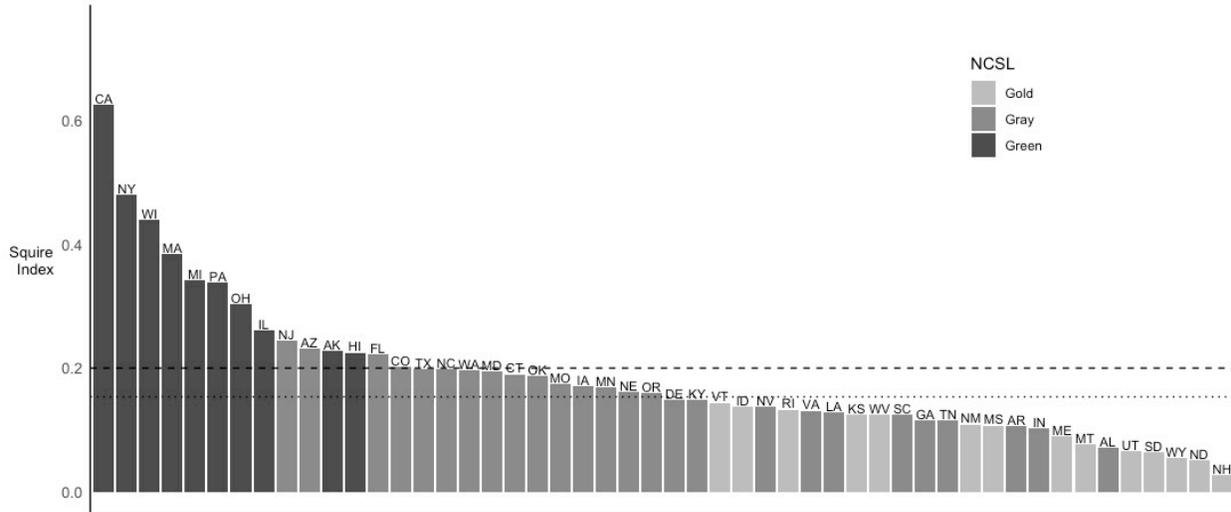


# Online Appendix for "The Professionalism Advantage: Attracting, Fostering or Retaining Knowledge?"

**Figure 1:** Distribution of Professionalism and Cut-offs. Dashed line is the Broockman and Skovron (2018) cut-off. Dotted line is the median.



**Table 1: Decomposition Sample Sizes**

	Low Professionalism Incumbent	Low Professionalism Non-Incumbent	High Professionalism Incumbent	High Professionalism Non-Incumbent	Total
Decomposition 1: Broockman cut-off All candidates	461	741	131	215	1,548
Decomposition 2: Broockman cut-off Republicans only	204	293	41	81	619
Decomposition 3: Broockman cutoff Democrats only	257	447	90	134	928
Decomposition 4: Squire Median All candidates	312	489	280	467	1,548
Decomposition 5: NCSL Gold and Green groups All candidates	210	329	123	204	866

Note: For Tables 2 - 6, the asteric in the Difference column denotes statistical significance for a one-tailed test at  $p < 0.05$ . Calculations for this can be found in our replication files.

**Table 2:** Group Means and Regression Coefficients for Decomposition 1: Broockman and Skovron cut-off and All candidates

Quantities of Interest	High Professionalism	Low Professionalism	Difference
Average Knowledge Gap ( $\overline{KG}$ )	19.47	20.58	-1.11* (0.60)
Average Years Served ( $\overline{Years}$ )	3.70	2.96	0.74* (0.39)
Non-Incumbent Knowledge Gap ( $\alpha$ )	19.71	20.99	-1.28* (0.66)
Rate of Learning While in Office ( $\beta$ )	-0.07	-0.14	0.07 (0.08)

Note: Standard errors in parentheses. \*  $p < 0.05$  (one-sided).

**Table 3:** Group Means and Regression Coefficients for Decomposition 2: Broockman and Skovron cut-off and Republicans

Quantities of Interest	High Professionalism	Low Professionalism	Difference
Average Knowledge Gap ( $\overline{KG}$ )	23.29	25.19	-1.90* (1.02)
Average Years Served ( $\overline{Years}$ )	2.68	3.04	-0.36 (0.58)
Non-Incumbent Knowledge Gap ( $\alpha$ )	23.08	25.38	-2.30* (1.14)
Rate of Learning While in Office ( $\beta$ )	0.08	-0.06	0.14 (0.18)

Note: Standard errors in parentheses. \*  $p < 0.05$  (one-sided).

**Table 4:** Group Means and Regression Coefficients for Decomposition 3: Broockman and Skovron cut-off and Democrats

Quantities of Interest	High Professionalism	Low Professionalism	Difference
Average Knowledge Gap ( $\overline{KG}$ )	17.39	17.31	0.08 (0.64)
Average Years Served ( $\overline{Years}$ )	4.26	2.91	1.35* (0.52)
Non-Incumbent Knowledge Gap ( $\alpha$ )	17.61	17.89	-0.28 (0.71)
Rate of Learning While in Office ( $\beta$ )	-0.05	-0.20	0.15* (0.08)

Note: Standard errors in parentheses. \*  $p < 0.05$  (one-sided).

**Table 5:** Group Means and Regression Coefficients for Decomposition 4: Median and all candidates

Quantities of Interest	High Professionalism	Low Professionalism	Difference
Average Knowledge Gap ( $\overline{KG}$ )	19.52	21.09	-1.57* (0.50)
Average Years Served ( $\overline{Years}$ )	3.40	2.88	0.52 (0.33)
Non-Incumbent Knowledge Gap ( $\alpha$ )	20.06	21.24	-1.18* (0.55)
Rate of Learning While in Office ( $\beta$ )	-0.16	-0.05	-0.11 (0.08)

Note: Standard errors in parentheses. \*  $p < 0.05$  (one-sided).

**Table 6:** Group Means and Regression Coefficients for Decomposition 5: NCSL and all candidates

Quantities of Interest	High Professionalism	Low Professionalism	Difference
Average Knowledge Gap ( $\overline{KG}$ )	19.23	21.04	-1.81* (0.68)
Average Years Served ( $\overline{Years}$ )	3.72	2.40	1.33* (0.43)
Non-Incumbent Knowledge Gap ( $\alpha$ )	19.53	21.28	-1.75* (0.75)
Rate of Learning While in Office ( $\beta$ )	-0.08	-0.10	0.02 (0.11)

Note: Standard errors in parentheses. \*  $p < 0.05$  (one-sided).

Decompositions 1, 2, 4 and 5 all have a professionalism advantage for the knowledge gap that is statistically significant and in the expected direction (higher professionalism legislatures have more knowledgeable members). The professionalism advantage for decomposition 3 is not statistically significant. Decomposition 3 includes just Democratic candidates, which is consistent with the Broockman and Skovron (2018) finding that the knowledge gap is attenuated drastically among Democratic candidates, relative to Republican candidates. Thus, we do not include decomposition 3 in our robustness checks because this specific sample of the data does not exhibit the phenomenon we are studying.

**Table 7:** Decomposition Results for Decomposition 1: Broockman and Skovron cut-off and All candidates

Total Professionalism Advantage	$= KG_L - KG_H$ $= 20.58 - 19.47$ $= 1.11$
<b>Components of Professionalism Advantage</b>	
Advantage from Attracting Knowledge	$= (\alpha_L - \alpha_H)$ $= (20.99 - 19.71)$ $= 1.28^*$ $(0.66)$
Advantage from Fostering Knowledge	$= (\beta_L - \beta_H) * Years_H$ $= (-0.14 - (-0.07)) * 3.70$ $= -0.26$ $(0.26)$
Advantage from Retaining Incumbents	$= \beta_L * (Years_L - Years_H)$ $= -0.14 * (2.96 - 3.70)$ $= 0.10$ $(0.07)$

Note: \*  $p < 0.05$  (one-sided). Standard errors in parentheses. Bootstrapping was used to calculate the standard errors for the *Advantage from Fostering Knowledge* and *Advantage from Retaining Incumbents* quantities.

**Table 8:** Decomposition Results for Decomposition 2: Broockman and Skovron cut-off and Republicans

Total Professionalism Advantage	$= KG_L - KG_H$ $= 25.19 - 23.29$ $= 1.90$
<b>Components of Professionalism Advantage</b>	
Advantage from Attracting Knowledge	$= (\alpha_L - \alpha_H)$ $= (25.38 - 23.08)$ $= 2.30^*$ $(1.14)$
Advantage from Fostering Knowledge	$= (\beta_L - \beta_H) * Years_H$ $= (-0.06 - (0.08)) * 2.68$ $= -0.38$ $(0.45)$
Advantage from Retaining Incumbents	$= \beta_L * (Years_L - Years_H)$ $= -0.06 * (3.04 - 2.68)$ $= -0.02$ $(0.05)$

Note: \*  $p < 0.05$  (one-sided). Standard errors in parentheses. Bootstrapping was used to calculate the standard errors for the *Advantage from Fostering Knowledge* and *Advantage from Retaining Incumbents* quantities.

**Table 9:** Decomposition Results for Decomposition 4: Median and all candidates

Total Professionalism Advantage	$= KG_L - KG_H$ $= 21.09 - 19.52$ $= 1.57$
<u>Components of Professionalism Advantage</u>	
Advantage from Attracting Knowledge	$= (\alpha_L - \alpha_H)$ $= 21.24 - 20.06$ $= 1.18^*$ $(0.55)$
Advantage from Fostering Knowledge	$= (\beta_L - \beta_H) * Years_H$ $= (-0.05 - (-0.16)) * 3.40$ $= 0.37$ $(0.23)$
Advantage from Retaining Incumbents	$= \beta_L * (Years_L - Years_H)$ $= -0.05 * (2.88 - 3.40)$ $= 0.03$ $(0.04)$

Note: \*  $p < 0.05$  (one-sided). Standard errors in parentheses. Bootstrapping was used to calculate the standard errors for the *Advantage from Fostering Knowledge* and *Advantage from Retaining Incumbents* quantities.

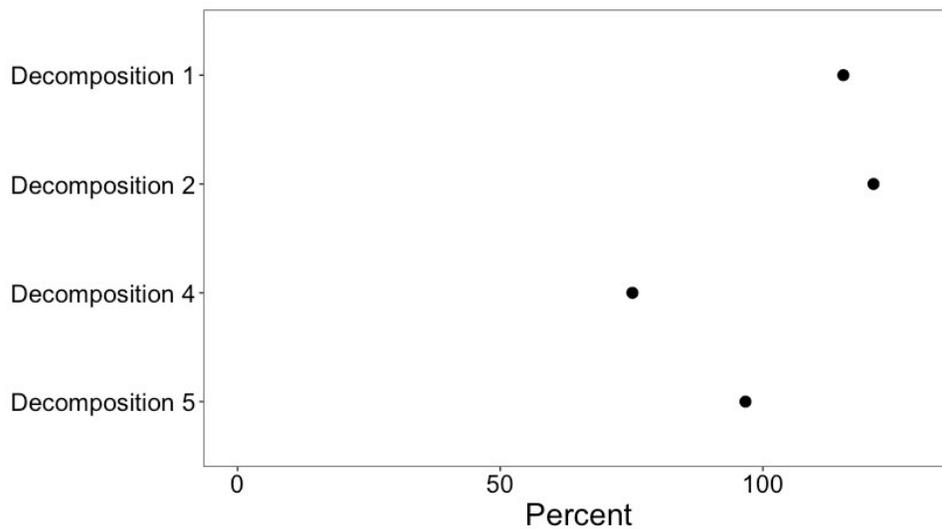
**Table 10:** Decomposition Results for Decomposition 5: NCSL and all candidates

Total Professionalism Advantage	$= KG_L - KG_H$ $= 21.04 - 19.23$ $= 1.81$
<u>Components of Professionalism Advantage</u>	
Advantage from Attracting Knowledge	$= (\alpha_L - \alpha_H)$ $= (21.28 - 19.53)$ $= 1.75^*$ $(0.75)$
Advantage from Fostering Knowledge	$= (\beta_L - \beta_H) * Years_H$ $= (-0.10 - (-0.08)) * 3.72$ $= -0.07$ $(0.36)$
Advantage from Retaining Incumbents	$= \beta_L * (Years_L - Years_H)$ $= -0.10 * (2.40 - 3.72)$ $= 0.13$ $(0.13)$

Note: \*  $p < 0.05$  (one-sided). Standard errors in parentheses. Bootstrapping was used to calculate the standard errors for the *Advantage from Fostering Knowledge* and *Advantage from Retaining Incumbents* quantities.

Figure 2 shows that in all three decompositions the majority of the professionalism advantage is derived from the ability of a highly-professionalized legislature to attract knowledgeable non-incumbent candidates. Per our pre-analysis plan: “If any of the decompositions 1-5 yield results that attraction does not constitute the majority (50% or higher) of the professionalism advantage, then those results will be considered different and we will pursue the specifications listed below.” In all four decompositions the majority of the professionalism advantage is derived from the ability of a highly-professionalized legislature to attract knowledgeable non-incumbent candidates, so we do not pursue further decomposition specifications.

**Figure 2:** Percent of Professionalism Advantage Derived from Attracting High-Knowledge Candidates



**Table 11:** Distribution of members from single-member and multi-member districts

	N =	% of Total Sample	% of MMD Sample
1-seat district	677	84%	—
2-seat district	74	9%	58%
3-seat district	34	4%	27%
4-seat district	10	1%	8%
5-seat district	2	<1%	2%
6-seat district	1	<1%	<1%
7-seat district	3	<1%	2%
8-seat district	2	<1%	2%
10-seat district	1	<1%	<1%
11-seat district	1	<1%	<1%