

Residence Maintenance Crew

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Executive Summary

The organization that our group chose to focus on for our final project is the Residence Maintenance Crew (RMC) which operates under the umbrella of Housing and Dining Services at American University. The responsibilities of the RMC are to insure that each dormitory is adequately furnished and to set up for all events in residence hall meeting spaces. After our group's initial meeting with the RMC, we defined three main problems that the organization faces. The first was severe understaffing during periods of peak demand, especially during Welcome Week. The second was a lack of communication between the Resident Assistants and the Residence Maintenance Crew, resulting in higher lag times and inaccurate information. The third problem we identified was a high turnover rate of employees, especially upperclassmen who left the RMC to seek out an internship.

Our primary method of data collection was to interview the head of the RMC, Ricki-Lamar Davis, as well as some of his employees. Additionally, we were given access to documents that allowed us to compute average times for tasks that the RMC completed and the amount of required labor. Taking metrics such as average setup time and average response time, along with the problems that we identified, our group was able to formulate three recommendations that would mitigate the largest operational problems in the RMC. Our first recommendation was to alter the structure of the organization so that upperclassmen that would otherwise leave the RMC would be able to take on a more managerial role and receive internship for credit. The second recommendation was to create an internal database within the RMC that would facilitate information sharing between the RMC and the RAs so that information regarding room

requests was accurate and complete. Our final, and most important, recommendation for the RMC is to adapt the labor model of the AU Ambassadors by utilizing seasonal workers to aid the RMC during Welcome Week when extra labor is needed to complete all of their tasks.

Description of Organization

The Residence Maintenance Crew (RMC) is an organization under American University Housing and Dining Programs that is responsible for furniture maintenance in the residence halls at American University. The RMC's main responsibilities are responding to 2Fix requests concerning residence hall furniture as well as preparing all residence hall meeting spaces for events. The RMC is led by Facilities Coordinator Ricki-Lamar Davis, who supervises thirteen RMC employees and oversees the daily operations of the RMC. All of the RMC staff are trained during the fall or spring Welcome Week of the school year, and are notified daily of requests for rooms and meeting spaces that require their attention.

As mentioned above, the RMC is responsible for 2Fix requests concerning residence hall furniture. During Welcome Week, their busiest time, the RMC must prepare all AU dormitories with desks, beds, chairs, lofts, and lounge furniture. After the initial heavy workload during Welcome Week, the RMC then takes on the task of de-tripling rooms as space becomes available for students who wish to move out of tripled rooms. This requires the RMC to remove the additional bed in a room, as well as the loft and any excess chairs or bookshelves. Besides Welcome Week and de-tripling, the RMC

mainly responds to requests regarding broken furniture and the setting up and tearing down of event spaces in the residence halls.

The RMC is located within the Housing and Dining office in Anderson Hall, and their normal business hours are 9 a.m. until 9 p.m. If an emergency occurs after normal business hours, there is always an RMC employee on call. The RMC on duty can be contacted by visiting the nearest residence hall front desk and asking the desk receptionist to put you in contact with the RMC.

Problems

American University Facilities and the Residence Maintenance Crew face many problems with the functionality of their organization. There are four primary aspects that, once addressed and amended, could greatly improve the success rates that the organization achieves.

The RMC has struggled in the human resources department with their inability to retain staff. The Residence Maintenance Crew is comprised of student workers who are employed while they are attending American University. The RMCs must be trained and gain experience throughout their time with American University Housing and Dining, but when they become upperclassmen, they often leave the department for internships. This means that there is a constant need to train new employees, and there is inconsistency in performance levels of the staff members.

Another challenge that the organization faces is the problem of miscommunication between the Resident Assistants and the Residence Maintenance Crew. Often there is a lack of communication between these two components of Housing

and Dining, resulting in a staggered response time to crucial issues and inaccurate reporting of facts regarding incidents. This causes some issues to remain uncorrected, and can cause frustration between the different organizations that need to work cohesively to create success for AU Housing and Dining.

We also see the need to improve the timing of training for the Residence Maintenance Crew. It is necessary for the Residence Maintenance Crew to be trained before they can perform their jobs successfully, and currently, this training takes place during Welcome Week. Welcome Week is one of the busiest times for the organization, and if the RMCs are being trained instead of being able to work during this time, there is no available staff to deal with the multitude of issues that occur. This also creates a surplus of trained employees at a time when they are not required, as well as a shortage at peak times.

One of the biggest challenges that the Residence Maintenance Crew faces is the distribution of staff according to peak business times. As the organization's main functions are fixing moveable furniture, bunking and debunking beds, and installing and removing lofts, there are certain times throughout the year when their services are required more steadily and at increased rates. These peak times are during Welcome Week when students are first moving in, a few weeks into classes when students require de-tripling, winter break when students move in and out of the dorms, and at the end of the school year when students vacate. During these peak business times, however, there are still the same numbers of Residence Maintenance Crew working as there are during the rest of the year. Not only does this create a shortage of staff during times when work levels are high, it causes staff to be idle during the slower periods of business.

Processes and Calculations

American University Housing and Dining was able to provide several different performance metrics in regards to requesting new parts, repairs to beds, setting up a room, and de-tripling it (removing one of the three beds from a room). American University has a growing undergraduate student population. Each year, the amount of admitted students is greater than the year before. In order for the university to accommodate for its additional students, new dormitories, which will require more beds and mattresses, are needed to be ordered. In order to request new bed frames and mattresses from the university, AU Facilities and their staff called the Residence Maintenance Crew (RMC) must place a request with Housing and Dining management. It takes one week on average to have the paperwork turned around and the expense approved. Once AU Facilities receives their approved request, it takes an average of one to three weeks for new stock to arrive depending on the quantity ordered. The more that is ordered, the longer it takes. Currently, AU Facilities holds 75-125 mattresses and 50-75 bed frames as extra stock in case of damages occurring throughout the school year. More students at American University means more bed components are needed to satisfy demand. However with more beds comes the potential for more damages to occur.

When a request has been made for a room set-up, two people are needed to accomplish the task. Assuming that the room is tidy when the AU Facilities arrives, it takes an average of 45 minutes to one hour to set up a room. If the RMCs arrive at the room and it has been left a mess or other items other than the bed has been broken, the process takes longer because a request to 2Fix (the organization in charge of all other

campus repairs) must be made to get the room in order so the RMCs can fill out their task. Assuming that the room is order, all requests will be responded to with 48 hours. Repairs needed in terrace or first floor rooms will be dealt with immediately. People from the outside can see into these rooms, and it is considered a hazard to the university because if prospective students and their parents can see the damaged rooms, they will not want to go to a university where the staff does not tend to the students' requests.

The final typical request AU Facilities receives is to de-triple a room. De-tripling will occur after 48 hours of receiving the paperwork from the students living in the room that all of them acknowledge that one of the roommates is leaving. This gives them time to get the room in order so the RMCs are not tripping over their personal belongings when moving the bed out. It takes two RMCs an average of 30 – 45 minutes to de-triple a room. Again, the process will take longer if the students leave their items in the way of the workers or the room is such a disaster that the RMCs are forced to leave a note saying that they came but could not complete the task due to the volume of stuff in their way. This creates a backlog in requests because the RMCs have now wasted their time and will have to come back again when the room is ready.

AU Facilities currently has 13 people staffed with 4 of the workers on duty each day in a team of 2. One team is out doing the repairs while the other is stationed in the office recording and planning out the next assignment. They have a 12 hour work day when class is in session. During non-peak seasons, they receive between 10-15 requests a day making an average of 12.5 requests per day. The average time it takes one team to set up a room is around 52.5 minutes and the average time to de-triple a room takes 37.5 minutes. During a 12 hour work day there are 720 minutes available to complete

assignments. If each minute was used, they would be able to complete 13.71 set ups. However, using the average request rate of 12.5 tasks, they are currently working at a 91% utilization rate. For de-tripling, they are working at a 65% utilization rate because they are able to complete 19.2 de-triples in the allotted time but only need to do 12.5 de-triplings at most.

During peak seasons, there is a spike in requests averaging about 25 per day. Under the current working conditions, they are very inefficient in regards to completing tasks because one team must remain in the office. This results in a huge bottleneck when it comes to meeting demand. If all requests on a given day were setups, based on the 13.71 set ups achievable per day, they would be working at a 55% utilization rate during peak times. Also, regarding the 19.2 de-triples achievable per day, they would be working at a 77% utilization rate.

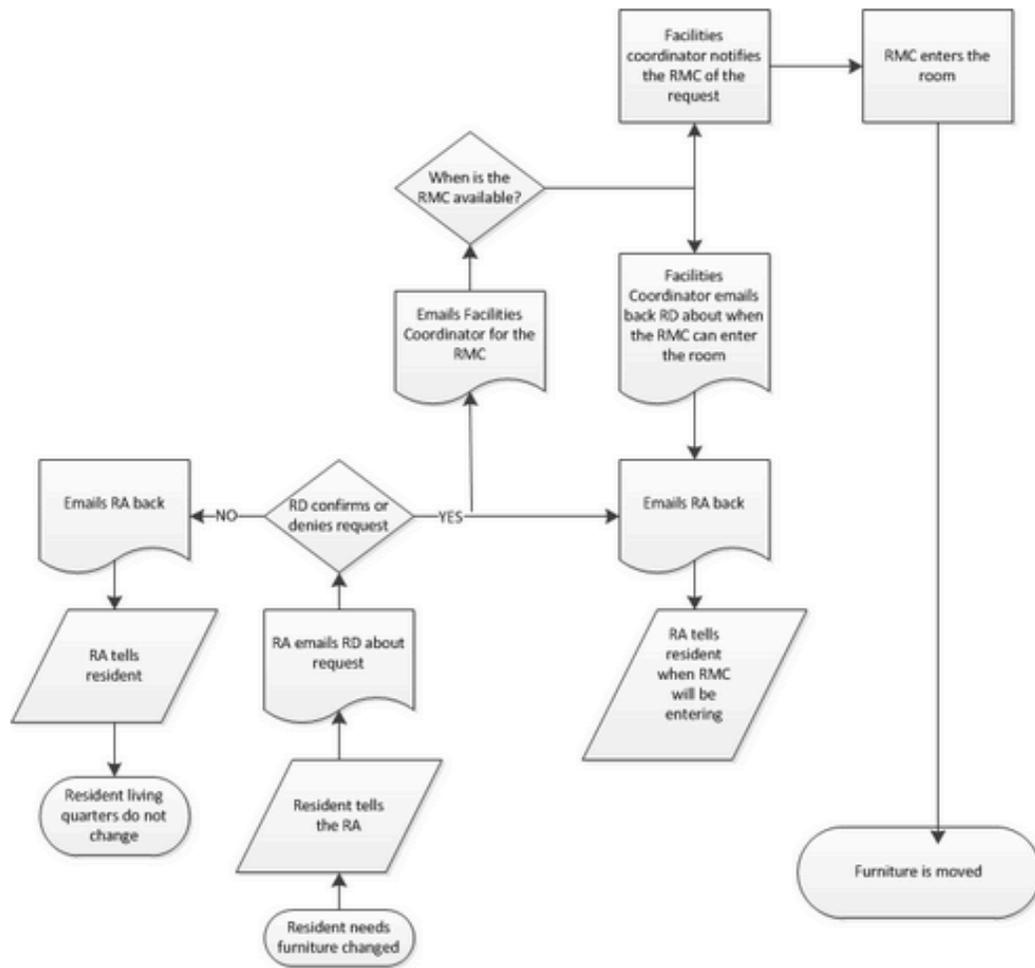
Solutions

One of the problems the managers in the Residence Maintenance Crew identified was a high turnover rate for upper-classmen employees. Although an RMC position is highly coveted among freshmen and sophomores, very few seniors choose to return to the position. Employees identified internship responsibility as the primary reason for leaving the RMC. This problem is not unique to the RMC; American University is the number one undergraduate university in terms of the number of students who will hold at least one internship during their undergraduate career. Many organizations, including the RMC, lose their most highly trained and experienced employees to paid and unpaid internship positions throughout the District each semester.

We recommend taking advantage of this desire for professional development by restructuring the RMC to allow for seniors to have a greater role in running the organization. Creating internship positions as well as administrative ones would allow for students to gain a working knowledge of how to efficiently run a business, and the RMC would be able to retain its best employees. Students indicate that they value leadership experience, hands-on learning, and the possibility of advancement when selecting an internship experience. By putting students in charge of the RMC team, introducing them to business operations, and employing them for the long term, the RMC would be able to meet these needs. Furthermore, because students can be employed for less than full-time staff, and many interns even work for free, the RMC may even be able to reduce its greatest expense, people.

Another problem that the RMC faces on a regular basis is miscommunication with other on-campus organizations about requests. The majority of tickets submitted for the RMC come from Housing and Dining. The Resident Assistants (RA) live on each floor of the residence halls and are responsible for the well-being of residents of each floor, as well as the property on the floor. One of the RAs duties at the beginning of each semester is to report which rooms need to be set up or rearranged for incoming residents, depending on the number and the specific needs of the students. As students continue to move in and out of rooms throughout the semester, Housing and Dining and the RAs are in charge of making sure that residents always have the exact amount of furniture they require.

Figure 1: Current RMC Request Submission Process

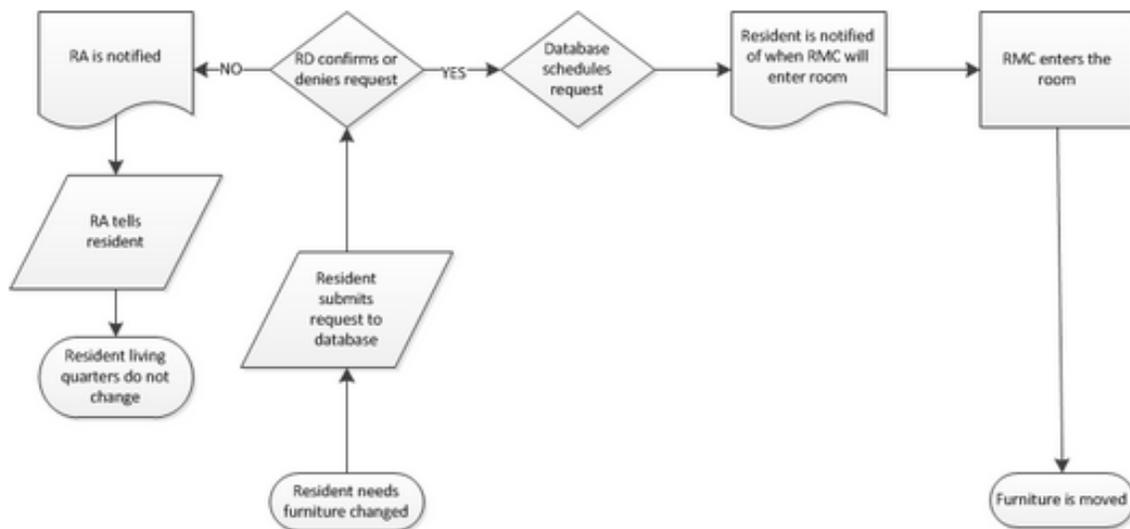


In order for an RA to submit a ticket to the RMC to move a bed in or out of a room, an email chain must be initiated. When it has been confirmed that a student wishes to change rooms or needs a change made in their room, their RA must first email his or her Resident Director, or RD, explaining the situation and the request. When the RD receives the email, they must then reply to the RA who sent the email confirming the request. Next the RD must email the Facilities Coordinator of the RMC to request that the RMC serve the ticket. The RMC supervisor must check the availability of the RMC

employees in regards to other tickets in the queue, and upon confirmation emails back the RD to coordinate when the RMC will enter the room. Once they have agreed upon a time frame, the RD emails back the RA to notify their resident that the request has been submitted and approved. The RMC then contacts the resident to inform them of the date and time they will be entering the room along with instructions on how to prepare the beds.

This is an extensive process that can take several days to coordinate. The result is greater lag time in responding to requests, decreased resident satisfaction, and an increased burden on Housing and Dining employees. We believe that all of these problems can be reduced and even eliminated by creating an internal database that would allow for Resident Assistants and the Resident Maintenance Crew to communicate directly. RAs would submit the request to the database, and the RMC would be able to view this request directly and respond upon the availability of the Crew.

Figure 2: RMC request submission process with database



By eliminating two of the processes in the chain of communication, only the relevant parties would need to take action. All employees would appreciate the reduction in email, and a database would be a much more efficient way to manage requests than via email. The database has the added benefit of allowing the RMC to compile official data on demand and response times. This information could lead to improved efficiency in other aspects of RMC operations, such as coordinating staff levels and anticipating supplies that will be needed depending on the time of year.

While the previous recommendations would be beneficial, our final recommendation addresses the biggest problem that the RMC faces: their inability to match the number of workers with the demand of the students. During times of high demand, such as Welcome Week, the RMC have far more requests than they can possibly fulfill in a single day with their current staffing levels. Yet for most of the semester, they only receive a small number of requests, and their workers experience a significant amount of idle time throughout the day. We attempted to find a solution which not only allowed the RMC to meet demand during the peak times, but also minimized the idle time which workers experienced.

Figure 3

	Average Demand	Peak Demand	Low Demand
Requests per day	12.5	20	6
Number of teams working	2	2	2
Daily Capacity	15	15	15
Labor Utilization	83.33%	100%(overbooked)	40.00%
Suggested Teams Working	2	3	1
Daily Capacity (after changes)	15	22.5	7.5

Labor Utilization (after changes)	83.33%	97.77%	80.00%
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As seen in Fig. 1, in times of high demand, the average number of requests per day jumps from 12.5 to 25. Currently, there are 2 teams on duty per day, which is adequate to service the 12.5 daily requests on an average day, as each team can respond to 15 people. However, in times of high demand they cannot meet all of the demand, and in times of low demand, they have significant idle capacity. For this reason, we recommend that the RMC adopt a flexible capacity system that allows them to schedule more workers during times of peak demand and fewer workers during times of low demand.

In order to implement this suggestion, we advise the RMC to adopt a scheduling method similar to that used by the AU ambassadors. The ambassadors have a pool of available workers that are scheduled as needed by demand. They can have drastically different numbers of workers at any given time depending on the demand. If the situation calls for it, the RMC can call in three or even more teams. When the demand is low, they can simply schedule less workers.

This change in staffing levels would lead to a number of important benefits for the RMC. By finding the optimal staffing levels and enacting a system which keeps actual staffing levels close to ideal levels, the RMC would be able to be much more efficient in times of peak demand while not paying idle workers during times of low demand. During high demand times, they had previously experienced a piling up of requests which they were unable to fill. This leads to problems such as rooms not being ready by the time students arrived. When this happens, the RMC has to work around the students schedules

and possessions, leading a routine maintenance event to become much more difficult and time consuming.

After evaluating all three recommendations, it is clear that finding optimal staffing levels would be the most beneficial. While retaining experienced workers would help, there are no metrics that show that experienced workers finish requests significantly faster, so that does not solve the basic problem of order backups. Streamlining the communication processes, would be beneficial, would require changes from the RA's as well as from within the RMC. Adopting flexible scheduling is not only the most effective of our suggestions, it would also be the easiest to implement. It would save money, reduce downtime and create a system where workers are always being used efficiently.