



# Understanding Late Surgical Cancellations to Prevent Late Surgical Cancellations



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## Introduction and Background

Throughout the Cleveland Clinic Hospital enterprise, over 154,000 surgical cases were scheduled in the year 2017. Many of these cases were not completed and cancelled for various reasons, however, these reasons are not well understood. Through review of internal data, we found a cancellation of 11% in the final 3 days before surgery. While it might be possible to backfill the open operating room (OR) time with 72 or 48 hours to plan, cases cancelled in the last 24 hours probably represent lost productivity for the OR teams and surgical staff. In 2017, over 10,000 cases representing 7.8% of the scheduled surgeries were cancelled the day before of day of surgery.

Some research has been undertaken in this area found similar rates of cancellations at other institutions, with some reporting lower rates in smaller samples. Reasons for cancellation appear site specific without consistency between publications (1,2,3). Among those who classified their cancellations as preventable and non-preventable, these ranged from 80% reported preventable (1) to the majority deemed “unforeseeable in nature.(2)”

Wait times in some surgical departments have become increasingly long, and taking advantage of the OR time created by cancellations would allow us to improve patient access to the procedures they need.

## Aim

To organize surgical scheduling, patient education and surgical operations to reduce OR time left vacant by late cancellations by 50% in the 2019 calendar year with a three part approach; 1) by preventing foreseeable cancellations 2) by earlier detection of unpreventable cancellations, and 3) by developing a strong backfill strategy for late cancellations.

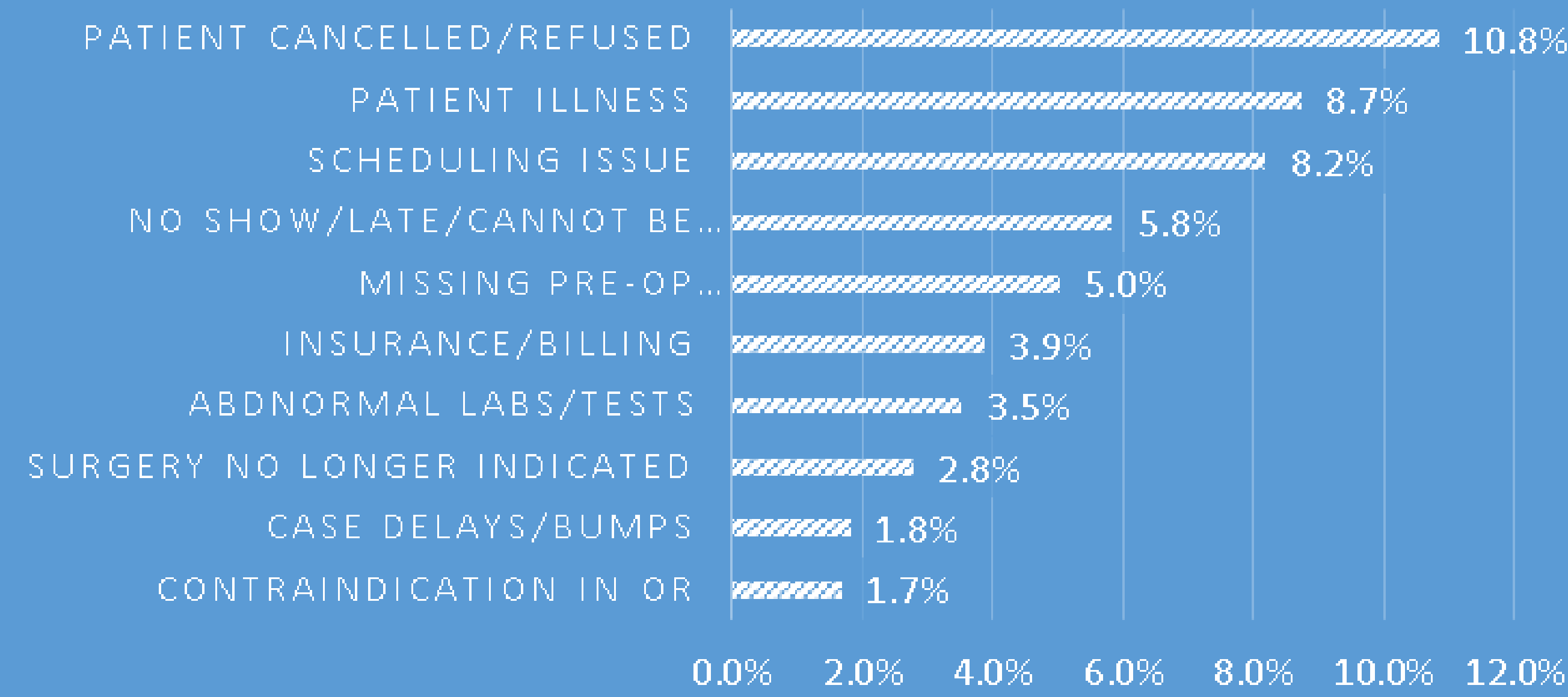
## Methods

- Historical data was reviewed for all cases in the enterprise excluding inpatient cases for the year 2017 - 131,644 cases
- Procedures not taking place in operating rooms were excluded, inpatient cases were excluded
- Cancelled cases were coded for cancellation reason- 10,536 cases
- Difficult cases were discussed among two physicians and marked as Unknown if reason could not be determined.
- Demographic data was also examined with the goal of identifying populations at risk for late cancellation.
- Additional surgical data was reviewed such as day of week and department.

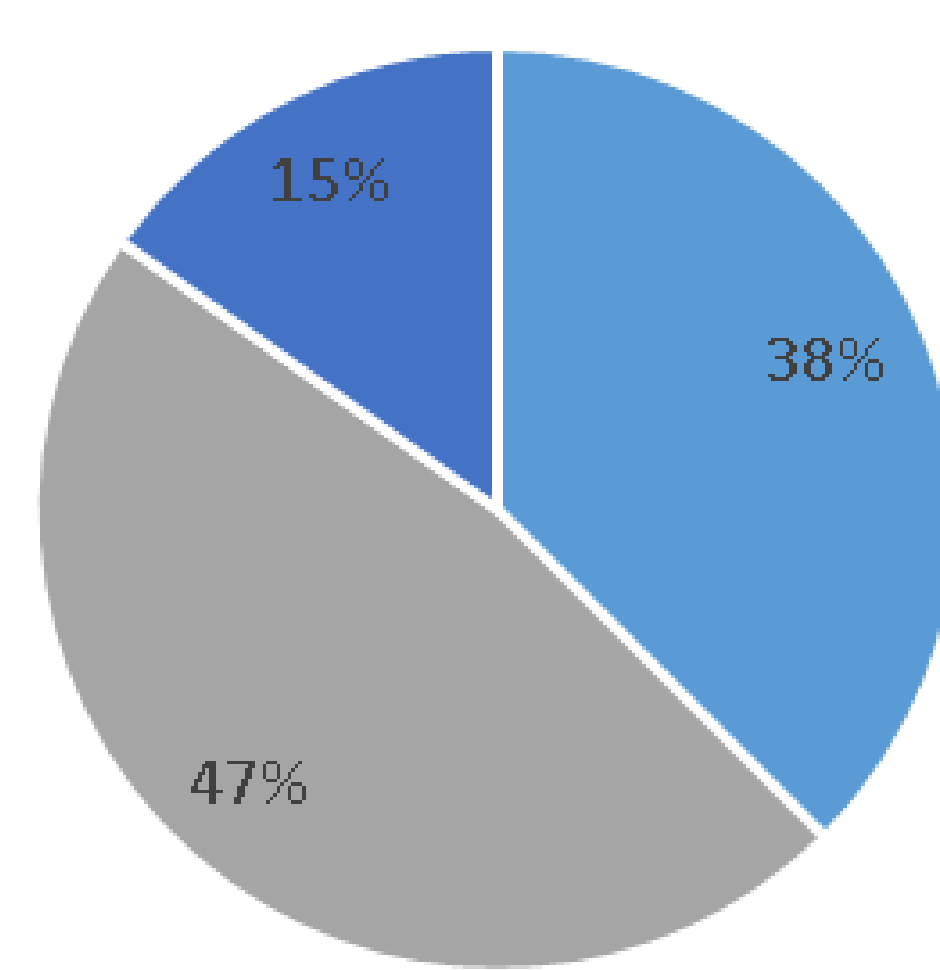
## Results

- Overall rate of cancellation around 7.8-8%
- Ambulatory Surgical Centers (ASC) with slightly high cancellation rate than inpatient hospitals at 8.7% and 7.6% respectively
- Cancellation almost half as likely on Monday compared with other business days
- Men have slightly higher proportion of late cancellations than women (8.5% vs. 7.6%)
- Differences in cancellation likelihood noted among reported races, with minority groups cancelling more than white patients
- Reasons for cancellation fall into patient, physician, and facilities factors, care coordination and changes in patient status
- Notably **absent** from the top 10 reasons for cancellation are:
  - NPO status
  - Medication errors (such as not discontinuing blood thinners)
  - Transportation
  - Facilities or equipment issues

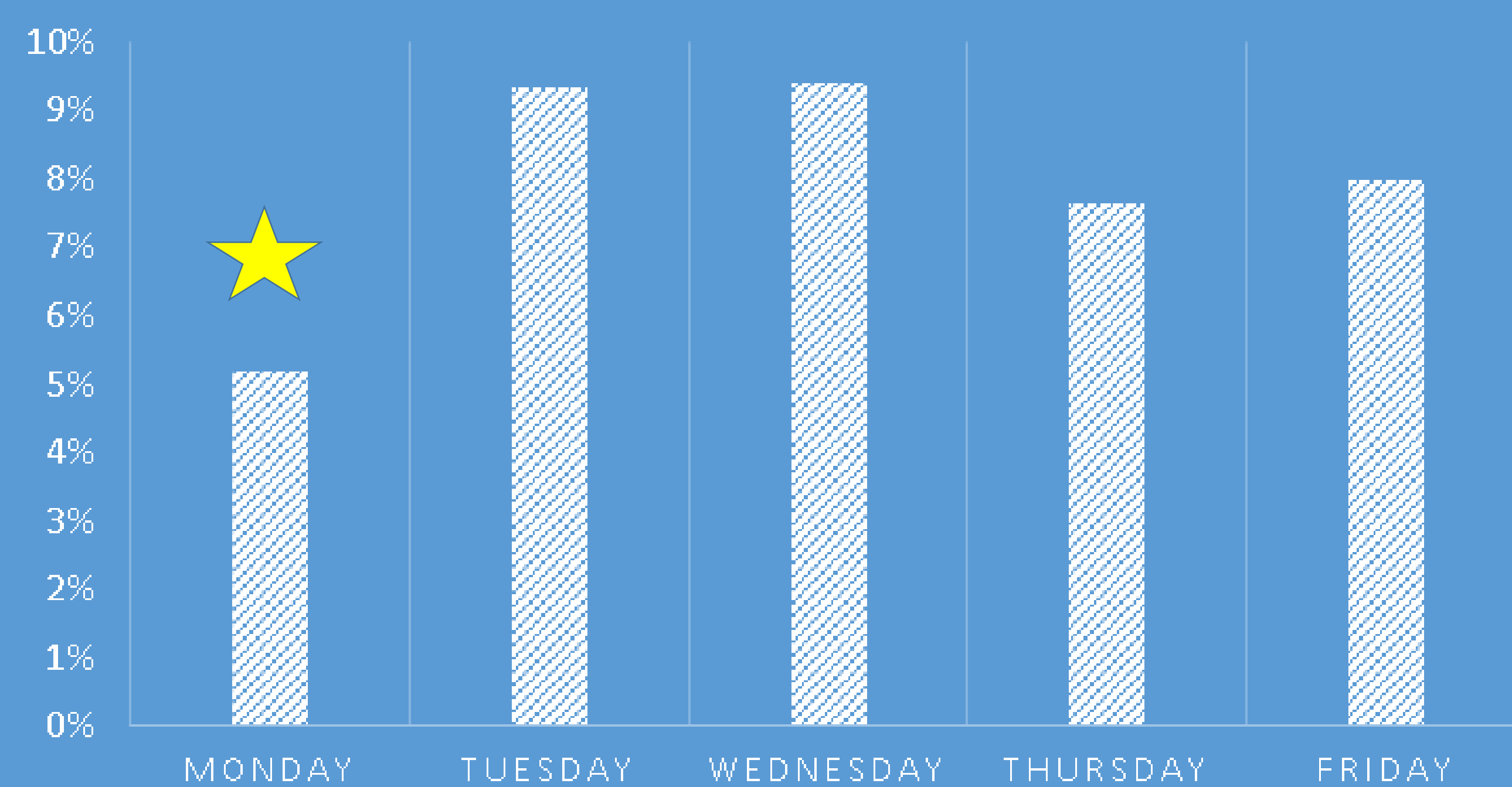
## TOP 10 KNOWN REASONS FOR LATE CANCELLATION



## Preventable vs. Non-preventable Cancellations



## CANCELLATION % BY DAY OF WEEK



## Measuring the Impact of Cancellations

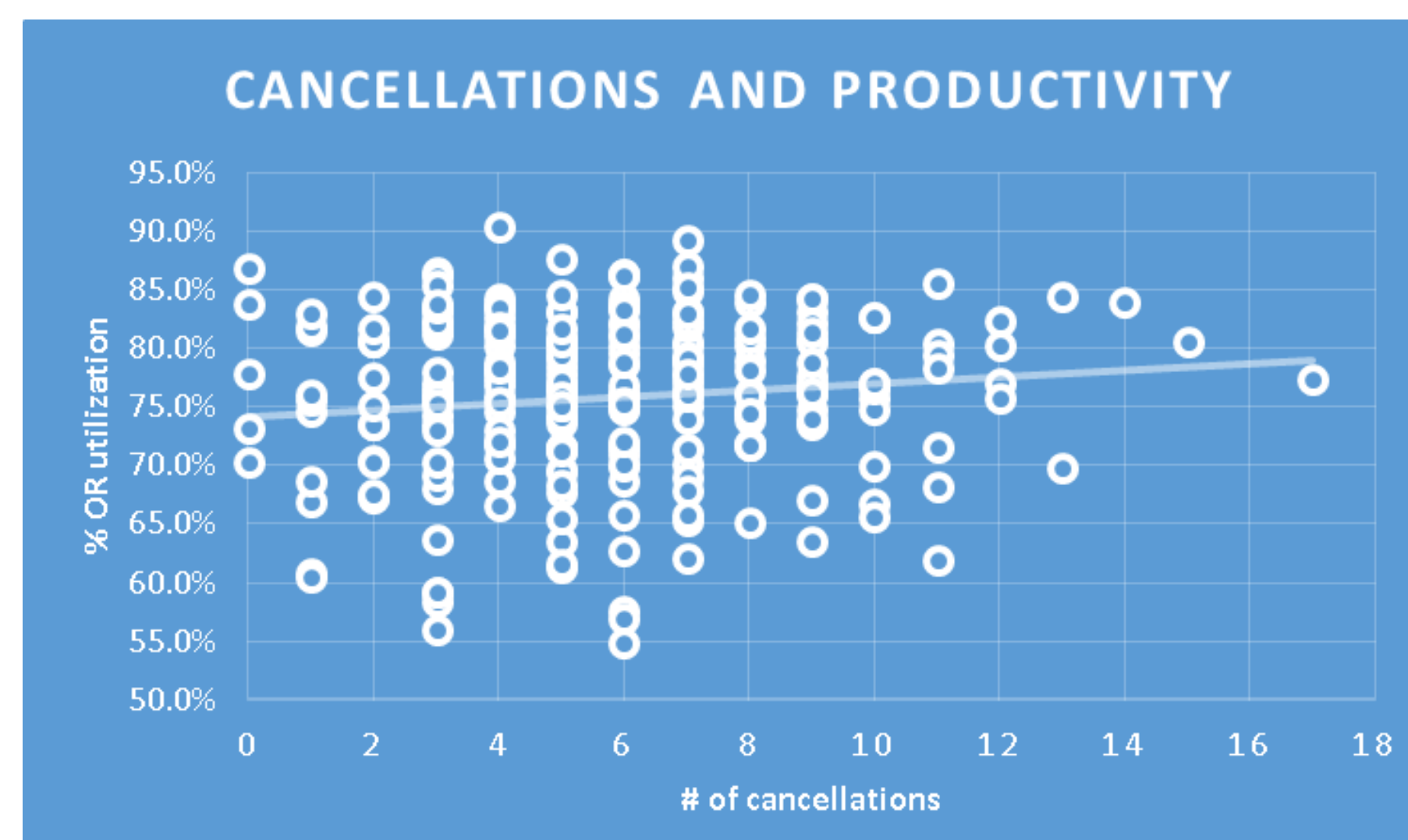
It makes intuitive sense that last minute cancellations are bad for patients and bad for the business of healthcare, but how bad are they? What is the impact of late cancellations, and how can it be measured. They represent a significant loss of revenue and waste of resources, have significant psychological, social and financial implications for patients and their families, they represent a missed opportunity to help another ill patient, and represent a significant loss of training opportunities for surgical trainees

Could cancellations actually be good?

Any time we design countermeasures we must think of the unexpected downstream effects. There have always been cases cancelled, and perhaps we are relying on this flexibility.

- Cancellations make room for the add on, inpatient cases.
- ORs are not level loaded and cancellations allow teams to float to other areas which may be understaffed
- Earlier days can prevent overtime and, over time, may also prevent burnout from trying schedules day after day

## CANCELLATIONS AND PRODUCTIVITY



This graph is one year of cancellation data from our main campus location- tertiary care hospital with inpatient, To-come-in, and ambulatory surgeries. Are we to believe the trend and assume that OR Utilization goes up as cancellations increase?

Of course, you have to book an OR to cancel and OR. Days with higher scheduled case loads have more cancellations, but still result in more completed work hours. Hours worked, % utilization and % of all cases cancelled do not give us the impact of the cancellations.

## Discussion

Without a good way to measure the impact of the cancellations, it is difficult to benchmark improvement. Still, we know improvement in this area is a valid aim since cancelled cases must contribute to loss of revenue, waste of resources, social and financial implications for patients and families, missed opportunities to help other patients, and loss of training opportunities for surgical trainees.

At an inpatient hospital, with add-on cases waiting for OR time, impact of cancellations is less than at an ASC, where there is currently no backfill strategy. The impact of a cancelled cystoscopy is also not equal to the impact of an 8 hour case scheduled with multiple surgical teams. Counting the number of cases is not sufficient, and, as discussed, other attempts at measuring impact have been clumsy and inaccurate. An automated method must be developed for tracking OR utilization hours lost due to cancellations.

An obvious countermeasure includes increasing our communication with patients. Initially, our team assumed that adding a “touch point” to remind patients to stop medications, stay NPO, and offer transportation options would be high impact. The data does not corroborate this, as none of these reasons for cancellation rose above 2% of total. Instead, unanticipated areas such as fixing scheduling errors and assuring patients complete pre-op testing and clearance should be prioritized.

Patient illness-- being unfit for surgery-- may seem unpreventable, but with proper communication and education, these cancellations may not need to fall into the late cancellation group. Some patients may wake up ill on the day of surgery (non-preventable), but many others will have been ill for a number of days, even having seen a doctor for treatment of pneumonia or a COPD exacerbation. If these cases are cancelled earlier, another case can fill the spot. This not only allows another patient to be treated, but frees up the surgeon’s schedule to rebook the original patient when they are more fit for surgery.

Knowing the demographic distribution of cancellations is interesting, but is unlikely to impact countermeasures. Although African-American/black identifying patients 80% more likely to have late cancellations than their white counterparts (12.8 vs 7.1%), we do not anticipate employing interventions which would reach only the black surgical population.

## Future Directions

**Prevention of foreseeable cancellations:** Patients should be educated to call right away if they are feeling ill or are having second thoughts about surgery and wish to speak to their surgeon. They should also report if they are symptom free and feel the surgery is not indicated. Touch points are currently available through text for the outpatient environment, and we will work to make this available for the surgery area. We also have access to messaging for those enrolled in the myChart interface.

**Earlier detection of unpreventable cancellations:** Touch points, discussed above, will help as patients who have proper pre-op testing are less likely to be cancelled due to abnormal test results (categorized as unpreventable) on the day of surgery.

**Backfill strategy:** A current pilot involves creating an on-call list of patients who would come in for surgery on short notice. This benefits the patient by decreasing their time to treatment, and lessens the impact late cancellation on the system.

We will continue to study results of the new touch points as they are rolled out and work toward better methods for assessing impact of late surgical cancellations.

## References

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2. Smith, B. B., Smith, M. M., Hyder, J. A., Mauermann, W. J., Warner, M. E., Licatino, L. K., & Barbara, D. W. (2018). Same-Day Cancellation in Ambulatory Surgery. *Journal of Ambulatory Care Management*, 41(2), 118-127.
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