

Minutes of the Meeting of the Academic Council  
Thursday, November 21, 2019

**Kerry Haynie (Academic Council Chair / Political Science and African and African American Studies):** Good afternoon. I will call the meeting to order. Welcome, everyone. We're getting close to the end. This is our next to the last meeting of the semester. We meet again in two short weeks, on December 5, for our last meeting of the semester.

A couple of announcements before we begin. ECAC and I decided to appoint an ad hoc committee to take a look at Appendix N that we had on our AC agenda earlier this semester. This is the appendix that deals with the Ombuds and Faculty Hearing Committee section of the Faculty Handbook. This committee is going to take a wholesale look at that appendix and report back to ECAC and eventually to the Council with some suggested revisions for that appendix. The committee members are three members of this Council: Larry Zelenak from the Law School, who will chair the committee, Marin Levy, a member of ECAC (Law School), Nan Jokerst, former Chair of this Council, and Nan is an expert on Appendix N. She was involved with the last revision of Appendix N in which we dealt with the Ombuds section. In addition, our two Faculty Ombuds will serve on the committee, Tom Metzloff from the Law School and Laura Svetkey from the School of Medicine. And Sam Buell from the Law

School, who is the current Chair of the Faculty Hearing Committee will also serve. So we are giving them ample time to bring back to us some suggested revisions for this important appendix. Larry, thank you for agreeing to chair the committee.

In our December 5 meeting, we will have a conversation about DKU. There have been some news reports about China in the last days and weeks and we thought it was important to have a conversation, so President Price and Provost Kornbluth will entertain questions at our December 5 meeting. Members of this Council and members of the faculty can send questions to me or can submit questions at [acouncil@duke.edu](mailto:acouncil@duke.edu). We hope you have questions in advance, and, if they need to, they can assemble or collect information, to answer any questions.

A reminder: make sure that you initial the attendance sheet. You know, we have an attendance policy. If you miss three consecutive meetings that are unexcused, you may be removed from the Council. So be sure that we have you recorded or that you email in advance that you will be absent -- Sandra has been tough on that.

**APPROVAL OF THE OCTOBER 17 MEETING MINUTES**

**Haynie:** Our next item is the approval of the October 17 minutes. They have been posted on the website. Are there any corrections or edits to the minutes?

*[Minutes approved by voice vote without dissent]*

**DUKE'S PLAN TO GO SMOKE-FREE IN 2020 AND THE RECENT HEALTH CRISIS REGARDING E-CIGARETTES**

**Haynie:** Our first presenter today is Dr. James Davis, who is going to present on the Duke plan for a smoke-free campus. This smoke-free campus initiative was announced initially in 2018 to take effect in 2020. Dr. Davis will speak to us about some proposed revisions to the initial plan, and that is to include e-cigarettes and vaping as a part of the ban. The original ban did not include those items. He is going to speak to us about the proposed revisions. This is something that has been in the news quite a bit. In the last few days, the American Medical Association has issued a statement advocating for the ban of these items, so it's timely that we discuss them on campus. Let me also mention that we posted on our website a letter that appeared in the Chronicle, a letter from some faculty colleagues, some of whom are on the Council, who are supportive of the ban. We also put on the website another letter from some faculty colleagues who spoke in opposition in a letter to the Chronicle to the banning of e-cigarettes and vaping devices. As I understand, there is some disagreement as to whether this is a wise move as vaping and e-cigarettes are thought to be effective ways to help people quit

smoking. If we ban those, where does that leave folks? Dr. Davis will talk to us about this issue. Let me mention that we're not asked to vote on this, this is not a matter for approval by the Council. It's information that Dr. Davis is gathering, making the rounds, talking to students and staff, and now faculty, to get input.

**James Davis (Medical Director for Duke Center for Smoking Cessation and Director of the Duke Smoking Cessation Program):** Thank you. I'm James Davis and I'm the director of the Duke Smoking Cessation Program. I'm also a physician here. As Kerry was saying, I spent probably a year making rounds around Duke trying to get a sense of what people, in all of the various areas of Duke, really are interested in – and there's a broad diversity of opinions on this. We've taken those recommendations, collectively to [Healthy Duke](#), and then it went on up to leadership. This went on mostly two years ago and into 2018. And then over the last two years, there have been a lot of changes in terms of e-cigarettes, what we know about e-cigarettes, and now a recommendation has arisen to ban e-cigarettes as part of the smoking ban. I want to give you a little context on that and just as was said, we are not actually voting today, but it's very important to get opinions and thoughts and questions and all of that so that we can pass that on to Healthy Duke and then pass that on to leadership, so we have a sense of what Academic Council feels about this.

Just a little background: morbidity and mortality. We have about 34 million smokers in the US today. Just about half a million deaths from smoking, and this is combustible tobacco, every year. For those of you who are in the health field,

this is absolutely enormous. It's very common to see people who are suffering from either lung disease, heart disease, or one of thirteen different cancers related to smoking, so this is very real to those of us who work with patients. About 30 percent of cancer deaths in North Carolina are a direct cause of smoking. E-cigarettes are really unknown. The long-term health risks associated with e-cigarettes, they haven't been around long enough for us to know really what's going on. We've got about 12 million e-cigarette users in the US. The toxicity of e-cigarettes looks like it's about 5-10 percent of what it is in cigarettes. Just looking at the levels of toxins in vapor, again, because we don't have data on how that level of toxin impacts the body. Recently, there has been an innovation in the e-cigarette world, and it was led by JUUL, which is now really the leader in the field, to use nicotine salt. Nicotine salt is a way of delivering nicotine so that it is not caustic when you breathe it in. It allows e-cigarette companies to dial up the level of nicotine such that it is very similarly addictive to cigarettes. An early generation of e-cigarettes was really not that addictive. That has shifted and now we see e-cigarettes as just as addictive as conventional cigarettes. The rate of use has increased. In the last five years, the rate of e-cigarette use has tripled among high school students and among the general population. This data is from 2018, [refers to slide] so it's a year old, but right now we're at about 28 percent in high school. College use is around that. The data is not as good in college as it is in high school. That's why I'm giving you this data. That seems to be rising, though not as rapidly as it was, thankfully. We did a survey at Duke. We found that – and this was for smoking and e-cigarette use – just over one percent of faculty smoke

cigarettes. In graduate students, it was 7.9 percent. Undergrads are 11.3 percent. I should say that when undergrads first show up on campus, the rate of smoking is 2.9 percent. So undergraduates are actually learning to smoke while they're at Duke. I learned to smoke when I was at college. I think it's not uncommon. I don't want to demonize this. I think this is common for undergrads to experiment. I think there is a lot that's positive about that, we would all agree. Employees smoke at about the same level as the graduate and professional students, but there are some employee groups, Grounds, Dining, and Housing, that are right around 30 percent. We got that based on face-to-face interviews with those groups, because they weren't responding to surveys the same way that people with desk jobs were. We think that e-cigarette use at Duke is about the same as national averages. We're thinking it's about 21 percent. I just met with the Duke Student Government and they think that that's probably a little bit low. It may be closer to 25 percent. But this is pretty common now. E-cigarette use is pretty common among undergraduates. An important point: about 30 percent of all college people who use e-cigarettes also use THC or other things in their e-cigarette devices. For those of us who are close to undergrads, this is not a big surprise: marijuana use on campus is common. This has become a common way of using a marijuana product, which is THC.

So the policy as it is written [refers to slide]: we're going to go smoke-free July 1, 2020. And very specifically, this has very specific wording, no use of combustible tobacco, that includes cigarettes, cigars, hookah, in any building or grounds owned or leased by Duke.

We're not really thinking about China [DKU] at this point, but anybody that we can be in contact with. Again, it's combustible tobacco. The reason is that tobacco burns at about 800 degrees Celsius. That makes a lot of toxic compounds. In e-cigarettes, nicotine is liberated at about 250 degrees Celsius, so it is a much lower temperature, and you don't get the production of as many toxic compounds. You get the same ones, but at a lower level.

**Treatment:** one of the things that was spelled out loud and clear, as we moved toward policy implementation with the smoke-free policy, is that we did not want to implement a policy and not have really easy and effective avenues for patients who wanted to quit. The students put that forward, leadership, everyone that we talked to said this is very important. So this has been our focus, developing effective treatment. It so happens, I'm the director of the Duke Smoking Cessation Program, and we've been given the resources and time and what it takes to develop a first class program, an effective program. Employee Health and Student Health did not have access to that treatment, and so we essentially moved the Duke Smoking Cessation Program into Employee Health and Student Health, so that people who are in our community would have access to it. This is a team-based treatment. We have physicians and we have behavioral providers, usually social workers, who are trained as tobacco treatment specialists and they develop individualized plans for people. There are medications that are involved. The medications have been made free thanks to funding that was put behind this initiative, and we're providing remote treatment. Julie [Harris, Facilitator, Duke Smoke Free Initiative], who is with me

today, is running around on foot, meeting with employee groups face-to-face and student groups face-to-face to get services to people because we understood, after all these interactions, that people might not come to get treatments. We might need to go to them. So we are trying to overcome these barriers. When a person has to quit smoking on their own, their chances of success at six months is about 3.5 percent. Nicotine is highly addictive. Those are the rates. If you go to CVS and pick up patches, it's the same. North Carolina Quitline and a primary care doctor gets you up to about 11 percent. Our program is about 37 percent. UNC actually has a similar program and they're at about that rate too. Then we have a very intensive treatment program that is up a little higher at 63 percent. So we are able to move the dial with treatment. That is real.

**Messaging:** data shows that the messaging for this kind of policy needs to be positive. The reason is that tobacco dependence is actually an illness. It's nicotine dependence. When people try to stop, they go into withdrawal. Not everybody can stop, just as I was showing you with those data, so we need positive messaging. The other thing that we need is very individualized messaging. The messaging that occurs in Athletics is very different than the messaging in Admissions. It's very different from the messaging for undergrads, for employees, different kinds of employee groups, and in fact, we have been required to develop messaging pathways that are unique and applied to each of these different areas. Special attention is focused on Grounds, Housing and Dining. International students, these folks smoke at about 16 percent. Contractors are about 30 percent. That's where the highest rate of smoking is. So really getting treatment to

those places and making services available.

**Punitive structure:** again, tobacco use is an illness. The idea is to have treatment-oriented punitive structures. Other institutions have done this kind of thing. You do not want to create a policy that people react to negatively and just end up in rebellion toward. So the focus, again, needs to be treatment. Managers, supervisors, RAs, and resident coordinators will be asked to speak with people who are under them, in their groups, to inform them of the policy and then help them actually access resources. If they simply refuse to stop, refuse treatment, are obstinate, that falls under insubordination, and that has to be worked out organically. But as I talked to people who are in Healthy Duke, we do not want to be in a situation where we're firing people or fining people. What we want to be is in a position where the messaging is out and we're moving people into treatment. We can codify that in policy statements, but that's the underlying spirit of this. That's really consistent with effective tobacco policy that has been passed at other institutions.

So what about e-cigarettes? Initially, we didn't ban e-cigarettes, and that's because a couple years ago, when we had the data that we had then, e-cigarettes looked like they were less harmful than combustible cigarettes, and I would say that's probably still true, though the information has really expanded. And e-cigarettes were seen as an effective means for smokers who are trying to quit. I would say that this is also still true, with one caveat, and that is that e-cigarettes are now very addictive and people who switch off of smoking onto e-cigarettes tend to stay on e-cigarettes. That, and about 56 percent

of people who try to use e-cigarettes to quit smoking actually end up using both. We call those dual users. So we're getting new data.

What has changed? Well, e-cigarette use has increased by about three times in the last five years. I don't know what it is this year, because we don't have data, but in 2018, it was about 20 percent of undergrads. The FDA has classified e-cigarette use as an epidemic. There is growing data on e-cigarette toxicity, specifically, we are now identifying heavy metals and organic compounds that are carcinogenic and we have not seen the development of cancer, we haven't had the time for that, but we've identified that those are in e-cigarettes. Some of the people who wrote the letter from the faculty saying that they are in favor of an e-cigarette ban actually are people who work with those toxins. The other is that there has really been a shift, nationally. The AMA this week just came out with a statement saying that they recommend a national ban on e-cigarettes. The AMA is a relatively conservative institution, and I'll tell you why I think that is. I read some of that information and I think the reason that they did it was that they felt, with this lung injury syndrome – and we'll talk about that in a minute – they felt like the harms of e-cigarettes are simply unknown. We do not know, and in five years, we may discover that there is something else that is bad as well. But there's simply too much that is unknown about this to assume that it's safe. So we're kind of shifting to a ban. I would say it is more of a recognition of our own lack of knowledge and a humility about e-cigarette use, than saying we really know a lot about it. I think, in fact, we don't know a lot about it. San Francisco banned e-cigarettes, JUUL has stopped using most

of the flavors. That's because flavors are appealing to kids. We've got flavors like cotton candy and all kinds of things that are really designed for kids. The White House has gotten involved in this. The North Carolina Attorney General is suing multiple e-cigarette companies. So there is a shift, nationally, to a position of being much more concerned about e-cigarette use. And then this came up, the lung injury. [refers to slide] This is now called e-cigarette/vaping associated lung injury. I should just say, vaping means inhaling vapor. It's just liquid that's been turned into vapor and you inhale it. An e-cigarette is a delivery device through which you inhale. That's what those terms are. This was two weeks ago when I sent the slides in, but we're now at 2300 e-cigarette associated lung injury cases. 45 deaths. About half of these people end up in the ICU. If you look at a CT scan, their lungs fill up with protein and all kinds of goopy stuff and it makes it very difficult to breathe. The average age of people getting this syndrome is 23. These are young people who are getting very sick. A lot of these cases, 85-90 percent, use THC. Vitamin E acetate has also been found in a majority of these cases, which is a preservative antioxidant that is used in a lot of these THC mixtures. About 10-15 percent look like it's nicotine only. This looks like it may be a non-specific reaction to a couple of different things, maybe a handful of things, in e-cigarettes. I've been talking to the pulmonology team and the ICU team and we had five patients now with e-cigarette associated lung injury at Duke. I don't know if any of those were students or employees, certainly could have been. And again, about 30 percent of college-aged e-cigarette users are putting things in their devices. This has shifted this conversation

toward being very hesitant about e-cigarettes.

The proposal that we're batting around, and that I wanted to bring to you all, is to add e-cigarettes to the July 1 ban. So we will be saying that Duke is a tobacco-free campus July 1. Then a proposal that we're coming forward with is, let's add e-cigarettes to that ban. I don't know how much time I have, but I'm happy to take questions and comments.

**Amy Bejsovec (Biology):** Has there been any thought about setting aside a space on campus with massive air handling equipment for people who can't quit? Because none of these programs are 100 percent. It seems discriminatory.

**Davis:** That's a great question. What the data has shown is that implementation of smoking areas, where you have smoke-free zones and then smoking areas, actually doesn't decrease the number of people who smoke on campus. You don't get a decrease in smoking on campus. This was one of the early decisions that we came to. Do we want to simply decrease secondhand smoke exposure on campus? Or do we want to decrease smoking on campus? We batted that around but we came down on the side of, we want to decrease smoking on campus. Implementation of a smoke-free policy, that is a 100 percent campus-wide policy, if the messaging is good and the treatment is good, and I think we're in that zone, should eventually reduce smoking rates about 50 percent among the community. And that has to do with people moving into treatment.

**Haynie:** Let me add that, when ECAC met with Dr. Davis, we shared a similar concern. We were quite concerned and

I'm happy to see that they're making the treatments more accessible. But there are still some concerns that we have about, can employees take advantage of the treatment on the clock, so to speak? The groups that are affected are disproportionate in this, we had some concerns. So I'm happy to see that there's some thought put into that and you are working towards making it more accessible with free medication and free treatment.

**Anne West (Neurobiology):** You know, there seems like there is a little bit of a split with the e-cigarettes and the THC maybe going with the undergrads a lot and that being a very big risk. Is there any in-between thing, like banning e-cigarettes in dormitories, that could be reasonable? These may be people who are less likely to already be long-term addicts challenged to quit, and more likely to be subject to these risks from THC.

**Davis:** Currently, there is a tobacco-free policy within buildings on campus. So people are not supposed to use e-cigarettes within buildings. One of the things that we have toyed with – and I don't pretend to be a policy person, I'm a facilitator in this and really trying to get messaging from people around campus to other people on campus. But I'll say, one of the things that I've learned is that you want to make policy as clear as possible and as simple as possible. When other schools have gone through this transition, the policy change that has made the biggest impact has been a simple ban. Ultimately, what we're looking for is not to get a bunch of people into trouble. But it's to create structures that lead people from smoking to non-smoking. Like I said, a lot of people learn to smoke on campus.

So we need structures that limit that increase in smoking. Good question.

**Cam Harvey (Fuqua School of Business):** I have two questions. Number one: this appears to be a harsher ban than what the AMA actually announced on Tuesday, in that they banned everything that is not approved by the FDA as a cessation tool. Will that be an exception if somebody is in a program, using a vaping device to try to quit? That they can do that on the Duke campus, which would be consistent with the AMA statement? Number two: I am confused by the discourse in the US versus the UK, which has a much different policy, and I think I know why. The reason is that the UK has a national health system and they look at it very simply. The amount of toxins, as you said, 90-95 percent less in vaping, and you look at the number of deaths by smoking, and anything you can do to reduce the amount of toxins is going to save them a lot of money and potentially a lot of lives.

**Davis:** Great questions, thank you. First, the American Medical Association. I have to be careful because some academics read. [laughter] What the AMA did precisely is to recommend a ban on all e-cigarettes that are not FDA approved, just as you were saying. So the FDA approval, at this point, the e-cigarette manufacturers have a certain amount of time, and I think it's like May 2020 or something like this, where they have to get applications into the FDA for product approval, or they're going to be removed from stores. Now, these applications, the smallest one is \$10 million. I think Pfizer has a \$100 million application. These are enormous applications. So the Mom and Pop shops that are doing e-cigarettes are going to disappear in 2020, most likely.

You're exactly right. Why are we not aligned with that? Let me answer your UK question because I think they're the same question, in a way. The UK recognized a couple of years ago that e-cigarettes, just like we were saying up here, are a viable way of quitting and they're less harmful than cigarettes. And they said, we should actually be recommending e-cigarettes to patients who smoke in order to help them quit. That was kind of our position recently as well. We have shifted in that for a number of reasons. One, we realized that e-cigarettes are more addictive than we knew at that time, and this data has come out since the UK recommendations, and that they're more toxic than we once thought. Now we have this lung injury syndrome. The other piece is that the recommendations for a society are not the same as the recommendations for a university. Part of the mission of the university is to provide a safe environment for our students and to serve our student population. And I think that that puts a bright light on, what are the harms in our student population? The harms include lung injury, because they're using THC with e-cigarettes and those kinds of things. It's not black and white, for sure. But there are some pieces to this that have made us look at it differently on a campus than you would see it in society. And look at it differently than we did two years ago.

**Mark Anthony Neal (African and African American Studies / Member of ECAC):** Some of the target groups that you mentioned: Housing, Dining, and Grounds, are disproportionately African American. Have you thought about how you are going to implement this in the context of a population that might seem as though, for them, it's discriminatory? And we're not talking about

undergraduate students or 25-year-olds, we're talking about grown-ass people. [laughter] Has there been a thought process about how to deal with that particular dynamic of this?

**Davis:** Yes. Two years ago, I think that that was probably issue number one with this policy. I work in a part of Durham, and that's my population that I work with primarily. Addiction is treated the same way in African American communities as it is in Caucasian communities. The issue is, can you afford it and can you get access to treatment? The answers that we came up with, and I'll say that they aren't perfect, but the answers that we came up with is, make it either free or five bucks, and then actually show up and meet them where they work and talk to them where they work. We're open to other ideas. But in terms of treatment, that's really been the primary focus of the initiative, is to get treatment out to people. And the main focus has been to those groups who smoke at the highest rates and have those kinds of challenges. Again, it's still going to be a challenge. I don't want to say it won't be. But that has been the focus of this initiative.

**Joel Meyer (Nicholas School of the Environment):** I was one of the original signers of the letter asking for the ban and I'll just stand by that. The point I wanted to make was largely in response to your question about potential uses for e-cigarettes. I think if we view these as a tool to quit, first of all, the data is not very strong as to whether this works. But in addition to the concerns about how functional that is and how toxic they may be, if this is essentially a drug to get people off of cigarettes, then the onus should be on the manufacturers to have really clear quality control demonstration

of efficacy, demonstration of safety, and currently, you can buy whatever you want. And that will probably continue to be the case. Short of a clear demonstration that these products are safe for that purpose and also functional for that purpose, I think the ban makes sense.

**Harvey:** So that I'm not mischaracterized, the basic idea in the UK, I believe, it is obviously bad to be addicted to nicotine. We would like everybody not to be addicted. But even if it doesn't lead to cessation of smoking, the switch to vaping, you intake 90-95 percent less toxins. Yes, I totally agree we don't have the long-term data, but the UK did the calculation based on the reduced toxins and determined that they would take that risk – of not having the long-term data. So this is a matter of public health where policy makers face tradeoffs all the time.

**Haynie:** We're going to have to move on.

**Meyer:** I would just like to point out that that's making an assumption that people are buying products that aren't less toxic and people are producing whatever they want and selling whatever they want.

**Haynie:** Dr. Davis, thank you.

**Davis:** Thank you. Should I make my email available if there are people who wanted to share thoughts or opinions about this?

**Haynie:** We can do that. We'll circulate that.

**Davis:** Those opinions and thoughts will go on to Healthy Duke and then go on to leadership.

**Haynie:** Thank you. [applause]

***A CONVERSATION WITH DAVID KENNEDY, DUKE'S VICE PRESIDENT FOR UNIVERSITY DEVELOPMENT & ALUMNI AFFAIRS***

**Haynie:** I'm pleased to welcome to his first Academic Council meeting David Kennedy, Duke's Vice President for Alumni Affairs and Development. Dave was appointed to his position in the summer of 2018 and he previously served as Stanford's Senior Associate Vice President for Development. Here at Duke, he directs the university's Central Development office and provides overall leadership for fundraising efforts in the schools at Duke. He oversees Duke's Alumni Association, which connects more than 167,000 alumni around the world to the university and with each other. Dave, thanks for coming. He's going to talk to us about the plans for the upcoming capital campaign. If you recall in an earlier meeting, I mentioned that ECAC had had some discussion with the trustees on how the faculty can get more engaged and more involved in the development efforts of the university. Dave is going to continue that conversation.

**David Kennedy (Vice President for Alumni Affairs and Development):**

Thanks, Kerry. Thanks for having me. The first thing, based on the previous presentation, I want to assure you that philanthropy is not dangerous to your health. [laughter] Kerry basically touched on it. I'm delighted to be at Duke. I've been here for almost a year and a half. I came from the west coast. I've been branded so well at Duke that I now refer to my former employer as "Duke Palo Alto." [laughter] I discovered Duke when I was a teenager, Duke basketball and

other things, so Duke has been on my radar since I was a teenager and I'm delighted to be back.

What I wanted to do was, I wanted to touch on two things that are really impacting our area, and I think both of them really impact our faculty partners in both areas where you can be very helpful to us, and also we can provide even more value to your work at Duke. We had four task forces of the Board of Trustees last academic year. One of them was Activating the Global Network. We've talked about it in a lot of settings. We identified the principles of how we think about the alumni experience and how, for their life as a post graduate, what that experience is like. We believe it to be a lifelong endeavor with many returns to the institution for ways of learning, retooling, and re-engaging with the university. What we definitely know to be true is that a transformational student experience can inform both how somebody leaves Duke and how they engage with Duke, if not for their whole life, for a good chunk of it. So a lot of our findings came back to what happened to our undergraduate and graduate students while they were here. We view this network as being alumni, students, faculty and staff who can be part of a cross-cutting network where we learn from both directions. We involve alumni in ways you might not imagine and engage faculty and staff in ways we maybe had not fully taken advantage of before. We definitely need to have better onramps for engagement and simplify them. A lot of things that we identified we need to get better at, we're doing in pockets around the university, but not really in a coordinated way. We see that being a great opportunity. Then we want people to think of the university as being a

partner in people's careers and in turn these alumni providing that same kind of service back. You spend so much time preparing our undergraduates or graduate students for their first job they have when they graduate. In reality, that's just the first of many different career moves they're going to make. We want to be their partner in all the pivots they have in the rest of their life and use Duke as both a partner to re-educate, retool, and perhaps even redirect into a new occupation. So our task force's work was completed in a report last spring that identified three areas that we want the university to focus on primarily: lifelong learning, career/professional development, and mentoring. We decided, for a number of reasons, which I can touch on briefly, lifelong learning is where we are focusing on now, because it provides us with the greatest opportunity to both provide great content and value to alumni, but also create an opportunity for people to really keep the intellectual engagement with their university in ways that we want to tap into and we want to leverage in more meaningful ways. Be it a professional, intellectual, personal issue or opportunity, we want people to turn to Duke first as a resource and a partner for these kind of opportunities. When we were doing our stakeholder interviews for our task force, what really became clear also is that career and professional development both had huge implications on how people viewed their undergraduate or graduate experience and it also informed how they wanted to engage in those areas in the future. We see that as a great opportunity and we have new leadership in hand to reimagine that and we're delighted to be a partner in that as we think about how better to engage faculty and alumni in the career

and professional development experience for our students.

Finally, mentoring. It can be a lot of different directions. Certainly, the one that you would most identify with is a faculty-student mentor-mentee relationship. But it could be a graduate student to an undergraduate. It could be an upperclass undergraduate to a freshman or sophomore. It could be an alum to a student or vice versa, in a lot of ways. We are going to tap into that through the Duke Alumni Association and various professional schools. But there's a huge upside to that. When we talk to our most satisfied graduating students or young alumni, more often than not, they point to a very meaningful mentoring experience being something that was cornerstone to why they feel so strongly about their experience at Duke.

We have a lot of resources. These might not be things you're fully aware of as resources for you as faculty members. So we want to do a better job of promoting this and we're also going to make this a more robust side of our operation in Alumni Affairs. Alumni, if you're not using them, can be phenomenal resources in your classes, either as a guest lecturer, perhaps providing a project that your students can work on. For us, it's a phenomenal way to engage our alumni in the life of the institution and get exposed to both faculty and students. That's something to really think about. If you're traveling somewhere and you want to meet with an alumni group, we'd be happy to connect you that way. We have such talent across the globe in most every industry you can imagine. There might be a resource there that could be the basis of your next research project or student project as well. And then, clearly, we've

started doing a lot more of this, where we can host alumni gatherings in your departments. We've done it around homecoming reunions and women's weekend. We'd love to have the alumni come back to their home departments and engage with their favorite faculty members or ones they haven't met before and connect in that way that may also open up other doors on how you can involve them meaningfully in your department.

Here's what we know, first by way of reference. Duke Forward completed very successfully about two and a half years ago. We are now in the midst of digesting that and looking ahead for what the university wants to be in the next decade and beyond. We are going to celebrate our Centennial in 2024. We plan to publically launch the most ambitious campaign in Duke's history before that. To be successful, though, we need to start engaging our academic leaders now in this process, both broadly, at the academy level, but more importantly at the school level. We've already been in conversation with our Deans and other academic leaders about how best to do that. We really want this to be a collaborative campaign planning process. We're engaging our Development and Alumni Affairs colleagues in ways they haven't been engaged with a wider university view and finding very good early returns on that. For reasons you may imagine become more obvious, bringing in endowment gifts is going to be a huge priority for us in this campaign. Duke Forward was phenomenally successful on almost every metric you could imagine. They outperformed the original campaign goal by about \$600 million. The only campaign goal they missed on was a \$1 billion goal for endowment, which they

raised slightly under, \$900 million. That's a huge impact. That's, right there, \$5 or \$6 million a year that does not freely flow to the Provost or the Deans for things they really prioritize. So we are going to be focusing on endowment for faculty and student support in ways that will both be traditional but also try to reimagine how we talk about that. Investing in people will really be a key component of our next campaign.

These are basic building blocks. [refers to slide] I just want to touch on them briefly, because these things will become more obvious to everyone in the next couple years as we work through this. Clearly, university priorities like undergrad financial aid, residential housing, things like that will be factored into the university side. But we expect a lot of great school and unit priorities to bubble up. We have Deans who have been here for two, three, four, or five years where they're developing their set of priorities and new Deans are also coming in and identifying what they want to do. So that's the process that will really take place over the next couple of years. And then Duke science and technology, you've probably heard about in different ways. We are actually working on that in the most focused way right now. It's a way to really get out in front of what we want to do to be ambitious and dramatically better in basic and discovery science. Major dramatic investments across the university in this area in a way that have happened in schools and units before but never in a holistic way. This is something that the President, Provost, and Chancellor are all totally aligned on with this being our top priority. We're beginning to engage trustees and volunteers and we're doing focus groups and other things now to start figuring out

how we frame this case. You'll be hearing about that. It's a little different from a traditional campaign because this is going to be part of a comprehensive campaign. Around this area, we start developing a case for this and then the rest of the campaign over the next few years after that. This is not what we're calling it, but it's just a reminder that we will be in our second century by the time we launch our next campaign. [refers to slide] We also wanted to advocate the "Advancing One Duke," both in terms of how we engage with our donors in terms of a very holistic way, how we look at their philanthropy, so they can come and think about all the things they are passionate about at Duke and help them find how their philanthropy can address that. It's also partnering, which we do really well across the campus. We learn so much from our faculty colleagues about how to collaborate across borders and boundaries and blur the lines. That's something we're really going to take advantage of in terms of how we articulate the next set of priorities across schools in a lot of ways.

Here are some of the factors we are thinking about now. [refers to slide] Thoughtful strategic planning and patience to stage and prepare the right way to ensure success. We want to hone our focus to strategically raise funds for the highest priorities of the institution. We want to better coordinate alumni engagement and development. We will invest more in those areas eventually, but we want to make sure our organization is aligned as well as it can be. And we're doing that both at the university level as well as across Alumni Affairs and University Development. We want to raise the sights of our closest donors. We need more transformational gifts. I think you

can't go more than a couple days without picking up news of an eight or nine-figure gift to some institution. Duke has had a number of those, but not many in recent years, probably because we're not in a campaign. We've also never had a science and technology focus like we want to have right now. That's where most of the big, truly transformational gifts come from. That's what we're striving to do. Clearly, that will be driven by us having better coordination around all our existing donors, but we may find somebody who comes in through the Duke Health door, Athletics, the Arts, they have a passion for something else on campus, we want to make sure we really tap into that path, wherever it may be at Duke. The thing where you can really help is clearly, as we get into the idea/brainstorming phase, share your ideas to your departments, your chairs, and your Deans. Keep coming up with ways you think that are uniquely Duke stories that we can really leverage Duke's strengths and make a great university even better. And then we have probably used a number of you in the room already to showcase, either in the past campaign, or programs like Faculty Fellows, where you're on the road, being an ambassador for Duke. That is the best thing you can do in terms of helping us. The way you bring your work to life for us makes our job so much easier. You don't even necessarily have to make an ask for a gift, you just need to make a case for why you're passionate about your work. That resonates with people in ways that, if you have not experienced it, it's magical when it happens with a donor. And that's what we need you to help us with.

That's briefly what we're working on. We'll be busy for the next few years but we're really excited about it and really looking forward to the partnership with

the faculty, Academic Council, and everybody in the schools throughout this process.

**Haynie:** Thank you, Dave. Any questions? Hearing none, you can go to the airport. I promised I would get you out of here by 4:20. [laughter] [applause]

### ***FACULTY SALARY EQUITY REPORT PRESENTATION FOR AY 2018-19***

**Haynie:** Our last agenda item for today is a presentation on salary equity from the Academic Council's Faculty Compensation Committee. The presenters today are two members of the Council, Craig Henriquez [Biomedical Engineering], who is also the chair of the committee, and Sayan Mukherjee [Statistical Science]. The other members of the committee are Sherryl Broverman from Biology and a member of ECAC, Sharron Docherty in the School of Nursing, Rick Hoyle, Psychology and Neuroscience, and Hayden Bosworth, School of Medicine.

**Craig Henriquez (Biomedical Engineering / Chair, Faculty Compensation Committee):** As some of you know, I actually used to be Chair of this Council ten years ago. For those of you who have chaired this Council before, Nan [Jokerst, Electrical and Computer Engineering] knows this, you're always looking for topics that are going to generate a lively discussion. [laughter] When I was Chair, I polled a few of my colleagues to ask what the topics are that generate lively discussion. We came up with three: Athletics, Parking...

**Haynie:** That's coming!

**Henriquez:** That's coming. And faculty salaries. And today I learned that vaping

also generates a lot of discussion. [laughter] It was interesting because I was reminded that almost exactly ten years ago, so at the November Academic Council meeting in 2009, we had a presentation by our Director of Athletics, Kevin White, on the state of Athletics. And that was in 2009. It was the first time an Athletic Director presented at Academic Council in 40 years, after Eddie Cameron, after whom Cameron Indoor Stadium was named, presented to the Council. But also, at that meeting, we had our first discussion of Duke in China. So we had both Athletics and Duke in China. Both generated a lot of discussion, I can tell you. So today, I want to talk about faculty salaries and hopefully this will be of interest to all of you.

Kerry introduced the Faculty Compensation Committee, which is an Academic Council committee, and I thank all the committee members who participated in this round of evaluation of faculty salaries. I'm going to tell you a little bit about the salary equity report. This is a study that I believe has been conducted roughly every two years since 1992. It excludes 2010, which actually is the time when I was Chair. And the reason we excluded 2010 was that we were in a salary freeze. So if you remember those days, there were no salary increases, so we basically reverted back to the 2008 report. When we've done these reports over the years, it's used different methodologies. So there has been a more stable methodology that was developed by Merlise Clyde [Statistical Science] over the last three cycles, which used this linear mixed model to examine various magnitudes of effects like gender, race, time in rank, rank, distinguished professor, department and when they joined as a full professor. Sayan, who is

back there, who is in the department of Statistics, ran this model, so he took it from Merlise, and he is available to answer any technical questions about the analysis at the end of the presentation. The data is provided to us by David Jamieson-Drake [Assistant Vice Provost and Director] and Kendrick Tatum [Assistant Director], who are in the Provost's Office for Institutional Research. The charge to the FCC is to examine Duke faculty salaries for statistical evidence of discrimination based on gender and/or race. And then the goal is to provide this information to the Provost and Deans about individual salaries that appear to be anomalously low, based on the statistical analysis.

I'm going to present a few slides, and this is one type of slide that I'm going to present, which shows the different schools that are part of the evaluation. This is a ranking of the size of each one of them. I found this interesting myself, just to see what the different sizes are. So Fuqua, which is a school, has the largest number of faculty who are sort of aggregated within Fuqua. They don't have individual departments. Law is next in size, and then you can see that there are four departments that are actually bigger than three of the schools. So Economics, Biology, Electrical and Computer Engineering, and Biomedical Engineering are bigger than Sanford, Nursing, and Divinity. Now, the colors indicate the grouping, the divisions. This is the Academic Council division, but also the university. So it has divisions in the Arts and Sciences, and then some other schools like Nicholas School. You can see, green indicates Social Sciences, so you can see they're aggregated a little bit towards the left hand side there. The Basic Sciences, which is part of our charge to

examine the salaries within Basic Sciences, are all sort of in the middle, average sized, about 18 faculty members. Humanities tend towards the right side, which are smaller departments. And Natural Sciences are also bigger. So you can get a sense here of the size of individual units and departments. Average size is about 21, median is about 18.

**Some demographics:** there are a lot of really interesting data in the data set that we received. You can spend a lot of time looking at it, and we have. I found a few things interesting. First of all, we received not every faculty member. So faculty members who are Dean administrators, and I don't exactly know how they get Dean administrators, but some faculty are Dean administrators, are excluded from the data set. So we ended up with 974 tenure track faculty members. This is in the university and in Basic Sciences. I'll comment about Clinical Sciences in a minute. We looked at, then, broken down as assistant professor, associate professor, full professor, and distinguished. So we separate them into four categories. Some interesting data: the youngest is 27, is a male. The oldest is 86, which is also a male. In fact, there are roughly 15 faculty members who are over the age of 80 and 14 of them are male. The mean age is 52. The median age is 51. And 30 percent of the faculty are women. As of today, 13 have been on the faculty for over 50 years, which is impressive no matter how you look at it. 15 percent, and I include myself in this group, have been in the faculty for 30 years, and the average time of faculty is 15.8 years with a median of 13 years. If you look at the average salary of all faculty, it's \$181,000. One percent make over \$400,000. Now, for the first time, we're presenting some

data on the non-tenure track faculty rank. This includes the assistant, associate, full PoP, lecturer, and senior lecturers. There is also assistant, associate, full research PoPs, and track V. We did not look at that group in any detail because many of those are paid off of soft money or grants, so we thought this is too complicated and it's difficult for the non-tenure track, as I will discuss. Just to give you a sense: the total salaries of everybody is about \$250 million. That's what all the faculty cost the university. Just to give you an order of magnitude, the net tuition received for all the schools is about \$500 million.

So the primary conclusions from the salary equity study: after adjusting for available backgrounds, characteristics, department, rank, time in rank, rank at hire, not accounting for factors that will influence salaries, such as research productivity, which are not in the available current database, the Faculty Compensation Committee does not find statistically significant evidence for a systematic difference in the salaries of tenure track faculty by race or gender at the ranks of assistant, associate, full and distinguished professors. The FCC does not find statistically significant evidence for a systematic difference in the salaries of non-tenure track faculty by race or gender at the ranks of assistant, associate, full PoPs and lecturers and senior lecturers. These results are similar to the findings of previous years' analyses. I say that, because, if you go back to all the previous years' analyses, there has never been found a statistically significant difference. So this is interesting, because we all know that there are some discrepancies in salaries and it's important to try to understand what those are, particularly around gender. But if you look at it in terms of the statistical

analysis, you cannot find a difference. As I mentioned, we did not include the clinical faculty salaries in this analysis and I received some information from Kate Hendricks, who is the Deputy University Counsel and I'll read that to you, because a lawyer wrote it, so I'm just going to read it. [laughter]

"From 2016-19, the university was audited by the OFCCP."

For those of you who do not know your federal acronyms, this is the Office of Federal Contracts Compliance Programs. This sounds very ominous and it was a three-year audit of the clinical infrastructure.

"This is a federal agency that monitors federal contracts. And among other things, the OFCCP reviewed whether compensation for staff and faculty was equitable according to race and gender."

So basically the same sort of analysis.

"The audit closed several months ago with findings of no violations of the university. Also no evidence of discrimination or gender issues related to faculty salaries."

So I mentioned that these results are similar to findings from previous years' analyses. So, as I mentioned, I was Chair of the Council ten years ago. But ten years prior to that was the first time I was on Academic Council and I actually remember the meetings. We held meetings in the Social Psychology building. I don't know how many people here were ever in that building for Academic Council meetings. And at the time, the Provost gave this talk. So this was a lively discussion, I remember a very

lively discussion. One of the professors stood up at the end of the presentation, Dr. Vogel, who was in the Zoology Department, and he said the following:

"Yes, I found the figures rather odd. I began with a sample [of] one, namely myself. I'm a full professor, a James B. Duke Professor, with 33 years of service and I'm nowhere close to that average figure shown for non- chaired professor... I was curious enough to ask my department chairman in Zoology about the number and he laughed and assured me that no one in the department was making anything like the average salary that was reported."

Provost Strohbehn responded: "You mean the average salary that's shown here for full professor [at] about \$105K. Yes, but that includes the law school, the business school, so you are certainly right that if you are trying to maximize income it would be smarter to have gone into law or business." [laughter]

So that was from the May 13, 1999 Academic Council meeting. One of the things that we're presenting, I think for the first time, is a plot that looks like this. [refers to slide] This is a very interesting plot and I'm going to walk you through it. The idea here is we plotted, by department in the database, the average salary in one standard deviation. You can see how it trends upward. This is a very interesting plot because you wonder how exactly this sort of distribution arose over time. I don't have the answer to that, but what you see is this big range of salaries across the university, across all the departments. This is a complicated factor, as Sayan will talk to you about. The first thing that you notice is this is almost a straight line, which is fairly remarkable.

And that the range of average salaries is about \$100,000 across the university. So that's a remarkable thing. Now I'm sure you're all staring at these three points. [laughter] The reason you're staring at those three points is because they are three departments. There's Law and Fuqua, as Provost Strohbehn noted, but also Economics is sitting up there at the very high end of the salary distribution. So they're almost outliers. And you ask, where is Professor Vogel? [laughter] So that's the Biology department. I'll have more to say about distribution in a moment. Now there was another faculty member who stood up at the meeting, and this is Ann Marie Rasmussen, who I served on ECAC with in 2000. She said something that was very important and actually a topic that I'm going to spend most of the time on.

"I would like to say that a differential in salary based on gender that varies between six to three percent over the lifetime of any given faculty member is, in fact, something perhaps if not a cause for alarm, then certainly a cause for continued awareness and alertness on the part of the Academic Council and the entire university."

So this was 1999 where she raised this question as to why there was a gender difference that's on the order of three to six percent. So I actually was able to get the data from that Academic Council meeting because we have great minutes. These are the data. [refers to slide] So this is also pretty fascinating. These are the salaries that were presented by Provost Strohbehn at the time. You can see this \$105,000 that Professor Vogel referenced. What you notice here is a thing you call the equity ratio. The equity ratio, which I have here, is the ratio of the female salary

to the male salary, multiplied by 100. So it basically gives you a percentage or a rough estimate of percentage difference between them. You can see, this is the three to six percent difference that Ann Marie Rasmussen was referencing. This is the data that was reported to AAUP from Duke University. This is data that you can find on a public database. This is Inside Higher Education data. You can see the numbers and you can see the equity ratios. The equity ratios did not get better in 20 years. they actually appear to be worse. Here we have equity ratios of 89 for assistant professors, 89 for associate professors, and 94 for full professors. The full professors I know here are both distinguished and just full professors. So there are a few things that are interesting. One is that the salaries sort of doubled in 20 years. So it's almost a doubling of all the salaries, which I found fairly interesting. And the other thing is, I did a little analysis to see what the purchasing power of \$105,000 would be today, and it's on the order of \$165,000. So the purchasing power of a faculty member in 1998 was less than that of a full professor in 2018. Now this issue about salary equity has been longstanding. It's been discussed for many years. These are just a couple things I found on the web. [refers to slide] Here's Harvard's analysis of this data, where women are making 92.5 cents on the dollar compared to men. Women's salaries have gone up more than men's, but the wage gap is still widening. And then a provocative journal article, "They Make How Much?" Investigating faculty salaries to examine gender inequalities.

This is data from Inside Higher Education. [refers to slide] This is a listing of the top 11 salaries in universities across the country. You can see the group that Duke is in. These are probably some of the

highest ranked universities in the country. You can see the salaries. Many of these universities are in urban areas where the cost of living is very high. If you account for cost of living, Duke is somewhere in the middle of this group. Look at the equity ratios. So if you look at the equity ratios, this, again, is at the professor level, I didn't do it for all, you can see that Duke is sort of towards the top. It's number four on this list. Interestingly enough, MIT reports an equity ratio of 102, which means that women, on average, make two percent more than men at MIT. But all of them are at this level on the order of 10 or 12 percent less than men make. This is what is mentioned over and over, and this is a confusing fact, given that we found no systematic differences in salaries based on gender. If you do an analysis that is all the aggregated units within the school, you get a slightly different picture. So if you do this from the divisions of Humanities, Natural Science, Social Science, and then the different schools, you can see I have highlighted here the equity ratios. [refers to slide] Some of those equity ratios are what we would hope them to be, 100. In some cases, a little bit higher than 100. But in many cases, we see about 100 across the board. The colors here indicate near-ideal. Green is close to ideal. Yellow is getting into a danger zone, and then grey is a little bit unfortunate. Now, I did this analysis because of Economics being an outlier when included in and not included in the Social Sciences. You can see, with Economics, there is a big difference in gender equity. One of the reasons for this is that Economics is a big department and has very few women. I think there are only four women in all of Economics and there are 45 faculty members. So that has a big skew and their salaries are very

high. So you can see what effect it has. Even with that, there are some differences in the salaries, particularly in the Social Sciences. There are a number, for example, Pratt, where it is 100 in all the ranks, except for distinguished professor. So distinguished professor is one place where you see, uniformly, a place where women make less than men in a significant way. I think this is something to pay attention to. If you look at individual units, we are not doing that badly in terms of equity ratios, except, perhaps, some challenges within the Social Sciences.

Now, here is some gender distribution by rank, just to get a sense of what's going on. [refers to slide] This is 2012 versus 2018. What you notice here is basically whether there was an increase in the number of women relative to men. And so what we're seeing is that in general, there is a large increase in the number of women relative to men. Now, I say this with an incomplete understanding of the data from 2012, which we do not have, and who was excluded and wasn't excluded, and things like that. But this was the data that was presented in 2012. So if you go back to the equity report, which is on the Academic Council website, you'll see these numbers. So just compared to those numbers, you can see that there has been a net growth in the number of women within the university and a net decrease in the number of men. So there is an increase here that is fairly significant in terms of the number of women.

This is in terms of rank. [refers to slide] You can see what it was in 2012. You can see that the total number of women was roughly 28 percent. You can see its representation at the different ranks. You

can see what's changed in 2018. Again, there has been an increase, where the most significant increase is at the associate professor rank. There hasn't been a big increase in the professor rank and not a big increase in the distinguished professor rank. Although, I should say, that the fraction of women who are full professors, who are also distinguished, is roughly the same, not exactly the same, but roughly the same. Here was actually fairly close and here there is a little bit of an increase. You can see there was a significant number of men now who are distinguished professors that may not have been distinguished in the previous year of 2012. So, again, there has been an increase in the fraction of women within the university, 30.4, and the largest fraction appears to be at the associate professor level. This raised the question: whether or not women are being recruited as associate professors and not moving to full professor, or it's just simply, we're seeing an increase and at some point, we'll see an increase in the number of full professors who are women, relative to what they are now. We did a little bit of analysis on this and we saw that, in some of the units, particularly in Arts & Sciences, 45 percent of the women are at that rank of associate professor for over nine years. That is a fairly large number, relative to the university-wide number, which is about 25 percent. For men it is about 23 percent. So this is not the case in Natural Sciences, it is also a high number in Social Sciences, so, again, this is something to look at with regard to what's happening at the rank of associate professor, particularly in Arts & Sciences.

We also did some analysis on race and ethnicity by division, again, looking at 2012 versus 2018. You can see there has

been an increase in the number of Hispanic faculty. [refers to slide] So there is a net increase of 17. Asian faculty, a net increase of 17, and African American faculty, 9. Those who identify as two races, just by one. So you can see that we have had some increase in the diversity of the university over those six years and I'll let the numbers speak for themselves and folks can ask questions about that.

Again, here is a plot that I showed before, just to get into the details. [refers to slide] It's a little hard to see the departments, so I'm going to show that in this plot. This is a ranking of all the faculty, so you can see that all in Fuqua and Economics live up there. And you can see where the other departments are by division. Sociology, surprisingly, is right at the top. So at the very top of this line is Sociology. You may be surprised, I think I was surprised, that Literature is at the top of this ranking. This is all faculty, so this includes faculty where some departments are small and many of them are full professor, so these are things that need to be accounted for. But you can see that, in terms of salary ranking, there is a cluster of the Humanities towards the bottom. There is a clustering of the Basic Sciences towards the top. Law and Fuqua, of course, in their own little stratosphere. Engineering, somewhat in the middle. You can also see that, for all the faculty, there is a wide distribution in terms of the Natural Sciences.

Now, if you look at the individual ranks, and these, again, are even harder to see, but I just wanted to highlight a few things. [refers to slide] First of all, you see these line distributions basically, this tilting line distribution, you see a wide range of salaries across the university. It's about \$100,000 different in assistant professor.

Associate professors are a bit tighter, about \$50,000. This is excluding these points out here. This is showing full professors, again, excluding a subset of points, there are two slopes to this one. There is a wide range here that goes almost about \$120 or \$130,000. The same thing at distinguished professor rank. So even when you go down to individual ranks, you see this wide distribution of salaries.

If you look at the professors, because there are more professors than there are associate professors and assistant professors, this is the ranking. [refers to slide] Economics is at the top. Fuqua is two, Neurobiology is three, Law is four, and you can see the distribution. Again, what's interesting is that the Basic Sciences cluster here and we see a wide distribution for Humanities because Literature is way over here. This is the Nicholas School, Marine and Environmental Policy and Earth and Ocean Sciences. And we also see that there is a wide range for Social Sciences.

Again, I want to highlight this plot. [refers to slide] This plot basically shows you an interesting data point for Duke, where Biology and Physics live within this distribution. This is professor, and this is also including distinguished professor, so it is a combined plot. You can see where Biology and Physics are on this distribution. They're on this end of it. You can see where Chemistry is in this part of the distribution. Political Science and Sociology here. It's interesting that you see this little second hump, which includes many of the schools in the Basic Sciences and, of course, Economics and Fuqua at the top. What we did is, we were actually able to look at data at another university, just to get some perspective.

The only data that we found where they did this by department was UC Berkeley, who we're playing in basketball tonight, by the way. Here is UC Berkeley in 2015. [refers to slide] So this distribution of average salaries across departments with a slope of about \$100,000 is not unique to Duke. This is something we see probably at all universities, although I only have the data for one. But what is interesting is that here, the Natural Sciences are towards the high end, where Engineering and the Basic Sciences are, and you then see this little plateau phase, which, again, is a slightly different set of departments. Electrical Engineering is here, and, of course, Economics and Business. So our distribution sort of mirrors this distribution, and, I would imagine, if we looked at many other universities, we would see very similar patterns.

So we did some analysis of non-tenure track faculty. Again, the slides are not very clear, but again, we see this basic trend, these slopes across the university. This is the teaching faculty at all levels, and then the PoPs at all levels. So this is what made this analysis very tricky, and Sayan can get into more details. There are not a lot of either men or women at the various ranks to make our ability to do gender equity possible. So, because we don't have a lot, it's very difficult to get any sort of sense of whether there's inequity, based on this aggregation on the basic units. I just raised this, just so you're aware, that none of that was done whenever we had a number like two or one. We didn't include that because it would be identifying salaries, particularly for one, if we did this equity ratio, so we decided not to present the data in this way. If you aggregate over all of Arts and Sciences, because of that distribution, the variance across the different units, you

see these numbers in terms of equity ratios. Here we have a slightly larger population. You see that the ratios are, again, in some cases, below 90, which is not ideal, and only at the associate PoP level do we see a number that's close to 100.

This is another important piece of data. [refers to slide] This is actually showing you the fraction of women in the tenure track and the non-tenure track for the various divisions. It's fairly striking to see the fraction of women in the non-tenure track. It's actually much larger than in the tenure track, almost across the board. So 70 percent of the non-tenure track faculty are women in the Humanities, 53, 72, 73, and you can see these differences across the board. It's only in Fuqua where there is only a small fraction of women who are on the teaching faculty.

So, final observations. The first one is, there is a big \$100,000 difference in average salaries between departments that exists that is not unique to Duke. Duke, perhaps, is anomalous in that salaries in some departments in Natural Sciences are at the low end of the distribution, which we believe is unusual for R1 universities. While equity ratios in many units are near the ideal of 100, a 20 year challenge of gaps between male and female salaries in some units and mostly at the full/distinguished ranks remain. The equity ratio appears to be more problematic in the Social Sciences, even when Economics is not included in the data analysis. Compared to 2012/2013, the growth in the faculty appears to be a result of a large net increase in the number of women faculty, with the highest fraction of women at the assistant and associate level. There is a small net growth of women at the full and

distinguished ranks in six years. The question is whether women are leaving Duke or they take longer to get to full. There is a higher fraction of women in Arts and Sciences at that rank for more than nine years compared to the rest of University. The biggest difference in equity ratio at the distinguished rank could be due to a fuzzy definition of distinguished rank in data. There has been a discussion of who is distinguished and some categories are no longer viewed as distinguished. We don't get that. Everyone is tagged as distinguished in our data, so we don't quite know who to call distinguished or not distinguished based on Duke policy. It's worthy of further study. There have been some gains in number of URMs [underrepresented minorities], notably Hispanic and Asian faculty, at Duke in the past six years. PoPs are paid significantly less than tenure track faculty. When aggregated over the school, equity ratios are low in Arts and Sciences despite the fact that about 60 percent of the PoPs are women. And finally, the last conclusion or observation is that reporting of gender is still binary at Duke. So that's interesting. So that is our presentation. We're happy to take any questions and Sayan is happy to talk about the analysis.

**Haynie:** Sally, do you have any observations before we take questions?

**Sally Kornbluth (Provost):** One thing I will say that, we were just talking about a science and technology initiative. This does have implications for recruiting and being competitive in the sciences, while maintaining salary equity. So we've looked at some, when we're recruiting an outside candidate and they're telling you what they're earning at their home institution, and in some cases, we've said,

“What?” And by trying to give someone that salary, you’re not going to throw them into a department where everyone in the department is making less money. It was striking to me. I hadn’t realized that Natural Sciences were at that point in the distribution.

**Alex Rosenberg (Philosophy):** Can you show us the ranking of departments by full professor? There was a parenthetical number next to each department. What does that number mean?

**Henriquez:** The number here is probably a bit confusing. It was just simply a shift from what it was for all the faculty, to just the full professors.

**Rosenberg:** That’s what I thought. Thank you.

**Henriquez:** So you can see Economics went up two, Neurobiology went up six, and Philosophy went down 12, relative to all the faculty. So you can get a sense of that.

**Sandy Darity (Sanford School of Public Policy):** Is there a way to get a handle on the presence of what we might do as discriminatory differentials without having information about measures of research?

**Sayan Mukherjee (Statistical Science):** So it’s kind of tricky in this analysis. What you almost want to do is have something that’s a randomized trial of something causal where, if you were to assign someone gender or race and check the difference. But we can’t do that. We have observational data. So what that linear mixed model is doing in a very impoverished way is trying to match people up as closely as possible and then

seeing what the effect of gender or race would be. Now, there’s a huge problem in this. The huge problem in this is, often, departments that are paid more like Economics, there are other ones, Computer Science is another one, there are very few women, especially at the senior level.

**Darity:** And sometimes few black people.

**Mukherjee:** Always. Yes. I don’t see how we’re going to get significance for race, given the numbers of individuals that we have. As a statistician, I can speak about a model. I can say what I did in that model. I’m not sure I’m very qualified to talk about what exactly equity means. But I can say, unless there is more diversity in underrepresented people, my model will not pick up. I can say certain things, though. If you look at Fuqua, I was looking at the salaries, it’s actually reasonably equitable. There are fewer women. It’s maybe one third/two thirds, or something like that, but if you look at the distributions, the means aren’t too off and they kind of line up. Now, if you go to Economics, it looks different. But there are just so few women. So maybe if there were more women hired in Economics, it might look more like Fuqua. I don’t know. I can think of ways to do the analysis in more fancy ways, but I don’t really think we can pick up that much more.

**Prasad Kasibhatla (Nicholas School of the Environment):** Are you looking at nine month salaries across the board, or is that causing some of these differences?

**Henriquez:** Yes. So we’re looking at nine month salaries and the Basic Sciences salaries were converted to nine month salaries. So all of these salaries have been normalized to nine months.

**Mukherjee:** I'll also say that the way that distinguished professors are coded is extremely confusing. Anyone who is a named professor becomes a distinguished professor. For example, when I was looking at some of the data, especially in the non-tenure track, in Math, the postdocs are called "assistant research professors" and they're named. So there are some, what we called distinguished, is very...

**Kornbluth:** We're working on that. [laughter] Now it should be that everybody who goes through a distinguished professor committee, either in the school or centrally, is going to have the distinguished name put on. Others will not. But we don't have it in the systems yet.

**Henriquez:** It will affect our analysis in subsequent years when comparing that.

**Kornbluth:** Right. So I'm not sure it's a meaningful category.

**Henriquez:** It's a challenge to do these sort of analyses over time, because not everything was done in exactly the same way. But the equity ratios give you some perspective as to what's going on.

**Adrienne Stiff-Roberts (Electrical and Computer Engineering):** Based on what you're saying about the model, it seems like the conclusion being drawn isn't exactly accurate. Instead of saying there's no evidence of a statistical difference, the conclusion should say something like, we don't have the data because we don't have the numbers, particularly where you're talking about race, and you can't make a conclusion.

**Mukherjee:** I did say that, according to the model, and according to the data, we could not find evidence. That is not to say there isn't any. I cannot say that. I could say, given the data and the model I used, I could not find evidence. Now, you could ask me, could I come up with a better model? And I don't know. I could come up with other models. I'd have to aggregate across departments or something like that. Again, that becomes this issue of, am I really comparing likes of likes? That's my answer.

**Sherryl Broverman (Biology / Member of ECAC / Member of the FCC):** Sayan, I think the critical point is that, you keep saying there is no data of systemic differences. Systemic is the critical word there because we see differences, it's just not, is there evidence of a Duke policy for it? No. Do we see differences? Absolutely. I think that's a critical distinction.

**Mukherjee:** Thank you, yes.

**Dori Canelas (Chemistry):** First, I want to commend the committee for including the regular rank, non-tenure track faculty for the first time, which is, if you do a calculation, is more than a quarter of the faculty, which means probably at least a quarter of the people in this room. It seems like the data was a bit obfuscated on the slides. I couldn't actually read, I don't know if you want to go back to those slides. I couldn't see any of that information. We have some very clear slides and then we have two... That doesn't need to be presented that way, right?

**Henriquez:** There's this data, and then there's just giving you the numbers. So the key point, I think, here, is, again...

**Canelas:** Go back to the previous slide.

**Henriquez:** The numbers are small. But you want to look at the range here. This is \$100,000 here. This is \$200,000 here. So this number is sort of in the middle. So we say that's \$50,000, ranging up to about \$120,000.

**Canelas:** If I was a research advisor, I would suggest redoing this slide.  
[laughter]

**Henriquez:** We appreciate that. The committee spent a lot of time doing brute force analysis. We are in the process of printing it off for the final report. So there will be a final report, which will be made available at some point in the future. And those slides will be improved. They'll be readable.

**Canelas:** Thank you. Sounds good.

**Vince Price (President):** Approximately what proportion of variance in salaries is left unexplained in your five year analysis?

**Mukherjee:** I have it, I didn't show you the plots of the residual. I don't remember the exact number, but I would say approximately 90 percent of the variance is explained. For further analysis, there were three individuals who the model did not fit at all. I removed them. But the fits are actually pretty good.

**Betsy Albright (Nicholas School of the Environment):** I just want to make sure I'm understanding the models correctly. The last slide suggests that there are differences in gender across non-tenure track and tenure track. But the models themselves, you're comparing within tenure track and within non-tenure track.

**Mukherjee:** Yes, I ran the models separately for tenure track and I ran the models separately for non-tenure track. There are a variety of reasons for it. First of all, the departments are different, because there are certain things like the writing programs and things like that, which do not appear in the tenure track. That's one of the reasons. Again, if I had to run them together, I'd have to add an extra coded variable about tenure track versus non-tenure track. It would become really messy. So I ran them separately.

**Albright:** I was just thinking, if there are systematic differences, say, in a hypothetical school that is hiring all women at the non-tenure track and a mix of gender at the tenure track, we're not capturing that in the analysis.

**Mukherjee:** We would not.

**Haynie:** Thanks, Craig and Sayan, and the committee. This is the most detailed of these reports that we've seen. I should also add that the 2013, 2015, and 2017 reports are on the Academic Council's website so you can go back. You can't really compare because we've done some different kind of analyses. But thank you to the committee. This was a lot of work. [applause] One of the things that Sayan mentioned when he met with ECAC was that, the model that he used, he has a model, it may be better used for the Deans level or in the schools where you can answer some of the questions you can't answer globally. He may use this other model. So I would encourage that we think about moving in that direction.

**Mukherjee:** There's also more detailed information if we do any further, in terms of rank and school, that we cannot show here, because it would identify people.

**Henriquez:** Also, if anybody has comments or questions, or would like us to look at something, please send us or Kerry an email and we will definitely take a look at it before we send in our final report.

**Haynie:** Just a reminder that we convene again on December 5, in two weeks. We are adjourned.