

**Administrative Changes to Improve Appointment Adherence:
A Quality Improvement Project**

Victoria M. Robinson

College of Nursing, East Carolina University

Doctor of Nursing Practice Program

Dr. Bradley Sherrod

July 15, 2025

Abstract

When a patient does not attend their scheduled appointment, it is referred to as a "no-show" or "missed" appointment. Such occurrences can have a significant negative impact on healthcare organizations. Missed appointments disrupt the workflow of the practice and directly affect the financial bottom line by contributing to nonproductive time. A literature review indicated that implementing a reminder system can effectively reduce the number of missed appointments. Based on this evidence, a quality improvement project was developed with the goal of decreasing missed appointments to 10%, ultimately aiming to increase projected revenue and minimize non-productive time in the schedule. This was achieved by introducing live telephone call reminders to patients 24 hours before their appointments. The results demonstrated a reduction in the clinic's no-show rate by 113 appointments, a decrease in nonproductive hours by 58 hours, and a reduction in revenue loss ranging from \$5,494.91 to \$10,229.88, all accomplished within a span of five months. Manual appointment reminders proved to be effective in achieving these positive outcomes.

Keywords: missed appointments; no-show; occupational medicine; appointment reminders; telephone appointment reminder; text reminders; non-attendance; reminder system.

Table of Contents

Abstract.....	2
Section I: Introduction	5
Background.....	5
Organizational Needs Statement.....	6
Problem Statement.....	7
Purpose Statement.....	8
Section II: Evidence.....	9
Literature Review.....	9
Evidence-based Practice Framework.....	14
Ethical Consideration and Protection of Human Subjects.....	16
Section III: Project Design.....	17
Project Site and Population.....	17
Project Team.....	17
Project Goals and Outcomes Measures.....	18
Implementation Plan.....	20
Timeline.....	22
Section IV: Results and Findings.....	23
Results.....	23
Discussion of Major Findings.....	25
Section V: Interpretation and Implications.....	26
Costs and Resource Management.....	26
Implications of the Findings.....	26

Sustainability	29
Dissemination Plan	29
Section VI: Conclusion.....	30
Limitations and Facilitators.....	30
Recommendations for Others.....	31
Recommendations for Further Study.....	32
Final Thoughts.....	32
References.....	34
Appendices	39
Appendix A Organization IRB Approval:	39
Appendix B: ECU IRB Approval	40
Appendix C: Reminder Phone Call Script	41
Appendix D: Data Collection Tool	42
Appendix E: Data Results.....	43

Section I. Introduction

When a patient fails to attend their scheduled appointment, often referred to as a "no-show" or "missed" appointment, it can have a detrimental impact on healthcare organizations. Missed appointments disrupt practice workflow and have a direct effect on the bottom line by contributing to nonproductive time. This ongoing issue remains a burden on healthcare, with patients frequently forgetting about their scheduled appointments (Briatore et al., 2019; Lance et al., 2021; Ooi et al., 2023). It is crucial to implement strategies to address this issue.

Background

The Occupational Medicine practice offers a range of physical examinations including new hire, return to work, annual, respiratory surveillance, and fitness for duty assessments. The scheduling protocol accommodates both pre-scheduled appointments and walk-in patients, with appointment durations varying from 30 minutes to 1 hour. The clinic often caters to large groups of employees from client companies, necessitating efficient scheduling to meet demand.

Upon reviewing the daily schedule, it became evident that missed appointments pose a significant challenge. The real-time scheduler allows identification of when patients fail to attend appointments, enabling the ability to assess the impact of these absences on the practice. It was observed that patients who had been exposed to blood were missing their surveillance schedule for necessary lab work. Additionally, a surprising number of patients consistently missed their appointments, resulting in nonproductive time, disrupted workflow, and potential revenue loss for the practice.

Research into strategies to reduce missed appointments in the healthcare setting revealed varied success rates, with text and phone reminders showing potential effectiveness (Lance et al., 2021; Mir, 2019). While existing literature provides insights into missed appointments, the

occupational medicine field lacks extensive research on this topic. It was also clear that the practice lacked a structured protocol to address the "no-show" appointment issue effectively.

Organizational Needs Statement

The non-attendance of scheduled appointments by patients is a widespread issue within the service line. The Occupational Medicine clinic has not yet attempted any methods to reduce the number of missed appointments. It is essential to implement a process to decrease missed appointments. Regrettably, no benchmarks or metrics pertaining to missed appointments in the field of Occupational Medicine have been located.

Missed appointments not only disrupt workflow but also impact the revenue and productivity of the practice. Between January 1, 2024 and July 31, 2024, there were a total of 347 missed appointments, which averages to 18.2% of all appointments. The monthly average of missed appointments ranged from 13.6% in January 2024 to 22.9% in May 2024, with 75 missed appointments in May. The estimated lost revenue from these missed appointments varied from \$24,186 to \$34,382, and without intervention, it could increase to \$41,462 to \$58,941 by the end of 2024. Additionally, a total of 178 hours were wasted on the schedule during this period, which is equivalent to over 4-weeks of unproductive time. If no action is taken, this unproductive time could potentially increase to over 293 hours, as the clinic's monthly average is 25.43 hours. The subsequent administrative workload to inform employers of missed appointments further compounds the issue.

One of the key objectives outlined in Healthy People 2030 is the advancement of employment opportunities among the working-age population (Office of Disease Prevention and Health Promotion [ODPHP], n.d.). ODPHP suggests that individuals engaged in the workforce are more likely to experience positive health outcomes. However, a significant portion of the

U.S. population encounters challenges when seeking and maintaining employment. While it is evident that businesses require a complete team for operational purposes, employees may not always fully comprehend the substantial benefits that come with rejoining the workforce.

Occupational medicine endeavors to facilitate employees' return to work, whether through light duty, modified duty, or resuming their previous roles, with a focus on ensuring their optimal well-being. However, the achievement of this goal is impeded if patients fail to attend their scheduled appointments.

The Quadruple Aim extends the concept of the Triple Aim, which focuses on enhancing patient experience, improving population health, and reducing costs, to a fourth goal of enhancing the work life of healthcare providers (Nundy et al., 2022). The initiatives outlined align with the Quadruple Aim by optimizing efficiencies and minimizing patient wait times, thus reducing missed appointments (Nundy et al., 2022). Effective communication between patients and providers facilitates timely resolution of referral delays, ensuring patient comfort and continuous care. These measures not only benefit the workforce's well-being but also translate into potential cost savings per capita. By minimizing missed appointments, healthcare providers can maintain planned schedules, reduce work overload, and mitigate burnout, ultimately enhancing the work life of healthcare personnel.

Problem Statement

The non-attendance of scheduled appointments by patients, often referred to as "no-show" or "missed" appointments, detrimentally impacts healthcare organizations. These absences disrupt the operational flow of medical practices and have a direct influence on financial performance. Research indicates that patients primarily fail to attend appointments due to forgetfulness (Briatore et al., 2019; Lance et al., 2021; Ooi et al., 2023).

Purpose Statement

The objective of this quality improvement initiative was to evaluate the effectiveness of introducing live telephone call reminders to patients 24 hours before their scheduled appointments. The aim was to decrease missed appointments to 10%, consequently increasing projected revenue and reducing non-productive time on the schedule.

Section II. Evidence

Literature Review

The literature search was conducted utilizing the Laupus Health Sciences Library at East Carolina University (ECU), with filters configured to retrieve solely peer-reviewed articles published within the preceding five years (2019-2024). Exceptions were made for articles exceeding the five-year threshold, provided they were referenced as primary sources by other articles. The terminology "no-show appointments" and "missed appointments" was initially employed, followed by the integration of terms such as "reduce," "prevent," "reminders," "telephone calls," and "text messages" into the discourse surrounding the mitigation of no-show and missed appointments. Adolescent studies were omitted.

Current State of Knowledge

Missed appointments continue to pose a significant challenge in healthcare, as patients often fail to remember their scheduled appointments, leading to operational inefficiencies and potential negative impacts on patient care. The failure to attend scheduled appointments reduces the availability of healthcare providers to accommodate other patients, particularly in situations where appointments are limited. In 2023, approximately one-third of healthcare providers have observed an increase in their patients' failure to attend scheduled appointments (Medical Group Management Association [MGMA], 2023). When a patient misses their appointment, the office is unable to cancel or fill the time slot with another appointment ahead of time, resulting in nonproductive time or loss of revenue. When patients are scheduled for an appointment at a healthcare practice, it is customary for the practice to ensure that adequate staffing is in place for the expected number of patients. Therefore, when patients fail to show up for their appointments, it also has a detrimental impact on the practice's revenue. This is because the practice is still

responsible for covering fixed expenses such as rent, utilities, equipment costs, and staff salaries, despite the absence of the anticipated patient visits (Marbough et al., 2020).

The primary reason for missed appointments is often attributed to forgetfulness (Biggs et al., 2022; Briatore et al., 2020). According to self-reported data gathered during telephone interviews, 44% of patients acknowledged forgetting their scheduled appointments (Briatore et al., 2020). Many of the suggested strategies aimed at decreasing nonattendance of outpatient appointments focus on addressing forgetfulness through the use of reminder systems.

Numerous studies have been conducted on methods to reduce missed appointments. The prevailing strategies largely revolve around prompting patients to remember their scheduled appointments. Reminder systems typically utilize automated phone calls, text messages, emails, or letters to convey information. The literature primarily supports other specialty outpatient clinics rather than Occupational Medicine (Bauerle et al., 2024; Hendrickson et al., 2020; Holcomb et al., 2023; Lagman et al., 2021; Ooi et al., 2023; Taylor, 2024). Hence, a standardized procedure for addressing missed appointments in the Occupational Medicine field is currently absent. The evidence clearly indicates that implementing a reminder system, where one is currently absent, has consistently led to positive outcomes. High-quality evidence, demonstrating consistent outcomes, was obtained across diverse settings and populations, indicating potential generalizability to other patient settings such as Occupational Medicine (Bauerle et al., 2024; Hendrickson et al., 2020; Holcomb et al., 2023; Lagman et al., 2021; Ooi et al., 2023; Taylor, 2024).

Current Approaches to Solving Population Problem(s)

For respondents to the MGMA (2023) poll whose non-attendance rates decreased, many attributed this improvement to the introduction of comprehensive, automated appointment

reminders and confirmation messages via text, email, and/or phone calls at specific intervals leading up to the appointment (e.g., five days, three days, and/or one day prior to the scheduled visit). Numerous strategies have been employed to reduce the occurrence of missed appointments (Bauerle et al., 2024; Hendrickson et al., 2020; Holcomb et al., 2023; Lagman et al., 2021; Ooi et al., 2023; Taylor, 2024). Reminder systems for upcoming healthcare appointments, such as live phone calls, automated calls, and text messages, have become standard practice in many healthcare settings. These systems have been effective in reducing the rate of missed appointments among patients (Bauerle et al., 2024; Hendrickson et al., 2020; Holcomb et al., 2023; Lagman et al., 2021; Ooi et al., 2023; Taylor, 2024).

Phone Reminders. Several studies have investigated the effectiveness of live telephone reminder calls on appointment attendance (Bauerle et al., 2024; Hendrickson et al., 2020; Holcomb et al., 2023; Lagman et al., 2021; Ooi et al., 2023; Taylor, 2024). Studies varied in the number of attempts made to reach the patient. Some made three attempts to contact the patient (Hendrickson et al., 2020; Holcomb et al., 2023; Ooi et al., 2020), while others made only two attempts (Bauerle et al., 2024; Taylor, 2024). Additionally, the timing of phone reminders was found to vary in different studies. Some researchers made reminder calls at least 24 hours prior to the scheduled appointment (Bauerle et al., 2024; Lagman et al., 2021; Taylor, 2024), while others made additional calls also 48 hours prior (Bauerle et al., 2024; Ooi et al., 2020). Taylor, (2024) made calls seven days prior the appointment. Hendrickson et al. (2020) made the reminder appointment 3-5 days post hospital discharge but within two weeks of the upcoming appointment. While all of the studies were focused on outpatient clinic patients they varied in specialties; two of the studies dealt with imaging (Holcomb et al., 2023; Ooi et al., 2020), two

trauma (Bauerle et al., 2024; Hendrickson et al., 2020), one palliative care and pre-anesthesia with subpopulation of gastroenterology patients (Braschi et al., 2023; Lagman et al., 2021).

Text Messages. A few studies have conducted comparisons between live reminder calls and alternative interventions. Lance et al. (2021) conducted a comparison between text message reminders and live phone calls for appointment adherence. The notifications were administered 48 hours prior to the scheduled appointments. The research findings demonstrate that reminder phone calls are more effective than text reminders and significantly outperform situations where no reminder system is implemented. Additionally, the study indicates that text reminders are also beneficial in reducing missed appointments when compared to having no reminders at all (Lance et al., 2021).

An extensive systemic review and an integrative review were conducted to evaluate interventions aimed at improving appointment attendance (Crale et al., 2021; Davis, 2021). Notification systems play a crucial role in significantly decreasing the number of missed appointments (Davis, 2021). The comprehensive analysis of the incorporated studies indicated a consistent reduction of 5-10% in missed appointment rates (Davis, 2021). Crable et al. (2021) conducted an evaluation of nine different types of interventions aimed at improving appointment attendance. These interventions included facilitated appointment scheduling, financial incentives, case management/patient navigation, text messaging, transportation assistance, telephone reminder calls, in-person referrals, patient contracts, and interventions combining multiple strategies. Crable et al. (2021) findings suggest that no single strategy has demonstrated unequivocal superiority over others. Conversely, Davis's (2021) research indicates that text messages, phone reminders, or a combination of both yield comparable results. In each of these

investigations, while there were never instances of zero missed appointments, there was a discernible decrease in missed appointments.

Evidence to Support the Intervention

In addressing the challenges associated with missed appointments, it is imperative to implement rigorous and timely quality improvement strategies. The project's proposed approach involved reaching out to patients with a live reminder call 24 hours before their scheduled appointment. One prevalent cause of missed appointments among patients is forgetfulness (Biggs et al., 2022; Briatore et al., 2020). In the practice setting of the project, there was no reminder system in place. Reminder systems have been shown to significantly decrease the incidence of missed appointments (Davis, 2021). Research by Lance et al. (2021) involving 360 participants found that while both text and personalized phone call reminders reduced no-show rates for scheduled appointments, live phone call reminders had a slight advantage over text reminders. The group that received phone calls had the lowest percentage of missed appointments (9.5%) compared to the group that received text reminders at 21%. Overall, Lance et al. (2021) concluded that both phone calls and text reminders are effective in reducing no-shows, with phone calls being slightly more effective than text reminders. Other studies found that the implementation of live telephone call reminders reduced missed appointments to 1.6% (1.7% overall decrease; Taylor, 2024) and 18.7% (12.2% overall decrease; Bauerle et al., 2024). Drabkin et al., (2019), observed a 66.31% decrease in missed appointments following the implementation of live reminder phone calls.

Teo et al. (2021) conducted a study to understand patient views and experiences regarding reminder systems, involving 27 veterans aged 34 to 75 years. Individuals expressed frustration when trying to cancel or reschedule their appointments due to the difficulty in

reaching someone and the time-consuming nature of the process. Consequently, some opted to simply skip their appointments altogether. In the same study, patients explicitly mentioned or suggested that reminder fatigue was a factor contributing to missed appointments. They noted receiving multiple reminders through up to five different methods (including letters, postcards, phone calls, text messages, and emails/secure messages).

The project site did not support the implementation of reminder SMS at this time. However, the practice did have the capability to conduct live reminder calls. Through the implementation of live phone reminders, patients are afforded the opportunity to promptly confirm, cancel, or reschedule their appointments in real time. In the event of a missed call necessitating contact with the office, patients will be relieved to find that the absence of a phone tree facilitates direct communication with a staff member regarding their appointment.

Evidence-based Practice Framework

The Plan-Do-Study-Act (PDSA) cycle is the central component of continuous improvement programs (Connelly, 2021). The PDSA cycle aims to improve quality and reduce cost and is most effective on a small scale. This evolved from Deming's wheel 1950 who created the PDSA cycle. The PDSA framework was chosen to manage and oversee the project due to their user-friendly nature and clearly defined objectives in each phase. This model provides a systematic approach to testing the intervention. The goal of this quality improvement initiative was to reduce missed appointments, leading to improved efficiency in the medical office by reducing non-productive time and increasing revenue following the implementation of process changes.

The planning phase involved the project manager organizing a meeting with the manager of the occupational medicine office and the Directors to address the consequences of missed

appointments and the lack of an appointment reminder system. The purpose of this meeting was to secure approval for the implementation of a reminder system. This phase also involved determining which project methods, measurements and data collection would be best.

The do phase, also known as the implementation phase, involved the establishment of a reminder system utilizing live phone call reminders to notify patients the business day prior to their scheduled provider appointments. The project manager was responsible for educating staff about the new initiative, defining key terms such as no-show, missed appointment, cancellation, scheduling, rescheduling, completed visit, and nonproductive time. It was essential to verify that the correct phone numbers were obtained when scheduling appointments and to ensure that all scheduled patients received a reminder call. Electronic Health Record (EHR) chart audits were performed to monitor staff compliance with the new initiative.

The study phase encompassed a pre-implementation review of the daily patient schedule to evaluate the missed appointment rate, non-productive time, and the projected revenue losses attributable to these missed appointments for the period of January 2024 through December 2024. A similar analysis was conducted post-implementation. This comprehensive assessment was undertaken by the project manager to measure the efficacy of the newly introduced initiative and to facilitate any necessary adjustments aimed at enhancing performance. The results of the monthly data reviews was presented through run charts and discussed with the project team. Following this, the project manager analyzed the findings, and recommendations derived from this project were proposed to optimize the practice setting.

The Act step completes the cycle by incorporating the insights gained throughout the process, which can inform adjustments to the goal, modifications in methods, a complete overhaul of a theory, or expansion of the learning-improvement cycle from a small-scale

experiment to a broader implementation plan. During this phase the team decided whether to continue to use the intervention or not. This decision was determined based off the success of the intervention.

Ethical Consideration & Protection of Human Subjects

Every patient has the possibility of not attending a scheduled appointment. To minimize the risk of missed visits, all patients who had an upcoming appointment with their healthcare provider—irrespective of their age, race, insurance type, or employer—received a personal reminder call. This initiative aimed to ensure that all individuals receive equal attention and support; thereby, reducing any potential biases that may exist in healthcare communication practices.

Following the policy of the partnering facility, this project was submitted to the Institutional Review Board (IRB) on October 29, 2024, to confirm and document that this was a quality improvement project. Collaborative Institutional Training Initiative (CITI) modules were completed as mandated by ECU and the collaborating organization. These modules were completed to gain an understanding of the rights of human subjects and to ensure adherence to those rights. The partnering organization's IRB approved this project on November 1, 2024, as a quality improvement project, not research, and was exempt from the full board review (see Appendix A). This project proposal was also placed through the ECU IRB digitally with approval granted on September 6, 2024 (see Appendix B).

Section III. Project Design

Description of the Setting

The project was conducted at an occupational medicine clinic situated in North Carolina that faced challenges related to patient no-shows. This clinic is part of a larger medical system in the region, which includes two acute care hospitals, one standalone emergency department, and multiple outpatient primary care and specialty clinics. The clinic operates from Monday to Friday, between the hours of 8:00 AM and 5:00 PM, and is closed on nationally recognized holidays. At this location, two providers attend to approximately 10-20 patients each day for a range of healthcare visits.

Description of the Population

The patient population comprised of individuals ages (18 years and older) of various genders and races. All patients with scheduled provider appointments in occupational medicine were included in this assessment. Specifically, this encompassed scheduled pre-employment physical examinations (PPE), annual or periodic evaluations (PHY), respiratory clearance assessments (RES), return to work evaluations (RTW), fitness for duty assessments (FIT), initial visits for worker's compensation (WCI), and follow-up visits for worker's compensation (WCF).

Project Team

The project team comprised a multidisciplinary group of professionals. The project manager was a nurse practitioner who is also a certified occupational health nurse specialist with over six years of experience in the field. A key member of the team was the Clinic Patient Services Specialist II, who managed the front desk and was primarily responsible for scheduling the majority of PPE, PHY, RES, RTW, FIT, and WCI visits. The certified medical assistants (CMA), certified nursing assistant (CNA), and site supervisor were also integral members of the

team, as they managed most of the worker's compensation follow-up (WCF) appointments. Additionally, the Director of Operations, the Medical Director, and the manager for Occupational Medicine were crucial members of the project team, as they were committed to enhancing site performance metrics and revenue generation.

Project Goals and Outcome Measures

The objective of the project was to reduce the rate of missed appointments to 10%; thereby, enhancing projected revenue and minimizing non-productive time within the schedule. A variety of data points have been identified to assess the outcomes of this initiative. The metrics to be evaluated include the number and percentage of missed appointments, the total and average number of scheduled appointments, non-productive hours, and the projected lost revenue, comparing post-intervention figures to those recorded prior to the intervention.

Description of the Methods and Measurement

The primary objective of this project was to reduce the rate of missed appointments to 10%; thereby, enhancing projected revenue and minimizing non-productive time in the schedule. A range of data points were identified to evaluate the outcomes of this initiative. Key metrics included the number and percentage of missed appointments, the total and average number of scheduled appointments, non-productive hours, and the estimated lost revenue, with post-intervention figures compared to those recorded prior to the intervention. The formula to calculate the percentage of missed appointments was (number of missed appointments / total number of scheduled appointments) multiply the result by 100 to express it as a percentage. Each visit type was linked to a baseline fee, although certain companies may have qualified for discounts on that fee. If additional services were needed during a visit, there were extra charges for each service rendered. For established companies, where there was a clear understanding of

their additional service preferences, the assessment of total lost revenue tended to be more accurate. In contrast, for new companies that the office was serving and with which the project manager was not yet familiar with, only the baseline fee was considered when evaluating lost revenue for a missed visit. Visits for which only a baseline fee could be determined were categorized as high and low projected revenue loss. In contrast, visits involving known companies that occasionally offered optional additional services were placed at the high end with these extras included, or at the low end with only their standard services considered. These visits are typically PPE, RTW, FIT, RESP and annual physicals. All fee information was obtained from the project site's fee service sheet, which was utilized throughout the duration of the project.

Responses to phone reminders during the intervention period were analyzed, specifically focusing on confirming appointments and whether or not they were completed. Additionally, whether patients were successfully reached for reminders was reviewed. Different types of appointments were also examined to determine if any particular category responded more favorably to the intervention. Furthermore, there was a comparison done of non-attendance rates from the pre-intervention and post-intervention periods, along with an analysis of department operational costs and savings. It is important to note that no direct patient identifiers were collected except for the appointment date, time, type, and allotted duration of the appointment.

Discussion of the Data Collection Process

Data collection commenced in May 2024, with an emphasis on pre-implementation data spanning from January 2024 to December 2024. The objective was to ascertain rates of missed appointments, quantify non-productive time, and estimate projected revenue loss. A retrospective audit of the daily schedule within the EHR system was conducted to evaluate how appointments

are scheduled, define the parameters that constitute a missed appointment, determine the estimated fees associated with different types of appointments, and assess the duration for which the schedule was blocked for each visit. Furthermore, it was essential to establish whether patients rescheduled their visits within the same month to ascertain if the anticipated revenue was ultimately realized in that month's budget. The documentation practices concerning this information in the EHR were also examined.

Data analysis was performed using Excel spreadsheets to establish the clinic's current monthly no-show rate, as well as to calculate both the average and percentage of non-productive time and revenue loss; thereby, setting a baseline for further comparison. Additional data was collected to verify whether patients receive appointment reminders, whether a team member successfully contacted the patient, left a voicemail, or was unable to reach the patient, and whether the patient attended or missed the appointment (see Appendix D).

This methodology for data collection was an ongoing process throughout the duration of the project. The same metrics were collected during the intervention phase, and the results were summarized in tables to facilitate trend analysis and evaluate the achievement of project goals. The data amassed throughout the project were presented in charts and tables for clarity and effective communication of findings.

Implementation Plan

Prior to the commencement of implementation, it was imperative to convene with key stakeholders to propose a change in practice. An appointment reminder system was established, which consisted of a live telephone call from a team member to all occupational medicine patients scheduled for a provider visit the business day prior to their appointment except for FIT exams as the patient may be unaware of the visit. A specific reminder phone call script was

followed (see Appendix C). These calls were conducted by the project manager; however, should the project manager be unavailable, the Clinic Patient Service Specialist II served as the backup, followed by the late CMA as an additional backup. Documentation of each call included whether the patient answered, if a voicemail was left, or if the patient could not be reached, along with the reason. One attempt were made to contact the patient in the afternoon. The implementation phase commenced in January 2025 and concluded in May 2025. To enhance the likelihood of success, the project manager provided training for staff members interacting with patients at the occupational medicine clinic. This training emphasized the definition of a no-show or missed appointment, the appropriate script to use when contacting patients, and the importance of having the correct phone number on file. The responsibilities of each stakeholder were clearly delineated, and deadlines for data collection and analysis were established.

The project manager organized a staff meeting to present research evidence aimed at fostering staff buy-in. In the three-month project period, the project manager conducted several meetings with the site champion, office manager, and office staff to discuss ongoing progress, necessary adjustments, and the overall approach.

The data utilized for the QI project pertains to patients who failed to attend their appointments. The EHR data was audited at least monthly by the project manager, who compiled appointment data in Excel sheets to identify any deviations from the implementation plan. Should a patient arrive more than 15 minutes late for their scheduled appointment, it was required to classify this occurrence in the EHR as a missed appointment, necessitating the scheduling of a new walk-in appointment.

Timeline

Data collection commenced in May 2024, focusing on pre-implementation data spanning from January 2024 to December 2024 to determine the missed appointment rates, the amount of non-productive time, and the amount of projected revenue loss. Conversations with stakeholders, including the Manager and Director of Operations of Occupational Medicine, began in May 2024. Monthly meetings were conducted with the leadership of Occupational Medicine. Project education initiated in October 2024, followed by staff training, which took place from November 2024 through December 2024. The implementation of appointment reminder calls commenced in January 2025. Throughout the period from January 2025 through May 2025, project team members were reminded of the importance of making reminder calls and assisted in conveying the rationale behind the project to the staff. The post-intervention data collection phase lasted for three months, from January 2025 through May 2025. The project is set to conclude in May 2025.

Section IV. Results and Findings

Results

Four key outcomes were assessed for this project: 1) the number of missed appointments; 2) the percentage of missed appointments; 3) nonproductive time; and 4) projected revenue loss, ranging from low to high, from January 1 to May 31, 2025. Each of these outcomes provided a unique perspective on project implementation. The goal was to achieve improvement across all measures.

Number of Missed Appointments

In January 2025, there were 18 missed appointments, a reduction from 31 missed appointments in January 2024. In February 2025, the count rose to 24 missed appointments, compared to 64 in February 2024. March 2025 witnessed an increase to 49 missed appointments, while March 2024 had 42 missed appointments. In April 2025, there were 23 missed appointments, down from 42 missed appointments in April 2024. In May 2025, the number of missed appointments was 27, significantly lower than the 75 missed appointments recorded in May 2024 (see Appendix E; Figure 1).

Percentage of Missed Appointments

Also in January 2024, the percentage of missed appointments was 13.6%, in contrast to 7.9% in 2025. In February 2025, the rate was 10.6%, compared to 19.2% the previous year. The percentage of missed appointments in April 2025 was 11.3%, while in April 2024, it stood at 18.1%. In May 2025, the missed appointments were at 10.6%, compared to 22.9% in 2024. Overall, the percentage of missed appointments decreased in all evaluated months except for March, which saw an increase to 18.6% compared to 14.3% in 2024 (see Appendix E; Figure 2).

Nonproductive Time

In January 2025, nonproductive hours decreased significantly to 10.5, down from 16.5 hours in January 2024. February also witnessed a noteworthy reduction in nonproductive hours, declining from 32.5 hours in 2024 to just 12.5 hours in 2025. In April 2025, nonproductive time was cut to 11.5 hours, compared to 21 hours the year before. May 2025 showed further improvement, with nonproductive hours dropping to 13.5 from 38.5 hours in 2024. However, March 2025 saw a slight increase, with nonproductive hours rising to 25 compared to 22.5 hours in March 2024 (see Appendix E; Figure 3).

Projected Revenue Loss

The projected revenue losses for January 2025 saw a notable decrease, with the low estimate dropping to \$1,654.11 from \$1,846.76 in 2024. Similarly, the high estimate also fell to \$2,446.09, down from \$2,874.69 the previous year. In February 2025, the low projected revenue loss decreased to \$2,069.97 compared to \$4,887.60 in 2024, while the high loss estimate fell to \$2,360.76 from a concerning \$6,268.73 in the prior year. In April 2025, the situation improved further, with the low projected loss reduced to \$1,381.73, a significant drop from \$3,852.94 in 2024. The high loss projection also decreased notably to \$1,769.45, down from \$6,262.71 last year. By May 2025, the low projected revenue loss was lowered to \$1,777.16 compared to \$4,251.61 in 2024, and the high loss estimate decreased to \$2,552.60 from \$5,907.69. However, the scenario took a turn in March 2025, where both the low and high projected revenue losses increased to \$4,205.09 and \$4,980.53, respectively, up from \$1,744.06 and \$3,025.49 in 2024 (see Appendix E; Figure 4).

Discussion of Major Findings

From January to May 2025, there were a total of 141 missed appointments, a notable drop from the 254 missed appointments recorded during the same period in 2024, reflecting a reduction of 113. Additionally, nonproductive hours saw a significant decrease of 58 hours, falling to 73 hours from 131 hours in the previous year. The total revenue loss, both low and high projections, also improved considerably, decreasing from \$16,582.97 and \$24,339.31 in 2024 to \$11,088.06 and \$14,109.43 in 2025 (see Appendix E, Figure 5). The comprehensive evaluation data is presented in Appendix E Figure 6, accompanied by the evaluation averages in Appendix E, Figure 7.

The research documented in the literature strongly corroborated the findings. Implementing a reminder system proves to be instrumental in significantly reducing the number of missed appointments. This proactive approach not only alleviates the burden on healthcare providers but also enhances patient engagement, ensuring that individuals prioritize their scheduled visits.

Section V. Interpretation and Implications

Costs and Resource Management

Overall, the actual cost of this project was minimal. Daily schedules, which totaled approximately five pages each day, were printed out; however, this did not push the office over or near budget. That said, a considerable amount of human resources were utilized. The project manager dedicated numerous hours to researching the most effective intervention for the clinic based on existing literature and soliciting feedback from staff and leadership on the proposed intervention. A substantial amount of time was spent gathering data benchmarks for 2024 and manually calculating visit fees, as different companies have varying total visit costs.

Implications of the Findings

The introduction of the appointment reminder system brought about highly favorable results for the practice. Notably, there was a marked decrease in the number of missed appointments, which in turn significantly reduced nonproductive hours for the staff. This improvement not only enhanced the overall efficiency of daily operations but also alleviated concerns over potential revenue loss, as fewer no-shows meant more opportunities for patient care. The system's effectiveness in reminding patients about their scheduled visits led to better adherence to appointments, fostering a more reliable and productive workflow within the practice.

However, the analysis revealed several barriers that need to be addressed for further improvement. One critical issue is the necessity of maintaining up-to-date patient contact information within the EHR system. It is essential that this information be verified regularly to ensure accuracy. Additionally, it was identified that when employers request appointments, they must provide the correct contact details to facilitate efficient communication.

Furthermore, the need for language accessibility within patient communications was recognized. For patients who do not speak English, there must be reliable interpretation services in place to ensure they receive and understand appointment reminders effectively. This also creates an inclusive environment.

Interestingly, it was also found that several patients confirmed their appointments yet still failed to show up, with some individuals missing multiple appointments. This pattern highlighted the urgent need for the implementation of a structured missed appointment policy. By establishing clear guidelines and consequences for missed appointments, the aim would be to reduce the frequency of no-shows and enhance overall patient accountability.

Implications for Patients

Patients conveyed their gratitude for the reminder calls they received regarding their upcoming appointments. These reminders serve as a crucial nudge, ensuring patients do not overlook their scheduled visits. Not only do these calls assist in reinforcing their commitment to their healthcare, but they also offer a convenient opportunity for patients to reschedule or cancel their appointments on the spot, should their circumstances change. This proactive approach not only enhances patient satisfaction but also helps clinics manage their schedules more effectively, ensuring that time slots are utilized wisely.

The appointments for which patients are being reminded significantly affect their livelihoods. A missed appointment for a WCI, WCF, RTW, PHY, or RES visit could hinder their ability to return to work. Similarly, forgetting a PPE or DOT physical could result in not securing a job, delays in starting a new position, or even the lapse of a driver's Commercial Driver's License (CDL), which may jeopardize their employment and ability to drive.

Implications for Nursing Practice

One important implication for nursing practice is the potential to improve patient outcomes. Reminder calls can help patients attend their appointments, promoting continuity of care and timely treatment, which in turn could help patients return to work as soon as possible. Additionally, this approach allows Advanced Practice Providers (APPs) to manage their time more effectively, reducing nonproductive time, and optimizing the schedule.

Appointment reminder calls could also play a role in enhancing the bond between nurses and their patients. During these calls, nurses have the opportunity to remind patients of any specific instructions they need to follow before their upcoming appointment. Additionally, nurses can answer any brief questions patients may have about their treatment or clarify key information discussed during their previous visit. This proactive communication not only reinforces the nurse-patient relationship but also helps ensure that patients are fully prepared and comfortable with the process, ultimately improving their overall experience and understanding of their healthcare journey (Kwame & Petrucka, 2021).

Impact for Healthcare System(s)

This project significantly contributed to the healthcare system's objective of enhancing appointment availability. It also advanced the service line's overarching priority, termed the "Wildly Important Goal" (WIG), by effectively reducing the incidence of missed appointments. This reduction not only lessened the projected loss of revenue for the clinic but also positively influenced the overall financial stability of the healthcare system. Furthermore, it ensured that patients have greater access to essential services, thereby promoting improved healthcare outcomes.

Sustainability

Implementing a reminder system in a small office setting is quite doable. It only takes one staff member to oversee the reminder calls, which can be wrapped up in under 15 minutes each day. Given the steady flow of patients, the provider should be able to manage these calls with ease. However, if there's a significant spike in patient numbers, it may not be practical for the provider to continue handling them, as their main focus should always be on patient care. In those cases, the responsibility for making the reminder calls would shift to the receptionist or other team members in the office. The long-term success of this project is strongly backed by the leadership of the Occupational Medicine team. With their support, this initiative is well-positioned to keep gaining traction and moving forward.

Dissemination Plan

The results of this project were shared with the appropriate stakeholders. First, the project results were shared throughout the office so those who participated could recognize the value of their contribution to the project. The results were shared with leadership, such as the manager and medical directors of the Occupational Medicine. The poster was displayed in the Occupational Medicine break room and reviewed during department lunch and learn. The project poster was presented to the East Carolina University (ECU) College of Nursing Health Systems Leadership Concentration Director on July 8, 2025, and submitted to Scholarship, which is ECU's database.

Section VI. Conclusion

Limitations and Facilitators

The primary and most significant barrier encountered was the lack of a current phone number for patients in the EHR system. Prior to the project's implementation, it was not standard practice for office staff to request or verify a contact number when scheduling appointments or during check-in. Through consistent reminders sent via email and during huddles about the importance of having an up-to-date phone number on file, there was noticeable improvement in this area. Additionally, it became evident that employers were seeking appointments for their employees (patients) without providing a phone number and sometimes no name or phone number. They accomplished this by sending emails to the Clinic Patient Services Specialist II and site coordinator, asking for specific blocks of time to be scheduled. Once the project manager recognized this issue, a new process was established whereby the site coordinator or Clinic Patient Services Specialist II would follow up with the company representative to obtain the patients' names and phone numbers. As the project progressed, this barrier was effectively addressed. The success of the initiative relied heavily on the ability to contact patients by telephone; without a valid phone number, we could not remind them of their appointments.

One of the challenges encountered was the inability to reach some patients due to issues with their voicemail. In certain cases, patients had either full voicemail boxes or had not set up their voicemail at all. As a result, it was impossible to leave appointment reminders, which negatively affected communication efforts throughout the project.

Additionally, a language barrier presented another limitation. To assist patients whose primary language is not English, the office utilizes a Language Line. Although the project

manager did not speak Spanish, arrangements were made for the Site Coordinator to communicate with those patients in Spanish.

Collecting data from the EHR system proved to be very labor-intensive. Fees for services had to be calculated manually, as different companies have varying total visit costs. Additionally, tracking whether a patient returned by the end of the month for a missed appointment presented challenges. Some patients had initial unofficial charts with incorrect spellings of their names, missing dates of birth, or absent Social Security numbers, which served as placeholders. This made it even more labor-intensive to locate them in the system if they missed their appointments. However, organizing data and creating Excel spread sheets helped to alleviate some of these issues.

Recommendations for Others

Establishing an effective appointment reminder system is essential for reducing the occurrence of missed appointments. Conducting manual reminder calls to patients the day before their scheduled visit can significantly lower the rate of no-shows, potentially by as much as 53.7%. To maximize the effectiveness of this system, it is vital for staff to consistently collect and maintain accurate, up-to-date contact information for all patients. This ensures that reminders reach individuals without delays or issues.

Moreover, it is important to consider patients who may speak languages other than English. Providing translation services or resources for these patients is critical to ensure clear communication, which can positively impact their ability to attend appointments. Ensuring that these individuals have access to interpreters could greatly improve their overall healthcare experience and encourage more proactive engagement in their treatment plans.

Additionally, implementing a comprehensive missed appointment policy can help streamline the scheduling process. This policy should clearly outline the consequences of missed appointments while offering solutions to accommodate patients and encourage them to keep their scheduled visits. By striking a balance between accountability and support, APPs can foster a more reliable appointment system while also prioritizing patient engagement and care continuity.

Recommendations Further Study

This project can be replicated in any outpatient setting where patients have scheduled appointments, regardless of specialty or patient population. This project was implemented in a small clinic where the project manager/provider could personally make the reminder calls due to the manageable patient volume. However, in larger clinics with a higher patient volume, it is advisable that a different staff member handle the calls, as the provider will be occupied with patient care.

Additionally, this project could be further enhanced by implementing a missed appointment policy that includes penalties to determine whether the outcomes remain consistent or improve. This policy should explicitly detail the repercussions of failing to attend scheduled appointments, including potential fees or restrictions on future bookings. Moreover, it should also present constructive solutions to assist patients in overcoming barriers that may lead to missed visits. For instance, offering flexible rescheduling options could significantly encourage patients to honor their commitments.

Final Thoughts

Missed appointments are a prevalent challenge faced by medical offices. In an effort to tackle this issue, an evidence-based quality improvement project was launched, leading to a noteworthy reduction in no-show rates, minimized non-productive hours, and a significant

decrease in projected revenue loss at the occupational medicine office. The catalyst for these remarkable enhancements was the implementation of a straightforward yet effective phone call reminder system, which served as a gentle nudge, ensuring that patients were more likely to attend their appointments.

References

- Adams, J. A., Whiteman, K., & McGraw, S. (2020). Reducing missed appointments for patients with HIV: An evidence-based approach. *Journal of Nursing Care Quality*, 35(2), 165-170. <https://doi.org/10.1097/NCQ.0000000000000434>
- Alharbi, R. (2019). How to reduce no-show in pain clinic? *Imam Journal of Applied Sciences*, 4(2), 45-48. https://doi.org/10.4103/ijas.ijas_9_19
- Anthony, N., Molokwu, J., Alozie, O., & Magallanes, D. (2019). Implementation of a text message to improve adherence to clinic and social service appointments. *Journal of the International Association of Providers of AIDS Care*, 18, 2325958219870166. <https://doi.org/10.1177/2325958219870166>
- Bauerle, W. B., Reese, V., Stoltzfus, J., Benton, A., Knipe, J., Wilde-Onia, R., Castillo, R., Thomas, P., Cipolla, J., & Braverman, M. A. (2024). Effect of standardized reminder calls on trauma patient no-show rate. *Journal of the American College of Surgeons*, 238(2), 236-241. <https://doi.org/10.1097/XCS.0000000000000898>
- Biggs, J., Njoku, N., Kurtz, K., & Omar, A. (2022). Decreasing missed appointments at a community health center: A community collaborative project. *Journal of Primary Care & Community Health*, 13, 215013192211068-21501319221106877. <https://doi.org/10.1177/21501319221106877>
- Braschi, C., Gutierrez, G., Liu, J. K., Yetasook, A. K., Simms, E. R., Petrie, B. A., & Moazzez, A. (2023). Impact of automated reminder calls in a safety-net setting on surgical clinic no-show rates. *The American Surgeon*, 89(11), 4955-4957. <https://doi.org/10.1177/00031348221142573>

- Briatore, A., Tarsetti, E. V., Latorre, A., Gonzalez Bernaldo de Quirós, Fernan, Luna, D., Fuentes, N. A., Elizondo, C. M., Baum, A., Alonso Serena, M., & Giunta, D. H. (2020). Causes of appointment attendance, nonattendance, and cancellation in outpatient consultations at a university hospital. *The International Journal of Health Planning and Management*, 35(1), 207-220. <https://doi.org/10.1002/hpm.2890>
- Connelly, L. M. (2021). Using the PDSA model correctly. *Medsurg Nursing*, 30(1), 61-64. <https://doi.org/10.62116/MSJ.2021.30.1.61>
- Crable, E. L., Biancarelli, D. L., Aurora, M., Drainoni, M., & Walkey, A. J. (2021). Interventions to increase appointment attendance in safety net health centers: A systematic review and meta-analysis. *Journal of Evaluation in Clinical Practice*, 27(4), 965-975. <https://doi.org/10.1111/jep.13496>
- Davis, D. (2021). Using technology to reduce missed appointments. *Online Journal of Nursing Informatics*, 25(2).
- Drabkin, M. J., Lobel, S., Kanth, N., Martynov, A., Hunt, H. W., Guerrero, D., Fogel, J., Grechanik, A., Mancuso, C. D., & Lev, S. (2019). Telephone reminders reduce no-shows: A quality initiative at a breast imaging center. *Clinical Imaging*, 54, 108-111. <https://doi.org/10.1016/j.clinimag.2018.12.007>
- Hendrickson, S. B., Simske, N. M., DaSilva, K. A., & Vallier, H. A. (2020). Improvement in outpatient follow-up with a post discharge phone call intervention. *Journal of the American Academy of Orthopedic Surgeons*, 28(18), e815-e822. <https://doi.org/10.5435/JAAOS-D-19-00132>
- Holcomb, J., Rajan, S. S., Ferguson, G. M., Sun, J., Walton, G. H., & Highfield, L. (2023). Implementation of an evidence-based intervention with safety net clinics to improve

- mammography appointment adherence among underserved women. *Journal of Cancer Education*, 38(1), 309-318. <https://doi.org/10.1007/s13187-021-02116-w>
- Kwame, A., & Petrucka, P. M. (2021). A literature-based study of patient-centered care and communication in nurse-patient interactions: Barriers, facilitators, and the way forward. *BMC Nursing*, 20(1), 1-158. <https://doi.org/10.1186/s12912-021-00684-2>
- Lagman, R. L., Samala, R. V., LeGrand, S., Parala-Metz, A., Patel, C., Neale, K., Carrino, C., Rybicki, L., Gamier, P., Mauk, M. E., & Nowak, M. (2021). “If you call them, they will come”: A telephone call reminder to decrease the no-show rate in an outpatient palliative medicine clinic. *American Journal of Hospice & Palliative Medicine*, 38(5), 448-451. <https://doi.org/10.1177/1049909120952322>
- Lance, R. C., Pazin-Filho, A., & Neves, F. F. (2021). Comparison between short text messages and phone calls to reduce no-show rates in outpatient medical appointments: A randomized trial. *The Journal of Ambulatory Care Management*, 44(4), 314-320. <https://doi.org/10.1097/JAC.0000000000000388>
- Marbough, D., Khaleel, I., Al Shanqiti, K., Al Tamimi, M., Simsekler, M. C. E., Ellahham, S., Alibazoglu, D., & Alibazoglu, H. (2020). Evaluating the impact of patient no-shows on service quality. *Risk Management and Healthcare Policy*, 13, 509-517. <https://doi.org/10.2147/RMHP.S232114>
- Medical Group Management Association. (2023). *Restoring balance to patient access and medical practice operations: An MGMA data report*.
- Mir, C. (2019). Among orthodontic patients, does the use of reminder systems compared to no reminders improve periodontal parameters and appointment adherence? *Evidence-Based Dentistry*, 20(3), 94-94. <https://doi.org/10.1038/s41432-019-0045-2>

- Nundy, S., Cooper, L., & Mate, K. (2022). The quintuple aim for health care improvement: A new imperative to advance health equity. *JAMA*, 327(6), 521-522.
- Office of Disease Prevention and Health Promotion. (n.d.). Employment. *Healthy people 2030*. U.S. Department of Health and Human Services.
<https://health.gov/healthypeople/objectives-and-data/browse-objectives/economic-stability/increase-employment-working-age-people-sdoh-02>
- Ooi, J. W. L., Mon, H. T., Tsai, K. T., & Chong, L. R. (2023). Cost-effectiveness analysis of phone reminders for outpatient magnetic resonance imaging (MRI) appointments in Singapore. *Journal of Medical Imaging and Radiation Sciences*, 54(4), 627-631.
<https://doi.org/10.1016/j.jmir.2023.07.015>
- Tarabichi, Y., Higginbotham, J., Riley, N., Kaelber, D. C., & Watts, B. (2023). Reducing disparities in no show rates using predictive model-driven live appointment reminders for at-risk patients: A randomized controlled quality improvement initiative. *Journal of General Internal Medicine*, 38(13), 2921-2927. <https://doi.org/10.1007/s11606-023-08209-0>
- Taylor, J. (2024). Reducing no-show appointments in preanesthesia screening. *Journal of Perianesthesia Nursing*, 39(5), 729-733. <https://doi.org/10.1016/j.jopan.2023.12.030>
- Teo, A. R., Metcalf, E. E., Strange, W., Call, A. A., Tuepker, A., Dobscha, S. K., & Kaboli, P. J. (2021). Enhancing usability of appointment reminders: Qualitative interviews of patients receiving care in the veterans health administration. *Journal of General Internal Medicine*, 36(1), 121-128. <https://doi.org/10.1007/s11606-020-06183-5>
- Teo, A. R., Niederhausen, M., Handley, R., Metcalf, E. E., Call, A. A., Jacob, R. L., Zikmund-Fisher, B. J., Dobscha, S. K., & Kaboli, P. J. (2023). Using nudges to reduce missed

appointments in primary care and mental health: A pragmatic trial. *Journal of General Internal Medicine*, 38(Suppl 3), 894-904. <https://doi.org/10.1007/s11606-023-08131-5>

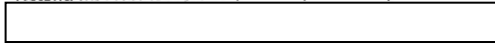
Ulloa-Pérez, E., Blasi, P. R., Westbrook, E. O., Lozano, P., Coleman, K. F., & Coley, R. Y. (2022). Pragmatic randomized study of targeted text message reminders to reduce missed clinic visits. *Permanente Journal*, 26(1), 64-72. <https://doi.org/10.7812/TPP/21.078>

Appendix A
Organization IRB Approval



November 1, 2024

Victoria M. Robinson, MSN, FNP-C, COHN-S, COHC



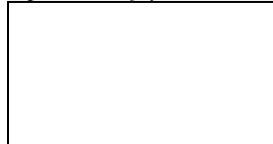
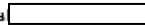
IRB #: 2024-10-012

Project Title: Administrative Changes to Improve Appointment Adherence: A Quality Improvement Project

Ms. Robinson,

Thank you for your inquiry regarding the above-referenced project. Based on a review of your project and in accordance with Policy 10107, Determinations of Human Subject Research, this activity has been deemed a Performance Improvement/Evidence-Based Practice project. As a reminder, any changes made to the protocol could impact this determination, and a new submission form may be required if changes are made to the protocol.

If you have any questions or concerns, please feel free to contact me at



Human Protections Administrator

Appendix B**ECU IRB Approval**

Based on your responses, the project appears to constitute QI and/or Program Evaluation and IRB review is not required because, in accordance with federal regulations, your project does not constitute research as defined under 45 CFR 46.102(d). If the project results are disseminated, they should be characterized as QI and/or Program Evaluation findings. Finally, if the project changes in any way that might affect the intent or design, please complete this self-certification again to ensure that IRB review is still not required. Click the button below to view a printable version of this form to save with your files, as it serves as documentation that IRB review is not required for this project. 9/6/2024

Appendix C

Reminder Phone Call Script

Dial # if there is an answer ask for the patient by name

If patient is there and speaking, then read the following:

Hi (patient name). I'm calling from (name of office) to confirm your upcoming appointment for (date and time).

If Confirm --- Say thank you and add "confirm" to Excel data sheet

If No --- Ask if the patient would like to reschedule or cancel? Either reschedule or cancel the appointment and make changes in EHR system and add "rescheduled or canceled" to Excel data sheet.

If the patient is not available, ask if there is a better time to call back.

If Yes --- Say thank you. Add "unreachable" and "patient unavailable" to Excel data sheet. Call back if able to and then make appropriate changes to spread sheet if necessary.

If No --- Say thank you. Add "unreachable" and "patient unavailable" to Excel data sheet.

OR

If there is no answer but voicemail then read the following:

Hi (patient name). I'm calling from (name of office) to remind you of your upcoming appointment for (date and time). If you have any questions or need to reschedule or cancel your appointment, please call us at (office phone #) again (office phone #).

Again I'm calling from (name of office) to remind you of your upcoming appointment for (date and time). Thank you.

If there is no way to leave a message such as voicemail full or not set up then document that as a response on the Excel data sheet.

Appendix D

Data Collection Tool

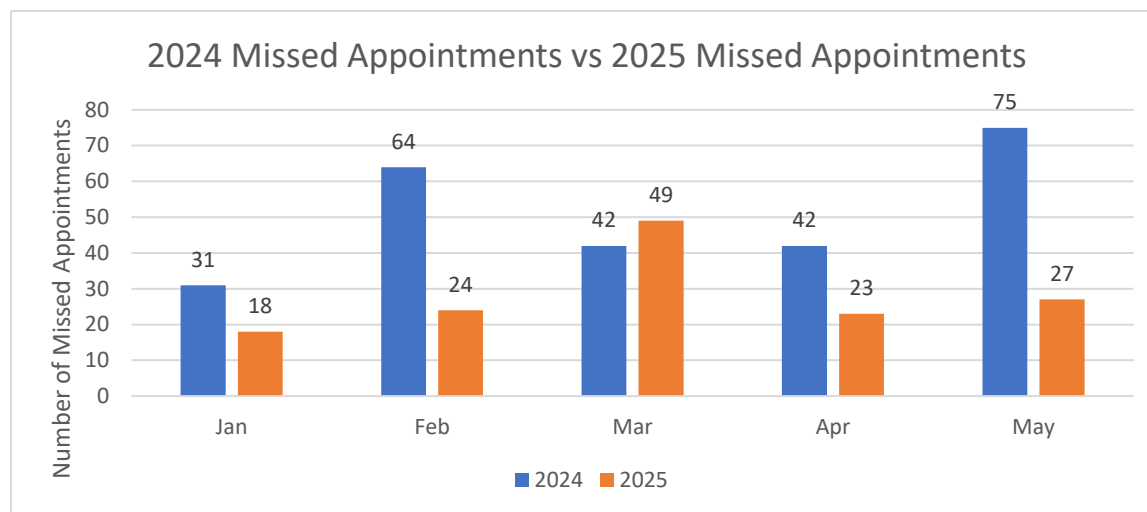
[illegible]

Appendix E

Data Results

Figure 1

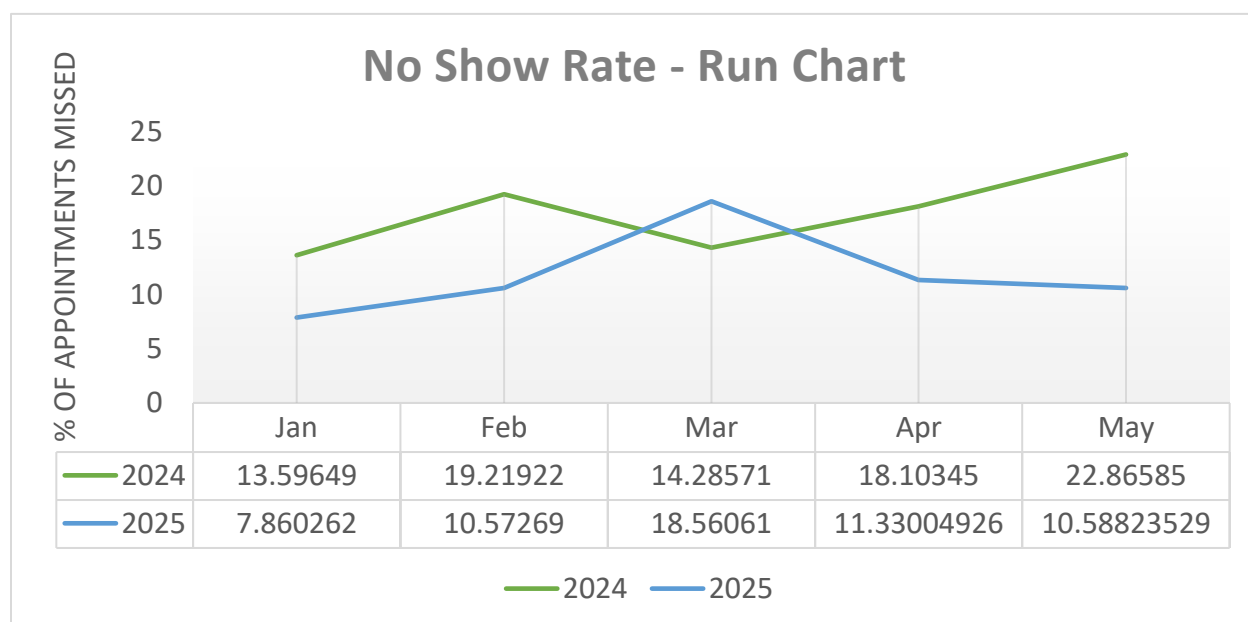
Missed Appointments Chart



Note. 2024 missed appointments vs 2025 missed appointments.

Figure 2

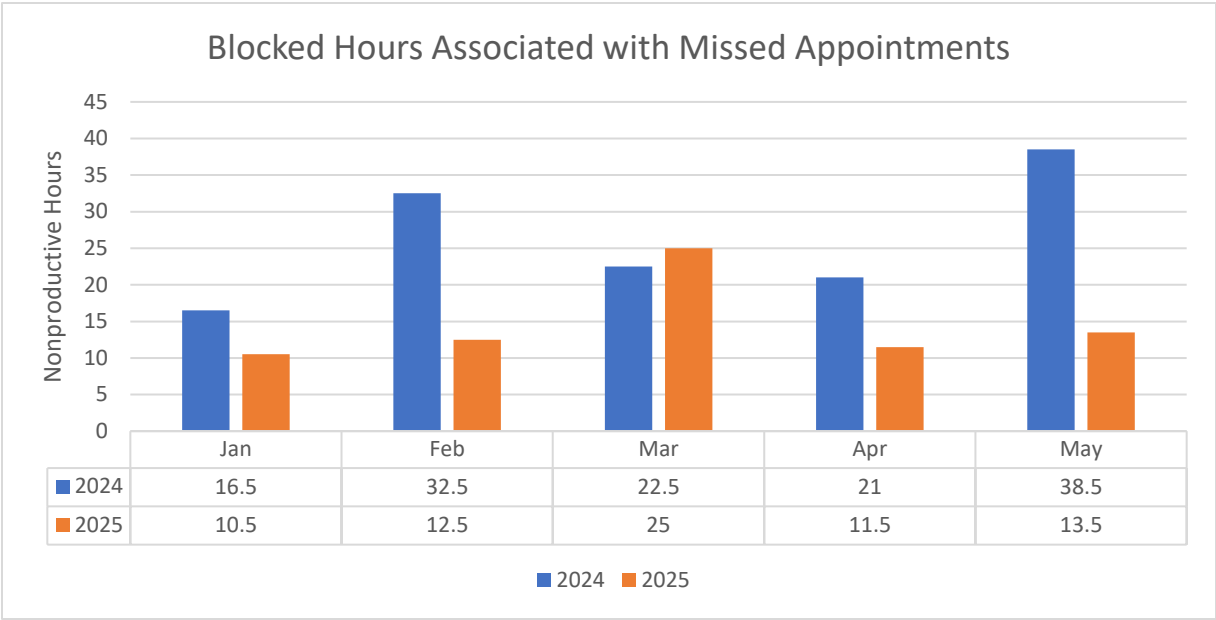
Missed Appointment Rate Run Chart



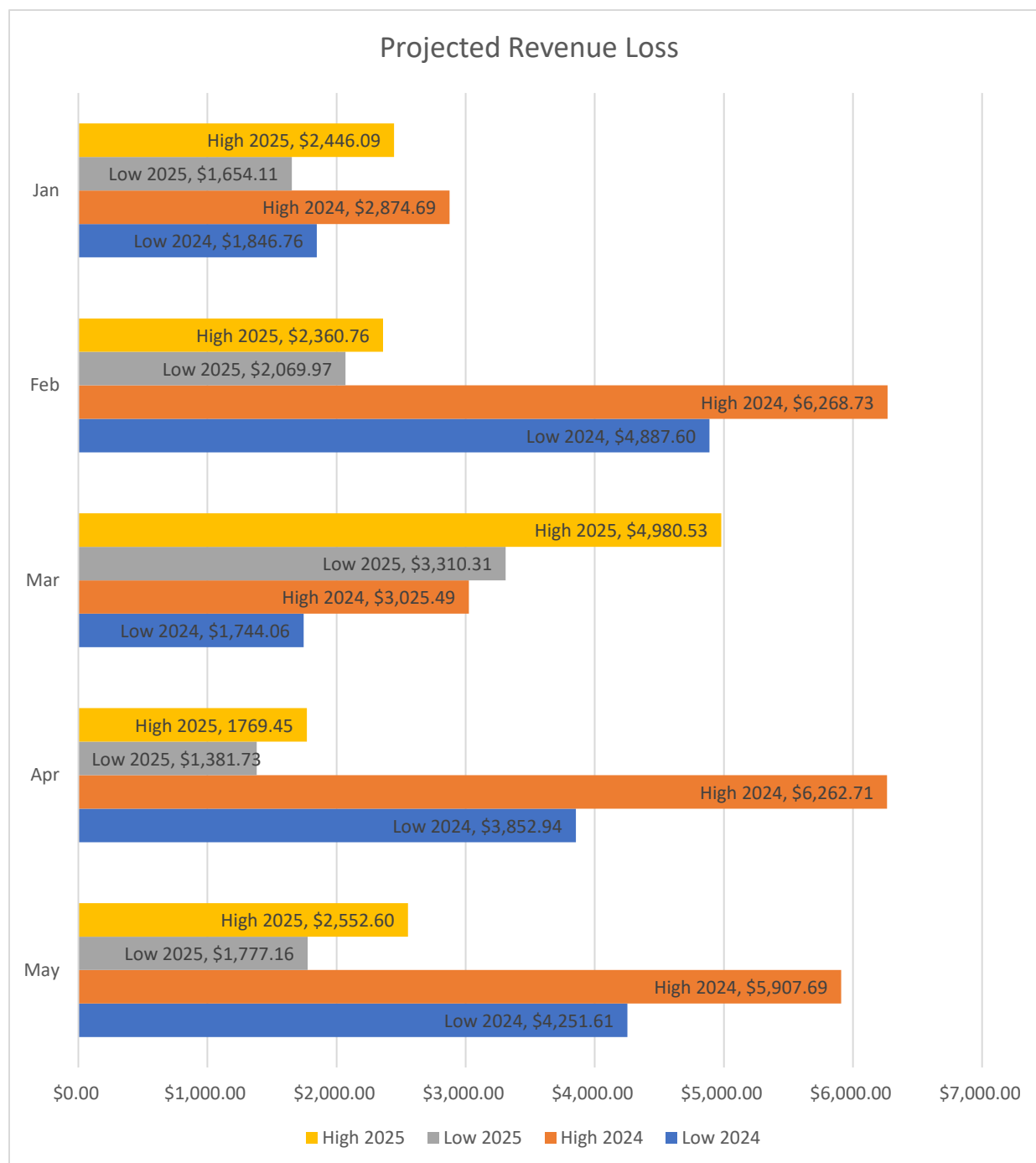
Note. Monthly percentage of missed appointments in 2024 and 2025.

Figure 3

Nonproductive Hours per Month Chart



Note. Monthly blocked hours associated with missed appointments.

Figure 4*Projected Revenue Loss Chart*

Note. Low and high projected revenue loss in 2024 vs 2025.

Figure 5*Evaluation Totals Table*

5-Month Data Totals					
	Missed Appts	Scheduled Appts	Nonproductive Hours	Projected Revenue Loss (Low)	Projected Revenue Loss (High)
2024	254	1415	131	\$ 16,582.97	\$ 24,339.31
2025	141	1178	73	\$ 11,088.06	\$ 14,109.43

Note. January through May totals 2024 vs 2025.

Figure 6*Comprehensive Data Evaluation Table*

Monthly Breakdown of Comprehensive Data							
		Missed Appts	Scheduled Appts	Nonproductive Hours	% of Missed Appts	Projected Revenue Loss (Low)	Projected Revenue Loss (High)
Jan	2024	31	228	16.5	13.59649	\$1,846.76	\$2,874.69
	2025	18	229	10.5	7.860262	\$1,654.11	\$2,446.09
Feb	2024	64	333	32.5	19.21922	\$4,887.60	\$6,268.73
	2025	24	227	12.5	10.57269	\$2,069.97	\$2,360.76
Mar	2024	42	294	22.5	14.28571	\$1,744.06	\$3,025.49
	2025	49	264	25	18.56061	\$4,205.09	\$4,980.53
Apr	2024	42	232	21	18.10345	\$3,852.94	\$6,262.71
	2025	23	203	11.5	11.33005	\$1,381.73	\$1,769.45
May	2024	75	328	38.5	22.86585	\$4,251.61	\$5,907.69
	2025	27	255	13.5	10.58824	\$1,777.16	\$2,552.60
Positive results = 				Negative results = 			

Note. Monthly breakdown of all data.

Figure 7*Evaluation Averages Table*

5-Month Data Averages						
	Missed Appts	Scheduled Appts	Nonproductive Hours	% of Missed Appts	Projected Revenue Loss (Low)	Projected Revenue Loss (High)
2024	50.8	283	26.2	17.6141453	\$ 3,316.59	\$4,867.86
2025	28.5	235.6	14.6	11.782368	\$ 2,217.61	\$2,821.89

Note. 2024 vs 2025 5-month data averages.