METRO TRANSIT MATERIALS MANAGEMENT STOCKROOM INVENTORY

PROGRAM EVALUATION AND AUDIT

METROPOLITAN COUNCIL

Contents

Highlights

Large Stockroom Variances Indicate Control Weaknesses

What We Found

What's Working Well

98% of tested items were found during the onsite visit. Since Audit's last onsite visit, research reports have moved from paper to a SharePoint database, increasing their auditability. Vertical Lift Modules (VLMs) show great potential for increasing control over stock while optimizing space and efficiency.

What Needs Improvement

The absolute Stock Keeping Unit (SKU) variance across sampled warehouses was high at 7.82%. Warehouses were unable to find a root cause for over a third of these discrepancies. Brake Shop and Unit Overhaul can improve their physical access controls. At Brake Shop, over three quarters of the cash variance came from brake shoes, despite these parts making up only 1% of the SKUs sampled. Variances at East Metro were much higher than anticipated, indicating that Cycle Counts were not being accurately reported.

What We Recommend

Management should:

- Strengthen physical access controls
- Closely monitor cycle count data
- Refine procedures for inventorying brake shoes
- Improve exception reporting process

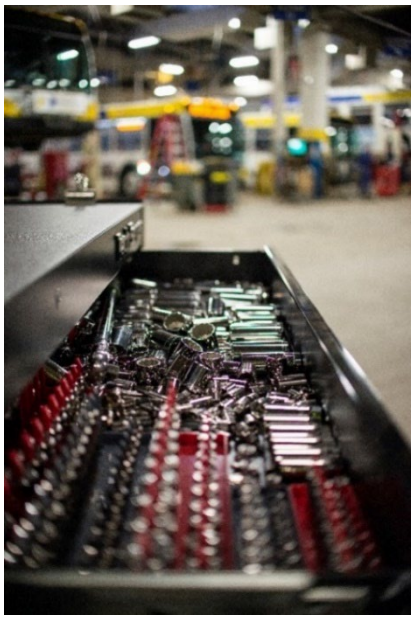


Figure 1: Tools at East Metro Garage

Why We Did This Work

This audit sought to ensure Metro Transit's stockroom inventories were accurate and ensure that policies and procedures were consistently followed.

Audit monitors stockroom variance rates, which indicate the percentage of items that have a disparity between the expected versus counted quantity. Audit observed an upward trend in this key indicator.

What We Reviewed

Audit reviewed six Metro Transit stockrooms' inventory. Five were selected based on SKU variance rates, while the new North Loop Garage was included at Materials Management's request. At each stockroom, Audit compared the computer quantity and the actual quantity to verify inventory system accuracy. Audit also reviewed a process for researching errors.

How We Did This Work

Audit performed onsite inventories at six Metro Transit garages. Audit also reviewed cycle counting policies/procedures and interviewed staff both informally during the onsite visits and formally before/after them.

Summary of Findings

Number	Description	Recommendation	Follow-up Action	Page
1	Weak physical access controls contribute to large numbers of unknown discrepancy causes.	Establish criteria/thresholds for acceptable ranges of unknown/undocumented reasons for discrepancies, then use these to target interventions.	Confirmation	12
		Identify cost-beneficial solutions that can be used to improve physical security while waiting for the new consolidated warehouse to be built, such as ensuring that existing access controls are used consistently, and/or retraining people who work in and around the stockroom.	Confirmation	12
2	Inventory errors at East Metro were not accurately reported.	Retrain East Metro's stockkeepers, emphasizing the importance of accurate reporting.	Confirmation	13
		Continuously monitor all cycle count data looking for trends to detect outliers, creating and applying thresholds for intervention in cases of both abnormally high and low SKU variance.	Confirmation	13

Number	Description	Recommendation	Follow-up Action	Page
3	An accurate inventory of manufactured brake shoes was not maintained at the Brake Shop Stockroom.	Update policy and procedures in collaboration with Bus Maintenance to ensure remanufactured and refurbished parts, specifically brake shoes, are accurately tracked and disseminate new procedures to staff.	Confirmation	*16*
4	The Cycle Count Error Research (CCER) Report can improve its data reliability.	Modify the SharePoint list to improve data reliability by restricting user editing of fields from TXbase, marking some fields as required/optional (e.g., transaction number), and adding fields to indicate the overall cause of the error and the post-research quantity	Confirmation	*19*

Introduction

Background

Metro Transit Materials Management operates sixteen warehouses that serve internal Metro Transit customers. These warehouses contain vehicle parts, cleaning supplies, and other necessary parts for operating Metro Transit's services. Materials Management also handles part ordering and receiving. Throughout 2023, these warehouses facilitated 541,065 inventory transactions, encompassing 19,687,140 pieces of inventory valued at over 391 million dollars. Currently, the standing inventory amounts to over 68 million dollars. In the past, Audit selected three stockrooms to audit annually. However, the COVID-19 pandemic, along with low variance rates, interrupted the annual schedule. The last onsite audit was conducted in 2019.

Materials Management uses cycle counting to manage its inventory and to ensure that stockkeepers count all inventory items at least once throughout the year. Cycle counting is a tool for issuing corrections and ensuring that accurate inventory is maintained. It is well-suited to operations that have little to no days off because it does not require the stockroom to shut down for a 100% count on a single day. At each warehouse, stockkeepers count a small sample of items and record the quantities on a handheld computer daily. Items are stratified in the cycle count so that high value items are counted more frequently.

After the cycle count process is completed, the stockkeeper performing lead stockkeeper duties will research large variances[1] using the Cycle Count Error Research (CCER) process and will correct errors to the cycle count by either "incrementing, decrementing, and/or issuing the items."[2] CCERs help stockkeepers research and resolve identified discrepancies. These controls are vital for maintaining accurate inventory levels and optimizing resources.

Program Evaluation and Audit has monitored cycle count data monthly since January 2012. In late 2022, Audit began an initiative to improve cycle count data analysis. Audit developed a new monitoring methodology using Power BI and began to supplement cycle count data monitoring with reviews of CCER Reports (CCERRs). In June, Audit noticed a significant increase in Stock Keeping Unit (SKU) Variance, which indicates the number of stock codes adjusted out of those that had been counted during the cycle count (**Figure Two**).[3] Audit used this data to strategically focus efforts on those stockrooms with very high or low variances.[4]

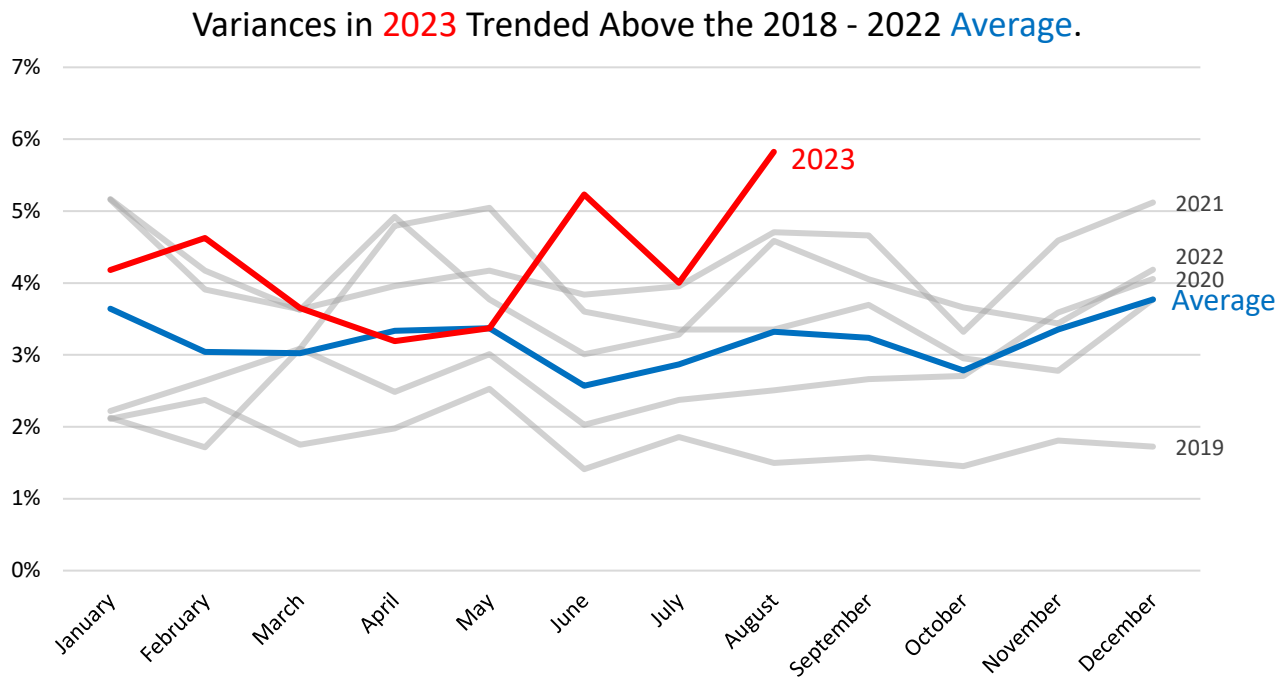
---

[1] A "large variance" is defined as ±$50 or ±10 units. For example, 8 missing bolts worth a total of $2 would not need a CCER.
[2] Metropolitan Council (December 2022). "Cycle Counts: Document 06.06.07." Web. *Link*
[3] A "Stock Keeping Unit (SKU)" is a unique identifier used to track specific items, including quantities and values.
[4] Although high variances clearly indicate a problem, low variances may reflect best practices that can be implemented at other locations. Conversely, they could also indicate flaws in data collection/analysis.

Objectives

This audit aimed to assess the accuracy and effectiveness of the Material Management's inventory process within Metro Transit's warehouse facilities.

Figure Two: Stockroom Variances



The primary audit objectives were to:

1. Evaluate the accuracy of inventory records.
2. Ensure internal policies and procedures are documented and consistently followed.

In designing these objectives, Audit considered the Council's Thrive MSP 2040 Outcomes and Principles.[5] Specifically, these objectives align with the *Stewardship* outcome and *Accountability* principle by ensuring that Council resources are managed effectively to prevent waste and financial loss. These objectives also align with the Core Elements of Metro Transit's Strategic Plan.[6] Core Element Three involves performance evaluation. This audit sought to provide an objective perspective and identify areas for improvement in the stockroom control environment. Core Element Four describes responsibility for a financially sustainable transit system. Ensuring a strong control system and an accurate inventory will help reduce waste, loss, and fraud improving the net financial outcomes of Metro Transit.

[5] Metropolitan Council (May 2014). "Thrive MSP 2040: Outcomes." Web. *Link.*
[6] Metropolitan Council (February 2023). "Stronger, Better 2023 Strategic Plan." Web. *Link*.

Scope

This audit reviewed Material Management's inventory activities and controls within the past year. Internal policies and procedures in place as of August 2023 and CCERRs from October 1, 2022 – October 10, 2023 were eligible for review. While all warehouses were eligible for review, six warehouses were reviewed: 3328 Brake Shop, 3329 Electronic Repair, 3326 Unit Overhaul, 3321 Nicollet, 3336 East Metro, and 3337 North Loop.

Methodology

Warehouse Selection

Audit used data analytics to select each stockroom. In ongoing monitoring, Audit anticipates a stock keeping unit (SKU) variance range of approximately 3-6% based on historical trends (**Table One**).[7]

Table One: SKU Variance Range Ratings

SKU Variance Range	Category
0 to 2.9%	Low
3.0 to 5.9%	Anticipated
6.0 to 9.9%	High
10% or More	Very High

The selected warehouses consistently fell outside of this range. Six warehouses were selected based on upward trends in SKU code variance, the presence of high-value items, a low variance-to-volume ratio, and the time since the last audit (**Table Two**).

Table Two: Stockroom Selection

Stockroom		Selection Reason
3321	Nicollet	Abnormally high variance in August
3326	Unit Overhaul	Upward trend in variance since June
3328	Brake Shop	Upward trend in variance since June
3329	Electronic Repair	Increase in variance and presence of high value parts
3336	East Metro	Consistent reports of 0% variance
3337	North Loop	New location, not previously audited

The average SKU variance for all warehouses have been higher in 2023 than in the past five years (See Figure Three). Unit Overhaul 3326, Brake Shop 3328, and Electronic 3329 all reported their highest SKU variances in the last five years in June of 2023.

Audit discussed business processes, controls, and potential risks with Materials Management. These interviews along with documented policies and procedures were used to map the cycle counting process. After the onsite, Audit interviewed key individuals from Materials Management, Strategic Initiatives, and Bus Maintenance to understand the process of manufacturing items.

---

[7] The unweighted average monthly SKU adjustment from 2018-2022 was approximately 3.65%

Onsite Testing

To confirm that items' locations matched the information in the inventory system, Audit reviewed a stratified sample of items during an onsite inventory. For each stockroom, Audit received an inventory list from Strategic Initiatives at 7 a.m. the day of the onsite. The inventory lists indicated the item's type, location, quantity, and price. Auditors stratified the list based on total value[8] (**Table Three**) and then created a statistical, random sample for Strata 1 through 3.[9] 100% of Strata 4 was reviewed due to the items' high values. Small value items were excluded to limit time spent counting high-quantity, small value items.

All onsite testing was conducted over the course of one week. During these onsite visits, auditors read out a location (row, aisle, and bin) and stockroom staff identified item number and quantity. Exceptions included items in the wrong location, missing items, and incorrect quantities. Auditors accounted for any changes in computer quantity between the 7 a.m. data and the time of testing, such as maintenance work orders using parts. During the onsite visits, auditors also documented physical access controls and inquired about procedures.

Table Three: Sample Stratification Scheme

Strata	Total Value	Additional Notes
N/A	$50 or less	Excluded from sample due to low value.
0	$50.01 - $100	Used as backup items in cases where a sampled SKU had very high-quantity, low-value items. For example, loose nuts or bolts.
1	$100.01 - $200	Randomly sampled.
2	$200.01 - $750	Randomly sampled.
3	$750.01 - $5000	Randomly sampled.
4	Greater than $5000	100% sample taken due to high value.

Post-Onsite Research:

After each onsite visit, Audit compiled a list of identified discrepancies. Stockkeepers then researched each instance and completed a paper CCERR, as the CCERR list on SharePoint triggers automatically for discrepancies over certain values. Audit reviewed these reports and designated responses into three categories: No Error, Issue Identified, and Issue Unidentified. The issues identified were then categorized by the cause of the error: incorrect location, undocumented removal, etc. The goal of post-on-site research was to identify the root cause of discrepancies and to correct any errors identified. Audit included interviews and emails as part of the post-onsite research.

[8] "Total value" is the items' quantity multiplied by the items' value for each SKU.
[9] Sample size was selected to provide margin of error of 5% and confidence level of 95%. The previous month's variance rate determined the expected error rate for 4 of the stockrooms, while a more conservative 50% was used for the new/untested stockroom and the low variance stockroom.

Cycle Count Error Research Reports (CCERR) Analysis

CCERRs from October 1, 2022 to October 4, 2023 were reviewed. A CCERR automatically generates for items where the absolute value of the discrepancy is more than $50 or 10 items. Audit performed a search to identify any items in the SharePoint database that fell under both thresholds, to ensure that the automated report generation was working as intended. Audit also checked if CCERRs were complete and assessed how easily the data could be used for trend analysis.

Limitations

Audit did not independently verify post-onsite research. There were 18 instances where researchers stated that the item had been miscounted during the audit. The cause of many discrepancies was unknown, limiting Audit's ability to conclude where those errors originated.

Recognition

Audit would like to thank Materials Management staff for their cooperation and support. Stockkeepers assisted Audit in locating and counting items and took time to research and correct minor errors as they were observed. The Materials Management Manager assisted with coordination and promptly helped Audit resolve questions that arose during testing. For their efforts to change their processes for brake shoe manufacturing, Audit thanks Bus Maintenance. Audit would also like to thank Strategic Initiatives for their help preparing the inventory lists each morning and for providing system insight.

Observations

What's Working Well

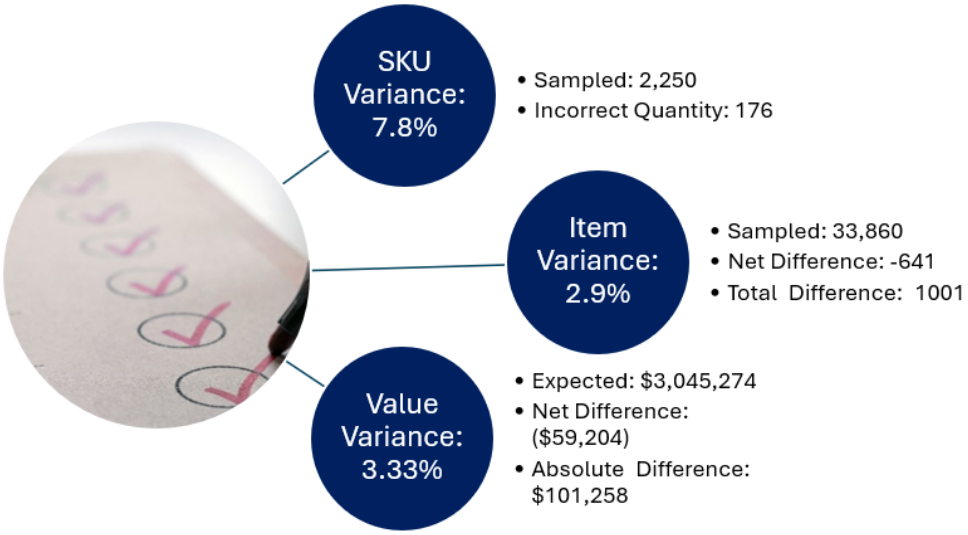
Materials Management improved the cycle count process since the last onsite visit in 2019. One noteworthy advancement is the transition of research reports from paper to a SharePoint database, increasing their auditability. Management and Audit now have efficient access to data that can help identify the root causes of cycle count discrepancies, and Management plans to use Microsoft Power BI to further streamline analysis. Movement towards more data analysis and improved technological controls will help implement targeted strategies to improve stockroom performance.

Another positive development is the installation of more VLMs. These automated storage systems help increase control over stock while also optimizing physical space and efficiency. Materials Management also plans to consolidate some of their smaller stockrooms when a new warehouse is constructed to increase efficiency and improve the physical layout of the space.

Onsite Inventory Results

Across all warehouses, 97% of tested items were found during the onsite visit, and 92% of SKUs had correct quantities. Audit counted 33,860 items across six sampled warehouses, valued at approximately $3 million. The absolute dollar value of all variances was $101,334.[10] Audit found $59,280 worth of items less than anticipated. Complete summary statistics are in Appendix B.

Figure Three: Summary of Onsite Inventory

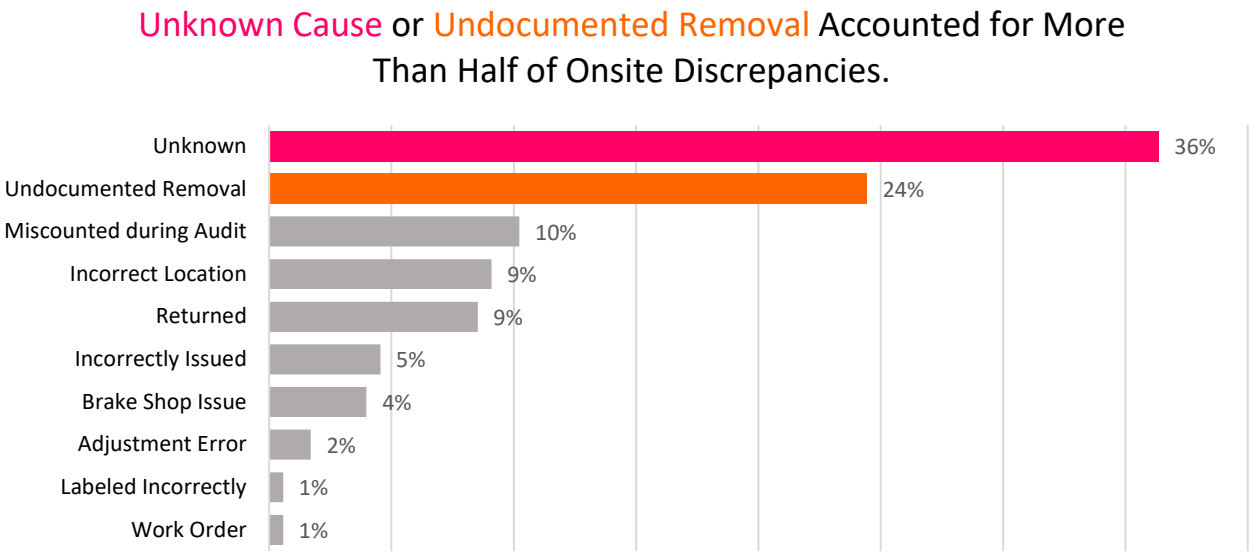


[10] "Absolute" here means the total amount of difference, and "net" is the sum of all differences. For example, a missing $5 part and an extra $2 part would have an absolute difference of $7 and a net difference of ($3).

Finding Observations

Observation 1 – Weak physical access controls contribute to large numbers of unknown discrepancy causes.

Figure Four: Discrepancy Causes



Across the six stockrooms, “Unknown” or “Undocumented” item use accounted for 66% of onsite SKU discrepancies, 26% of value discrepancy, and 59% of quantity discrepancy. “Unknown” or “Undocumented Removal” was the top cause of discrepancies for all six audited stockrooms (stockroom-level data available in Appendix C). Outside of the onsite tests, 186 out of the 648 (28.7%) CCERs over the last year did not identify a clear cause.

As per *Central Stores and Garage Stockroom Security*, stockkeepers are responsible for preventing unauthorized entry. If parts are needed during unattended hours, the Maintenance Supervisor or Technician-in-Charge takes on responsibilities such as accessing/securing the stockroom, accompanying unauthorized employees, and filling out issue sheets so the stockkeeper can update TXbase. If items are readily available to all employees, such as when the stockroom area is open and unlocked, it is easy for stock changes to happen without documentation.

Some locations have different physical setups, which impact how easily items can be taken without documentation.

- Unit Overhaul and Brake Shop stockrooms were both fairly open to employees during the audit, and maintenance staff walked into the Brake Shop to retrieve parts during the audit.
- East Metro has a large stockroom that can be closed off with overhead doors and its office space has a window into the rest of the garage. There is also an interior, locked room within the stockroom.
- Nicollet and Electronic Repair had doors with card readers to control access.

- North Loop Garage uses a Vertical Lift Module (VLM) to store smaller items. Variances at North Loop were 2.8% for items in the VLM and 4.7% for items not in the VLM. North Loop also has a service window and an inner room for specialty items. This is the preferred setup.

In general, the more secure areas (Nicollet, Electronic Repair, North Loop VLM) had lower SKU variances.

Without documentation, stockkeepers cannot accurately and proactively maintain TXbase inventory levels. Inaccurate inventory levels have many downstream effects. Lack of documentation makes it harder to identify patterns and act proactively. Many Key Performance Indicators (KPIs) depend on accurate inventory levels, so high variance rates reduce how accurate the KPIs are for decision-making. This could impact reorder timing, stockouts/availability of parts when needed, and only purchasing needed items. The inability to accurately track the location, movement, and usage of items reduces fraud detection and data-driven training opportunities.

In pursuit of operational efficiency and enhanced control, Materials Management is pursuing a Capital Improvement Program of approximately $55 million for the construction of a consolidated warehouse facility. This initiative involves merging the two warehouses into a singular, centralized warehouse. A key benefit of this consolidation will be the implementation of heightened security. The ultimate outcome promises a substantial boost in control, but the project will likely have a three-year timeline.

Recommendation:

1. Establish criteria/thresholds for acceptable ranges of unknown/undocumented reasons for discrepancies, then use these to target interventions.

   Management Response: Management can accomplish this task. However, it will take time to create the reporting structure and dashboard necessary to make this process efficient and effective.

   Timetable: October 1, 2024

   Staff Responsible: Material Management BSA, Material Management Assistant Manager of Supply Chain Operations, Supply Chian Supervisors (3 each)

   Audit Follow-Up: Confirmation

2. Identify cost-beneficial interventions that can be used to improve physical security while waiting for the new consolidated warehouse to be built, such as ensuring that existing access controls are used consistently, and/or retraining people who work in and around the stockroom.

   Management Response: Levels of stockroom access have been established between Metro Transit Material Management (MT-MM) and the maintenance departments MT-MM supports.

   Each person who gains access is trained by the location stockkeeper on the proper procedure for the recording of inventory taken from a stockroom when no stockkeeper is present.

   In Bus Maintenance, the access afforded to non-stockkeepers is updated each week based on the positions staff fill. For example, maintenance supervisors have 24-hour access, seven

days a week. Technicians-in-charge have unattended access, which is from 10PM on Friday to 10PM on Sunday.

In Rail Maintenance and Facility Maintenance, access is requested from the maintenance management team. That person is then given training and once complete, they are granted unattended access.

Stockrooms are always kept secure via card access readers and controls except for the three stockrooms at Overhaul Base. The three Overhaul Base stockrooms do not have card access controls but access to inventory is controlled by the stockkeepers who are on site during working hours.

Timetable: Already in place and continuously monitored.

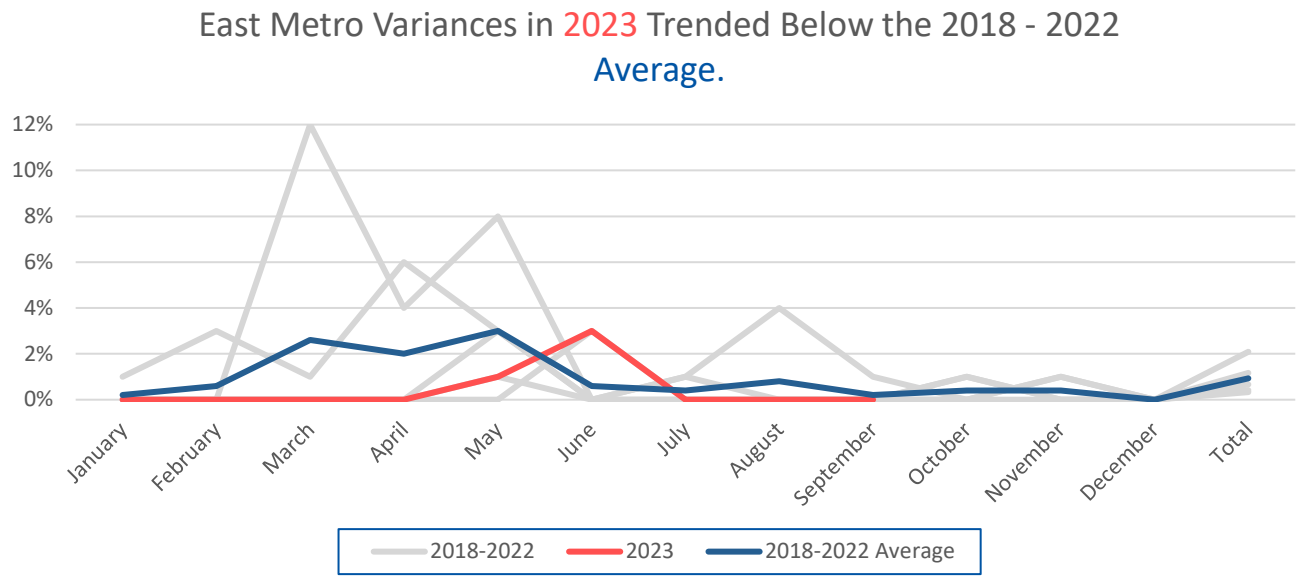
Staff Responsible: Manager, Material Management and Bus Maintenance administrative staff.

Audit Follow-Up: Confirmation

Observation 2 – Inventory errors at East Metro were not accurately reported.

Despite having the highest transaction volumes, East Metro Stockroom consistently reported some of the lowest SKU variances. From 2018 to 2022, 41 out of 60 (68.3%) monthly reports from East were 0%. Since January, this trend has worsened. East reported 0% SKU variance for the entire month in 7 of the last 10 months. In 2023, East Metro's SKU variance was on average lower than in the previous five years (**Figure Five**).

Figure Five: 2023 East % of SKUs Adjusted Compared to 2018-2022 Monthly Average



During the onsite, the actual SKU variance at East was found to be much higher than the reported error rates in daily cycle counts (**Table Four**). Of 500 SKUs counted, 48 were found to have

inaccurate quantities (9.6%). On the item level, there was a smaller item variance of 0.81%, with 70 incorrect items of the expected 12,110. Despite the high SKU variance, the overall financial impact was minimal. The combined value of all discrepancies showed a slight positive balance of $292.95, while the absolute financial difference amounted to $7,922.68.

Table Four: Average Versus Actual Variance Rates:

Average Reported SKU Variance in 2023	0.45%
Onsite SKU Variance*	9.6%

*The onsite variance rate is estimated based on 500 SKUs randomly sampled within each stratum to ensure a 95% confidence interval for items over 100$.

A benefit of cycle counting compared to less frequent 100% counts is that cycle counting provides continual opportunities to review discrepancies and respond to issues quickly. For this reason, it is best practice that all quantity discrepancies get reported. According to management, training provided by a previous long-term stockkeeper incentivized repairing rather than reporting errors. This deviation from procedure improved the data's appearance. Despite prior awareness of this issue, inadequate monitoring and action allowed it to proceed unchecked.

Fixing, rather than reporting errors reduces the ability to detect fraud or other systemwide issues, which could result in financial losses if lost or stolen items are not identified, investigated, and reported. It can also make KPI's less reliable. Improvements in short-term metrics such as completion rate may hide underlying process issues, if they exist, hindering the ability of management to understand and address root causes of discrepancies effectively and undermining the system of control.

Recommendations:

1. Retrain East Metro's stockkeepers, emphasizing the importance of accurate reporting.

Management Response: The stockkeepers at East Metro were retrained on the proper cycle count procedures on December 11, 2023. The MT-MM supervisor has followed up to ensure the stockkeepers understand the process (December 20 and January 23). The MT-MM supply chain supervisor also monitors the cycle counting at East Metro on a regular basis to ensure they are following the process. Finally, on a monthly basis the MT-MM supply chain supervisor does a spot check of the inventory most recently cycle counted at all garages to ensure accuracy of said cycle count.

Timetable: December 2023 and ongoing.

Staff Responsible: Supply Chain Supervisors (3 each)

Audit Follow-Up: Confirmation

2. Continuously monitor all cycle count data to detect outliers, creating and applying thresholds for intervention in cases of both abnormally high and low adjustments.

Management Response: This recommendation goes hand-in-hand with Recommendation #1 to Observation #1. Management will accomplish this task. However, it will take time to create the reporting structure and dashboard necessary to make this process efficient and effective.

Timetable: October 1, 2024

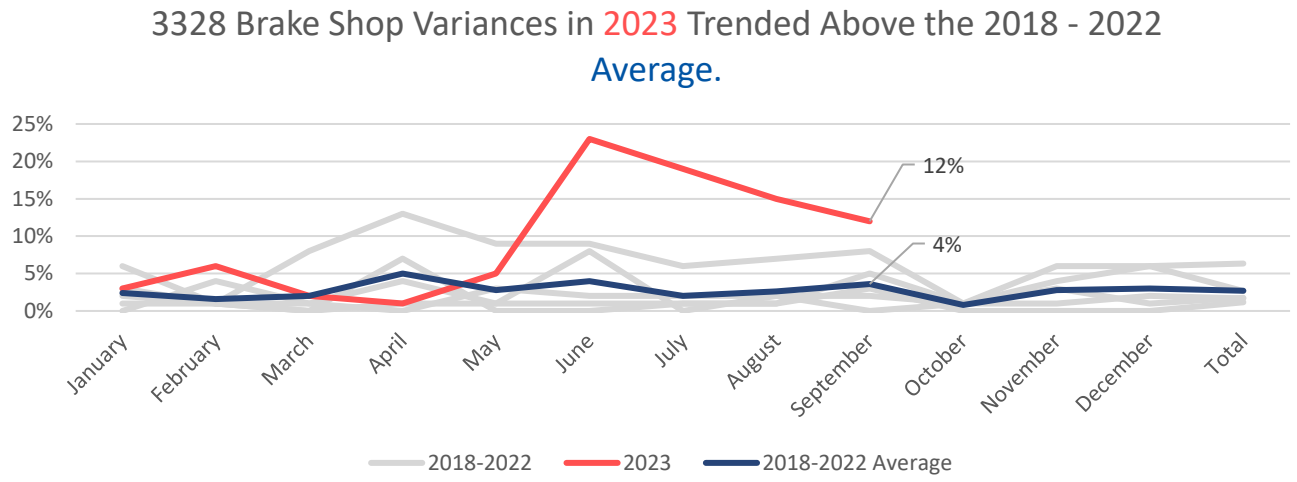
Staff Responsible: Material Management BSA, Material Management Assistant Manager of Supply Chain Operations, Supply Chian Supervisors (3 each)

Audit Follow-Up: Confirmation

Observation 3 – An accurate inventory of manufactured brake shoes was not maintained at the Brake Shop Stockroom.

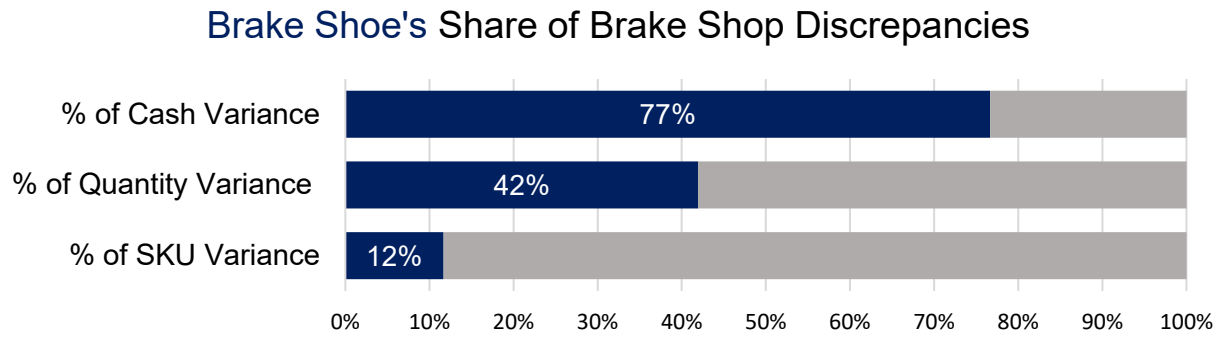
The average SKU variance at Brake Shop over the last four years was approximately 4% (**Figure Six**). However, the actual quantity of items inventoried at the Brake Shop varied significantly from the anticipated quantity in the computer software used for inventory management. Of the 232 SKUs reviewed, 60 were inaccurate (25.86%).

Figure Six: Brake Shop Variance Over Time



A large portion of Brake Shop discrepancies came from the manufactured brake shoes that never entered the stockroom. The 295 manufactured brake shoes accounted for 42% of the total quantity discrepancy. However, these 295 items constituted a substantial 77% of the total cash variance, amounting to $50,888.22 (**Figure Seven**). These items made up less than 1% of the total SKUs in the stockroom (8 out of 988 total).

Figure Seven: Breakdown of Manufactured Brake Shoes Percent of Variance



Although the process for inventorying manufactured parts is different than typical inventory, there are currently no special requirements for manufactured parts outside of Materials Management's Document 06.06.03 which details the return procedure (**Figure Eight**).[10] Bus Maintenance, who handles the manufacturing of brake shoes, also does not have a documented procedure.

Figure Eight: Manufactured Parts Process Flow[11]

[11] Metropolitan Council (December 2022). "Cycle Counts: Document 06.06.03." Web. *Link.* Audit generated this image during the audit process based on information presented in this document.

Without a formal policy in place, front-line staff developed habits that saved time but weakened inventory controls. For example, manufacturing technicians handed brake shoes directly to nearby technicians responsible for repairing buses, bypassing the inventory system. Audit observed completed brake shoes stored outside of the stockroom. Because these parts did not physically reenter the stockroom, standard stockroom procedures could not adequately track brake shoe inventory levels or ensure the same level of physical security as other inventory items.

The existing inventory tracking system, TXbase, lacks a dedicated function for monitoring manufactured goods, namely a 'Receive-to-Hold functionality' which is present in more modern programs. Via a work order, technicians are issued the parts necessary to build the brake shoes, and when that work order is closed the system automatically accounts for the items in inventory regardless of whether they have been returned. Given the proximity of potential system upgrades and the high labor cost to implement interim upgrades, it was decided to not pursue these changes and instead incorporate this feature into Business Process Systems Improvement Initiative (BPSI).

If the TXbase inventory inaccurately reflects the items in stock, inventory cannot be accurately managed and accounted for. Inaccurate inventory can lead to an inability to track the location, movement, and usage of items and reduces the ability to detect fraud and track parts in the case of an accident. It may also lead to overstocking or understocking of certain items, which could result in financial losses and delayed repairs.

As brake shoes made up a disproportionate amount of the dollar value for discrepancies than would be expected based on quantity, challenges maintaining inventory for these items have larger financial effects than other types of items. Even though the items are made in-house, they still have labor and material costs. Failing to properly account for these costs impacts larger budgetary decisions and hampers the organization's ability to perform cost-benefit analyses on manufacturing versus direct purchasing. Additionally, poor tracking of manufactured parts such as brake shoes could negatively impact vehicle maintenance including impairing tracking repairs. This risk extends more broadly to regulatory compliance, risk mitigation in the case of an accident, warranty management, and the overall reliability of vehicles on the road.

Recommendation:

1. Update policy and procedures in collaboration with Bus Maintenance to ensure manufactured and refurbished parts, such as brake shoes, are accurately tracked and disseminate new procedures to staff.

   Management Response: MT-MM and Bus Maintenance have worked together to change the manufacturing process in the Brake Shop. changes will more tightly control the access to and manufacturing process of the brake shoes. Brake shoes will be manufactured by the Brake Shop and then exclusively stocked in the Central Warehouse. As brake shoes are needed, the stockkeeper will create a manual interbranch from the Central Warehouse to the Brake Shop. These manual interbranch will be to support specific bus repair work orders.
   Timetable: January 31, 2024

   Staff Responsible: Brake Shop Maintenance Supervisor, Supply Chain Supervisor, Assistant Manager of Supply Chain Operations, Manager of the Overhaul Base.

   Audit Follow-Up: Confirmation

Observation 4 – The Cycle Count Error Research Report can improve data reliability.

CCERRs automatically populate with fields from TXbase that lists the computer quantity, actual quantity, discrepancy value ($), item description, and item location. CCERRs used to be completed on paper worksheets but have now moved to a spreadsheet on SharePoint. While Materials Management plans to begin using Power BI to improve review and trend analysis, the electronic CCERR should be improved before doing so.

Editable Fields - Staff can edit the dollar value and quantity fields. The Center for Internet Security Control 16, *Application Software Security*, says to apply the least privilege needed for users accessing data.[12] If someone only has a business need to enter the results of their research, they may not have a business need to edit other fields that are already automatically populated. By editing quantities or dollar values, an opportunistic individual could decrease the reported size of a discrepancy. However, only 2 of the 648 CCERRs over a 12-month period (<1%) were below the automated threshold. The item descriptions, cost per unit, and comments for these two examples were all reasonable.[13]

Skippable Fields - Some important fields are not required and can be skipped. This includes work order numbers for items determined issued to maintenance, and corrective transaction numbers used to correct inventory levels. Omitting work order or corrective transaction numbers make it harder to identify potential theft, loss, or misuse. 7 of the 52 CCERRs (13.4%) involving work orders had no work order number listed. Another 12 of the 52 (23.1%) contained them in comment fields, but not in the work order number field. The 7 CCERRs missing work order numbers accounted for $7,653.16 in absolute value discrepancies.

Fields to Add - Audit could not quantify the overall dollar value of discrepancies after research was complete. Although there are fields showing different steps of research done, there isn't a simple way to tell if all items were found. Many existing fields could contain information about the result, including two different open-ended comment fields. However, there is not a single field that indicates the research result or the final discrepancy. The system also cannot accommodate situations where some, but not all, of a discrepancy was resolved. This reduces the effectiveness of CCERRs in identifying trends and overall losses or overages, both in terms of quantity and value.

Recommendations:

1. Modify the SharePoint list to improve data reliability by restricting user editing of fields from TXbase, marking some fields as required/optional (e.g., transaction number), and adding fields to indicate the overall cause of the error and the post-research quantity.

   Management Response: This recommendation goes together with Recommendation #1 to Observation #1. Management will accomplish this task. However, it will take time to create the reporting structure necessary to make this process efficient and effective.

   Timetable: October 1, 2024

---

[12] Center for Internet Security (May 2021). *CIS Controls, Version 8.* Web. *Link.*
[13] Audit filtered for CCERs with a quantity discrepancy between -10 and 10 that also had a value discrepancy between $(50) and $50.

Staff Responsible: Material Management BSA, Material Management Assistant Manager of Supply Chain Operations, Supply Chian Supervisors (3 each)

Audit Follow-Up: Confirmation

Conclusions

The high rate of variance in the warehouses sampled poses a significant financial and operational risk to the Council. Potential system and infrastructure enhancements, including BPSI and consolidated and updated warehouses, are promising. However, until these improvements are implemented, it is important to revise policy and procedures to support inventory accuracy and guard against financial and operational risk. Improving monitoring of cycle count data and CCERRs will not only validate new policy effectiveness but will also proactively detect stockrooms requiring intervention. To achieve a better control environment, collaboration will be required between Materials Management, Bus Maintenance, Facilities, and Strategic Initiatives.

January 31, 2024
Matthew J. LaTour, Director Program Evaluation & Audit
Chief Audit Executive

Appendix A

Program Evaluation and Audit recommendations are categorized according to how Audit will follow-up on them. The categories are:

- **Retest —** Audit will retest the area using the same or similar procedures after a recommendation has been implemented and sufficient time has passed for the changes to take effect. The retest will take place on a specified timetable. The recommendation will be closed once the change has occurred. A new audit project will be opened for retesting and any new findings will include new recommendations.
- **Confirmation —** Audit will confirm that an adequate risk response has been completed on the agreed-upon timeline. The recommendation will be closed once the change has taken place.
- **Assess Risk —** Audit will not plan for specific follow-up to these recommendations. Audit will discuss the area as part of its annual risk assessment activities and consider future audit work in the area.

Appendix B: Inventory Results

Table One: Stockroom Onsite Inventory Results

Stockroom #	SKUs Counted	SKUs Incorrect	SKU Variance %	Items Expected	Items Counted	Items Difference	Abs Item Variance	Item Variance %	Expected $ Value	Counted $ Value	Variance $	Abs $ Variance	$ Variance %
3321 Nicollet	416	9	2.16%	1,614	1,620	6	12	0.74%	223,467.75	223,700.09	232.34	1,744.76	0.78%
3326 Unit Overhaul	290	23	7.93%	2,019	1,981	-38	76.00	3.76%	241,781.94	238,776.12	(3,005.82)	6,705.27	2.77%
3328 Brake Shop	232	60	25.86%	2,681	2,132	-549	703	26.22%	183,008.95	133,992.76	(49,016.20)	66,372.74	36.27%
3329 Electronic Repair	400	19	4.75%	7,478	7,450	-28	70	0.94%	1,687,246.13	1,685,673.36	(1,565.74)	11,535.57	0.68%
3336 East Metro	500	48	9.60%	12,109.5	12,081	-28	98.00	0.81%	371,240.05	371,564.50	292.95	7,922.68	2.13%
3337 North Loop	412	17	4.13%	8600	8,596	-4	42	0.49%	338,529.17	332,387.74	(6,141.43)	6,977.23	2.06%
Total	**2250**	**176**		**34,502**	**33,861**	**-641**	**1,001**		**3,045,273.99**	**2,986,094.57**	**(59,203.89)**	**101,258.25**	
Average			**7.82%**					**2.90%**					**3.33%**

Table Two: Selected Subgroups Within Stockrooms

Stockroom #	SKUs Counted	SKUs Incorrect	SKU Variance %	Items Expected	Items Counted	Items Difference	Abs Item Variance	Item Variance %	Expected $ Value	Counted $ Value	Variance $	Abs $ Variance	$ Variance %
3328 Brake Shop (with shoes)	232	60	25.86%	2,681	2,132	-549	703	26.22%	183,008.95	133,992.76	(49,016.20)	66,372.74	36.27%
3328 Brake Shop (no shoes)	201	53	26.37%	2,346	2,074	-272	408	17.39%	122,648.86	122,343.37	(305.49)	15,484.52	12.63%
3337 North Loop (non-VLM only)	234	12	5.13%	7,819	7,813	-6	25	0.32%	269,070.77	262,898.36	(6,172.41)	6,736.01	2.50%
3337 North Loop (VLM)	178	5	2.81%	781	783	2	18	2.30%	69,458.40	69,489.38	30.98	241.22	0.35%

Overview of Warehouses

3321 Nicollet

Out of 416 SKUs counted, 9 were incorrect (2.16%). Similarly, on the item level, there was a minimal item variance of 0.74%, with only 12 items found to be incorrect out of 1,614 items. The variance's financial impact is relatively small, with an absolute financial variance of $232.34, which translates to just 0.78% of the total expected value. Overall, while there are slight deviations in both SKU and item counts, these discrepancies are within the anticipated range.

3326 Unit Overhaul

Unit Overhaul had very high inventory discrepancies. Out of 290 SKUs, 23 were incorrect (7.93%). The item-level analysis reveals an item variance of 3.76%, with 76 items found to be incorrect out of the expected 2,019. This discrepancy is of -$6,705.27, representing 2.77% of the total expected value.

3328 Brake Shop

Out of 232 SKUs, 60 were found to be incorrect, resulting in a SKU variance of 25.86%. The item-level analysis reveals an even more substantial item variance of 26.22%, with an absolute item variance of 703 items out of the expected 2,681. These discrepancies are reflected financially, with an absolute variance of 66,372.74 (36.27% variance). The net variance of -$49,016.20 represents a considerable negative financial impact. Analysis for Brake Shop was also conducted after removing brake shoes which accounted for a large portion of the dollar variance.

3329 Electronic Repair

Only moderate discrepancies were observed. Out of 400 SKUs counted, 19 were found to be incorrect, resulting in a SKU variance of 4.75%. Similarly, on the item level, there is a minor item variance of 0.94%, with 70 items found to be missing or more than the expected 7,478. 0.68% of the total expected value. The overall financial impact of this variance is relatively small, approximately -$1,565.74,

3336 East Metro

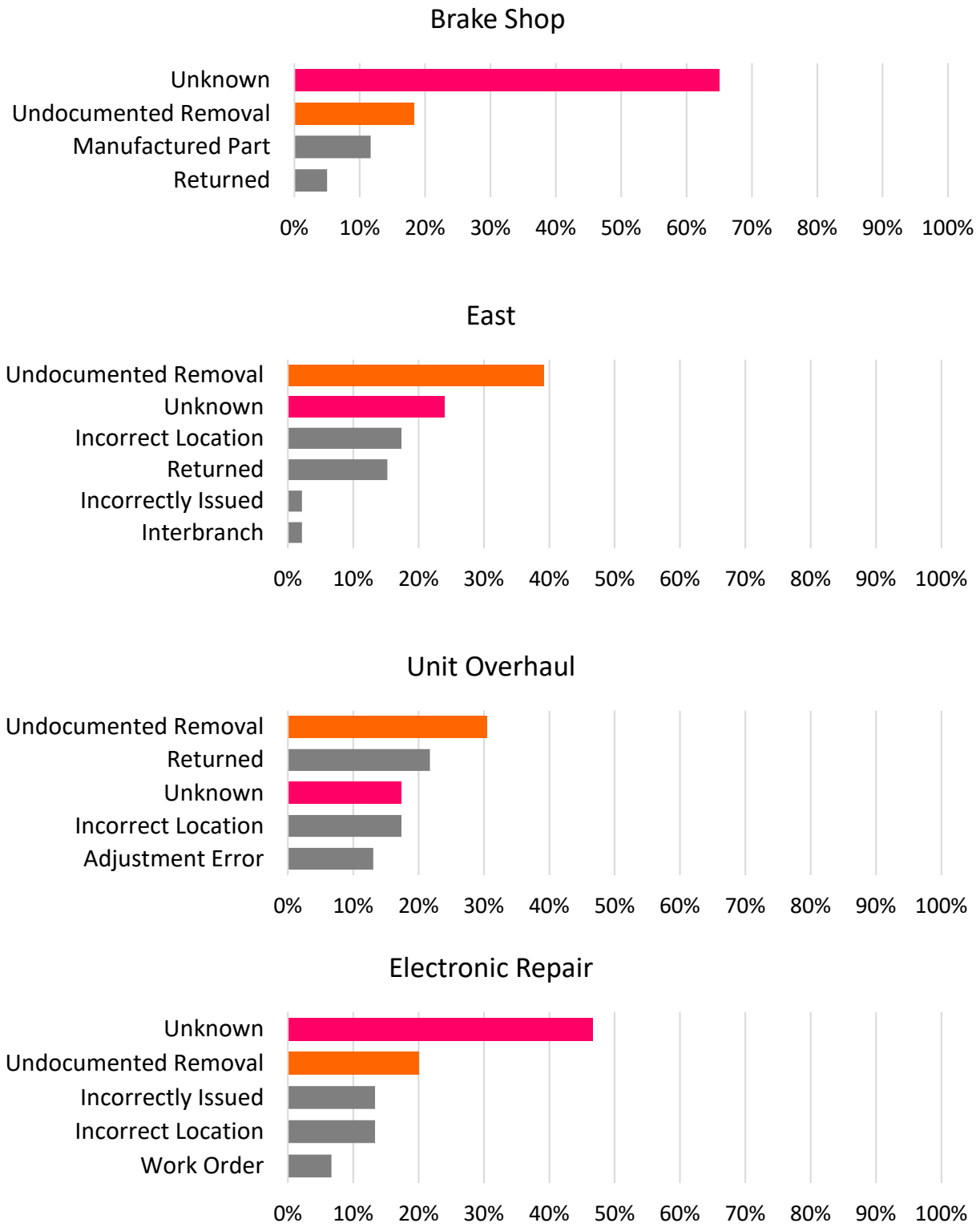
Out of 500 SKUs counted, 48 were found to be incorrect, resulting in a SKU variance of 9.60%. On the item level, there is a minor item variance of 0.81%, with 70 items found to be incorrect out of the expected 12,110. 2.13% of the total expected value the financial impact was Despite the SKU variance, the positive financial impact of Overall, there are variations in SKU and item counts, but the financial impact is slightly positive $292.95.

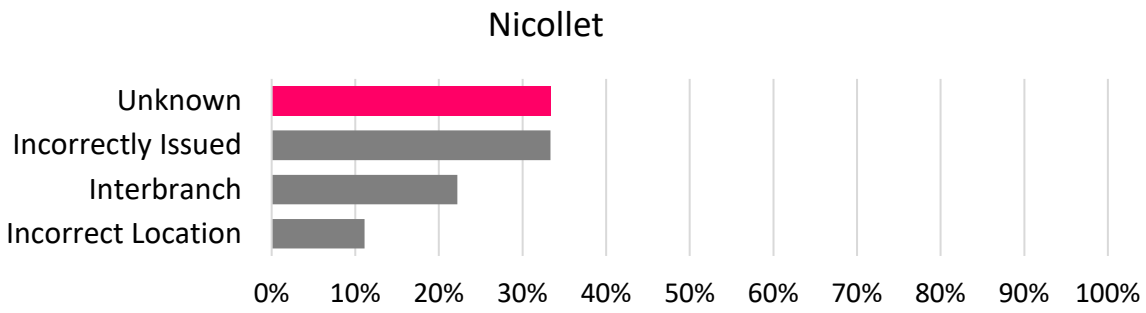
3337 North Loop

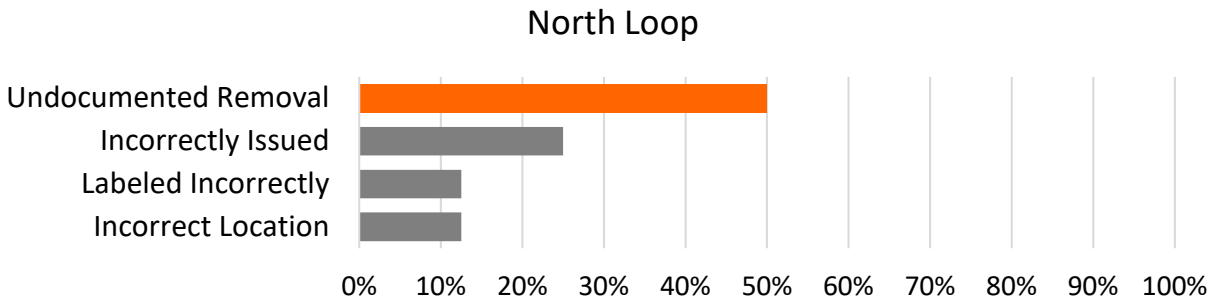
North Loop had only minor discrepancies. Out of 412 SKUs counted, 17 were found to be incorrect, resulting in a SKU variance of 4.13%. The item-level analysis reveals a minimal item variance of 0.49%, with only 42 items found to be incorrect out of the expected 8,600. represents a modest 2.06% of the total expected value. The net financial impact of this variance was relatively small, -$6,141.43.

Appendix C: Additional Figures

Onsite Discrepancy Causes Listed in CCERRs for Selected Warehouses




Nicollet
Unknown
Incorrectly Issued
Interbranch
Incorrect Location
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%


North Loop
Undocumented Removal
Incorrectly Issued
Labeled Incorrectly
Incorrect Location
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

Distribution List

All audit reports are reported to the general public and are available on *www.metrocouncil.org*. This audit report was distributed to the following parties:

- Members of the Audit Committee
- Regional Administrator
- General Manager, Metro Transit
- Director, Metro Transit Finance
- Manager, Materials Management
- Manager, Bus Maintenance
- Business Systems Manager, Strategic Initiatives

390 Robert Street North
Saint Paul, MN 55101-1805

651.602.1000
TTY 651.291.0904
public.info@metc.state.mn.us
metrocouncil.org