Response to the Report of the 2021 Academic Program Review
Department of Statistics, UNL
7 June 2021

Background

The 2021 Academic Program Review (APR) of the Department of Statistics at the University of Nebraska-Lincoln was conducted 29 March – 1 April. The APR report was made available to the deans of IANR and the Chair of Statistics on Tuesday 4 May. Shortly after, the report was forwarded to all Faculty in Statistics. A Faculty Meeting was held on Monday 10 May to discuss the report and the Department more generally.

The APR report had five specific recommendations:

1. Expand the Department to at least 20 T/TT FTE's plus several more FTE's of teaching faculty.
2. Grow the UG majors.
3. Mentor junior faculty better.
4. Expand support to the SC3L ('Help Desk') to meet the increasing workload.
5. Expand Departmental administration.

The report also provided many specifics as to how these five recommendations should be implemented. We discuss these in turn and then provide a brief discussion of other aspects of the report.

1 Increasing Faculty FTE's

The APR Team noted that the Statistics Department has the potential to lead in a variety of emerging areas such as: automated data collection, observational data, complex dependence structures, streaming decisions, robustness for contemporary data (such as sequential), modern design and instrumentation, 'tensor' data, etc. These broad areas are amongt those that are now in the early phases of attracting attention. However, as we advance, we must simultaneously maintain our strengths in core subfields of Statistics and rapidly overcome our FTE deficit.

In point of fact, the Statistics Department has now effectively decreased to 13 FTE's, the smallest it has been over the last decade. This has occurred at a time of increasing demands; the last 2-3 years have been particularly arduous. It may seem strange that the Department is so small given all the positions that have come into the Department. However, the rate of departures and retirements has outstripped the rate of hiring. Indeed, the Department lost two faculty members during the summer of 2020, one through retirement and one through spousal accommodation, and neither has been replaced.

Despite our small numbers, we can offer our existing programs by extensive use of GTA's[1]and begin offering the first seven STAT credits of our new Statistics and Data Analytics major for AY 2021-22. (All seven of these are 1XX credits and 8 1XX STAT credits are required in our major.) Apart from the manifest problem with faculty burnout, this offering could be continued the following AY 2022-23 but we would be unable to offer the 8th first year credit in our major or any of the higher level UG credits without cuts elsewhere. Thus, either growth in our major would stall and students starting our first year courses would not graduate on time or other Departmental functions would be reduced.

The extra problem right now is that, unless faculty are hired, we will be unable to meet the demands of AY 2022-23 because we will lose 1 faculty FTE summer 2022. This means that in 2022-23 we will have to cut 3 courses. We will have to choose which of our offerings to reduce and by how much. These include

[1]It should be noted that GTA's are an unstable supply of teaching resources because students' plans change – they may leave early, stay longer, get put on grants, etc. This makes staffing more complicated because teaching schedules end up being revised multiple times before being finalized. Also, many GTA's cannot teach large section classes.

service teaching (grad and UG), core MS and PhD courses, or electives e.g., related to the consulting arm of the Department, and faculty research. The only way to avoid cuts to these areas is to hire faculty during the 2021-22 AY to come on-stream in August 2022.

Furthermore, it is anticipated that there will be three retirements over the next few years. Absent replacement, this would also necessitate cuts to Department functions. Of particular concern is hiring a full time Head of Consulting who can be trained by the current (part time) Director of the consulting program during the next AY. The role of consulting is discussed in Sec. 4.

In short, for continuity, the Department must hire three faculty during the 2021-22 AY: One Head of Consulting, one T/TT faculty member, and a third faculty member who can be either teaching faculty or TT. This is in addition to the urgency of filling a staff position (an academic advisor/recruiter). The Department must also hire at least two more faculty members the year following, 2022-2023, to come on-stream August 2023. Hiring these 5 positions will not actually grow the Department as 6 faculty have left recently or are likely to leave in the near future leaving a net loss of 1 FTE.

It is hard to look out more than 2 years and be specific about Departmental requirements, but it is easy to see the necessity of continuing to hire at the rate of about two per year until we reach the APR recommended total of 20 T/TT FTE's plus several teaching FTE's. It should be noted that the Department is comfortable using GTA's to teach 2nd and 3rd year service courses but quite negative on using GTA's to teach required undergraduate courses for our Statistics majors or any 4XX courses.

In terms of what areas these new hires should cover, almost any high quality hire would bring important skills to the Statistics Department and IANR. The urgency of new positions is so high that the specific area of a hire is not as important as simply hiring top people with contemporary skills.

Finally, for this section, more faculty level FTE's provides other benefits that should be noted. An obvious one with is to ensure that we can cope with any medical leaves. Second, faculty teaching is dropping from 3 to 2.5 or 2 courses per year to reflect research and consulting. More faculty FTE's will mean we can do this and be more competitive with our peer institutions. Third, sabbaticals – that also make us more competitive – can only be afforded if there are sufficient extra faculty to cover our teaching programs. More faculty will also make it easier for our teaching program to keep current – update old courses and create new ones. Finally, statistics faculty are central to the mission of IANR and UNL more generally via our collaborations. A partial list is given at the end of this document.

2 UG Programs

The Department has plans to start two UG majors over the next two years. This will bring local visibility to the Department and increase our SCH production, hopefully substantially, and may ultimately lead to alumni donations; see the 3rd and 4th bullet points in Sec. 6.

As noted above, by extensive use of GTA's we can begin offering 7 of the 8 1XX credits required for our major, in AY 2021-22 but the AY following (2022-23) we will not be able to offer all of our undergraduate major courses. The APR report recommended starting our major by offering only the required courses i.e., not the required electives, until we have the resources to do so. Under UNL rules, we can 'sub in' other courses for the electives we would want our students to have. While suboptimal, this is a way to buy time for the development of new courses and hiring faculty; see Sec. 1. Again, insufficient faculty would mean that in its second year of operation, our undergraduate major will not be able to offer its second year courses in AY 2022-23 unless we cut other activities. Hiring for AY 2022-23 must be done during AY 2021-22.

3 Mentoring

This has been a gap for many years. Several approaches to mentoring have been tried since the 2013 APR. None were particularly successful largely because senior faculty do not have enough time. That is, lack of mentoring stems from insufficient FTE's, see Sec. 1. This, despite mentoring being a Departmental obligation per the Department's Bylaws.

[1]Sabbaticals are common in most Statistics Departments as a way for faculty to keep up with developments in their areas. This is much easier – and may be more important – in Statistics than in lab or field based subjects.

At present,most formal mentoring has been done through annual evaluations by the P&T Committee and even more so by the Chair. The APR team deemed this insufficient and they are probably right. While hard to assess, there is also evidence of informal mentoring. Not fully promoted faculty seem comfortable asking fully promoted faculty for advice on an ad hoc basis. This has been reduced over the past 15 months due to the policies for dealing with COVID. However, when everyone is back on campus, informal mentoring should resume as faculty interact more.

Developing a formal mentoring plan remains to be done. To begin, it will be important to survey how other departments in IANR and other statistics departments at R1 universities mentor their junior faculty. The current view in Statistics is that each plan should be tailored to the 'mentee' since mentees have different backgrounds. There is also the suggestion that ARD should play a role in mentoring junior faculty into Hatch projects. Taken together, one starting point may be to formulate mentoring policy based on principles and general goals more than on specific activities. Given suitable resources, this should be relatively easy since there is so much goodwill on all sides.

4 The Help Desk

The SC3L (Help Desk) has been a topic of much discussion and there are a variety of models ranging from offering consulting services gratis i.e., centrally funded, to models where essentially all services are billed. Of course, there is no constraint on an individual faculty member doing consulting work with colleagues as part of a grant proposal, in return for authorship, or simply for intellectual fun. Indeed, if this is done at a high level, the line between consulting and applied research blurs.

The top priorities for the Help Desk are: 1) enhance student learning, 2) establish relationships with faculty outside the department with whom departmental faculty will be able to collaborate, 3) provide a service to the UNL community, and 4) be financially self-sustaining. This prioritization sets us apart from the four consulting services discussed below and provides a rationale for our strategic use of the Help Desk.

Indeed, if cost recovery is not a factor, we think the model currently followed by the Stat Help Desk is ideal: There are no formal limits on the free consulting services offered by the Help Desk to UNL researchers, apart from Help Desk capacity. Informally, if a researcher is seen to be using more than his/her 'fair share' the priority of his/her work is reduced. This ensures a sort of 'egalitarianism' over researchers so that everyone involved has a stake in the Help Desk. To date, this has appeared to be sufficient. Moreover, functioning as it does, the Help Desk is an effective way to improve training of students in Statistics – and other departments – and to improve quantitative research more generally.

There are three arguments for cost-recovery. One is to bring in money either in addition to central funding or in place of central funding. The second is to control overuse by sending the message that statistical services are not free. The third is that statistical consulting is not different from other core services e.g., the Bioinformatics Core, and should be treated the same way.

We deal with these in turn.

First, the desire to bring in money is ubiquitous because budgets have been decreasing in general and look to continue decreasing. However, bringing in money from UNL researchers would be difficult: Faculty are not generally flush with grant money. Junior faculty from outside the Statistics Department would likely have the least funding despite being the colleagues we most want to support and develop a long term relationship with. Thus, we would want to have carve-outs for junior faculty and others who did not have money. Even with this, our reputation for support and collegiality would be damaged.

Second, sending the message that statistical services are not free is a good one to send. However, from the standpoint of the client, we become a cost to be minimized contradicting the goal of seeking to train students in other fields how to work with a statistician and generally improving quantitative research.

Third, the Statistics Department rejects the proposition that consulting is like any other core. The reason is that consulting contributes directly to the intellectual content of research in a way that most other cores simply do not. Modern consulting is an intellectual function that cannot be automated; human insight is continually required.

Overall, this means that the only reasonable way to deal with the question of charging for our services is to limit charges to those who can pay or come from outside UNL, recognizing that internal clients will generally prefer to work with a long term statistical collaborator than a PhD student temporarily assigned

to the Help Desk. At present, the Help Desk does not seek outside clients and does not charge the few who find us because the extra negotiations and paperwork required to write contracts for so few clients is considerable. However, if a full time Head of Consulting were hired, it would be reasonable to expand our services to external researchers and charge them for those services The problem then becomes how to allocate Help Desk resources between largely external paying clients and internal non-paying clients. Given that the Help Desk is fully committed at present with 4 PhD students and it would be hard to maintain a staff size higher than 4 without a larger pool of Statistics PhD students, it is unclear how much internal clients should be sacrificed for external money. A partial correction to this might be having more PhD students but the main limitation on this is advising capacity for them to finish their degrees. Advising capacity requires more FTE's, see Sec. 1.

A further unknown is how successful the Help Desk could be in terms of bringing in external clients and whether this would be enough to justify the extra work of marketing our services.

Two other solutions to the problem of overuse of the Help Desk have been raised. First, it may be possible to develop some sort of 'voucher system' enabling researchers to access a specific amount of consulting service per semester. Second, with the inception of IBB, we could create a 1 or 2 credit hour course that students from outside Statistics could take to serve as a forum for consulting support. Under IBB, the Department could get partial cost recovery. Doubtless there are other possible strategies; it is as yet unclear what our course of action should be.

To conclude this subsection, we note there are other models for consulting. For instance, the consulting models the departments of the external members of the APR team follow are as follows.

1. The Statistical Consulting Service (SCS) at OSU[2]is a cost recovery unit: 'The SCS is an earnings unit and can bill clients for our services. All paid work is performed under contract and is billed at an hourly rate.' There is unpaid work which it seems is done by agreement between individual faculty members and clients, possibly involving grant funding and co-authorship.

2. The Illinois Statistics Office[3](ISO) is similar: It is 'affiliated with the Department of Statistics at the University of Illinois at Urbana Champaign. ISO provides fee-based statistical consulting services to members of the university community, government and industry.' Presumably there is unpaid consulting work as well.

3. The Statistical Consulting Center at UCLA is different. [4]It has 'the dual purpose of teaching graduate/undergraduate students and consulting with the Los Angeles and broader community on statistical questions and projects. ... We provide statistical consulting through three avenues: walk-in consulting hours, contractual consulting, and STAT 140/141SL projects.' This is much like our Help Desk with the exception that we offer free consulting in place of contractual consulting for UNL researchers.

4. The Statistical Consulting Center at Penn State is between the OSU/Illinois policy of near complete cost recovery and the UCLA policy of maintaining avenues to offer some consulting for free at least on a limited basis[5]: 'Free short-term consulting. If you are a member of the PSU community you can schedule a one-hour appointment for statistical guidance and assessment of your project needs. In this service, there is a limit of 2 follow-up appointments. We have an approved fee structure for projects requiring further collaboration. '

It should be noted that these appear to be run more as businesses i.e., to bring in money, are more established, and at bigger and richer universities. It is unclear how much student training or improvement of quantitative research is achieved. We must presume that these operations recover enough money to be worthwhile since they have been in their present forms for some years. It is unclear whether this would be the case at UNL. Common wisdom at other universities is that Statistics Cores are typically able to bring in around 40% of their costs.

[2]https://scs.osu.edu/working-scs/faculty-staff
[3]https://stat.illinois.edu/consulting/illinois-statistics-office-consulting-rates
[4]http://scc.stat.ucla.edu/
[5]https://scc.stat.psu.edu/

5 Departmental Administration

The suggestions for a Vice-Chair or Undergrad Program Director are sound. Both of these can be filled if there are enough faculty (see Sec. 1), especially senior faculty, simply by giving teaching release or otherwise adjusting apportionments. This would help reduce the chances of senior faculty, especially those with administrative responsibilities, experiencing burn out.

A longerterm benefit of developing a Vice-Chair (or similar role) would be to help with leadership development as we look toward the next five years, see Sec.7.

6 Other Matters

Here we comment on several of the answers the APR team provided to our six questions. We only address topics that have not already been discussed.

- The APR team commented on UNL developing a more effective policy for dual career couples. This would be helpful since several of the tenure-track faculty who have left the Statistics Department did so for this reason.
- The issue of visibility is continually a problem. Without belaboring the point, travel at UNL has never been easy or simple even when money was available. However, we have to do better e.g., with more dedicated funds and simpler procedures, so that faculty and students can 'strut their stuff'. Travel for faculty research is a crucial value-added activity not a frill or junket. Other aspects of visibility include possibly hosting high profile speakers or organizing focused conferences or short courses.
- The fields of Statistics, Data Analytics, and Data Science have generated a lot of well paying jobs and likely will continue to do so. Our capstone project should enable our students to compete effectively for these jobs and it will be important to encourage faculty to work with these undergraduates and potential employers.
- The APR report effectively recommends a near doubling of the size of the space allocated to the Statistics Department. The report notes that there will have to be space for faculty, instruction, computer facilities, etc. The APR team connected alumni donations to helping undergrads feel like they had a "home", e.g., a student lounge, to build camraderie.

One factor that remains undiscussed at this time is the Department's GTA budget. This needs to be increased to fund approximately 26 GTA's or Departmental budgets will be dangerously in the red by the end of the 2021-22 AY. OTOH, the IBB model may resolve this problem.

7 The Future

Given that substantial hiring will be required over the coming years, it is not too soon to start thinking about who will author the Statistics Department self-study document for a 2028 APR. Ideally, this person should have been in the Department for at least 3 years in some kind of position that would give him/her an overview of all major department activities.

Likewise, it is not too soon to begin thinking about who the next Department Chair will be. One way to begin such considerations is to draw up a list of qualities a future Chair should have and prioritize them. It is well understood that different Chairs have different skill sets. It would be a good Departmental exercise to contemplate what skill set a Department Chair of Statistics should have during, say, AY 2025-26, the AY we should be producing our second year of undergraduate majors.

Taking these two points together, and noting the hiring disucssed in Sec. 1, the mentoring discussed in Sec. 3, and the administrative work discussed in Sec. 5 it would be prudent to hire at least one more Associate or Full Professor, probably sooner rather than later.

8 Conclusion

The bottom line is that all the compromises the Department has had to make – difficulty offering our programs, reduced mentoring, inability to grow the Help Desk, heavy administrative burdens – stem from lack of FTE's.

The question is: How many FTE's will the Statistics Department have and what are the priorities for the deployment of those FTE's? At this point, resources are so tight that it is an upper level policy decision what to cut, maintain, or expand. This decision should be made as quickly as possible since being optimally ready for the next hiring season will require positions be formulated, approved and advertised by November. Working backwards, preliminary decisions for what positions to fill must be made by the end of August. Doubtless, the faculty response will depend on what the plan is. Statistics Faculty preferences to date are embedded in the positions noted in Sec. 1.

The Department of Statistics is at a decision point – grow into a full, competitive department appropriate for a leading R1 university or stall out and decline. Intermediate positions are not viable and postponing the decision is de facto the choice of stalling out and declining.

Annex I – Collaborators

In the Statistics Department Self-study document Tables 3.7 and 3.8 listed the array of researchers the Help Desk supported. Table 3.7 shows that Help Desk clients came from 51 different departments or other units in NU. Table 3.8 listed the actual meetings with each unit – a total of 661 – over the last 3 years.

In addition, faculty collaborate with diverse units at NU. Going back three years gives the following list of names – not counted with multiplicity. It is incomplete because two (highly collaborative) faculty were on vacation at the time this was compiled; most of their collaborators are in Animal Science. The total is 87.

Agronomy & Horticulture – 20

Adams, S.
Arkebauer, T.
Baenziger, Stephen
Blanco, H.
Francis, C.
Gilley, J.
Graef, G.
Grassini, P.
Hyten, D.
Jarquin, D.
Jhala, A.
Mamo, M.
Paparozzi, E.
Puntel, L.
Read, P.
Redfearn, D.
Schacht, W.
Shapiro, C.
Urrea, C.
Walia, H.

Food Science & Technology – 13

Bianchini, A.
Danoa, M.
Hallen-Adams, H.
Hutkins, R.
Izard, J.
Majumder, K.
Ramer-Tait, A.
Rose, D.
Schlegel, V.
Wang, B.
Weller, C.
Xu, C.
Yin, Y.

School of Natural Resources – 13

Awada, T.
Brandle, J.
Corman, J.
Franz, T.

Hayes, M.
Koehler-Cole, K.
Qi, Y.
Rhoades, M.
Smith, A.
Smith, K.
Snow, D.
Tang, Z.
Thomas, S.

Animal Science – 6

Calkins, C.
Drewnoski, M.
Fernando, S.
Lewis, R.
Purdum, S.
Spangler, M.

Biological & Systems Engineering – 6

Bashford, G.
Ge, Y.
Luck, J.
Meyer, G.
Schmidt, A.
Shi, Y.

Plant Pathology – 5

Geisler, L.
Godoy-Lutz, G.
Herr, J.
Wegulo, S.
Wilson, R.

Agricultural Economics – 4

Dennis, E.
Mattos, F.
Mieno, T.
Parsons, J.

Entomology – 3

Bradshaw,J.
Hein, G.
Meinke, L.

School of Veterinary Medicine and Biomedical Sciences – 3

Loy, D.
Kelling, C.
Topliff, C.

Forensics – 2

Adamowicz, M.
Reil, M.

Biochemistry – 2

Velander, P.
Wilson, M.

Chemistry – 2

Jiantao Guo
James Takacs

Other Units – 8

Anania, K. ; Art History
Brown, S. ; Center for Transformative Teaching
Cressler, C.; SBS
Li, X. ; Civil Engineering
Riethoven, J.-J. ; BCRF
Smith; W. ; Center for Math, Science, and Computer Education
Votruba, A. ; Psychology
Wilhelm, R. ; ORED