



Just Another Manic Monday in the Call Center: When Equal Demand Does Not Produce Equal Service

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Abstract: Call centers ordinarily explain service-level variation through demand, service time, staffing, routing, and customer patience. Yet performance may also vary systematically by weekday even when workload is comparable. This study examines a Monday effect in operational data from a large U.S. insurance-service organization. The dataset contained 13,024 intraday records across 32 business days, 37 reporting queues, and 20 business groups. Because call counts were cumulative within day, the primary analysis used each queue's final daily snapshot, producing 1,127 active queue-day observations. Monday service level averaged .658, compared with .715 on Tuesday, although log-transformed call volume did not differ significantly between the two days. Ordinary least squares models with queue-clustered standard errors showed that Monday remained associated with a 5.1-percentage-point reduction in service level after controlling for call volume, average handle time, and business-group fixed effects. The result persisted across all-weekday, logit-transformed, volume-threshold, nonboundary, weighted, paired-queue, and nonparametric sensitivity analyses. The findings distinguish workload effects from weekday effects and suggest that start-of-week operational frictions may impair service beyond what volume alone explains. Because staffing, schedule adherence, absence, backlog, and call-mix measures were unavailable, the analysis identifies a robust temporal pattern rather than a causal mechanism. The study contributes to service-operations research by treating weekday as an operational state variable and offers managers a focused diagnostic agenda for Monday readiness.

Keywords: call centers, service level, Monday effect, service operations, workload, queueing

INTRODUCTION

Monday is often treated as a cultural shorthand for the transition from weekend to workweek. The title adopts that familiar 1980s popular-music framing without relying on it as evidence or explanation. In service operations, however, a “manic Monday” is not merely a metaphor. If performance declines at the beginning of the workweek, the pattern can affect customer access, staffing costs, abandonment, managerial attention, and interpretation of enterprise dashboards.

Call centers are tightly measured service systems in which demand arrives stochastically, service capacity is perishable, and delays emerge when required workload exceeds immediately available capacity. Established research therefore emphasizes arrival forecasting, queueing models, staffing, scheduling, routing, service times, customer patience, and abandonment (Aksin et al., 2007; Brown et al., 2005; Gans et al., 2003;

Garnett et al., 2002). These mechanisms explain why call volume matters, but they do not imply that equal or comparable volume must produce equal service. Two weekdays with similar demand may differ in resource availability, schedule adherence, residual backlog, team coordination, call complexity, employee recovery, or the speed with which operations stabilize after a nonworking interval.

This distinction is practically consequential. Managers often attribute low service levels to heavy volume and respond by revising forecasts or adding capacity. That diagnosis may be incomplete when comparable demand is handled differently across weekdays. A weekday effect is an association between temporal position and performance that remains after observed workload and other operating conditions are held constant. Workload captures how much service activity entered the system; weekday may proxy how prepared the operating system was to absorb that activity.

The present study investigates a call-center operational dataset containing 13,024 intraday records spanning 32 business days, 37 reporting queues, and 20 business groups. The dataset includes queue-level measures of service level, call volume, handled calls, abandons, average handle time (AHT), average speed of answer (ASA), and maximum delay. The central empirical question is whether Monday remains associated with lower service level than Tuesday and other weekdays after observed workload and operational differences are taken into account.

The study makes three contributions. First, it extends call-center research from demand-and-capacity modeling to temporal operating states by treating weekday as more than a forecasting category. Second, it shows that Monday service level remains lower than Tuesday service level after accounting for call volume, AHT, and business-group differences. Third, it translates this conditional association into a managerial diagnostic agenda: when Monday performance remains adverse after workload controls, managers should examine staffing availability, schedule adherence, backlog, call mix, system readiness, and transition routines rather than attributing the deficit to demand alone.

LITERATURE REVIEW AND THEORETICAL BACKGROUND

Call-Center Operations and Service Operations Management

Call centers combine stochastic arrivals with labor-intensive service delivery. Their operational challenge is to align uncertain demand with capacity that cannot be inventoried. Gans et al. (2003) describe the call center as a service-operations environment in which forecasting, staffing, scheduling, routing, and queueing interact. Aksin et al. (2007) emphasize the multidisciplinary character of call-center management, linking operations research with technology, human resources, and organizational design. Brown et al. (2005) demonstrate the value of analyzing arrivals, service durations, and patience rather than relying only on averages.

Customers experience access, waiting, responsiveness, and resolution as an integrated service process. Service level, commonly represented as the proportion of calls answered within a specified standard, summarizes a customer-facing outcome produced by multiple upstream conditions. Although service level is bounded, its managerial meaning depends on the response-time threshold and operational context.

Queueing, Staffing, and Workload

Queueing theory explains why small mismatches between workload and capacity can produce disproportionately large delays near high utilization. Erlang-based models and extensions connect arrival rates, service duration, available agents, and target service levels. Garnett et al. (2002) add customer impatience to the staffing problem, while Avramidis et al. (2004) show that arrival processes vary within and across days.

Workload is not synonymous with call count. A useful approximation is offered calls multiplied by AHT, adjusted for call mix and after-call requirements. The present dataset contains call volume and AHT but not direct staffing, occupancy, skill mix, shrinkage, or adherence. Consequently, the design can separate some demand-side variation from weekday variation but cannot reconstruct offered load relative to effective capacity. The analysis is therefore diagnostic rather than causal.

Temporal and Day-of-Week Effects

Recurring cycles can influence coordination, absence, task initiation, and resource availability. Ryan et al. (2010) show that experiences vary across the week in ways associated with need satisfaction. In operations, weekday variables are commonly included in forecasts because demand and process conditions recur weekly (Avramidis et al., 2004). Less attention has been paid to whether weekday predicts realized service after observed workload is controlled.

Prior research therefore provides two complementary reasons to examine weekday explicitly: call-arrival processes can vary across days, and workplace experiences can vary across the week (Avramidis et al., 2004; Ryan et al., 2010). The present study extends that logic from temporal demand and experience to realized service performance after observed workload is controlled.

A Monday effect may reflect accumulated demand, complex contact reasons, unscheduled absence, schedule adherence, system readiness, managerial routines, or other start-of-week conditions. The archival variables do not distinguish these mechanisms. Weekday is therefore treated as an observed temporal state, not as a psychological cause.

Service Quality and Service-Level Performance

Service-quality research distinguishes technical performance from broader judgments of reliability, responsiveness, and value (Parasuraman et al., 1988). In call centers, access and waiting are salient because customers remain in the process while capacity becomes available. Keiningham et al. (2006) connect call-center satisfaction with retention, while Cronin et al. (2000) link service quality, value, and satisfaction to behavioral intentions. Service level is incomplete as a quality measure but actionable as an indicator of access performance.

Kyper et al. (2012) used business-intelligence methods in a related insurance call-center context and showed that speed of answer, abandonment, delay, and weekday can help managers interpret service-level variation. The present study addresses a narrower inferential question: whether Monday remains associated with lower service level after workload and handling conditions are considered.

Human Factors and Operational Variability

Call-center work combines monitoring, emotional labor, performance targets, and constrained discretion. Houlihan (2000) describes tensions between control and learning, while the job demands-resources model explains how high demands and insufficient resources can impair functioning (Bakker & Demerouti, 2007). Conservation of resources theory similarly predicts that unavailable resources constrain performance under demand (Hobfoll, 1989). These theories do not establish a Monday effect, but they clarify why comparable demand may yield different outcomes when usable resources differ.

RESEARCH QUESTIONS AND HYPOTHESES

- RQ1: Do service levels differ systematically across weekdays, particularly between Monday and Tuesday?
- H1: Monday service level is lower than Tuesday service level.
- H2: Monday remains a negative predictor of service level after controlling for call volume, average handle time, and business-group differences.
- H3: The negative Monday association is robust to alternative outcome transformations, sample restrictions, weighting choices, all-weekday comparisons, and paired-queue tests.

Figure 1 summarizes the analytical logic. The research questions progress from establishing the Monday-Tuesday service-level difference, to determining whether workload accounts for that difference, and finally to testing whether Monday remains associated with service level after operational controls are introduced. The figure separates the observed weekday contrast from the workload explanation and identifies the adjusted Monday coefficient as the focal test of the proposed weekday effect.

The distinction between H1 and H2 is central. H1 establishes the empirical gap; H2 asks whether the gap is merely a workload artifact; H3 evaluates whether the conclusion is model dependent.

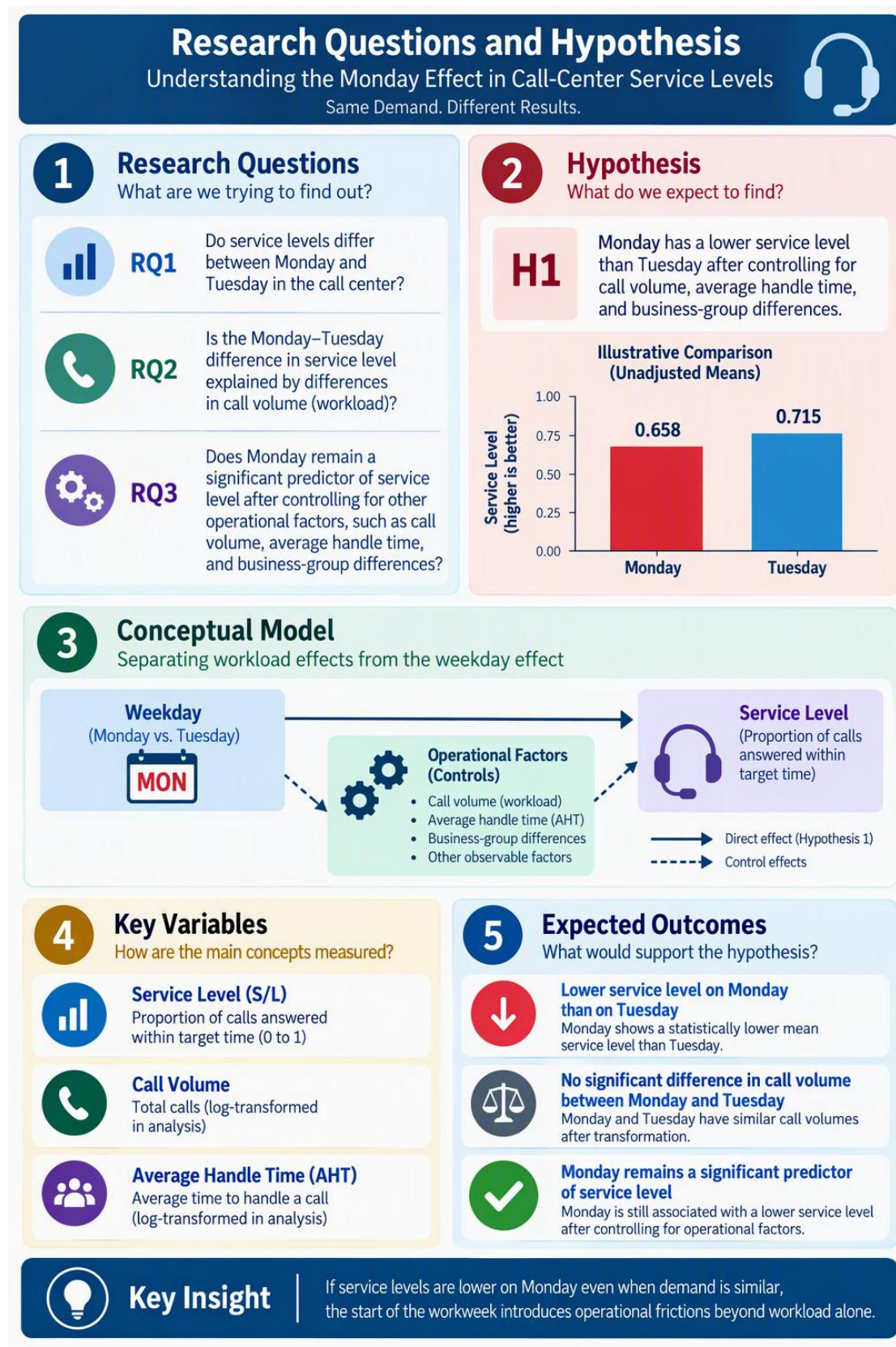


Figure 1: Research Questions, Hypothesis, and Analytical Logic

Note: The values .658 and .715 are the unadjusted mean service levels for Monday and Tuesday, respectively. The model distinguishes the weekday association from call volume, average handle time, and business-group differences.

METHODOLOGY

Research Design and Data Source

The study used a retrospective observational design. The dataset contained 13,024 operational records spanning 32 business days and one populated worksheet. Records were organized by day-of-week code, intraday reporting time, business group, subgroup, service level, offered calls, ACD calls, abandons, AHT, ASA, and maximum delay. The raw data represented 37 unique group-subgroup reporting queues in 20 business groups. Day-of-week codes identified Monday through Friday. Because intraday call counters increased across reporting times, the records represented cumulative snapshots rather than independent hourly intervals. To avoid treating cumulative snapshots as independent workload observations, the primary analysis selected each queue's final daily record at time code 7.

Sampling and Analytic Sample

The final-snapshot extraction produced 1,127 queue-day observations with no duplicate date-queue keys. All final snapshots had positive calls, valid service levels between 0 and 1, and usable AHT values; therefore, the primary analytic sample also contained 1,127 observations. Monday and Tuesday models used 501 observations: 244 Monday queue-days and 257 Tuesday queue-days. Unequal counts arose because some queues were inactive or absent on particular days. The observation window included multiple occurrences of each weekday, permitting weekday-level comparisons.

Variables and Measures

Service level was the dependent variable and was recorded as a proportion from 0 to 1. The source did not include the organization's threshold definition, so the analysis treats service level as reported without assigning a specific response-time standard. Monday was coded 1 for Monday and 0 for Tuesday in focal models; the all-weekday model used Tuesday as the reference category.

Calls represented final cumulative offered-call volume and entered models as $\ln(\text{Calls} + 1)$. AHT total seconds entered as $\ln(\text{AHT} + 1)$. Business-group indicators absorbed stable broad operating-context differences. Queue-clustered standard errors allowed residual dependence among repeated observations from the same group-subgroup queue. ASA, abandons, and maximum delay were excluded as primary controls because they are contemporaneous congestion outcomes and potential downstream mechanisms.

Data Preparation, Quality, and Missing Data

The workflow preserved the source workbook and operated on a converted working copy. Percentages were converted to proportions, dates and numeric variables were type-checked, and group-subgroup identifiers were concatenated into a queue key. No duplicate final-snapshot keys were found. Invalid service levels, nonpositive calls, and missing AHT were prespecified exclusions; none occurred in the final-snapshot sample. No values were imputed. Boundary outcomes were retained in linear models and excluded in one sensitivity analysis.

Reproducibility and Ethics

A scripted workflow recorded inclusion rules, transformations, model formulas, standard-error choices, and output tables. The organization and customers are not identified, and the aggregate operational records contain no direct customer or employee identifiers. A de-identified analytical extract, codebook, and analysis script are available from the corresponding author on reasonable request, subject to continuing organizational confidentiality restrictions.

Statistical Assumptions

Linear models assume a correctly specified conditional mean, independent clusters, and no perfect multicollinearity. Queue-clustered standard errors address heteroscedasticity and within-queue dependence. Because service level is bounded, a logit-transformed outcome served as a functional-form check. The 37 reporting queues provide a modest number of clusters; inference is therefore interpreted with effect sizes and confidence intervals. The observational design cannot establish causal exchangeability because staffing, backlog, call mix, absence, adherence, and capacity were unobserved.

Data Analysis

The analysis proceeded from data-structure audit to descriptive comparison, nested regression, and sensitivity analysis. Table 1 summarizes the model sequence and analytical purpose. The focal models were:

$$SL_{it} = B_0 + B_1 \text{Monday}_t + \varepsilon_{it}$$

$$SL_{it} = B_0 + B_1 \text{Monday}_t + B_2 \ln(\text{Calls}_{it} + 1) + B_3 \ln(\text{AHT}_{it} + 1) + \varepsilon_{it}$$

$$SL_{it} = B_0 + B_1 \text{Monday}_t + B_2 \ln(\text{Calls}_{it} + 1) + B_3 \ln(\text{AHT}_{it} + 1) + \gamma g + \varepsilon_{it}$$

The all-weekday model replaced Monday with weekday indicators using Tuesday as reference. Sensitivity analyses used a logit-transformed outcome, excluded queue-days with fewer than 30 calls, excluded boundary service levels, used square-root call-volume weights, and compared queue-specific Monday and Tuesday means with paired *t* and Wilcoxon signed-rank tests. Tests were two-sided with $\alpha = .05$.

RESULTS

Analysis Audit

The audit confirmed 13,024 raw records, 32 operational days, 37 reporting queues, and 20 business groups. Selecting final daily snapshots yielded 1,127 unique queue-day observations. No duplicate final date-queue keys were detected, and all final snapshots met prespecified validity criteria.

Descriptive Weekday Patterns

Descriptive statistics by weekday are reported in Table 2. Monday service level averaged .658 (SD = .231), compared with .715 (SD = .214) on Tuesday. The 5.7-percentage-point

difference was significant, Welch $t(490.60) = -2.84$, $p = .005$. Monday calls averaged 2,967 (median = 997), and Tuesday calls averaged 2,541 (median = 822). The comparison of $\ln(\text{Calls} + 1)$ was not significant, $t(496.76) = 0.97$, $p = .335$. Workload was therefore not literally identical, but transformed call-volume distributions were not statistically separable.

Hypothesis Tests

Regression estimates are reported in Table 3. Model 1 estimated an unadjusted Monday coefficient of $b = -.0565$, $SE = .0121$, 95% CI $[-.0803, -.0327]$, $p < .001$. Adding log call volume and log AHT reduced the coefficient only modestly, $b = -.0487$, $SE = .0115$, 95% CI $[-.0711, -.0262]$, $p < .001$. In the primary model with business-group fixed effects, Monday remained negative, $b = -.0512$, $SE = .0129$, 95% CI $[-.0766, -.0259]$, $p < .001$. Monday therefore predicted an adjusted service level approximately 5.1 percentage points below Tuesday.

In the all-weekday model, Monday remained 5.2 percentage points below Tuesday, $b = -.0524$, $SE = .0125$, 95% CI $[-.0769, -.0278]$, $p < .001$. Wednesday, Thursday, and Friday did not differ significantly from Tuesday, indicating a Monday-specific deficit rather than a monotonic weekday trend.

Robustness and Sensitivity Analyses

Robustness results are summarized in Table 4. The logit-transformed specification yielded a negative Monday coefficient, $b = -.2723$, $SE = .0980$, 95% CI $[-.4643, -.0803]$, $p = .005$. The result persisted after excluding observations with fewer than 30 calls ($b = -.0547$, $p < .001$), excluding boundary service levels ($b = -.0550$, $p < .001$), and weighting by the square root of call volume ($b = -.0580$, $p < .001$). Across 37 queues, the mean queue-specific Monday-minus-Tuesday difference was $-.0533$ ($SD = .0755$), paired $t(36) = -4.30$, $p < .001$; the Wilcoxon test also produced $p < .001$. H1-H3 were supported.

DISCUSSION

The central finding is operationally important: Monday service level was lower than Tuesday service level even though the two days were not statistically distinguishable on log-transformed call volume. The adjusted Monday deficit was approximately five percentage points and remained after controlling for call volume, AHT, and business-group differences. Because service level is a core measure of customer access, a recurring deficit of this magnitude can affect target attainment, queue performance, and the timing of managerial intervention. No comparable deficit appeared for Wednesday, Thursday, or Friday relative to Tuesday. The pattern also persisted across alternative transformations, sample restrictions, weighting choices, and within-queue comparisons.

These results distinguish workload effects from weekday effects. Monday carried a higher raw mean number of calls, so perfectly identical demand should not be claimed. Yet the transformed workload comparison was nonsignificant, and the Monday coefficient remained strongly negative when workload entered the regression. Volume therefore explains neither the full gap nor its persistence. Monday appears to identify a recurring

operating state in which observed demand is converted into customer access less effectively.

The data cannot show why. Staffing availability, adherence, absence, weekend backlog, call complexity, system readiness, routing changes, and managerial routines are plausible mechanisms, but none is directly measured. The responsible conclusion is a robust conditional association, not a causal claim about employee motivation or mood.

Theoretical Implications

The study separates temporal demand patterns from temporal conversion performance. Queueing models focus on arrivals, service requirements, capacity, and patience; the Monday coefficient suggests that calendar position may proxy a latent operating state influencing effective capacity or task mix. Weekday can therefore be treated not only as a forecasting category but also as a potential moderator of how demand translates into service. The result also aligns with resource-based explanations: comparable observed demand may produce different outcomes when usable operational and human resources differ.

Managerial Implications

Managers should treat Monday readiness as a distinct diagnostic problem. Forecasts and schedules should be evaluated separately by weekday rather than averaged across the week. Leaders should add scheduled agents, agents logged in, absence, adherence, occupancy, shrinkage, backlog, transfer rate, call reason, system incidents, and skill mix to queue-day records. Potential interventions include preopening system checks, weekend-backlog triage, reserve staffing, cross-training, and targeted adherence review. These are testable managerial options, not conclusions established by the observational data.

Limitations

The data come from a single organization and a limited operational observation window. Although the analysis includes repeated observations across 37 reporting queues, additional studies across organizations, service settings, and longer observation windows are needed to assess generalizability.

The source contains reported service level but not the underlying threshold, numerator, or denominator. Staffing and capacity were unavailable, so calls and AHT cannot reconstruct offered load relative to effective capacity. The final-snapshot design avoids cumulative intraday pseudoreplication but sacrifices within-day timing. Finally, the observational design does not establish that Monday causes lower service.

Future Research

Future studies should collect longer queue-interval panels with staffing, adherence, backlog, call reason, routing, and incident measures. Multilevel models could nest intervals within queue-days and queues. Mechanism tests should assess whether absence, schedule

adherence, ASA, abandonment, backlog, or call complexity mediates the Monday association. Comparative research across service channels could determine whether temporal readiness is a general service-operations construct.

CONCLUSION

Monday was associated with materially lower service level than Tuesday. The difference persisted after call volume, AHT, and business-group controls and remained robust across alternative models and samples. Because service level is a customer-access measure, a recurring five-percentage-point deficit is operationally meaningful even when its underlying mechanism cannot be identified. The evidence therefore supports a Monday weekday association that is distinct from observed workload, while stopping short of identifying a causal mechanism.

The practical lesson is not that Monday is inevitably manic. Rather, the start of the workweek may place the service system in a different operating state. Managers who measure that state can move beyond demand-only explanations and design more precise staffing, readiness, and recovery interventions.

Declarations

Use of Generative AI: Microsoft Copilot was used to support statistical-code development, literature organization, drafting, editing, and document formatting. The tool did not generate or alter source data. The authors verified the analysis, references, interpretations, originality, and final manuscript and accept responsibility for the submitted work.

Prior Work: The dataset was previously used in research on operational business intelligence in call centers (Kyper et al., 2012). The present manuscript addresses a distinct question about weekday service-level variation, uses a separate final-snapshot regression strategy, and presents original text, tables, and claims.

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Tables

Table 1: Model Summary

Model	Sample	Specification	Purpose
M1	Monday/Tuesday	SL ~ Monday	Unadjusted contrast
M2	Monday/Tuesday	M1 + log calls + log AHT	Workload adjustment
M3	Monday/Tuesday	M2 + group fixed effects	Primary adjusted test
M4	All weekdays	Weekday indicators + controls	All-weekday comparison
M5	Monday/Tuesday	Logit-transformed SL	Functional-form check

Note: SL = service level; AHT = average handle time. Standard errors were clustered by reporting queue.

Table 2: Weekday Descriptive Statistics

Day	Queue-days	Mean SL	SD	Mean calls	Median calls
Monday	244	.658	.231	2,967	997
Tuesday	257	.715	.214	2,541	822
Wednesday	257	.731	.199	2,300	737
Thursday	185	.736	.202	2,171	672
Friday	184	.729	.201	2,005	672

Table 3: Regression Results

Model/term	b	SE	95% CI	p	N	R ²
M1 Monday	-.0565	.0121	[-.0803, -.0327]	< .001	501	.016
M2 Monday	-.0487	.0115	[-.0711, -.0262]	< .001	501	.147
M3 Monday	-.0512	.0129	[-.0766, -.0259]	< .001	501	.266
M4 Monday vs. Tuesday	-.0524	.0125	[-.0769, -.0278]	< .001	1,127	.268
M4 Wednesday vs. Tuesday	.0147	.0148	[-.0143, .0438]	.320	1,127	
M4 Thursday vs. Tuesday	.0196	.0130	[-.0059, .0451]	.132	1,127	
M4 Friday vs. Tuesday	.0119	.0197	[-.0267, .0506]	.545	1,127	

Note: M3 and M4 include log calls, log AHT, and business-group fixed effects.

Table 4: Robustness Checks

Analysis	Estimate	SE/SD	95% CI	p	N
Logit-transformed SL	-.2723	.0980	[-.4643, -.0803]	.005	501
Calls >= 30	-.0547	.0132	[-.0805, -.0289]	< .001	487
Exclude SL = 0 or 1	-.0550	.0133	[-.0811, -.0289]	< .001	481
Volume-weighted	-.0580	.0141	[-.0857, -.0303]	< .001	501
Paired queue means	-.0533	.0755	-	< .001	37 queues

Note: Linear estimates are service-level proportions.