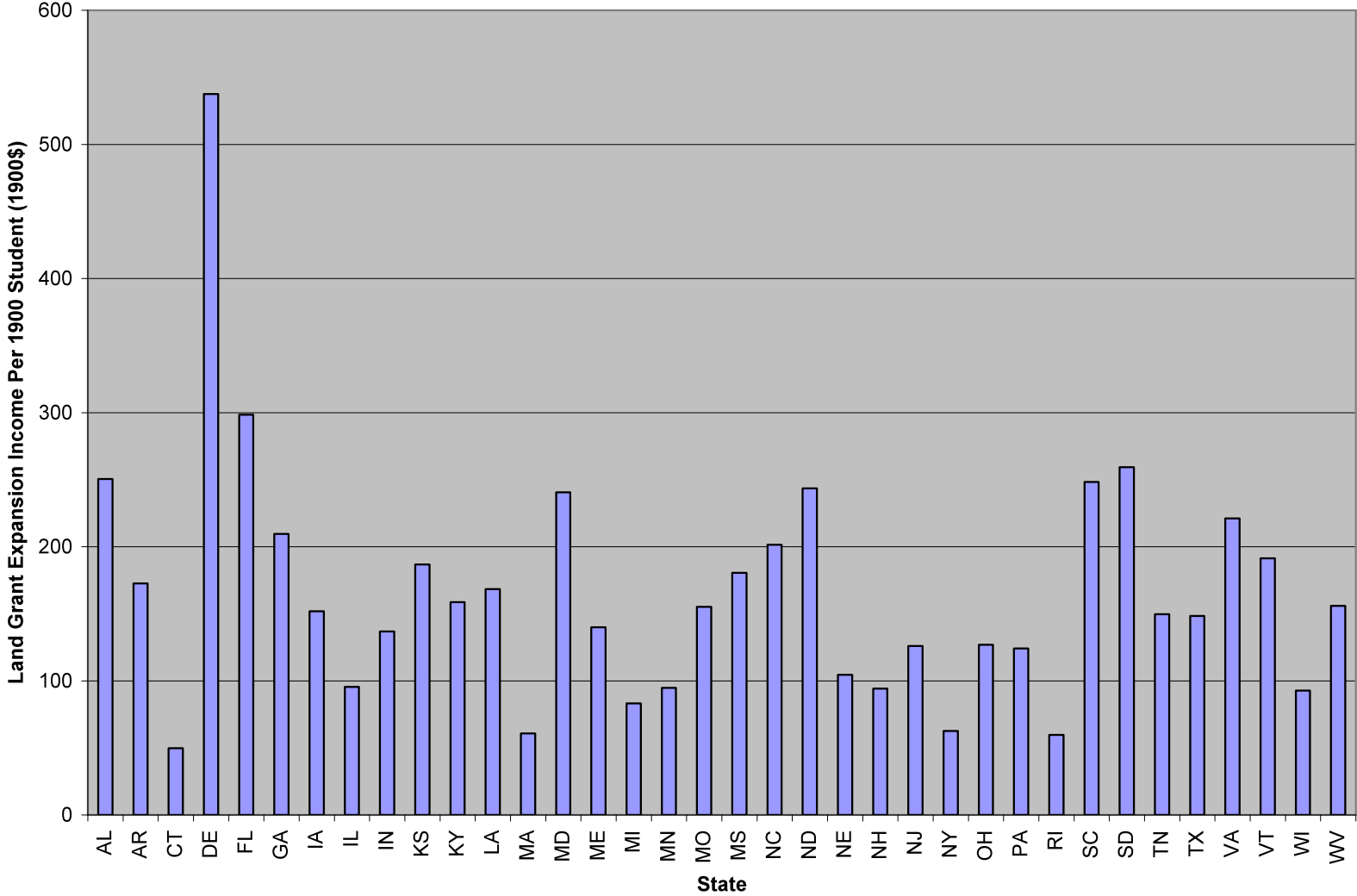
Source: U.S. Commissioner of Education, *Annual Report* (1900-1914).

**FIGURE 3: Federal Land Grant Expansion Spending Per State, 1900-1914**



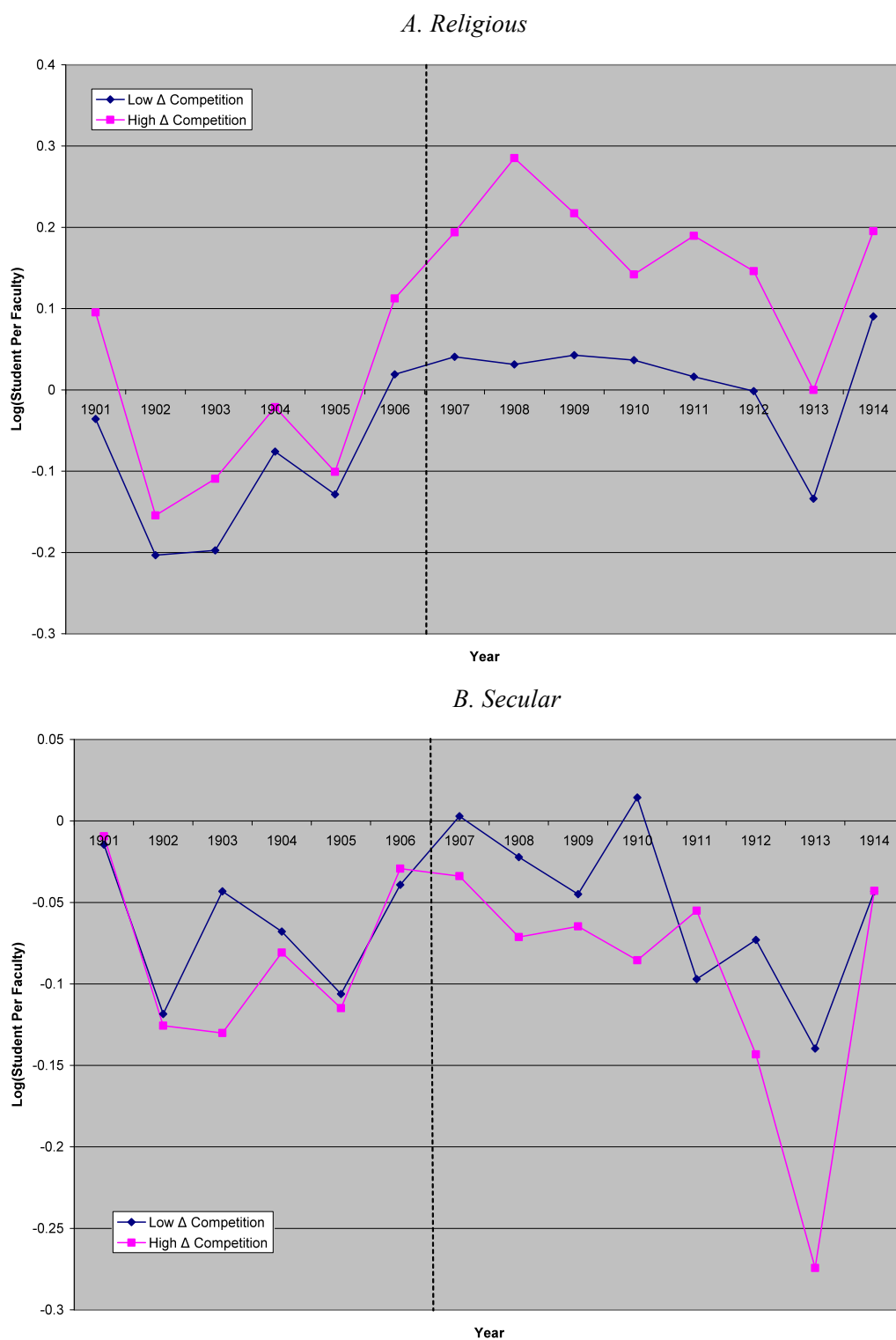
Source: U.S. Commissioner of Education, *Annual Report* (various years).

**FIGURE 4: Federal Land Grant Expansion Income in 1914 per Student in 1900, by State**



Source: U.S. Commissioner of Education, *Annual Report* (various years).

**FIGURE 5: Student Enrollment Per Faculty 1900-1914, by State Competition Change**

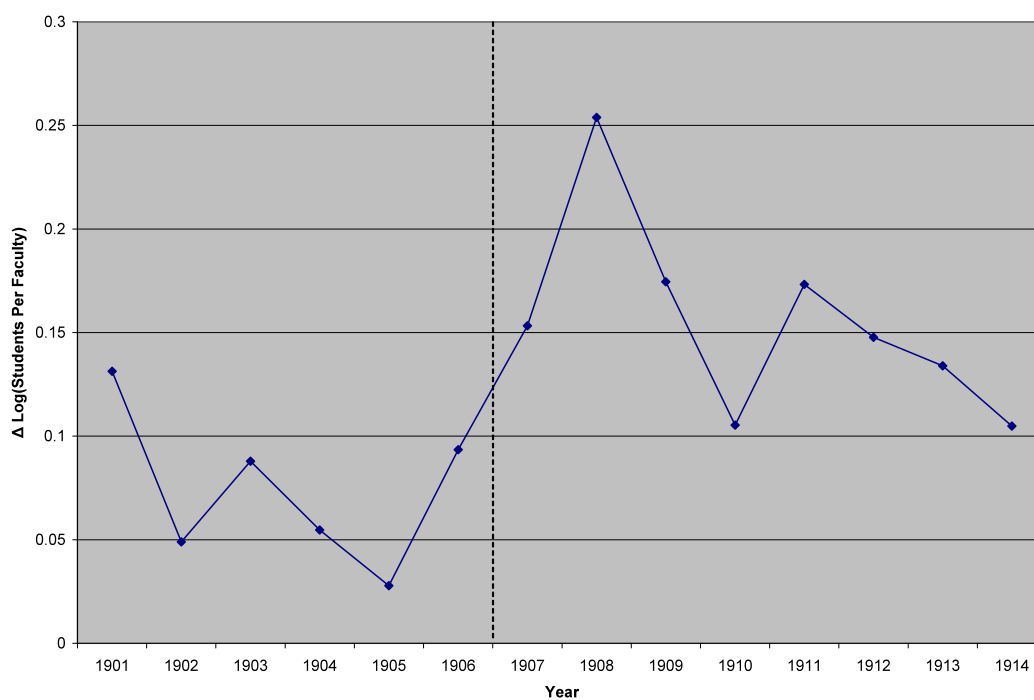


Source: U.S. Commissioner of Education, *Annual Report* (various years). The estimates presented are for alternative versions of equation (2), reported in Table 3.

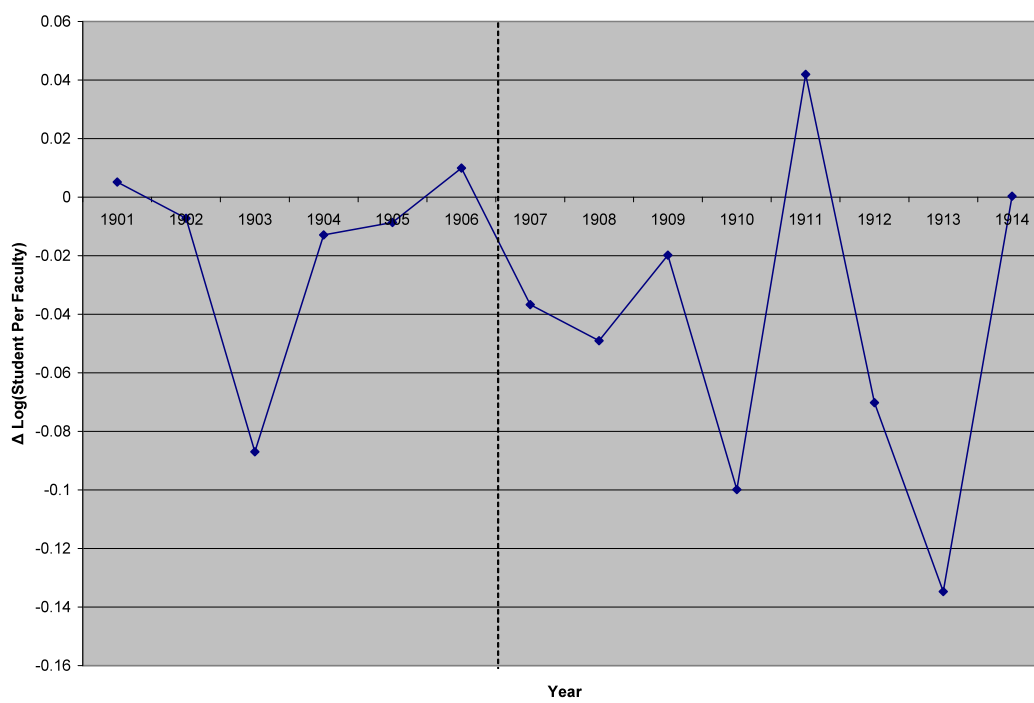


**FIGURE 6: Change in Student Enrollment Per Faculty 1900-1914, by State Competition Change**

*A. Religious*



*B. Secular*



Source: U.S. Commissioner of Education, *Annual Report* (various years). The estimates presented are for alternative versions of equation (2), reported in Table 3.