

Supplemental materials for

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Impact of Financial Incentives and Department Size on Scholarly Activity Output

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Supplemental Table 1. Distribution of characteristics of family medicine residency programs surveyed.				
Variable	Full Sample (N= 195)		Interviewing Module Sample (N=106)	
	N (SD)	Mean (%)	N (SD)	Mean (%)
DC Gender				
Female/Woman	71	36.41%	39	36.80%
Male/Man	123	63.08%	67	63.20%
No Response	1	0.51%	0	0.00%
DC Race				
American Indian/Alaska Native/Indigenous	1	0.51%	1	0.90%
Asian	15	7.69%	6	5.70%
Black or African American	21	10.77%	10	9.40%
Hispanic/Latino/of Spanish Origin	8	4.10%	5	4.70%
Middle Eastern/North African	0	0.00%	0	0.00%
Native Hawaiian/other Pacific Islander	1	0.51%	1	0.90%
White	147	75.38%	83	78.30%
Choose not to disclose	9	4.62%	0	0.00%
No Response	2	1.03%	2	1.90%
DC Age				
20 - 29 years old	0	0.00%	0	0.00%
30 - 39 years old	2	1.03%	1	0.90%
40 - 49 years old	37	18.97%	19	17.90%
50 - 59 years old	66	33.85%	38	35.80%
60 - 69 years old	79	40.51%	40	37.70%
70+ years old	10	5.13%	8	7.50%
No Response	1	0.51%	0	0.00%

In what state is your department located?				
New England (NH, MA, ME, VT, RI, or CT)	12	6.15%	7	6.60%
Middle Atlantic (NY, PA, or NJ)	30	15.38%	18	17.00%
South Atlantic (PR, FL, GA, SC, NC, VA, DC, WV, DE, or MD)	37	18.97%	17	16.00%
East South Central (KY, TN, MS, or AL)	11	5.64%	6	5.70%
East North Central (WI, MI, OH, IN, or IL)	29	14.87%	18	17.00%
West South Central (OK, AR, LA, or TX)	21	10.77%	8	7.50%
West North Central (ND, MN, SD, IA, NE, KS, or MO)	15	7.69%	10	9.40%
Mountain (MT, ID, WY, NV, UT, AZ, CO, or NM)	11	5.64%	8	7.50%
Pacific (WA, OR, CA, AK, or HI)	18	9.23%	9	8.50%
Canada	11	5.64%	5	4.70%
Source: Analysis of the Fall 2022 Council of Academic Family Medicine Educational Research Alliance Family Medicine Department Chairs. SD: standard deviation; DC: Department Chair				

Supplemental Table 2. Distribution of characteristics of family medicine department chairs surveyed on engagement in scholarly activity (N=106).

Variable	All (N=106)		Department Chair Did Engage in Scholarly Activity (N=89)		Department Chair Did Not Engage in Scholarly Activity (N=17)	
	N (SD)	Mean (%)	N (SD)	Mean (%)	N (SD)	Mean (%)
Type of Residency Program						
Medical School - Based / Medical School Affiliated	83	78.3%	71	79.8%	12	70.6%
Non Medical School Affiliated	4	3.8%	4	4.5%	0	0.0%
Other (Don't have a residency / Other/Unknown)	19	17.9%	14	15.7%	5	29.4%
Residency Program Location						
New England	7	6.6%	5	5.6%	2	11.8%
Middle Atlantic	18	17.0%	15	16.9%	3	17.6%
South Atlantic	17	16.0%	15	16.9%	2	11.8%
East South Central	6	5.7%	6	6.7%	0	0.0%
East North Central	18	17.0%	14	15.7%	4	23.5%
West South Central	8	7.5%	7	7.9%	1	5.9%
West North Central	10	9.4%	8	9.0%	2	11.8%
Mountain	8	7.5%	8	9.0%	0	0.0%
Pacific	9	8.5%	7	7.9%	2	11.8%
Canada	5	4.7%	4	4.5%	1	5.9%
Community Size						

Less than 30,000	5	4.7%	5	5.6%	0	0.0%
30,000 to 74,999	4	3.8%	2	2.2%	2	11.8%
75,000 to 149,000	14	13.2%	11	12.4%	3	17.6%
150,000 to 499,999	27	25.5%	24	27.0%	3	17.6%
500,000 to 1 million	20	18.9%	17	19.1%	3	17.6%
More than 1 million	36	34.0%	30	33.7%	6	35.3%
Unknown	0	0.0%	0	0.0%	0	0.0%
DC Current Tenure	5.44(4)[0-27]		5.39 (4)[0-27]		5.73(4)[0-26]	
DC Total Tenure	6.62(5)[0-30]		6.59(5)[0-30]		6.78(5.25)[0-26]	
Department full-time FTEs (MD, DO, PhD, PharmD, and other types of faculty)	37.4(20)[0-250]		37.03(20)[1-250]		39.51(18)[0-200]	
DC Gender						
Female	39	36.8%	33	37.1%	6	35.3%
Male	67	63.2%	56	62.9%	11	64.7%
Other/Non-Binary	0	0.0%	0	0.0%	0	0.0%
Other/ Chose not to Disclose	0	0.0%	0	0.0%	0	0.0%
DC URiM						
NO	92	86.8%	77	86.5%	15	88.2%
YES	14	13.2%	12	13.5%	2	11.8%
Missing	0	0.0%	0	0.0%	0	0.0%
DC RACE						
American Indian or Alaska Native	1	0.9%	1	1.1%	0	0.0%
Asian	6	5.7%	5	5.6%	1	5.9%
Black or African-American	10	9.4%	10	11.2%	0	0.0%
Hispanic	5	4.7%	4	4.5%	1	5.9%
Middle Eastern	0	0.0%	0	0.0%	0	0.0%
Native Hawaiian or Pacific Islander	1	0.9%	1	1.1%	0	0.0%
White	83	78.3%	69	77.5%	14	82.4%
Unknown	2	1.9%	1	1.1%	1	5.9%
DC Age						
20-29	0	0.0%	0	0.0%	0	0.0%
30-39	1	0.9%	1	1.1%	0	0.0%
40-49	19	17.9%	16	18.0%	3	17.6%
50-59	38	35.8%	35	39.3%	3	17.6%
60-69	40	37.7%	31	34.8%	9	52.9%
70+	8	7.5%	6	6.7%	2	11.8%
Age Unknown	0	0.0%	0	0.0%	0	0.0%
Department has a family medicine clerkship						
Yes	96	90.6%	81	91.0%	15	88.2%

No	10	9.4%	8	9.0%	2	11.8%
Missing	0	0.0%	0	0.0%	0	0.0%

Source: Analysis of the Fall 2022 Council of Academic Family Medicine Educational Research Alliance Family Medicine Residency Directors Survey. SD: Standard Deviation; DC: Department Chair; FTE: Full Time Equivalent; URiM: underrepresented in medicine

Supplemental Table 3. Faculty scholarly activity versus FTE size.

Variable	All (N =106)		Department Chairs with FTE <25 (N=60)		Department Chairs with FTE between 25-75 (N=30)		Department Chairs with FTE > 75 (N=16)	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
<i>In the 2021-2022 academic year, how many of the following scholarly activities did your clinical based family medicine faculty complete:</i>								
Poster or oral abstract presentation at an academic conference (local, regional, or national)								
0	5	4.7%	5	8.3%	0	0.0%	0	0.0%
1 to 5	47	44.3%	32	53.3%	14	46.7%	1	6.3%
6 +	53	50.0%	23	38.3%	15	51.7%	15	93.8%
Missing	1	0.9%	0	0.0%	1	3.3%	0	0.0%
PubMed indexed peer-review original research article published								
0	10	9.4%	8	13.3%	2	6.7%	0	0.0%
1 to 5	54	50.9%	34	56.7%	16	53.3%	4	25.0%
6 +	42	39.6%	18	30.0%	12	40.0%	12	75.0%
Missing	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Editorial or commentary article published								

0	27	25.5%	20	33.3%	6	20.0%	1	6.3%
1 to 5	60	56.6%	33	55.0%	20	66.7%	7	43.8%
6 +	14	13.2%	5	8.3%	2	6.7%	7	43.8%
Missing	5	4.7%	2	3.3%	2	6.7%	1	6.3%
Clinical review articles published								
0	37	34.9%	29	48.3%	6	20.0%	2	12.5%
1 to 5	44	41.5%	24	40.0%	17	56.7%	3	18.8%
6 +	22	20.8%	6	10.0%	7	23.3%	9	56.3%
Missing	3	2.8%	1	1.7%	0	0.0%	2	12.5%
Other scholarly activity								
0	19	17.9%	14	23.3%	5	16.7%	0	0.0%
1 to 5	24	22.6%	15	25.0%	7	23.3%	2	12.5%
6 +	43	40.6%	19	31.7%	14	46.7%	10	62.5%
Missing	20	18.9%	12	20.0%	4	13.3%	4	25.0%
Did you yourself produce a scholarly product in academic year 2021-2022? (Select all that apply)								
None	17	16.0%	10	16.7%	5	16.7%	2	12.5%
Poster or oral abstract presentation at an academic conference (local, regional, or national)	51	48.1%	29	48.3%	13	43.3%	9	56.3%
PubMed indexed peer-review original research article published	58	54.7%	30	50.0%	19	63.3%	9	56.3%
Editorial or commentary article published	34	32.1%	17	28.3%	11	36.7%	6	37.5%
Clinical review articles published	16	15.1%	6	10.0%	7	23.3%	3	18.8%
Other (please specify)	21	19.8%	11	18.3%	6	20.0%	0	25.0%
Is a financial incentive for scholarly activities allowed at your institution?								
No	65	61.3%	44	73.3%	13	43.3%	8	50.0%
Yes	41	38.7%	16	26.7%	17	56.7%	8	50.0%
Missing	0	0.0%	0	0.0%	0	0.0%	0	0.0%
What is the most significant barrier to your institution offering financial incentive for scholarly activities?								
Institutional governance rules directly disallow	9	8.5%	4	6.7%	3	10.0%	2	12.5%
Institutional budget constraints	38	35.8%	26	43.3%	7	23.3%	5	31.3%
Department culture or tradition	11	10.4%	7	11.7%	3	10.0%	1	6.3%
Other	5	4.7%	5	8.3%	0	0.0%	0	0.0%
Missing	43	40.6%	18	30.0%	17	56.7%	8	50.0%
In the 2021-2022 academic year, did your clinical based FM faculty receive a cash financial incentive for engaging in scholarly activities (excluding professional meeting attendance expenses)								
No	22	20.8%	10	16.7%	7	23.3%	5	31.3%
Yes a salary bonus, a set amount if any activity	1	0.9%	0	0.0%	0	0.0%	1	6.3%
Yes a salary bonus, a variable amount based on activity	18	17.0%	6	10.0%	10	33.3%	2	12.5%

Missing	65	61.3%	44	73.3%	13	43.3%	8	50.0%
In the 2021-2022 academic year, did your clinical based FM faculty receive non-financial incentives for engaging in scholarly activities								
No	70	66.0%	41	68.3%	20	66.7%	9	56.3%
Yes	34	32.1%	17	28.3%	10	33.3%	7	43.8%
Missing	2	1.9%	2	3.3%	0	0.0%	0	0.0%
What is the most significant limitation your FM clinical faculty face in engaging in scholarly activities?								
None	3	2.8%	2	3.3%	0	0.0%	1	6.3%
Research effort support not available	13	12.3%	10	16.7%	2	6.7%	1	6.3%
High patient care demands	47	44.3%	22	36.7%	17	56.7%	8	50.0%
Lack of resources(research expertise, mentoring etc.)	17	16.0%	9	15.0%	4	13.3%	4	25.0%
Lack of interest in scholarship	15	14.2%	9	15.0%	4	13.3%	2	12.5%
Other	8	7.5%	5	8.3%	3	10.0%	0	0.0%
Missing	3	2.8%	3	5.0%	0	0.0%	0	0.0%
Source: Analysis of the Fall 2022 Council of Academic Family Medicine Educational Research Alliance Family Medicine Residency Directors Survey. SD: Standard Deviation; DC: Department Chair; FTE: Full Time Equivalent								

Supplemental Table 4. Faculty scholarly activity versus department chair engagement.

Variable	All (N=106)		Department Chair Did Engage in Scholarly Activity (N=89)		Department Chair Did Not Engage in Scholarly Activity (N=17)	
	N (SD)	Mean (%)	N (SD)	Mean (%)	N (SD)	Mean (%)
<i>In the 2021-2022 academic year, how many of the following scholarly activities did your clinical based family medicine faculty complete:</i>						
Poster or oral abstract presentation at an academic conference (local, regional, or national)						
0	5	4.7%	3	3.4%	2	11.8%
1 to 5	47	44.3%	40	44.9%	7	41.2%
6 +	53	50.0%	45	50.6%	8	47.1%
Missing	1	0.9%	1	1.1%	0	0.0%
PubMed indexed peer-review original research article published						
0	10	9.4%	7	7.9%	3	17.6%
1 to 5	54	50.9%	47	52.8%	7	41.2%
6 +	42	39.6%	35	39.3%	7	41.2%
Missing	0	0.0%	0	0.0%	0	0.0%
Editorial or commentary article published						

0	27	25.5%	20	22.5%	7	41.2%
1 to 5	60	56.6%	52	58.4%	8	47.1%
6 +	14	13.2%	12	13.5%	2	11.8%
Missing	5	4.7%	5	5.6%	0	0.0%
Clinical review articles published						
0	37	34.9%	27	30.3%	10	58.8%
1 to 5	44	41.5%	40	44.9%	4	23.5%
6 +	22	20.8%	19	21.3%	3	17.6%
Missing	3	2.8%	3	3.4%	0	0.0%
Other scholarly activity						
0	19	17.9%	13	14.6%	6	35.3%
1 to 5	24	22.6%	23	25.8%	1	5.9%
6 +	43	40.6%	36	40.4%	7	41.2%
Missing	20	18.9%	17	19.1%	3	17.6%
Did you yourself produce a scholarly product in academic year 2021-2022? (Select all that apply)						
None	17	15.6%	0	0.0%	17	100.0%
Poster or oral abstract presentation at an academic conference (local, regional, or national)	51	46.8%	51	57.3%	0	0.0%
PubMed indexed peer-review original research article published	58	53.2%	58	65.2%	0	0.0%
Editorial or commentary article published	34	31.2%	34	38.2%	0	0.0%
Clinical review articles published	16	14.7%	16	18.0%	0	0.0%
Other (please specify)	0	0.0%	0	0.0%	0	0.0%
Is a financial incentive for scholarly activities allowed at your institution?						
No	65	61.3%	55	61.8%	10	58.8%
Yes	41	38.7%	34	38.2%	7	41.2%
Missing	0	0.0%	0	0.0%	0	0.0%
What is the most significant barrier to your institution offering financial incentive for scholarly activities?						
Institutional governance rules directly disallow	9	8.5%	9	10.1%	0	0.0%
Institutional budget constraints	38	35.8%	31	34.8%	7	41.2%
Department culture or tradition	11	10.4%	10	11.2%	1	5.9%
Other	5	4.7%	4	4.5%	1	5.9%
Missing	43	40.6%	35	39.3%	8	47.1%
In the 2021-2022 academic year, did your clinical based FM faculty receive a cash financial incentive for engaging in scholarly activities (excluding professional meeting attendance expenses)						
No	22	20.8%	17	19.1%	5	29.4%
Yes a salary bonus, a set amount if any activity	1	0.9%	1	1.1%	0	0.0%
Yes a salary bonus, a variable amount based on activity	18	17.0%	16	18.0%	2	11.8%

Missing	65	61.3%	55	61.8%	10	58.8%
In the 2021-2022 academic year, did your clinical based FM faculty receive non-financial incentives for engaging in scholarly activities						
No	70	66.0%	61	68.5%	9	52.9%
Yes	34	32.1%	27	30.3%	7	41.2%
Missing	2	1.9%	1	1.1%	1	5.9%
What is the most significant limitation your FM clinical faculty face in engaging in scholarly activities?						
None	3	2.8%	3	3.4%	0	0.0%
Research effort support not available	13	12.3%	12	13.5%	1	5.9%
High patient care demands	47	44.3%	39	43.8%	8	47.1%
Lack of resources(research expertise, mentoring etc.)	17	16.0%	14	15.7%	3	17.6%
Lack of interest in scholarship	15	14.2%	12	13.5%	3	17.6%
Other	8	7.5%	8	9.0%	0	0.0%
Missing	3	2.8%	1	1.1%	2	11.8%
Source: Analysis of the Fall 2022 Council of Academic Family Medicine Educational Research Alliance Family Medicine Residency Directors Survey. SD: Standard Deviation						

Supplemental Table 5. Multivariable logistic regression results.

Dependent Variable	Unadjusted FI OR (95% CI)	Unadjusted FTE OR (95% CI)	Adjusted OR (95% CI)	Fully Adjusted^ OR (95% CI)
<i>Clinical Review Articles Greater than Six</i>				
FI	1.8 (0.698-4.6424)		1.3412 (0.4725- 3.8073)	1.0841 (0.1843- 6.379)
FTE25		0.2075 (0.0726- 0.5934)	0.2252 (0.0758- 0.6686)	0.1493 (0.0181- 1.237)
<i>Editorials Greater than Six</i>				
FI	1.2215 (0.391-3.8158)		1.0836 (0.3152- 3.7256)	0.1216 (0.0024- 6.2597)
FTE25		0.3978 (0.1204-1.314)	0.4072 (0.1169- 1.418)	0.0508 (0.0017- 1.6049)
<i>Research Articles Greater than Six</i>				
FI	1.5771 (0.7108-3.4995)		1.1958 (0.5056- 2.8283)	0.995 (0.2526- 3.92)
FTE25		0.4091 (0.1813- 0.9232)	0.4305 (0.1842- 1.0058)	0.9818 (0.2785- 3.4616)

Poster Presentations More than Six				
FI	1.4482 (0.6584-3.1856)		0.974 (0.4071-2.3302)	1.1638 (0.3136-4.3196)
FTE25		0.3109 (0.1361-0.7101)	0.3084 (0.1294-0.735)	0.1991 (0.0537-0.739)
<p>^: Adjusted for type of residency program, program location, community size, department chair current tenure, department chair sex, department chair URiM status, department chair Race, and department chair age.</p> <p>Source: Analysis of the Fall 2022 Council of Academic Family Medicine Educational Research Alliance Family Medicine Residency Directors Survey. FI: Financial Incentives, FTE25: Full Time Equivalent < 25, 95% CI: Confidence Interval</p>				