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Research Article

Cost-Benefit Analysis of Security Gates and Collection Shrink in the Academic Library

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Abstract

Objective – Two academic libraries serving public universities in the United States faced a similar choice of whether to keep magnetic security gates in place and pay for their upkeep. To make informed decisions, researchers at Chicago State University (CSU) and Western Kentucky University Libraries (WKUL) ran concurrent studies with different models of cost-benefit analysis to determine whether magnetic security gates were worth the expense. Security gates were physically present but not functional at both institutions during the study. Exploring different methods of analysis provided opportunities to discuss whether security gates are effective at preventing collection shrink, identify issues in measuring the costs of theft, and explain why WKUL chose to remove magnetic security gates altogether.

Methods – At CSU, we measured loss over a six-month period on a sample set of 110 monographs. The cost of replacing missing books, including labor and incidentals, was used to approximate the cost of shrink in an equivalent percentage of materials from the main collection housed in open stacks. We compared the expected cost of replacing the security gates to the estimated cost of shrink to determine how much loss security gates would need to prevent to justify the cost of maintaining security gates. While the sample was neither randomized nor large enough to draw conclusions, trialing this model of cost comparison presented an opportunity for discussion.

WKUL had a practice of running a near continuous inventory prior to this study. In 2024, staff inventoried the entire collection held in open stacks. This provided a precise number of how many items went missing during that timeframe. We compared the number of missing items to the quoted cost of annual service and maintenance fees to determine whether maintaining security gates would justify the cost. Simply dividing the annual service fees by the number of missing items provided a dollar value per missing item that security gates would have had to save in order to justify their expense.

Results – The calculated annual cost of collection shrink at CSU is $136,335, much more than the estimated $85,121 to replace the magnetic security gates. Inferring a similar rate of shrink to the sample set, despite the problems with the method, suggests that new security gates would have to prevent 62.44% of total loss to pay for themselves in the first year, 33.66% in two years, and 24.07% over three years. While we did not draw firm conclusions from this trial analysis, it is evident that security gates would likely save money over the span of a few years.

WKUL found that 99 individual items went missing from all collections housed in open stacks over 2024. The quoted annual subscription fee for the four sets of security gates at WKUL is $8,894. These data suggest that security gates at WKUL must prevent an average of $89.83 in lost value per missing item to justify the annual fees alone. Another way of describing this is that if each item that went missing cost $89.83, security gates would have to stop 100% of collection shrink to make up for their annual subscription fees. A more likely scenario is that security gates would have prevented 50% of the collection shrink, and materials would have had to carry an average value of $179.66 for security gates to pay for themselves.

Conclusion – At first glance, the data from CSU suggests that magnetic security gates have the potential to prevent enough collection loss that they pay for themselves. The library at CSU has an annual operating budget of just over $2 million, and an annual loss of nearly $140,000 in value would be unsustainable. However, the data from WKUL suggest it would be difficult to justify the annual subscription fees, let alone the cost of replacing defunct hardware. Further inquiry and discussion are needed to explore variables not covered in this study, including employee theft, security gate efficacy, the lifecycle of library materials, and how security gates may affect students' feelings of belonging and inclusion.

Introduction

Libraries have been using security gates to mitigate theft and collection loss for decades. The visible presence of standing gates that sound an alarm if library materials that have not been properly checked out pass between them has been status quo in both academic and public environments. Anecdotes of libraries with browsable or open stacks that do not have some sort of security gate system are novel and are often met with scrutiny or suspicion. However, some libraries are choosing to either leave security gates turned off or remove them altogether. More published literature exists about decisions not to use security gates in public libraries than in academic libraries. This paper contributes to the conversation on how academic libraries are making decisions about security gates by reporting on two concurrent studies comparing the cost of maintaining electromagnetic security gates to the cost of replacing missing library materials.

Chicago State University (CSU) faced a decision on whether to replace three sets of magnetic security gates that no longer function. To guide this discussion, we examined methods determining whether replacing the gates would make fiscal sense. We conducted a trial study with a small sample to evaluate loss rates, the value of library material, and whether new gates have cost-saving potential.

Western Kentucky University Libraries (WKUL) removed their security gates during the spring of 2025. While a recent inventory shows that some materials go missing, we are skeptical that security gates reduce collection shrink enough to warrant continued use. Researchers at WKUL collected data on collection shrink over one calendar year in the open stacks while security gates were still in place, and we compared the cost of missing items to the annual subscription and maintenance fees WKUL would have paid if they had not canceled the subscription.

Data from the trial study at CSU and the complete inventory at WKUL provide a starting point to discuss why some academic libraires are choosing to go without security gate loss prevention systems. Identifying weaknesses in the comparison models and recommendations for further inquiry are both intended deliverables of this study. Furthermore, this discussion is not meant to be prescriptive. We recognize there are many factors to consider when deciding whether to use security gates, and not all academic library stakeholders will reach the same conclusion.

Literature Review

Security Gate Use

From the beginning, libraries have been in the business of collections—amassing them, providing access to them, and protecting them. Materials that go missing cannot circulate or be used in-house and are rendered inaccessible. Lost materials represent lost opportunities and funds because there is a cost to replacing those materials if they are replaceable. In the 1970s, libraries began installing systems to protect physical library collections. Library literature on security gates from the 1970s through the 2000s considered cost-effectiveness and how to calculate it in terms of collection loss; subsequent literature questions the efficacy and cost-effectiveness of the security gates themselves. Michalko & Heidtmann (1978) provide an example of this discussion within academic libraries, finding that security gates at the University of Pennsylvania reduced the overall loss rate by 39%. Ensuing studies debated methods of measuring loss while maintaining support for security gates in academic libraries. Smith (1985) noted that a complete inventory, not annual loss rates, should be considered for factoring in hidden costs such as patron frustration over missing books. Foster (1996) disagreed, arguing that random samples can provide accurate loss rates for a collection. The emphasis on cost savings remained in future decades. Gelernter (2005), a library security professional, estimated that a 3% loss for a 50,000-book library collection at an average replacement cost per book of $44.65 would total $70,000 in losses annually. Later, anecdotal evidence that libraries were removing gates due to costs and negative patron feedback prompted Harwell's (2014) comprehensive landmark survey of security gate vendors, academic libraries, and public libraries on security gate use. In that study, 90% of the 212 responding libraries employed security measures, and 76% used security gates. Harwell (2014) noted, "Of the 24 percent without gates, one-third of those had them in the past and decided to remove them, with cost being the most common factor cited in those decisions" (p. 5). Other reasons given included aesthetics and operational problems. One academic library reported they no longer employed sufficient staff to monitor exits and found that "material losses were statistically insignificant" (p. 57). Echoing this decision is a brief mention in *Library Journal* about renovations at Clemson University's R.M. Cooper Library, in which library staff reported that they were not worried about book theft (Aiken, 2017).

Harwell (2014) also conducted a pilot study using magnetic tape of various ages in two library settings and found, contrary to expectations, that older magnetic tape was just as reliable as newer magnetic tape. However, the failure rate, defined as items not triggering the alarm when passing through the gates, across the two participating libraries was 16.4%, with some items failing to trigger the alarms up to 30% of the time. Vendor responses to Harwell's survey revealed that they expected library staff to test gates daily and keep them clean and dust-free to function properly. One vendor indicated that annual maintenance contracts run 10-15% of the cost of the systems themselves.

Functionality Problems With Security Gates

Library security gates are not a magical talisman against theft. Their effectiveness hinges on the basic reliability of the technology they employ, how well they are maintained, how library staff react to false alarms, and the dedication of the people who seek to defeat the system. Even when security gates function well, they are not perfect. In 2012 and 2013, a former student stole over 2,000 books from Gonzaga University's two libraries after discovering a weakness in the library security system. Reporting on the incident, Charles (2017) surmised that library security gates serve as a visible deterrent rather than a reliable tool to catch someone stealing books. For example, "security gates randomly activate when patrons have non-library items or library materials that have been properly checked out. The reasons for

this can range from lax procedures in sensitizing/desensitizing library materials to malfunctioning equipment" (p. 49). Failure to register an item is an obvious aspect of security gate failure, but more pernicious is the false positive, when the gate is triggered either spontaneously or by something that should not trigger it. Improper triggering of security gates can lead to negative interactions with library patrons and a loss of faith in the security system. Perhaps worse, high rates of false alarms cause staff to turn off security gate systems (Holt, 2007). The human reaction to false alarms is probably the single largest factor in undermining the reliability of library security gates: The least reliable security gate is the one that is turned off or simply ignored.

Theft and Employee/Patron Behavior

While the topic of library security conjures images of theft by library users, insider crime—thefts by library employees and other trusted people—is serious and possibly of greater consequence. Insiders may be familiar with existing security practices and their weaknesses, are likely to possess detailed knowledge of valuable items and items especially vulnerable to theft, may possess the technical ability and access to alter records or otherwise conceal the evidence of their crimes, and can often operate for years in public and academic libraries (O'Connor & Read, 2007; Snyder, 2006). The precise magnitude of insider theft is unknown. However, Van Nort (1994) estimated that 75% of library theft is perpetrated by employees or other insiders. Rare books and manuscripts are at particular risk from insider theft, as there is a substantial market for these high-value items (Griffiths & Kohl, 2009).

Effects of Security Culture on Students and Library Users

The cost for security systems may extend beyond their initial price, maintenance fees, and failure rates. Students in North America may be reminded of negative experiences with metal detectors used in secondary education. Metal detectors, almost non-existent in schools before the 1990s, were used in 10 percent of all U.S. schools by 2015, concentrated in urban and lower socioeconomic status areas. Some research indicates that the presence of metal detectors makes students feel less safe (Gawley et al., 2021), and there is little evidence to suggest that metal detectors reduce or prevent school violence. However, they may increase students' perceptions of fear in general and lower academic outcomes for students in low-income schools (Harper, 2019).

Policies such as these focus solely on students' actions rather than the motivations or circumstances that are behind any action (Alnaim, 2018; Gawley et al., 2021). Surveillance and punishment techniques target symptoms and not the root causes of undesirable behavior, often to the detriment of students whom institutions exist to serve. For libraries, a step toward dismantling the perceived need for security gates may be to consider why library materials go missing. Chander et al. (2022) identify resource scarcity as a driving factor behind theft and other abuses of library resources. Investigating and addressing user needs may prevent material loss and promote patron satisfaction.

Public librarians have expressed similar concerns. Lipinski and Saunders (2021) call upon libraries to evaluate their physical spaces to ensure they are not intimidating to users. Physical security measures, such as book detection systems, can be intimidating, and while they may not make a space safer, they "give visual clues that a space is unsafe" (p. 1019).

Removing Security Gates

There is a gap in the literature covering how libraries respond when security gates stop working and the reasoning behind decisions to remove them, which we hope to begin to fill with this paper. One institution, the Olin Library at Rollins College, reported that some missing items were not worthy of replacement and would have needed to be weeded from the collection (Harwell, 2014). Ultimately, Rollins College librarians decided not to replace the security gates.

The Chicago Public Library no longer installs book detection gates in new library branches and removes them whenever a branch goes under renovation. As a result, patrons with mobility devices do not struggle to navigate between gates, lines move more quickly because staff do not have to sensitize items, and "there have *[sic]* been no rash of material thefts. The patron experience has been enhanced, the library saves money, and the materials remain available" (Lipinski & Saunders, 2021, p. 1021).

Aims

These concurrent studies aim to explore methods of determining whether it is worth the cost of replacing and maintaining defunct magnetic security gates in academic libraries. Furthermore, we use this study to discuss issues in quantifying the cost of collection shrink and recommend areas for further exploration. Most importantly, we discuss the reasons why one library at a large public university in the United States chose to remove all security gates from the building housing its main collection and why another academic library is still considering its options.

Chicago State University

About the Library at Chicago State University

The Gwendolyn Brooks Library at Chicago State University (CSU) is a four-story building containing Library and Instruction Services (LIS) and other university departments, event spaces, and personnel offices. Thirteen full-time staff and faculty work in LIS, and the unit had a budget of just over $2 million in the 2025 fiscal year. Open stacks take up most of the third floor and part of the second floor with seating for individual and group study interspersed throughout. Most of the circulating collection is housed in an automated storage and retrieval system (ASRS), four walls of storage bins serviced by two robotic cranes that run on fixed tracks to bring materials to a workroom behind the circulation desk. The ASRS also houses the university archives and special collections. The Gwendolyn Brooks Library has two primary entryways, a staff entrance and a main entrance, both of which have sets of magnetic security gates that no longer work.

Methods at Chicago State University

Investigators at CSU tracked a sample of 110 monographs that were moved from the ASRS into open stacks during planned maintenance and downtime. The sample was not randomly selected or large enough to be statistically relevant. However, we took the opportunity to track collection shrink to explore methods of comparing costs of replacing missing books with costs associated with replacing and maintaining magnetic security gates.

Library staff at this primarily Black institution wanted to ensure the most in-demand portions of the Black studies collection, which had previously been housed exclusively in the ASRS, remained available

during ASRS downtime. We selected a sample set of the 110 newest titles that had circulated five times or more from the collection and moved them from the ASRS to the open stacks. This selection method may have affected the data.

Student workers inventoried the sample set six months after the collection had been shelved. Missing items were searched for again by a different student worker, and a librarian conducted the third and final check. We multiplied the number of missing materials by two to approximate what might go missing in a calendar year.

We used $118 as the value of library material based on the average cost of a new academic book in North America. This included $102.98 from the most recent "Prices of U.S. and foreign published materials" (Aulisio, 2022, p.p. 340-341) rounded up two cents to $103 with $15 added for labor and incidentals. We calculated the annual cost of collection shrink by applying the percentage of shrink from the sample to the number of items held in the open stacks multiplied by $118.

We calculated the cost of replacing security gates at CSU by adding the retail price of three sets of new gates and a box of 5,000 magnetic strips listed by the OhioNet library consortium (2025), plus estimated annual subscription fees, to the estimated cost of removing three sets of defunct gates. We based the estimate to remove old gates on three quarters of what Western Kentucky University Libraries (WKUL) paid to remove their security gates in spring 2024, since WKUL had four sets of gates and CSU had three. Similarly, we estimated annual service fees for CSU's three gates at three quarters of what WKUL was quoted for four sets. We used the estimated costs of collection shrink and replacing security gates to project the rate at which gates would need to prevent shrink in order for the institution to recoup money spent on replacing and maintaining security gates over time.

Results at Chicago State University

It would cost an estimated $85,121 to replace the magnetic security gates at CSU without altering the configuration of entrances and exits or the flow of foot traffic. The cost of a box of 5,000 double-sided magnetic strips was added, and annual service fees of $6,672 or $2,224 per set of gates reflect what WKUL paid in fiscal year 2024. The annual service fees would have been the only recurring cost. Other expenses would have been one-time costs (see Table 1).

Table 1
Cost of Replacing Gates

Item	Cost
Two-aisle sets (3)	$60,000
Removal of existing hardware and floor repair	$17,250
Annual maintenance and subscription fee	$6,672
Magnetic strips (box of 5,000)	$1,199
Cost of new gates	**$85,121**

One book went missing from the sample set of 110 monographs over six months. One of 110 is a 0.9% loss over six months and 1.8% over a calendar year, not including books checked out and marked overdue or lost. The most recent report lists $102.98 as the average price of a new academic book in North America (Aulisio, 2022). Rounding up two cents and adding $15 per book in labor and processing materials yields an estimated replacement cost of $118 per item. With 64,188 items in the circulating open stacks, the estimated value of the collection comes to $7,574,184. An annual rate of 1.8% devaluation equates to $136,335 without adjusting for loss, weeding, or acquisitions in subsequent years (see Table 2).

Table 2
Annual Cost of Shrink

Value per Item	Number of Items	Value of Collection	Estimated Shrink Rate	Cost of Shrink
$118	64,188	$7,574,184	1.8%	$136,335

The estimated cost of collection shrink is greater than the estimated cost of replacing the security gates at CSU (see Table 3).

Table 3
Cost Comparison

Annual Cost of Shrink		Cost of New Gates
$136,335	>	$85,121

Rather than assuming that security gates will save CSU money, necessary efficacy rates are described in Table 4. Rates have been adjusted to include annual fees each year. The line graph shows how over a period of time, if we apply the estimated rate of annual shrink to the entire collection, it is very likely that new security gates would be a sound fiscal decision.

Table 4
Shrink Prevention Rate Needed to Match Cost of New Gates at CSU

Time	Cost of New Gates	Cost of Shrink	Shrink Gates Would Need to Prevent to Pay for Themselves
Year 1	$85,121	$136,335	62.44%
Year 2	$91,793	$272,670	33.66%
Year 3	$98,465	$409,005	24.07%
Year 4	$105,137	$545,340	19.28%

Western Kentucky University Libraries

About Western Kentucky University Libraries

The Western Kentucky University Libraries (WKUL) are comprised of two buildings connected by a skybridge: the Commons at Helm Library and Cravens Library. The Commons at Helm Library is three-story building housing a service desk, four classrooms, librarian offices, extensive seating, study rooms, a coffee shop, and two restaurants. It contains stacks with low-use physical journals but is primarily used as a social and collaborative space. Cravens Library is a nine-story building, one of the tallest in the city of Bowling Green, Kentucky. It houses library administration, special collections and archives, access services, nineteen study rooms, and the physical stacks. WKUL employed 35 full-time staff with an operating budget of $6.6 million during the 2025 fiscal year. Magnetic security gates were located at the skybridge between buildings, the ground-floor main entrance to Cravens Library, and on the second floor of Cravens Library at the entrance to Special Collections. Similar to Chicago State University (CSU), security gates were physically in place but not functioning at the time of this study. All security gates at WKUL were physically removed during the spring of 2025.

Methods at Western Kentucky University Libraries

Staff at WKUL ran a complete inventory of library materials held in the open stacks in 2024 as part of the regular stack maintenance workflow. All materials held in open stacks were inventoried over the course of the year, providing an accurate count of missing materials. To conduct this inventory, WKUL staff scanned each item on the shelf, moving through the collections over a period of 12 months. If an item was not found on the shelf, and it was not on loan, it was marked missing and searched for a second time. Because this procedure has been followed in previous years, we can say with confidence that we have a complete and accurate count of materials that went missing over a 12-month period from WKUL.

The magnetic security gates at WKUL did not function in 2024. This is the same situation as at CSU, where gates were physically present and may have acted as a visual deterrent against theft but would not actually sound an alarm. Unlike CSU, WKUL would only have had to renew the annual service contract for the gates. The hardware was in working order and would not have had to have been replaced. WKUL obtained a quote for annual service and maintenance fees on the four sets of magnetic security gates covering the entrances to the parts of WKUL housing materials in open stacks. By dividing the annual cost of maintaining security gates by the number of items that went missing in 2024, we were able to assign projected dollar values of material to the amount of shrink that gates would need to prevent to match their annual expense.

Results at Western Kentucky University Libraries

Data from WKUL present the opportunity to compare the cost of security gates to the actual number of items that went missing over a calendar year. Ninety-nine items went missing during 2024. The vendor quote for annual service and maintenance fees on the four sets of security gates was $8,894. These two data points allow us to calculate the annual rates of loss that security gates would need to prevent to match their annual fees given replacement costs of collection materials. We started with the estimated cost for new academic monographs, $103 (Aulisio, 2022), and added $15 in labor and incidentals for a total of $118 per item. As such, we can surmise that in 2024, WKUL's security gates would have needed to prevent 76% of annual shrink to cover their maintenance fees.

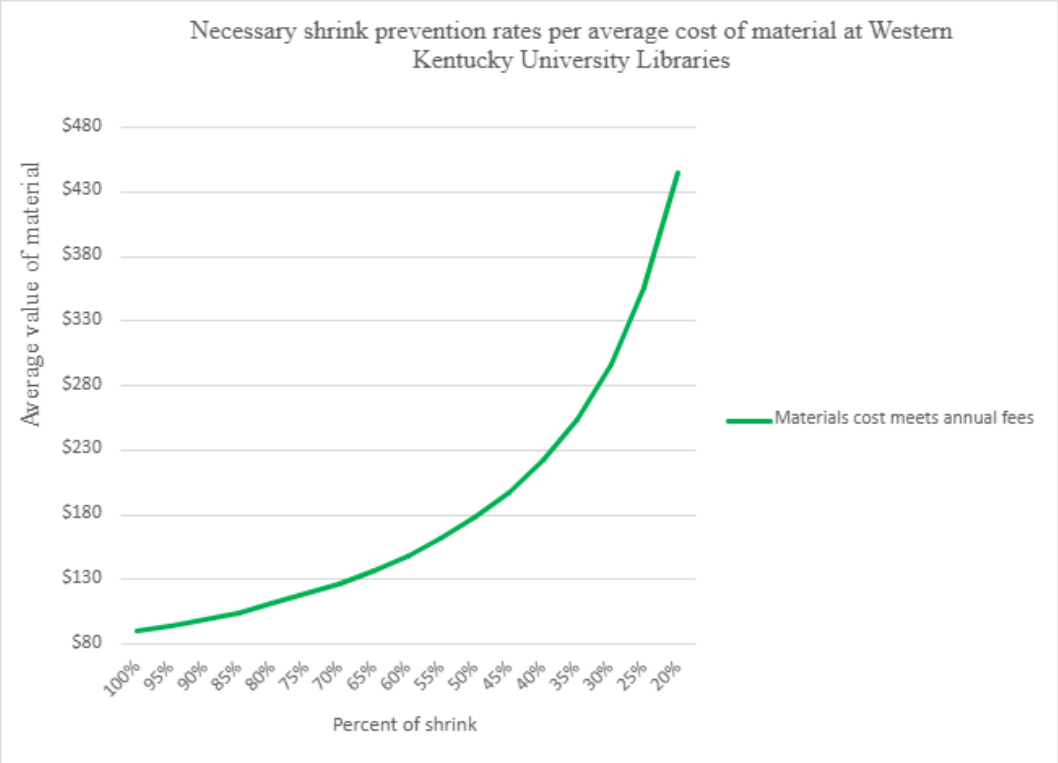

Figure 1
Graph showing necessary rate of loss prevention given average cost of materials to match gate maintenance costs at WKUL.

Discussion

Limitations

Sample Size

The sample size of the study at Chicago State University (CSU) is problematically small. Furthermore, the study only ran for six months, and researchers doubled the percentage of missing items to estimate an annual loss rate. Because of these two issues, a more complete dataset would be necessary to give an accurate picture of the rate of loss experienced at CSU. It is also worth noting that magnetic security gates were present but not functioning during this study, providing a visual theft deterrent. Collection shrink data is needed from academic libraries that do not have visible security gates at all.

Security Gate Pricing

Subsequent or similar studies would also benefit from more accurate pricing information on security gates. Researchers pulled price data for new magnetic gates from the OhioNet consortium's listed retail prices from Bibliotheca (2025), and data on annual maintenance and subscription fees reflect what Western Kentucky University Libraries (WKUL) paid per set of magnetic security gates in the fiscal year 2024. These price points will differ for other consortia or individual libraries, and libraries will not know exactly what new gates will cost until contacting a product vendor. However, averaging prices from multiple sources could produce a more generalizable figure. Using data from multiple sources will also

present challenges given the variables that can affect pricing, such as library size, consortial bargaining, and the specific product being purchased. Magnetic security gate systems are often tailored to the needs of the library, resulting in different pricing models.

Furthermore, product vendors that cater to libraries are not always quick to make their pricing models available. This is especially true in academic journal pricing, in which vendor negotiations have an outsized effect on libraries' ability to serve their constituents (Eye, 2023). Whether due to the necessity for customized solutions or a desire to maintain a competitive edge in the market, library security gate vendors generally do not publish prices.

Labor Cost of Replacing Materials

This study relied on calculating the average price of replacing material. In doing so, researchers included the estimated labor cost of processing new material. The time it takes to purchase, catalog, and physically process library material may be viewed as an opportunity cost rather than a financial encumbrance. The people working in technical services departments are presumably already on the payroll. If a particular book was not replaced, the library would not recoup the money spent on employee pay and benefits. Instead, the staff involved would be free to concentrate on other work. The choice to include labor costs in collection valuation in this study is intended to capture the larger effect of upkeeping a large collection over time.

Hidden Cost of Collection Shrink

Academic libraries serve the information needs of their users and provide welcoming spaces to work and study. These objectives are not met when library users attempt to retrieve material that is not present. There may be costs in terms of frustration for students and scholars that are not quantified when measuring the price tags of replacement books against an invoice from the security gate vendor. These unseen qualitative costs may be balanced against the negative experiences some people have with security measures.

Results in Context

One book went missing from CSU's sample of 110 books over a six-month period, suggesting a 1.8% annual loss rate. If we apply that rate to the main collection housed in open stacks at CSU despite the issues with the sample set, we come up with a $136,335 cost of replacing materials. After calculating the expected rate and cost of collection shrink, it becomes simple to determine the efficacy rate required for security gates to pay for themselves. The available data suggest that security gates would have to stop less than 23% of loss to pay for themselves in three years, a little over half the rate Michalko and Heidtmann found security gates to prevent theft by in 1978. Even when critiquing security gates, Harwell (2014) could not claim less than 23% efficacy.

Why, then, are institutions choosing not to repair defunct security gates or, in cases like WKUL, electing to remove them altogether? The data from WKUL provides a conclusive answer. Even if security gates enabled library personnel to intervene and prevent 50% of the loss experienced in 2024, those materials would have to carry an average value of $179 to justify the expense. It is very unlikely that renewing the service contract on security gates would be a sound fiscal decision at WKUL. Factoring in the issues associated with security gates and students' experience, we can see why WKUL made the decision to

remove security gates.

Library Material Lifecycle

Another problem with measuring the cost of shrinkage via the methodology in this study is that it does not treat library books as consumable material. The monograph that went missing from the sample set at CSU had 27 individual checkouts and nine recorded in-house uses. It was added to the collection in 2002, and the last recorded use was in 2019. It had 36 recorded uses over a 17-year lifespan. Given that the book had no recorded use in the five years preceding this study, it is arguable that CSU consumed the value of the monograph. Would it really have been necessary to stop that book from leaving the shelf? Would it have made it into the next batch of weeded material?

Recommendations for Further Inquiry

College students who have had negative experiences with security gates in primary or secondary school may feel demoralized by their presence in libraries. Students could also be desensitized to their presence, having become used to security gates at schools or other settings where we routinely encounter screening, such as stores, airports, and public offices. A study of college students' perceptions of security gates and other surveillance measures in academic libraries is warranted. The literature on the importance of college students' feelings of belonging in academic success is significant; if studies showed that security gates in libraries alienate students, it would bolster arguments against their use.

The other side of this argument is that library users may have a negative experience when material is unavailable. Even worse, someone might search for material in the stacks and it is not there, contrary to what is shown in the online catalog. Academic library collections are changing as focus shifts to subscription databases and leased access to content. Library users' experiences and expectations surrounding collections may also be changing as a result.

Examining patrons' expectations could also help guide decisions about security gates.

Conclusion

This study suggests that security gates have the potential to save money at Chicago State University. However, another study with a larger sample size or a comparison of two complete inventories over time is necessary to draw a conclusion. Because researchers at Western Kentucky University Libraries (WKUL) tracked actual loss over one calendar year, it is safe to say that security gates do not make fiscal sense at that institution. This is partially why the WKUL administration made the decision to remove security gates in the spring of 2024.

Both sample and complete inventory models for running a cost-benefit analysis of security gates in academic libraries are feasible. Both can provide the necessary efficacy rates for gates to pay for themselves over time given an assumed value of collection materials. Although it is reasonable to believe that such rates can be achieved, especially over longer time intervals, many libraries are electing not to maintain these security measures. The reasons behind WKUL's decision to remove security gates are clear. It is likely to be more expensive to maintain security gates than to replace missing materials for their institution.

Author Contributions

Loren D. Mindell: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing - original draft, Writing - review & editing **Amanda Hardin:** Data curation, Investigation **Gabrielle M. Toth:** Conceptualization, Writing - original draft, Writing - review & editing **Joshua J. Vossler:** Conceptualization, Writing - original draft, Writing - review & editing

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