

To: Joseph Shepherd, Vice President of Student Affairs

From: Advisory Committee on Residential Life

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Date: March 16, 2019

Subject: Retrospective evaluation of Rotation 2018 and recommendations for future improvements

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## **SUMMARY**

The ACRL was charged with carrying out a retrospective evaluation of the 2018 rotation process and identifying potential areas for improvement. We found that the new rotation algorithm and processes implemented in 2018 worked well, although we also identified some areas requiring improvement. Based on these findings, the committee recommends that Rotation 2019 be based on the same algorithmic processes, subject to some fine-tuning.

The report is organized as follows. Section I summarizes our findings regarding the performance of Rotation 2018. Section II outlines the committee's recommendations for Rotation 2019. Section III outlines a number of additional questions that Student Affairs and the ACRL might want to consider in the future.

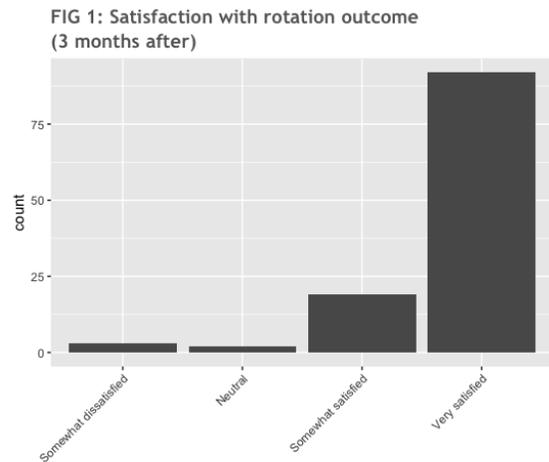
## **I. RETROSPECTIVE EVALUATION OF ROTATION 2018**

The committee's evaluation was based on several types of data. First, we analyzed the housing preferences and housing outcomes for the 2018 incoming class. Second, we collected a detailed survey of students, faculty and coaches regarding various aspects of the rotation experience. The survey responses included 116 incoming students, 216 upperclassmen, 60 faculty and 8 coaches. Third, we had separate consultation sessions with Housing, the ORE, the IHC, and a group of other student leaders.

The rest of this section summarizes the key findings.

**Rotation outcomes.** An analysis of the rotation outcomes suggests that the algorithms and processes used in Rotation 2018 performed quite well.

- On average, incoming students were allocated to a residence they ranked 1.44 out of 9 (with 1 = most preferred and 9 = least preferred).
- The percentage of women across houses ranged from 39% to 50%.
- 76% of students were allocated to their top choice, 94% to one of their top two choices, and 99% were allocated to one of their top three choices.
- Two houses were assigned 100% of the students in their house list, six houses were assigned 75% or more of the students in their house list, and every house was assigned at least 47% of students in their house list.
- As shown in Fig. 1, student reported satisfaction with rotation outcomes taken three months after rotation indicate a high level of satisfaction.
- Out of 234 incoming students, only 3 of them chose to remain unaffiliated with any house at the end of rotation.



**Rotation process: incoming students.** The survey provided additional data on the quality of incoming students' rotation experiences.

- They report a high level of participation in rotation dinners (Fig. 2), but lower participation levels in other rotation activities (Fig. 3; in decreasing order of participation, last two dinners at location of choice, house events and desserts).
- They report high levels of satisfaction with the rotation process (Fig. 4).
- Three months after rotation, they report that the impression that they formed about the different houses during rotation was only somewhat accurate (Fig. 5).

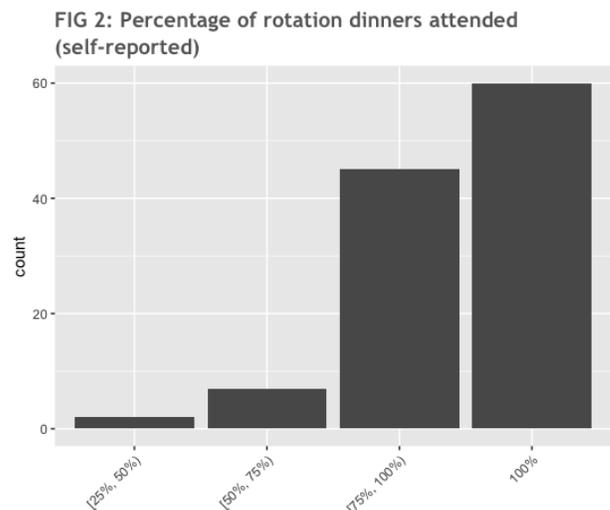


FIG 3: Percent of other rotation activities attended (self-reported)

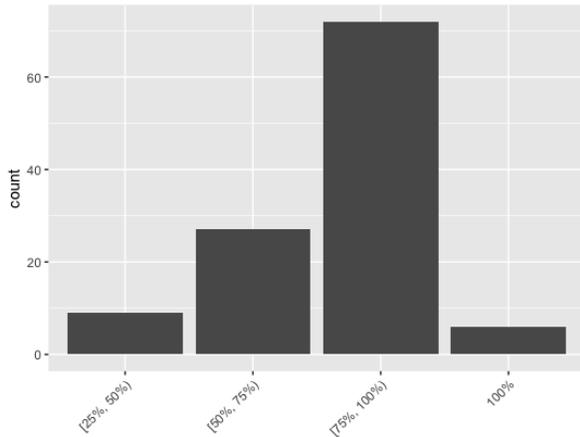


FIG 4: Overall evaluation of rotation experience (self-report)

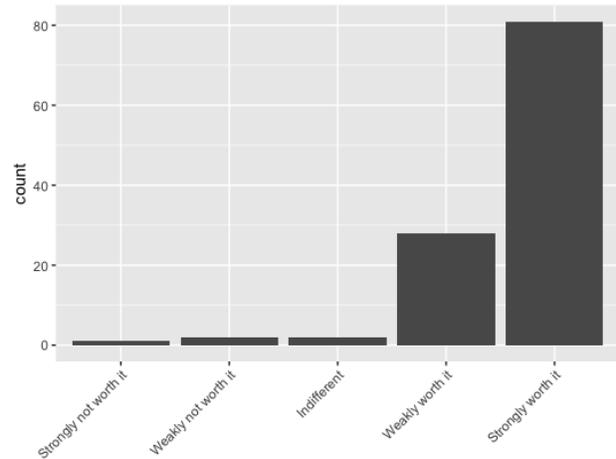


FIG 5: Accuracy of house representations during rotation (incoming students reports)

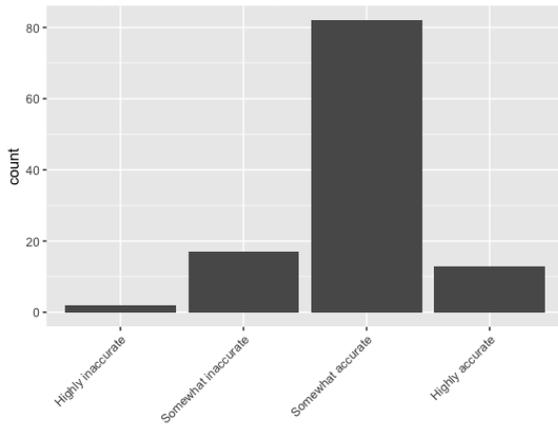
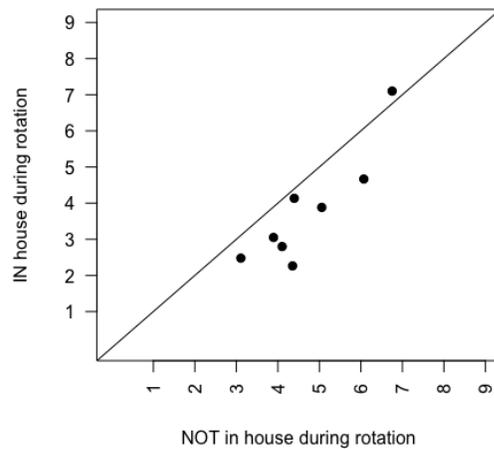
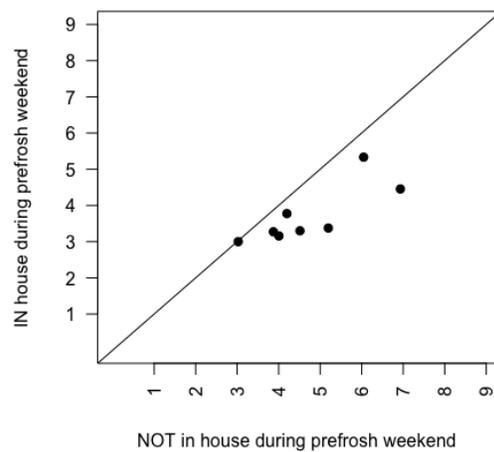


FIG 6: Average rankings BY rotation location (1 = best, 9 = worse)



**Rotation process: impact of random assignments.** Our analyses revealed one interesting aspect of the rotation process. When students first arrive on campus, they are randomly assigned to a residence until the conclusion of the rotation process. We found that this initial random assignment affects students housing preferences: on average, that house goes up one spot on their ranking (Fig. 6, each point is a different house). The effect is similar for the assignments associated with campus visits during pre-frosh weekend (Fig. 7), which are significantly less random.

FIG 7: average rankings by PFW assignment (1 = best, 9 = worse)



**Rotation process: upperclassmen.** The survey also allowed us to measure the rotation experiences and engagement of upperclassman.

- They report more mixed levels of satisfaction with the new rotation process adopted in 2018, where sophomores tended to express more positive views than older students (Fig. 8).
- They report more varied levels of engagement in rotation activities, which decrease with seniority (Fig. 9).

FIG 8: Reported satisfaction with rotation upperclassman

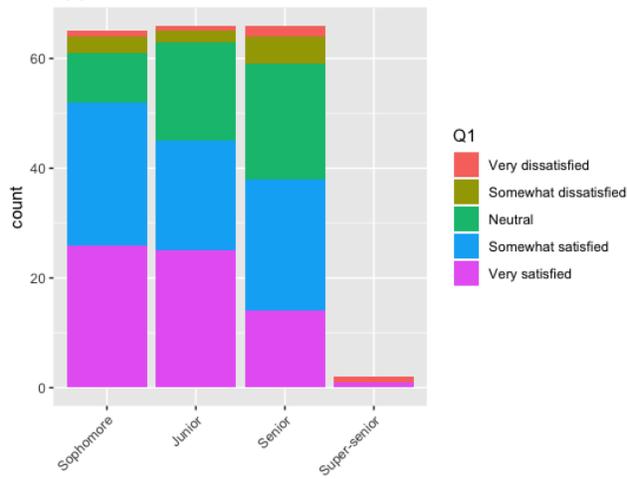
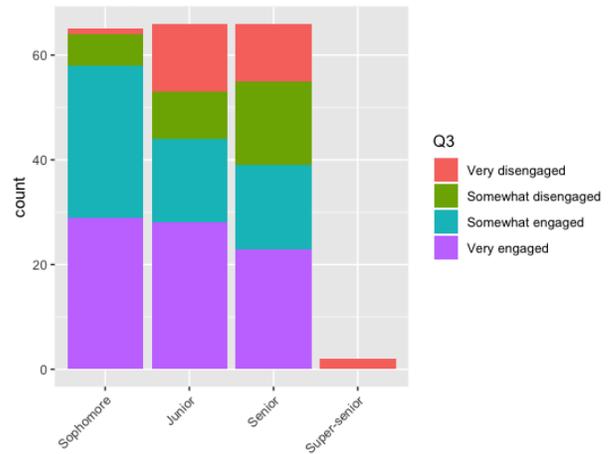


FIG 9: Upperclassman rotation engagement (self-reported)



**About rotation timing and duration.** The committee was also asked to collect data on whether changes to the timing and duration of rotation are needed. In determining this need, we considered how rotation currently interferes with students' well-being and other responsibilities. Here is what we found:

- Incoming students report low to medium levels of rotation interference with academic work (Fig. 10) and with their sleep and stress levels (Fig. 11)

FIG 10: Interference with academic work incoming students (self-reports)

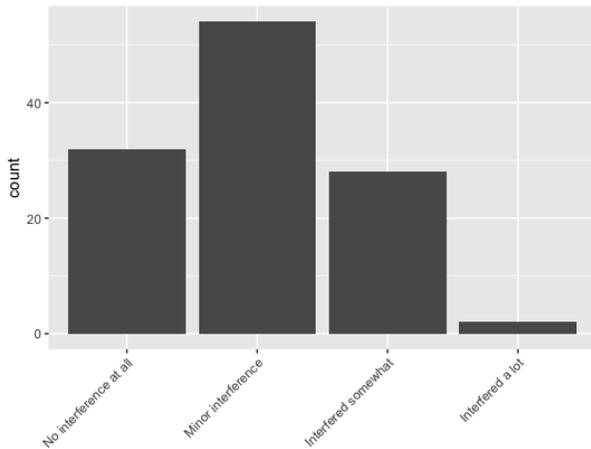
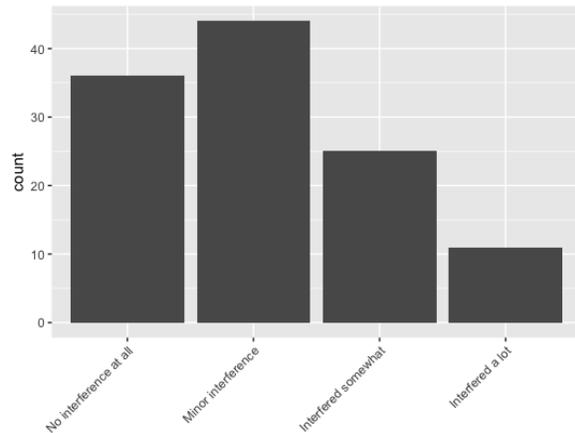
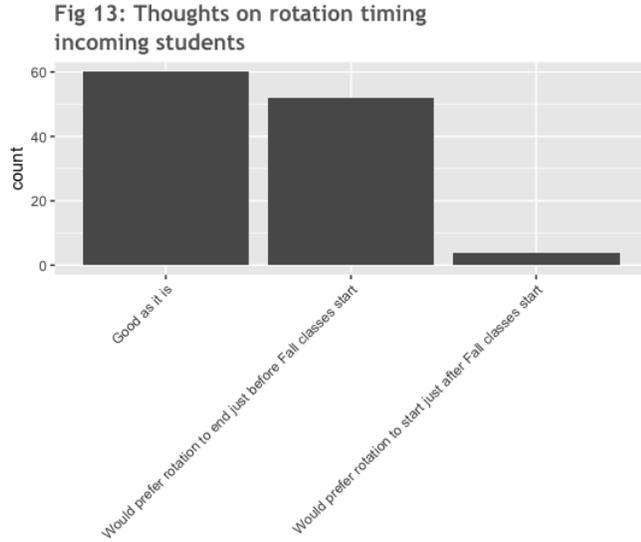
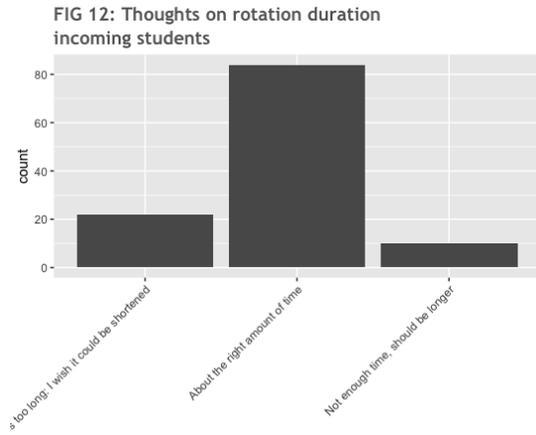


FIG 11: Inteferece with sleep / stress incoming students (self-reports)



- Incoming students report the current duration of rotation to be “about right” (Fig. 12), and they have divided opinions on the timing of rotation: slightly over half favor the current timing, whereas slightly under half would prefer rotation to end before classes start (Fig. 13).



- Upperclassmen also report low to medium levels of interference with academic work (Fig. 14) and with sleep and stress levels (Fig. 15).
- Upperclassmen views on the duration and timing of rotation are similar to those of incoming students, with a stronger preference among upperclassmen for the current timing of rotation (Figs. 16 & 17)

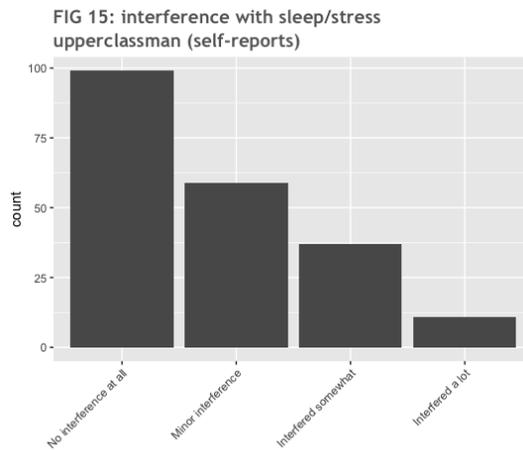
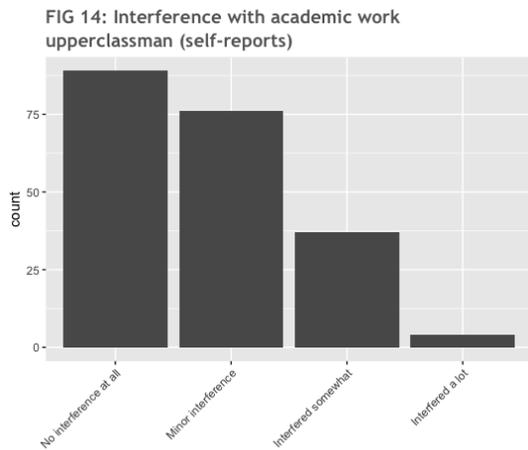


Fig 16: Thoughts on rotation duration  
upperclassman

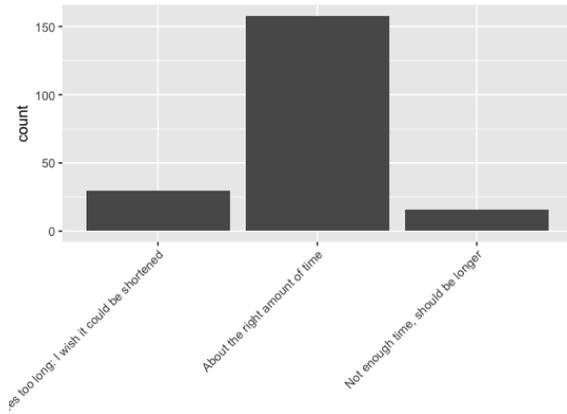
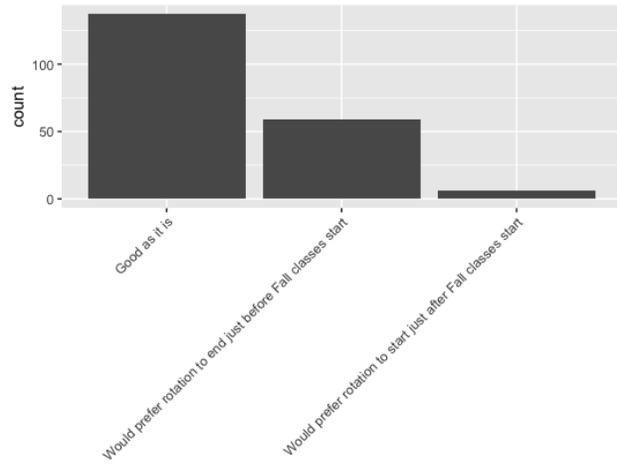


FIG 17: Thoughts on rotation timing?  
upperclassman



- Faculty perceive a somewhat higher level of rotation interference with academics for students, but the most common report is minor interference (Fig. 18)
- The faculty views regarding rotation duration are similar to those of students (Fig. 19). However, in contrast to students, the majority of faculty think that rotation should end before classes start (Fig. 20)

FIG 18: Rotation interference with academics  
faculty view

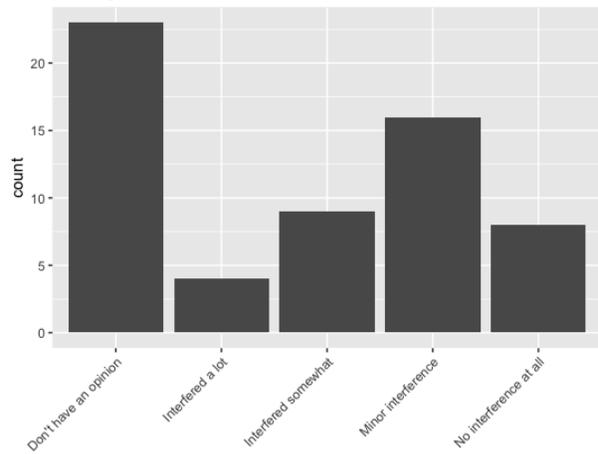


FIG 19: Thoughts rotation duration  
faculty view

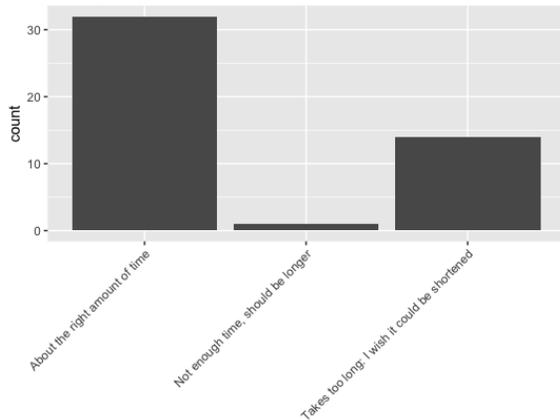
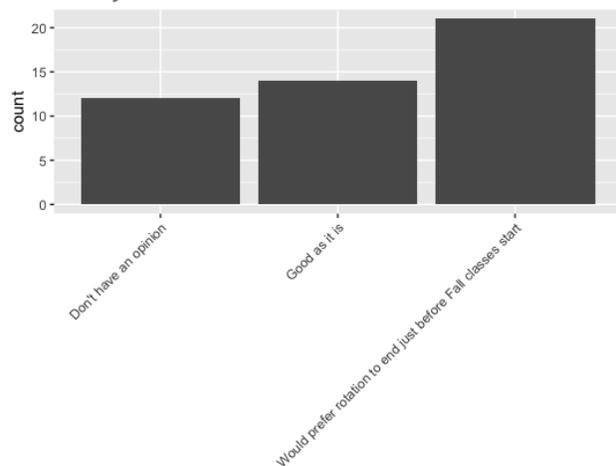


FIG 20: Thoughts on rotation timing  
faculty view



- Coaches report a very high level of interference of rotation with athletics (Fig. 21) and some report a negative impact of rotation on team dynamics (Fig. 22)

FIG 21: Rotation interference with athletics coaches view

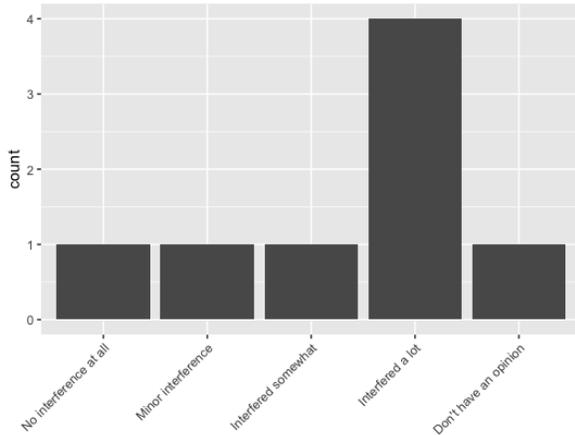
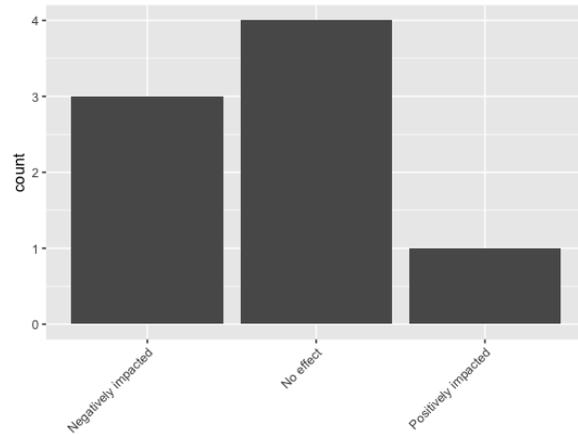


FIG 22: Rotation impact on team dynamics coaches view



**Demand for Bechtel.** The survey data also provides some insights about students' current preferences for living in Bechtel versus other options.

- Fig. 23 shows that there is considerable variation among incoming students in their preferences for Bechtel: 18 students ranked it first, 30 ranked it in the top two locations, and 59 ranked it among the top three locations, but 79 students ranked it in the bottom two locations. To put these numbers in context, the mean ranking for Bechtel places it 7th out of 9 locations, with only two houses getting lower mean rankings.
- Figs. 24 & 25 summarize upperclassmen reported preferences for housing next year. They revealed several interesting patterns. First, the vast majority of students would prefer to live in one of the eight houses, but Bechtel is widely listed as the desired second choice. Second, about 40% of students currently in Bechtel list that residence as their top choice for next year. Third, the overall preference for living off-campus is low.

FIG 23: Incoming students distribution of Bechtel ranking (1 = most preferred, 9 = least preferred)

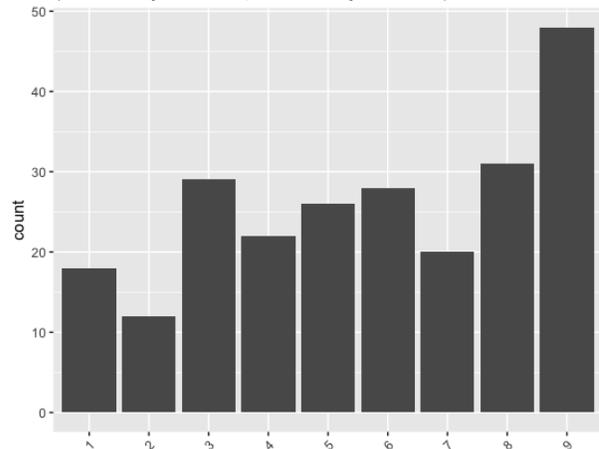


FIG 24: Preferred housing option next year upperclassman

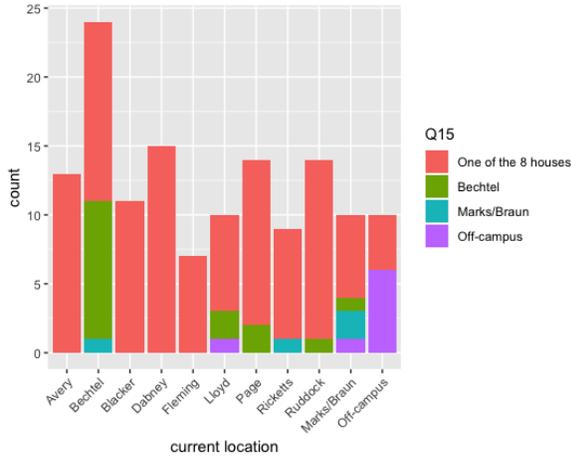
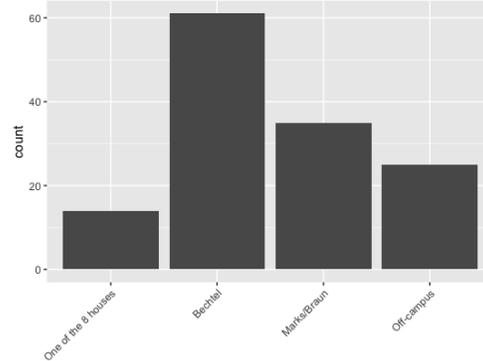


FIG 25: second choice housing option next year upperclassman



**Cases of Concern process.** The Cases of Concern (CoC) Committee worked well. Its services were utilized multiple times during the rotation process, and it was determinant in facilitating the rotation outcomes of several students. However, we also found that there was some confusion regarding the scope of the committee, some discomfort with the term “cases of concern,” and some confusion among students about when and how to access the committee’s resources.

**Areas for improvement.** We found two areas where further work is required to improve the rotation process. First, the house lists were implemented inconsistently across houses, with some of them using processes focused on identifying individuals who can make major contributions to the mission and leadership of the house, while others used them in ways that were less consistent with the spirit of the new rotation system. Second, as shown in Figs. 26 & 27, a sizable number of students report feeling unwelcome and/or uncomfortable at rotation events, and this number is substantially larger for women.

FIG 26: Did you feel welcome at rotation events? (self-reports)

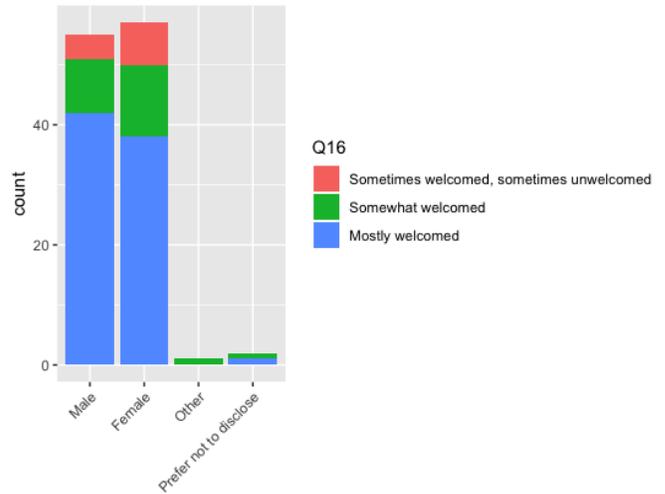
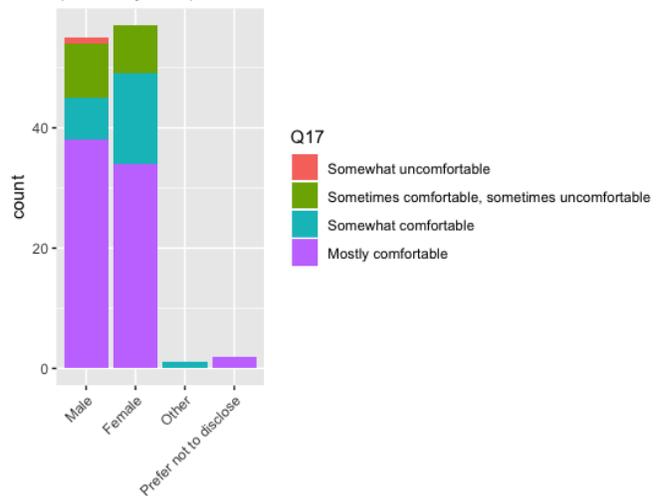


FIG 27: Discomfort at rotation events (self-reports)



## II. RECOMMENDATIONS FOR ROTATION 2019

**Recommendation 1.** Use the same algorithm and rotation processes for Rotation 2019, except for the minor improvements described in the recommendations below.

Why?

- The new system worked quite well in Fall 2018, and we hope that the modifications described in these recommendations will make it even stronger.

**Recommendation 2.** Add the following gender constraint to the assignment and affiliation algorithms: the percentage of women assigned to every location should be at least the fraction of women in the incoming class minus 8%, and no more than the fraction of women in the incoming class plus 8%.

Why?

- A minimal degree of gender parity in every residence is highly desirable to provide a strong peer and support group within their residence and cohort.
- Simulations show that the addition of these constraints can dramatically improve the gender distribution across houses with a negligible impact on the algorithm's ability to allocate incoming students to their most preferred residences.

**Recommendation 3.** Add the following gender constraint to the assignment and affiliation algorithms for the North Houses (Page, Lloyd and Ruddock) and for Avery House: the number of men and women assigned to each house should be an even number.

Why?

- This is necessary to accommodate the fact that incoming students are required to live in same-gender doubles at these locations.

**Recommendation 4.** In implementing Recommendations 2 & 3, update the processes used to determine student gender to follow best practices in higher education, in consultation with Caltech's Center for Diversity.

Why?

- Some students do not conform to traditional definitions of gender, and residential rules and procedures should reflect this.

**Recommendation 5.** Modify the software interface used to collect students' rankings to make it clear that incoming students can submit housing preferences that allow for indifferences, except for the requirement that a single house should be ranked first.

Why?

- A fraction of our students have indicated a preference for not having to provide a strict ranking of all the nine residences since, at the end of rotation, they are indifferent among subsets of the houses.
- The algorithm deployed last year allowed for this, but the web interface used to collect preferences did not make this transparent.

**Recommendation 6.** Reduce the excess number of beds reserved for incoming students, ideally to no more than 5 spots above the number of expected incoming students.

Why?

- Reserving a large number of extra beds for incoming students, as was done for Rotation 2018, unnecessarily hurts continuing students' ability to pick their favored housing location.
- Simulations using data from Rotation 2018 suggest that this would have a minimal impact on the quality of assignments for incoming students.

**Recommendation 7.** Keep the house lists to the same size as in 2018, but instruct the Office of Residential Experience to work with the IHC in developing improved guidelines and training procedures.

Why?

- Better training and guidelines are required to make sure that the procedures used at every house to pin down the house lists focus on identifying students that can make a strong contribution to the house mission and leadership, and not just to express a preference for some incoming students over others.

**Recommendation 8.** Implement the following improvements to the Cases of Concern process:

- Change the name of the committee to something with less negative associations.
- Instruct the Office of Residential Experience to work with the IHC in developing improved guidelines and training procedures for house leadership and continuing students.

Why?

- The committee plays a role of facilitating the rotation process of a wide range of cases, many of which do not fit the term "cases of concern" and its associated stigma. Renaming the committee, and emphasizing its role as facilitator, should increase the

likelihood that students access the committee's resources in the wide range of cases where it can have value.

**Recommendation 9.** Instruct the Office of Residential Experience to work with the IHC to update and simplify the set of "rotation rules" that guide students and houses behavior during the rotation process, and to facilitate and update the key role of the IHC in communicating this standards to the community in preparation for rotation. Two important changes include the following:

- The focus should be on providing practical examples of appropriate and inappropriate behavior during rotation, consistent with Caltech's Honor Code and Code of Conduct.
- The materials should make clear that all disciplinary actions associated with rotation are handled by the Dean's Office following the same disciplinary processes that apply in all other domains.

Why?

- Although the IHC has worked hard in recent years to bring these rules up to date, more work remains to be done.
- Based on the additional comments section from the survey, many students perceive the current rotation rules to be unnecessarily and counterproductively restrictive.
- All disciplinary actions associated with rotation violations need to comply with best practices and with legal and regulatory demands.

**Recommendation 10.** The current rotation algorithm generates multiple solutions. We recommend adding the following steps at the end of the existing algorithm to facilitate the process of choosing among the multiple solutions:

- Pick solutions with the lowest standard deviation in the percentage of women across houses.
- Pick solutions that maximize the lowest percent occupancy across residences.
- Pick solutions with the maximal number of house list spots assigned to the houses (added over all of the residences)
- Pick solutions with the lowest standard deviation in the number of individuals assigned to a house that they ranked at the top.

Note that these steps should be applied sequentially, one at a time.

Why?

- These rules favor the selection of assignments that have additional desirable properties without affecting the algorithm's ability to identify assignments that maximize the preferences of the incoming students.

### III. TOPICS FOR FUTURE CONSIDERATION

During our work we also identified a number of additional questions that Student Affairs and the ACRL might want to consider in the near future. These include:

- A more careful study of the ideal number of freshman beds in Bechtel.
- Using non-random assignments to determine where to place students when they first arrive on campus for rotation.
- Providing better information to students about housing options before arriving on-campus.
- Modifications to the rotation process and traditions to better reflect the diversity of residential experience options and preferences on campus.
- Experimenting with changes to the timing, number and duration of rotation events within the current rotation framework.
- Studying potential bigger changes to the rotation process, including extending rotation over a full-quarter, while decreasing the frequency and intensity of rotation events during this extended period.