

Efficiency Estimates for Academic Restructuring Scenarios

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The objective of UofA for Tomorrow (UAT) is to transform our organization so that we can meet and sustain funding cuts without reducing our capacity for research and community engagement or diminishing our learning environment and student experience. To achieve that, we must find financial efficiencies through academic restructuring and SET. Financial efficiencies from academic restructuring stem from a variety of sources, but the primary ones result from economies of scale for providing administrative services and the release of academic capacity from leadership roles. Faculties currently spend \$285M on support functions (\$145M on operations alone) and \$75M on leadership roles. To achieve the UAT goal of reducing expenditures by \$127M while maintaining our reducing capacity to teach, research or engage our communities, we must create economies of scale that reduce faculty expenditures in these areas.

Administrative economies of scale can be seen in our UniForum data which generally shows that larger academic units are able to deliver operations (administrative) services at a lower cost intensity than do smaller ones. For example, the Faculty of Science delivers 23.4% of all teaching (by course registration) and holds 21.2% of all faculty-held research grants yet spends only 8.1% of all operations amongst the faculties. These improved efficiencies for larger units stem from having greater ability to specialize, capacity to reduce transactional processes, and relatively less spent on supervision, reception, general administration, communications and identity.

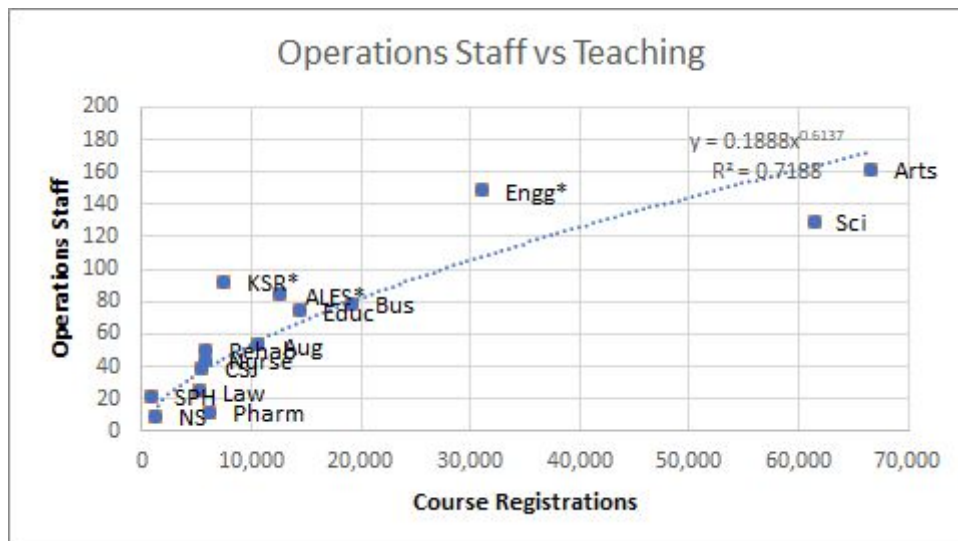


Figure 1: UniForum data showing operations (HR, finance, IT, general administration, teaching and research administration, facilities management, etc.) staffing vs teaching for all faculties except FOMD. The power law fit shown is generally used for predicting operations costs for hypothetical faculty configurations.

Leadership efficiencies result from having fewer professors seconded into roles as Chairs, Associate Deans, Associate Chairs, etc. This can result from combining academic units. For example, the vast majority of our 66 departments have one Chair and 2 or 3 Associate Chairs regardless of whether there are 6 or 60 professors in the unit. Arguably, combining

two departments should result in about half as many leaders needed. Similar arguments can be made for combining faculties. Another way to reduce the number of academic leaders is to shift the function they support to a higher level in the organization where there are fewer units involved. For example, shifting the front line responsibility for elements of graduate student administration from the department to faculty level could reduce the number of academic leaders serving as Associate Chair (Graduate) or Graduate Coordinator from 55 to 15. Obviously, a concurrent shift in how we would provide those services would be required to maintain a reasonable workload. This would be achieved by supporting the leader with a larger service team that could be largely funded through the administrative economies of scale that result. Adopting a Division model could allow this reduction to scale even further.

Administrative efficiencies from economies of scale result in direct savings. After restructuring, the positions eliminated and the associated resulting cost reductions are clear. Savings from reducing academic leadership roles are primarily indirect. The people no longer performing those roles would return to being full time professors focused on teaching, research and community engagement. While some direct savings result from reduced stipends or reduced research allowances and recruitment costs, most of the savings here result because we are able to continue to deliver current levels of programming in the face of professor retirements without needing to hire new faculty members. The savings result from a reduced cost to maintain existing academic capacity (indirect).

In a typical year, almost 70 tenure-track professors (out of an average of 2050) resign, retire or otherwise leave the university. Since most of these are retirements, this is a fairly senior group. To maintain capacity for teaching, research and service, we typically hire an equivalent number of professors, albeit generally at junior levels. While the new hires are generally not as productive as the senior colleagues they replace, the difference is made up by the progression of everyone else through the ranks, over time establishing their research programs and community connections and building their portfolios of courses and honing teaching abilities.

Due to our severe financial crisis, for the next two years, we will be forced to severely curtail the hiring of new faculty. Failure to do so would require even more reduction of support staff and critically undermine the ability of the university to function. Extended over two years, the hiring freeze will result in a reduction of over 100 in our professor complement. The only way the university can sustain its capacity in teaching, research and service in the face of this reduction is to rededicate some of its existing academic leaders back into these roles. In effect, the cost savings of reducing academic leadership is achieved through the reduction of hiring new professors for a period of time. Given that we are replacing new faculty with seasoned, more productive veterans, it is not necessarily a one-to-one offset.

Table 1: Total count of professors (including leadership roles) projected to 2023 based on a presumed net loss of 50 in each of the next two years. Academic restructuring assumes some of these losses will be mitigated by academic leaders returning to professor roles.

	2019-20	2020-21	2021-22	2022-23
Professors	2046	2011	1961	1911
Loss	-	35	85	135

As examples of how this might work, two approaches to estimating leadership savings are provided below. The first looks at capacity released (plus direct savings). The second looks at new hire costs avoided (plus direct savings). The former assumes 80 leadership positions released, the latter assumes 100 new hires avoided over two years. The implication is that the 80 released leaders allows us to sustain the capacity lost by not hiring the 100 new faculty members.

Released capacity argument

- Salary of leader, assumed Full Professor, 0.5 FTE	\$81,000
- Benefits, assumed 22%	\$17,820
- Leadership stipend (direct saving)	\$5,130
- <u>Research allowance (direct saving)</u>	<u>\$15,000</u>
- Total released capacity plus savings	\$118,950

The example above assumes each leader devotes 50% of their time to that role and is based on an average Full Professor salary. Multiplied by 80 positions, this results in total efficiencies of \$9.5M (\$1.6M of direct savings and \$7.9M of released capacity). This excludes recruitment and relocation costs as most of these leaders are likely internally recruited.

Hiring offset argument

- Salary of new hire, assumed to be Assist Prof	\$90,000
- Benefits, assumed 22%	\$19,800
- Startup allowance (one time, each year)	\$57,140
- Lab renovations (one time, each year)	\$20,000
- <u>Recruit and relocation costs (one time, each year)</u>	<u>\$5,000</u>
- Total hire cost (each year for two years)	\$191,940

Multiplied by 50 positions in each of two years, this gives a year one savings of \$11.2M and year two savings of \$16.2M (includes the \$1.6M direct savings noted above which are ongoing). After year two, it is assumed that hiring resumes and the one time savings (\$4.1M) are no longer realized. However, the University will have bought two years of much needed time to restructure and start to grow revenues which should help cover those costs.

The hiring offset argument is easier to see where the cost savings will actually occur (reduced spending on new hires). However, the degree to which the various scenarios offset this reduced academic capacity is less clear from this approach. Hence, the released capacity argument is used in the analysis below, recognizing that the capacity savings cannot exceed the total hiring offset.

Specific Scenario Costing

Scenario A

In Scenario A, five health sciences faculties are consolidated into a single faculty. Department consolidation across the institution is anticipated but not enumerated. The administrative savings are computed by using the power law relationship noted in Figure 1

and using an average staff compensation cost of \$92,084. The table below shows the administrative savings as \$6.9M.

Table A1: Administrative cost calculation for Scenario A based on power law scaling.

Faculty	Courses	Current		Scenario A	
		Ops Staff	Ops Cost	Ops Staff	Ops Cost
KSR excl ACR	7,472	45	\$4,142,995	97	\$8,935,256
Nurse	5,855	44	\$4,051,696		
Pharm	6,164	12.1	\$1,114,216		
Rehab	5,748	50	\$4,604,200		
SPH	903	21.4	\$1,970,598		
Total	26,142	172	\$15,883,705	97	\$8,935,256
Savings				75	\$6,948,449

In order to estimate leadership savings, some assumptions about the resulting leadership structure must be made. Table A2 summarizes the current leadership structure and A3 suggests a possible configuration post-reorganization. This shows the release of 13 academic leaders within the health sciences area. Using the released capacity argument presented above (with 2/3 loading), this results in leadership savings of \$2.1M.

Table A2: Current leadership configuration of health sciences faculties

Faculty	Dean	Vice D	AD Res	AD Grad	AD Acad	AD Stud	AD Int'l	AD EDI	AD Other	Chair	AC Grad	AC Ugrad	AC Res	AC Other	Grad Co	Director	Total
KSR	1	1	1	1	1												5
Nursing	1	1	1	1	1				1								6
Pharmacy	1		1		4		1									2	9
Rehab Med	1	1		1	1					3				3	1		11
SPH	1	1	1		1												4
Grand Total	5	4	4	3	8	0	1	0	1	3	0	0	0	3	1	2	35

Table A3: Possible leadership configuration of a consolidated Health Sciences Faculty

School/Faculty	Dean	Vice D	AD Res	AD Grad	AD Acad	AD Stud	AD Int'l	AD EDI	AD Other	Head	AH Prog	AH Stud	AH Res	AH Other	Grad Co	Director	Total
Health Sci	1	1	1	1		1	1	1									7
KSR										1	1						2
Nursing										1	1			1			3
Pharmacy										1	1					2	4
Rehab Med										1	3						4
SPH										1	1						2
Grand Total	1	1	1	1	0	1	1	1	0	5	7	0	0	1	0	2	22

This scenario does not preclude departmental consolidation across the institution, and that may lead to additional leadership savings. If we assume each department has 3 academic leaders (2 FTE), then each consolidation releases an additional \$0.5M in professorial capacity. That is over and above the administrative savings that result from not supporting a distinct unit.

Table A4: Summary of efficiencies resulting from Scenario A

Administrative efficiencies	\$6.9M
Leadership capacity	\$1.5M
Additional department consolidation	\$0.5M each
Total	\$8.4M +

Scenario B

In scenario B, the existing faculties are retained but most are incorporated into three divisions which provide the majority of administrative services, allowing significant economies of scale. However, this creates new academic leadership roles at the division level, so the only way that professor capacity can be released is through department consolidation and the realignment of leadership roles to a higher level in the hierarchy.

Table B1 summarizes the calculation of administrative savings through economies of scale. Values for consolidated units are computed using the power law relationship shown in Figure 1 except those involving FOMD. That faculty did not fit the power law relationship as course registrations is not a key driver of scale. Hence, the contributions due to FOMD are retained unscaled, even though significant economies of scale should nonetheless be realized. Hence the \$31.8M savings would be an underestimate based on the methodology.

Table B1: Administrative cost savings calculation for Scenario B

Faculty	Courses	Current		Scenario B	
		Ops Staff	Ops Cost	Ops Staff	Ops Cost
Sci	61,432	129.8	\$11,952,503	227.8	\$20,977,121
ALES	12,523	95	\$8,747,980		
Engg	31,067	162.2	\$14,936,025		
FoMD	6,588	437.2	\$40,259,125	534.2	\$49,194,381
KSR excl ACR	7,472	45	\$4,142,995		
Nurse	5,855	44	\$4,051,696		
Pharm	6,164	12.1	\$1,114,216		
Rehab	5,748	50	\$4,604,200		
SPH	903	21.4	\$1,970,598		
Aug	10,599	53.3	\$4,908,077	53.3	\$4,908,077
CSJ	5,456	39	\$3,591,276	39	\$3,591,276
NS	1,224	9	\$828,756	9	\$828,756
Arts	66,548	161.6	\$14,880,774	228.5	\$21,040,924
Educ	14,486	74.6	\$6,869,466		
Law	5,330	24.6	\$2,265,266		
Bus	19,179	78.9	\$7,265,428		
Total	260,574	1,438	\$132,388,38	1,091.8	\$100,540,53
Savings			1	345.9	\$31,847,847

To estimate academic leadership savings under Scenario B, again some assumptions have to be made about what roles could be consolidated at a faculty or division level. Table B2 describes the current leadership role configuration. Table B3 provides a scenario in which leadership in research, graduate administration, EDI and international initiatives are all

delivered at the Division level. This frees up 83 academic leaders (excluding FGSR) for a net professorial capacity growth of \$9.9M. Alternatively, if graduate administration were done at the faculty level, the released capacity would be \$8.7M. Of course, any of these scenarios would require that the academic leaders for these functions would be fully supported by a professional team which would have some offsetting costs associated with it. (Given economies of scale, these net costs would likely be minor but would be factored into the SET initiative. This model presumes that the academic leader is setting strategy and policy and not delivering on most day-to-day services as is often currently done.)

Table B2: Current leadership configuration of all faculties

Faculty	Dean	Vice D	AD Res	AD Grad	AD Acad	AD Stud	AD Int'l	AD EDI	AD Other	Chair	AC Grad	AC Ugrad	AC Res	AC Other	Grad Co	Director	Total
ALES	1	1	1	1	1					4	2	1	2		2	3	19
Business	1	1	1	2	1			1		4							11
Arts	1	1	1	1	2	1				15	15	15	1			4	57
Augustana	1	1	1		1	1				4		2				2	13
CSJ	1	1	1	1	2												6
Education	1	1	1	1	1				1	5	4	4			2		21
Engineering	1	1	1			2			1	4	4	5	3			6	28
FGSR	1	1		4													6
KSR	1	1	1	1	1												5
Law	1	1	1		1												4
FoMD	1	6		1	4		1	1	9	21	4	3	1	7	15	7	81
Native Studies	1		1	1	1												4
Nursing	1	1	1	1	1				1								6
Pharmacy	1		1		4		1									2	9
Rehab Med	1	1		1	1					3				3	1		11
SPH	1	1	1		1												4
Science	1	1	1	1	1	1		1		6	6	7	6			4	36
Grand Total	17	20	14	16	23	5	2	3	12	66	35	37	13	10	20	28	321

Table B3: Possible leadership configuration under Scenario B. Assumes research, graduate, international and EDI leadership are delivered at the Division level.

Division	ExDean	AD Res	AD Grad	AD Int'l	AD EDI	Faculty	Dean	Vice D	AD Prog	AD Stud	AD Other	Chair	AC Prog	Director	Total
NSE	1	1	1	1	1	Science	1	1	1	1		6	6	4	25
						Engg	1	1	1	1	1	4	4	6	19
						ALES	1	1	1	1		4	4	3	15
HMS	1	1	1	1	1	FoMD	1	4	1	1	6	21	11	7	57
						Nursing	1	1	1	1				4	
						SPH	1	1	1	1				4	
						Rehab	1	1	1	1		3		7	
						Pharmacy	1		1	1				2	5
						KSR	1	1	1	1				4	
SSH	1	1	1	1	1	Arts	1	1	1	1		15	15	4	43
						Education	1	1	1	1	1	5	4	14	
						Law	1	1	1	1				4	
						Business	1	1	1	1	1	4	4	13	
						CSJ	1	1	1	1				4	
						Augustana	1	1	1	1		3	2	2	11
NS	1		1	1				3							
Total	3	3	3	3	3		16	17	16	16	9	65	50	28	232

Table B4: Summary of efficiencies resulting from Scenario B

Administrative efficiencies	\$31.8M
Leadership capacity	\$9.9M
Additional department consolidation	\$0.5M each
Total	\$41.7M +

Scenario C

In Scenario C, there is a combination of consolidating faculties as schools in larger faculties where academic synergies exist, and consolidating unrelated faculties together within a shared division so administrative efficiencies at least can be achieved. It is harder to achieve academic leadership efficiencies in the shared division because there is less academic alignment between the units.

The administrative efficiencies through economies of scale are shown in Table C1. As above, estimates are generated using the power law relationship shown in Figure 1. The one exception is for the shared division where Augustana and CSJ are not included in any scaling (eg. they bring their existing costs into the shared division). This is because the economies of scale will be more difficult to extend to these campuses since they are physically (and linguistically for CSJ) removed from the rest of the division. Some economies will occur, but they are harder to estimate, so a conservative approach is used here of not including them.

Table C1: Administrative cost savings calculation for Scenario C

Faculty	Courses	Current		Scenario C	
		Ops Staff	Ops Cost	Ops Staff	Ops Cost
Arts	66,548	161.6	\$14,880,774	257.2	\$23,683,140
Sci	61,432	129.8	\$11,952,503		
ALES	12,523	95	\$8,747,980	132.8	\$12,228,632
Engg	31,067	162.2	\$14,936,025		
FoMD	6,588	437.2	\$40,259,125	437.2	\$40,259,125
KSR excl ACR	7,472	45	\$4,142,995	97.0	\$8,935,256
Nurse	5,855	44	\$4,051,696		
Pharm	6,164	12.1	\$1,114,216		
Rehab	5,748	50	\$4,604,200		
SPH	903	21.4	\$1,970,598		
Aug	10,599	53.3	\$4,908,077		
CSJ	5,456	39	\$3,591,276	218.7	\$20,138,620
NS	1,224	9	\$828,756		
Educ	14,486	74.6	\$6,869,466		
Law	5,330	24.6	\$2,265,266		
Bus	19,179	78.9	\$7,265,428		
Total	260,574	1,438	\$132,388,38	1142.9	\$105,244,77
Savings			1	294.8	\$27,143,608

A possible configuration of leadership roles is presented in Table C2. Where possible, this assumes the same degree of consolidation of roles at the highest level (consolidated faculty). This is not, however, assumed of the faculties in the shared division as their

academic alignment is probably not sufficient to share these academic roles. In this scenario, the released professor capacity is \$9.0M (76 leaders).

Table C2: Possible leadership configuration under Scenario C. Assumes research, graduate, international and EDI leadership are delivered at the consolidated faculty level, but are not consolidated in the shared division.

School/Faculty	Dean	Vice D	AD Res	AD Grad	AD Acad	AD Stud	AD Int'l	AD EDI	AD Other	Head	AH Prog	AH Stud	Chair	AC Ugrad	AC Grad	AC Res	AC Other	Grad Co	Director	Total
Arts & Science	1	2	1	1	1	1	1	1					21	21					8	59
Health Sci	1	1	1	1		1	1	1												7
KSR										1	1									2
Nursing										1	1						1			3
Pharmacy										1	1								2	4
Rehab Med										1	3									4
SPH										1	1									2
Applied Sci	1	1	1	1			1	1												6
Engineering										1	1	1	4	4						6
ALES										1	1	1	4	4						3
FoMD	1	6		1	4		1	1	9				21	4			7		7	62
Education	1	1	1	1	1				1				5	4	4				2	21
Business	1	1	1	2	1			1					4							11
Law	1	1	1		1															4
Augustana	1	1	1		1	1							4		2				2	13
CSJ	1	1	1	1	2															6
Native Studies	1		1	1	1															4
Total	10	15	9	9	12	3	4	5	10	7	9	2	63	37	6	0	8	2	28	239

Table C3: Summary of efficiencies resulting from Scenario C

Administrative efficiencies	\$27.1M
Leadership capacity	\$9.0M
Additional department consolidation	\$0.5M each
Total	\$36.1M +