

Colleagues,

Thanks to all who completed the 2017 Astronomy Climate Survey. This survey follows two others conducted in 2016 and 2015, the results of which are on the Astronomy Department website. This year there were 131 respondents out of a total of 221 Department members --- a record high --- with response rates ranging from 44% to 80% depending on demographic. The survey questions were prepared by the Astronomy Climate Advisors, in consultation with the Berkeley Office of Equity and Inclusion (OEI).

The survey was administered by OEI, who also prepared a comprehensive analysis. Raw data were seen only by OEI. A draft report was shared first with the Astronomy Climate Advisors, who requested some clarifications; these were made in OEI's revised report, which accompanies this letter. We encourage everyone to look through OEI's report, in particular the first 4 pages which provide an overview of the survey results.

Based on their initial readings of OEI's report, the Astronomy Climate Advisors highlight below a few issues we think are particularly noteworthy. *We also provide some initial responses and suggestions toward improving department climate (these are italicized).* The discussion below is intended merely to orient. We hope it will foster a broader discussion, starting first with small groups and individual constituencies and culminating in a Department Town Hall.

Background and Overview

Questions 1-16 as discussed below¹ were all phrased in a way that more positive responses on a scale of 1 to 5 indicated a more positive climate. A "positive" response is one where the respondent answered 4 or 5; a "neutral" response is a 3; and a "negative" response is a 1 or 2.

The variable N which appears in some tables denotes the number of overall respondents in the group (e.g., N = 20 for the total number of faculty respondents), while $n \leq N$ denotes the number in that group who responded to a given question.

Response rate demographics are on page 1 (all page numbers referenced below --- 3, 4, 11, 12, 14, 35, 36, 37, 38, and 41 --- refer to the 57-page PDF report prepared by OEI). Overall response rates were highest for administrative/support staff (80%), followed by undergraduate students (69%), faculty (69%), and graduate students (61%), with the lowest response rates for postdoctoral scholars (46%) and research scientists (44%).

Footnote 1: The numbering scheme for questions in this cover letter follows that of the OEI report; this scheme differs from that in the original survey. The OEI considers the original survey questions 7-24 as "Climate Metrics". Of these, questions 15 and 24 had text responses instead of numeric (1 through 5) responses. The remaining questions (7-14 and 16-23) have been re-numbered 1-16 in the OEI survey report and in this cover letter.

Page 12 offers a global snapshot of the fraction of “negative” responses to Questions 1-16. When the entire Department is taken into account (“Total”), these “negative response” fractions range from 2% to 18%. Page 11 provides the fraction of “positive” responses; these range from 57% to 87%.

Questions 7, 9, and 10 received the most number of negative responses; these are discussed individually below.

1. **Question 7** (17% negative in total): “I am comfortable discussing climate issues in the Department with my colleagues.” Sizeable fractions of undergraduates (19%), graduate students (21%), and faculty (30%) disagreed with this statement (page 12). The groups among undergraduates who had less than a 50% positive response included members identifying as heterosexual, Asian, or one of the ethnic minorities (page 41).

The Department has had several venues for discussing climate---e.g., Town Halls, Lunch Talks, GSPS (Graduate Student and Postdoc Seminar), and AstroJustice. Climate was also the focus of a semester-long consultation/retreat organized by and for the faculty in Fall 2016. We need to do more to normalize climate as part of our everyday conversation. We propose opening colloquia to speakers on diversity, and prompting colloquium speakers to discuss diversity/climate issues as part of their meetings with graduate students. Faculty should solicit speaker suggestions from postdocs and graduate students to help increase the diversity of opinions, while providing opportunities for early career researchers to have a voice in discussion of climate at the Department level.

We encourage climate-related discussions in classes. Making clear statements on standards of conduct on the first day of class and providing links to Department and campus resources can help to set the tone for the rest of the semester. We note that both steps are currently taken in the Astro 7 series (gateway to the major).

2. **Question 9** (18% negative in total): “The Department articulates clear expectations and guidelines relevant to my goals”. Several demographics---graduate students (21%), postdoctoral fellows (27%), research scientists (43%)---reported disagreeing with this statement (page 12).

Relatedly, there was a 20 percentage-point differential between undergraduate women who responded positively (63%) and undergraduate men who responded positively (83%; the disaggregated data are available on page 41).

Broader discussion is needed to understand the root causes of the disagreement with this statement, and in particular why there are gender- and demographic-based differences.

For undergraduates, one way to set “clear expectations and guidelines” is the annual “How to Enter Graduate School” seminar organized for undergraduates by graduate student Alex Krolewski and attended by Head Undergraduate Advisor Mariska Kriek. For graduate students,

a venue for articulating expectations and guidelines is Astro 290, as newly renovated by Jessica Lu: this “Introduction to Research” semester-long orientation class covers many “meta” topics such as student-advisor relations and what constitutes a competitive PhD thesis. Also relevant for graduate students and postdocs is the Astronomy Career Development Seminar (“Astro CDS”) which hosts speakers from industry and government (often Berkeley alumni) to discuss non-academic career paths. We invite suggestions from the Department on ways to engage the postdoctoral scholars and research scientists so we may have a better understanding of their needs.

3. **Question 10** (18% negative in total): “I receive the level of mentoring/advising that I need to achieve my goals.” Sizeable fractions of graduate students (25%), the LGBTQ+ community (33%), people of Asian descent (21%), or Chicanx/Latinx descent (20%), reported disagreeing with this statement (page 12).

Mentoring/advising is not merely the charge of our Head Undergraduate Advisor, our Head Graduate Advisor, and the faculty advisors to our junior faculty. It is the responsibility of every person in a supervisory position: perhaps most notably, individual advisors to undergraduate researchers, graduate students, and postdocs. Individual researchers and their advisors should be in continuous communication with one another to assess whether their mutual needs are being met. Suggestions for innovative approaches to improve mentoring and advising are welcome. We invite proposals for presentations and/or workshops by external experts for educating and empowering mentors.

4. **“Equity Gaps in Percent Positive for Each Question”**. Equity gaps are deviations in the response rate from the mean. People of Middle Eastern/North African descent, of Chicanx/Latinx descent, of multiracial backgrounds, and who also “declined to state” their ethnicity, had systematically negative equity gaps for nearly all Climate Metrics (Questions 1-16; page 15). In other words, these demographics were inclined to report a negative climate compared to the average response in the Department, and responded generally more negatively to many of the questions. They were also less enthusiastic about the addition of Departmental Climate Advisors (Question 8, page 14).

The demographics of the Astronomy Department fail to reflect those of the state of California or the U.S. as a whole. For example, the percentages of people identifying as African American are 13% in the U.S. and 6% in California; for Latinx/Chicanx, the percentages are 18% and 32%. These fractions are not represented at any level of the Department, from undergraduates to faculty, or in key positions of advising and mentoring. We recognize that addressing climate for extremely underrepresented groups requires particular care against BOTH neglecting their concerns AND placing an undue burden on a few individuals to act as representatives.

5. **“Within the past year have you experienced any exclusionary behavior or harassment in your work environment for Astronomy that negatively impacted your ability to do that work?”** About 32% of all women in the Department reported “yes” (page 37). We note that the

question as phrased did not distinguish between harassment and discrimination. Based on the results from the 2016 Climate Survey, which did make this distinction, we believe the majority of affirmative responses to this question likely refer to discrimination rather than harassment (in the 2016 survey, there were essentially no reports of sexual harassment made, while 48% of women respondents reported some form of gendered discrimination).

The fractions reporting exclusionary behavior (a.k.a. "bias") were high among undergraduates (both men and women; 30%) and administrative staff (25%); they were even higher for ethnic minorities (36-60%).

Second-hand reports of exclusionary behavior or harassment (page 38) were higher for undergraduates (41%), women (45%), and LGBT+ people (33%). The bias rates for the Department were generally higher than for the campus as a whole, often by a factor of 2 or more (page 4). OEI's detailed analysis of bias on pages 3 and 4 is useful; it states that the most often cited sources of bias were undergraduates (50%) and faculty (36%).

*Since 2015, the Department has assembled a response system to harassment and exclusionary behavior: e.g., a Departmental website detailing how all of us should respond to calls for help; a set of Astronomy Climate Advisors drawn from all demographics that have served to mediate conflicts and point to campus resources; an Anonymous drop box that provides a complementary and anonymous means of reporting; and annual Climate Surveys like this one that raise awareness. While these have worked to monitor our progress, and to respond to several incidents of unwanted behavior, the Department and campus need to find ways to **prevent** such incidents from happening in the first place, and to **mitigate** the impact of such incidents even (especially) when the persons affected are not comfortable using the current response systems. Acceptable standards of conduct need to be discussed explicitly and more frequently in all venues, from undergraduate classes to faculty meetings. One example is the space usage policy in the 5th floor undergraduate lab: since Summer 2017, we have put up posters in every cubicle describing the official space usage policy to avoid conflicts between students. An idea that has yet to be implemented is to use the Undergraduate Astronomy Society (UAS) monthly lunches --- these gather together all Department members from all ranks for informal meals --- for explicit conversations about climate, with discussion prompts and literature distributed in advance.*

Cognitive bias (the subject of a Department Lunch talk in February 2017 by Peter Behroozi) is a pervasive and significant threat to all of our activities, from research to hiring. A way to combat bias is to lay out in advance the criteria and procedures that go into making a decision, and to subsequently hew as closely as possible to those rules. The faculty recently completed one example of such a process in hiring our two newest faculty members (Lu and Dressing). Another way to address unconscious bias is to make it conscious; to become aware of common pitfalls (such as confirmation bias) and to learn when to question our own instincts.

6. Undergraduate Mental Health. The questions with the most negative responses from undergraduates were Questions 15 and 16, both of which concerned mental health. For Question 15 -- “The department supports and encourages a good work/life balance” -- 49% of undergraduates responded positively, 32% were neutral, and 19% were negative (page 35). For Question 16 -- “I receive adequate support and resources for good mental health” -- 46% of undergraduates responded positively, 32% were neutral, and 22% were negative (page 36). More negative responses (by about 10 percentage points) were from women than from men, and from LGBT+ people than from heterosexual people.

Distressed students, both undergraduates and graduates, have been known to come to their fellow students and faculty to help. Faculty have relied on the Berkeley “Gold Folder” to enlist the help of campus resources (e.g., the Tang Center, and the Students of Concern Committee) to help such students, and to provide what personal support they can. Head Graduate Advisor Aaron Parsons, working with other faculty and the Graduate Student Mentor Masters, are responsible for ensuring that graduate students get through the roughest patches of their careers. Head Undergraduate Advisor Mariska Kriek holds regular office hours open to all undergraduates seeking assistance of any kind. And the Department Chair has an open-door policy for every member of the Department.

But as is the case with other problems (e.g., item 5 above), prevention is the best cure. In this regard, class instructors and research supervisors should strive to work closely with their students in setting clear expectations and guidelines (see items 2 and 3 above) that are practical and mutually acceptable; to set a tone for their classes or research that is constructive and positive (item 1 above); and to create a common trust that whatever problems arise can be solved with intelligent and sensitive discussion.

Sincerely,

Astronomy Climate Advisors: Gibor Basri, Eugene Chiang, Kara Kundert, Jessica Lu, Tanmoy Laskar, Lochland Trotter, Melanie Veale, Hayley Williams

Astronomy Equity Advisor: Mariska Kriek