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Article

Who Bears the Surcharge? Card Segmentation and the Distributional Incidence of Merchant Credit Card Fees

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Abstract

Egan et al. (2026) estimate that interchange fees transfer approximately $30 billion per year from cash and debit card users to credit card users, assuming merchants set uniform prices. We extend their sufficient-statistics framework to incorporate merchant surcharging and show that it attenuates the pooled cross-subsidy by $1–2 billion (3–7%). The correct aggregation uses transfer-weighted sector shares, not expenditure shares; the naive alternative overstates the correction fivefold. Using transaction-level data from the Diary of Consumer Payment Choice (2022–2024), we document that surcharging has nearly doubled since 2021 and is concentrated in sectors where small businesses face high interchange costs. At the transaction level, credit card purchases by consumers with household income below $25,000 are surcharged at twice the rate of those above $150,000 ($p = 0.038$, respondent-clustered standard errors with merchant-category fixed effects). However, this gradient is fragile: it does not survive aggregation to the respondent level, is present in 2024 but not in 2022, and is largely absorbed by controlling for rewards card status. Surcharging widens inequality in the net benefits of card use primarily through *card segmentation*—non-rewards cardholders face higher surcharge rates—rather than through an independent income channel.

Keywords: credit cards; interchange fees; surcharging; card segmentation; payment redistribution

JEL Classification: D12; E42; G2; L81

1. Introduction

The modern payment system redistributes consumption across consumers. When merchants accept credit cards, they pay interchange fees that fund consumer rewards. If merchants pass these costs into uniform retail prices, consumers who use low-cost payment methods—cash and debit cards—effectively cross-subsidize the rewards of credit card users. Egan et al. (2026) quantify this cross-subsidy at approximately $30 billion per year using novel merchant-level data, a figure now widely cited in policy debates over the Credit Card Competition Act.

A key assumption underlying this estimate is that merchants set a single price for all consumers, regardless of payment method. Egan et al. (2026) justify this uniform-pricing assumption in a footnote, citing evidence that "gains from price discrimination are second-order in merchant fees." This may have been a reasonable approximation in 2018, when surcharging was rare. It is increasingly untenable in 2024.

Using transaction-level data from the Diary of Consumer Payment Choice (DCPC), we document that merchant surcharging of credit card transactions has nearly doubled since 2021 and now affects approximately 3% of all credit card transactions. Surcharging is concentrated in specific sectors—restaurants, gas stations, auto repair, and professional services—where interchange fees represent a significant share of merchants' costs and competitive pressures to absorb these costs are weaker.

Our paper makes three contributions. First, we extend the sufficient-statistics framework of Egan et al. (2026) to allow for merchant surcharging. Our **Proposition 1** provides a corrected welfare

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formula that nests their Theorem 1 as a special case when surcharging is absent. A key methodological point is that the correct aggregation uses transfer-weighted sector shares, not expenditure-weighted shares; the naive alternative overstates the correction by approximately fivefold. Using DCPC data to measure surcharge prevalence by merchant category and calibrating to their framework, we estimate that surcharging attenuates the pooled cross-subsidy by \$1–2 billion (3–7% of the \$30 billion baseline). The modest magnitude of this correction is itself an important finding: even as surcharging spreads rapidly, it remains far too sparse to materially erode the aggregate interchange cross-subsidy.

Second, we examine the distributional incidence of surcharging within credit card users. Our **Corollary 1** demonstrates that surcharging benefits cash and debit users (who enjoy lower pooled prices) while imposing a direct burden on credit card users. At the transaction level, credit card purchases by consumers with household income below \$25,000 are surcharged at approximately twice the rate of those above \$150,000, a gap that is significant with respondent-clustered standard errors and merchant-category fixed effects ($p = 0.038$). However, this result requires careful interpretation. The transaction-level income gradient does not survive aggregation to the respondent level: high-income credit card users are no less likely to *ever* be surcharged than low-income users. The gradient is present in 2024 but absent in 2022, and it is largely absorbed by controlling for rewards card status. The primary mechanism is *card segmentation*: non-rewards cardholders—who are disproportionately lower-income—face surcharge rates approximately twice those of rewards cardholders. We report these findings transparently, noting where the evidence is strong and where it is fragile.

Third, we provide descriptive evidence on the effectiveness of state-level surcharge regulation. States with long-standing surcharge bans (Connecticut, Massachusetts) maintain near-zero surcharge rates, while California's 2024 transparency regulation had no measurable effect.

Taken together, our findings suggest that surcharging introduces a distributional margin that the uniform-pricing framework misses, but the channel operates primarily through card segmentation rather than income per se. Non-rewards cardholders—who receive smaller gains from the interchange system and disproportionately hold lower incomes—bear a larger share of direct surcharge costs. Surcharging compresses the net gains from card use for this group, widening inequality in the benefits of the payment system.

Related literature.

This paper contributes to several literatures. Most directly, we extend the sufficient-statistics framework of Egan et al. (2026), who quantify the cross-subsidy from cash/debit to credit card users under uniform merchant pricing. Agarwal et al. (2025) document a complementary redistribution channel through interest charges, estimating that naive credit card users transfer over \$15 billion annually to sophisticated users. We show that surcharging introduces a third distributional margin that operates through card segmentation.

Our empirical analysis uses the same DCPC data as Greene et al. (2026), who study whether merchants can steer consumer payment choice. We differ in focus (distributional incidence vs. steering effectiveness), method (calibrated sufficient statistics vs. discrete choice), and scope (panel 2022–2024 with income heterogeneity vs. cross-section). Felt et al. (2023) document regressive payment card pricing in Canada and the United States using earlier DCPC waves; we extend their descriptive analysis to the surcharging margin.

Theoretically, our pricing extension builds on the two-sided market literature on interchange fees and merchant surcharging (Bourguignon et al. 2019; Rochet and Tirole 2011; Shy and Wang 2011; Wright 2003). Our sufficient-statistics approach follows Chetty (2009) in deriving welfare-relevant objects from reduced-form moments. On the policy side, Klein and Schardin (2025) argue that credit card rewards subsidize the wealthy; our results qualify this claim by showing that surcharging—often proposed as a corrective—operates through card segmentation rather than directly targeting the cross-subsidy.

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2. Institutional Background

This section provides institutional context on the U.S. interchange fee system and the evolving legal landscape for merchant surcharging.

2.1. Interchange Fees and the Four-Party Model

Credit card transactions in the United States operate through a four-party system: the cardholder, the card-issuing bank, the merchant, and the merchant's acquiring bank. When a consumer pays by credit card, the acquirer remits a fraction of the transaction value—the *interchange fee*—to the issuing bank. The merchant receives the transaction amount minus the interchange fee and an additional acquirer markup, collectively known as the *merchant discount rate* (MDR).

Interchange fees vary by card network, card type, and merchant category, but typically range from 1.5% to 3.5% of the transaction value for credit cards. Premium rewards cards carry the highest interchange rates, often exceeding 2.5%. Issuing banks use a substantial portion of interchange revenue to fund cardholder rewards: Drechsler et al. (2025) estimate that 86% of interchange fees flow to rewards programs. Total U.S. interchange fee revenue reached a record $187 billion in 2024 (Payments and Cards Markets International 2024).

2.2. The Rise of Merchant Surcharging

For decades, card network rules prohibited merchants from passing interchange costs directly to consumers. The landmark *In re Payment Card Interchange Fee and Merchant Discount Antitrust Litigation* (2013) settlement between merchants and Visa/Mastercard eliminated the blanket no-surcharge rule effective January 2013, permitting merchants in most states to impose a surcharge of up to 4% on credit card transactions.[1]

However, adoption was initially slow. As recently as 2021, only about 5% of small and medium-sized businesses imposed surcharges (Payments and Cards Markets International 2024). Several forces have since accelerated adoption: rising interchange rates, pandemic-driven awareness of payment costs, and the proliferation of point-of-sale technology that automates surcharge calculation and disclosure. By 2024, an estimated 34% of SMBs imposed some form of credit card surcharge (Payments and Cards Markets International 2024).

2.3. State-Level Regulation

The legal landscape for surcharging is fragmented across states. Ten states enacted surcharge bans between the 1980s and 2000s, though several have since been struck down on First Amendment grounds.[2] As of 2024, only Connecticut and Massachusetts maintain enforceable blanket prohibitions on credit card surcharging.

California presents a particularly instructive case. The state passed SB 478, the "Honest Pricing Act," effective July 1, 2024, which requires merchants to display all-inclusive prices and prohibits mandatory fees not disclosed in the advertised price. While commonly described as a surcharge ban, SB 478 is more precisely a *transparency regulation*: it does not prohibit surcharging per se, but requires that any surcharge be included in the posted price. Moreover, SB 1524—signed just three days before SB 478 took effect—exempted restaurants and bars from the all-inclusive pricing requirement. Since restaurants are among the highest-surcharging merchant categories (6.2% in our data), this exemption substantially weakens the regulation's practical scope.

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[1] The settlement initially faced legal challenges and was revised in 2019. The right to surcharge credit card transactions, subject to state law and network disclosure rules, has been in effect since 2013.

[2] Federal courts invalidated surcharge bans in New York (*Expressions Hair Design v. Schneiderman*, 2017), Texas (*Rowell v. Pettijohn*, 2016), and Florida (*Dana's Railroad Supply v. Bondi*, 2015), among others. These rulings held that surcharge bans regulated commercial speech and were not narrowly tailored.

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2.4. The Policy Debate

Surcharging has emerged as a key element of the broader policy debate around payment system fairness. Proponents argue that surcharging restores efficient price signals by making credit card costs transparent to users, reducing the cross-subsidy documented by Egan et al. (2026). Opponents counter that surcharging is poorly disclosed, confusing to consumers, and may disproportionately burden low-income households who use credit cards for liquidity reasons rather than rewards. Consumer surveys support the latter concern: 56% of respondents in a LendingTree survey believed surcharging should be illegal, and 30% reported switching to cash at surcharged merchants (LendingTree 2024). The Credit Card Competition Act, if enacted, would introduce network routing competition that could reduce interchange fees and, potentially, the impetus for surcharging.

3. Data

Our primary data source is the Diary of Consumer Payment Choice (DCPC), an annual survey conducted by the Federal Reserve Bank of Atlanta. Each year, a nationally representative sample of U.S. adults records every transaction over a three-day diary period, including the payment method, transaction amount, merchant category, and—for credit card transactions—whether a surcharge was imposed.

3.1. Survey Design and Key Variables

The DCPC comprises three levels of data. The *transaction-level* file records each payment with the following key variables: payment instrument (`pi`), merchant category (`merch`, 21 categories), transaction amount (`amnt`), and, for credit card transactions, whether the consumer paid a surcharge or convenience fee (`cc_surcharge`). The *individual-level* file contains respondent demographics including household income (`hhincome`, 8 brackets from under $25,000 to over $200,000), state of residence (`statereside`), whether the respondent's primary credit card offers rewards (`cc_rewards`), and standard sociodemographic controls. We merge individual characteristics to transactions using respondent identifiers.

3.2. Sample Construction

We use DCPC waves from 2020 through 2024. Table 1 summarizes variable availability and sample sizes by year.

Table 1. DCPC Sample Construction by Year.

	2020	2021	2022	2023	2024
Total transactions	7,520	19,877	22,387	23,108	32,267
CC transactions w/ surcharge data	—	4,799	6,085	—	9,773
`cc_surcharge` available	No	Yes	Yes	No	Yes
`statereside` available	No	No	Yes	Yes	Yes
Individual respondents	—	—	4,720	—	5,583
Used in main analysis			✓		✓
Used for trend only		✓			

Notes: "—" indicates the variable was not fielded or released in the public-use file. The 2023 wave does not include `cc_surcharge`; the 2020 and 2021 waves do not include `statereside`. Our main analysis pools the 2022 and 2024 waves, which contain both surcharge and state variables. The 2021 wave is used only for the time trend in surcharge prevalence.

Our main analysis pools the 2022 and 2024 waves ($N = 15{,}858$ credit card transactions with surcharge data), which are the only years containing both `cc_surcharge` and `statereside`. The 2021 wave contributes to the surcharging time trend but lacks state identifiers. The 2023 wave omits the surcharge variable entirely.

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3.3. Measurement

The surcharge variable `cc_surcharge` is coded from the survey question: "Did you pay an extra charge, surcharge, or convenience fee for using a credit card for this transaction?" This measure captures the consumer's perception of being surcharged, which may differ from the merchant's posted surcharge policy. We view this as the economically relevant measure for welfare analysis: a surcharge that consumers do not notice cannot affect their payment behavior or welfare.

We define the *count-weighted surcharge rate* as the fraction of credit card transactions where `cc_surcharge` = 1, and the *dollar-weighted surcharge rate* as the share of credit card spending (by dollar amount) on surcharged transactions. Unless otherwise noted, we report count-weighted rates as our primary measure; dollar-weighted rates can be sensitive to outlier transactions.

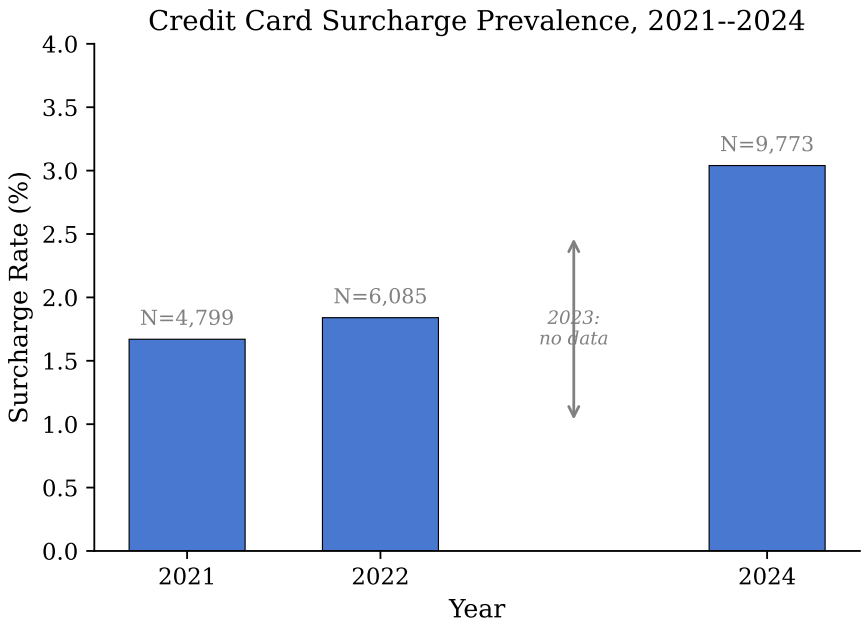
3.4. Limitations

Three limitations merit discussion. First, the DCPC records *consumer* state of residence, not merchant location. A New Jersey resident surcharged while shopping in New York would be classified under New Jersey's legal regime. This measurement error attenuates any estimated effects of state-level regulation. Second, the 2023 gap in the surcharge variable prevents us from constructing a balanced annual panel. Third, the DCPC is a consumer-side survey and does not observe the merchant's surcharge policy, the surcharge amount, or the merchant's interchange costs. We cannot determine whether observed surcharges exceed the merchant's actual interchange fee, which some state regulations prohibit.

4. Descriptive Facts

4.1. Fact 1: Surcharging Has Nearly Doubled

Table 2 reports surcharge rates across the three DCPC waves that include the surcharge variable. The count-weighted surcharge rate rose from 1.67% in 2021 to 1.84% in 2022 and 3.04% in 2024—a near-doubling over three years. This trajectory is consistent with industry reports documenting rapid adoption of surcharging technology by small and medium-sized businesses following the pandemic (Payments and Cards Markets International 2024).



Notes: Count-weighted surcharge rate from DCPC transaction-level data. The 2023 DCPC wave does not include the surcharge variable. *N* denotes the number of credit card transactions with non-missing surcharge data.

Figure 1. Credit Card Surcharge Prevalence, 2021–2024.

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Table 2. Credit Card Surcharge Prevalence by Year.

Year	CC Transactions	Surcharged	Count Rate (%)	Dollar Rate (%)
2021	4,799	80	1.67	—
2022	6,085	112	1.84	10.81*
2024	9,773	297	3.04	4.69

Notes: Count rate is the fraction of credit card transactions with `cc_surcharge` = 1. Dollar rate is the share of credit card spending (by amount) on surcharged transactions. *The 2022 dollar-weighted rate is inflated by a small number of high-value surcharged transactions (average surcharged transaction = $546).

4.2. Fact 2: Merchant-Type Heterogeneity

Table 3 reports surcharge rates by merchant category for the pooled 2022–2024 sample. Surcharging is concentrated in specific sectors: recreation (25.5%), professional services (20.0%), and auto/transportation (11.1%), where small businesses face high interchange costs relative to thin margins. In contrast, large-volume categories—grocery (1.3%) and online shopping (1.2%)—exhibit minimal surcharging, consistent with competitive pressure to absorb payment costs.

Table 3. Surcharge Rate by Merchant Category (2024).

Merchant Category	Count Rate (%)	Dollar Rate (%)	*N* (CC trans.)
Recreation/entertainment	25.5	67.6	47
Professional services	20.0	21.5	30
Auto/transportation	11.1	11.1	126
Repair/maintenance	10.7	33.4	112
Personal care	7.2	11.4	139
Restaurant/bar	6.2	6.5	875
Gas station	5.1	6.3	851
Home improvement	4.6	12.3	108
Fast food/coffee	3.1	2.2	1,261
General merchandise	1.7	0.9	1,085
Grocery	1.3	0.8	2,216
Online shopping	1.2	1.2	2,123

Notes: Restricted to merchant categories with at least 20 credit card transactions. Categories sorted by count-weighted surcharge rate.

This heterogeneity is important for interpreting the income regressivity documented below: if low-income consumers disproportionately shop at high-surcharging merchant types, the aggregate income gradient may partly reflect differences in merchant composition rather than differential treatment.

4.3. Fact 3: Surcharge Incidence by Income and Card Type

Transaction-level income gradient.

Table 4 reports surcharge rates by household income for each year and pooled, using the correct 16-bracket DCPC income coding. Pooling 2022 and 2024, credit card transactions by consumers with household income below $25,000 are surcharged at a rate of 4.47%, compared to 2.23% for those above $150,000—a ratio of 2.0×. A two-sample proportion test rejects equality ($z = 3.68$, $p < 0.001$).

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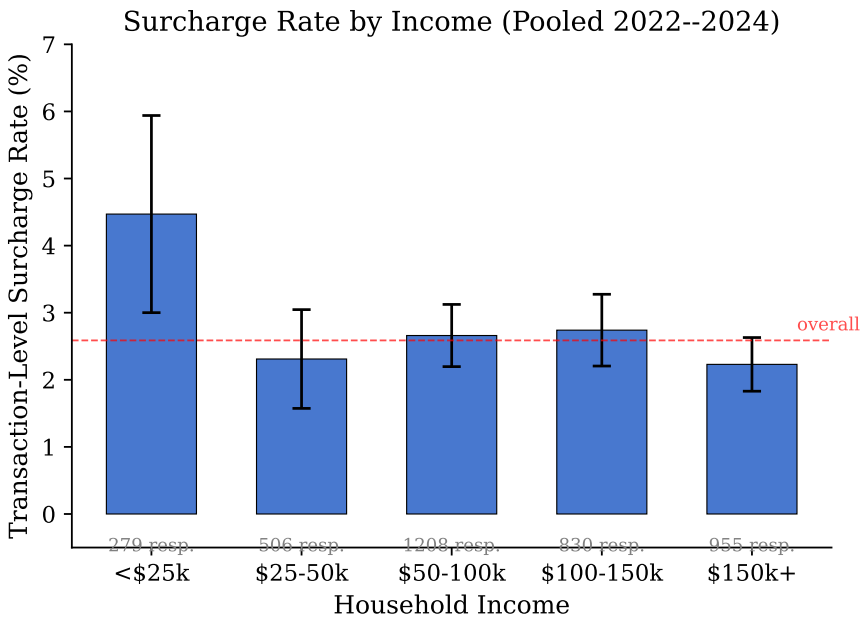
Table 4. Transaction-Level Surcharge Rate by Household Income.

	2022			2024			Pooled	
Income Group	Rate	N_{txn}	N_{resp}	Rate	N_{txn}	N_{resp}	Rate	N_{txn}
Low (<$25k)	1.14%	263	121	6.24%	497	191	4.47%	760
Low-mid ($25–50k)	2.06%	680	267	2.50%	920	332	2.31%	1,600
Mid ($50–100k)	2.20%	1,912	672	2.98%	2,718	814	2.66%	4,630
Upper-mid ($100–150k)	1.88%	1,332	416	3.25%	2,248	590	2.74%	3,580
High (≥$150k)	1.50%	1,864	495	2.64%	3,374	757	2.23%	5,238
Low / High ratio		0.76×			2.36×			2.00×

Notes: Income groups use the 16-bracket DCPC coding: Low = brackets 1–7 (<$25k), Low-mid = 8–11 ($25–50k), Mid = 12–14 ($50–100k), Upper-mid = 15 ($100–150k), High = 16 ($150k+). N_{resp} reports the number of unique respondents, not transactions.

Figure 2 displays these rates with 95% confidence intervals. A linear probability model with merchant-category fixed effects, year effects, and standard errors clustered at the respondent level confirms the gradient: each income bracket is associated with a -0.0019 change in surcharge probability ($t = -2.08$, $p = 0.038$). The result is also significant with survey weights ($p = 0.028$).



Notes: Error bars show 95% confidence intervals for proportions. Dashed line is the overall average. Number of respondents shown below each bar.

Figure 2. Transaction-Level Surcharge Rate by Income (Pooled 2022–2024).

Fragility of the income gradient.

Three facts temper the interpretation of Table 4. First, the gradient is driven entirely by 2024. In 2022, the low-to-high ratio is 0.76×—reversed and insignificant ($p = 0.65$). Second, the gradient does not survive aggregation to the respondent level. Table 5 reports the share of respondents who were *ever* surcharged during their diary period. High-income respondents are no less likely to experience a surcharge than low-income respondents (7.75% vs. 6.09%; $z = -1.00$, $p = 0.32$). The transaction-level gradient reflects differences in transaction intensity: low-income credit card users conduct fewer transactions, so a single surcharged transaction produces a mechanically higher rate. Third, as we show below, the gradient is largely absorbed by controlling for rewards card status.

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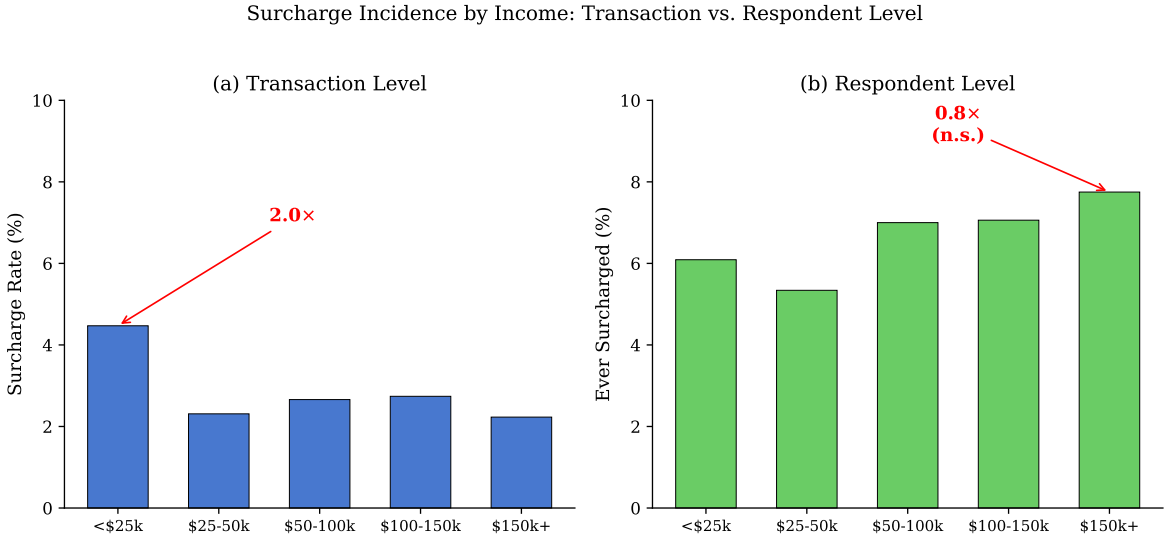
Table 5. Respondent-Level Surcharge Exposure by Income (Pooled 2022–2024).

Income Group	Ever Surcharged (%)	Mean Share Surcharged	*N* (respondents)
Low (<$25k)	6.09	3.40%	312
Low-mid ($25–50k)	5.34	1.90%	599
Mid ($50–100k)	7.00	2.84%	1,486
Upper-mid ($100–150k)	7.06	2.71%	1,006
High (≥$150k)	7.75	2.32%	1,252

Notes: "Ever Surcharged" = fraction of respondents with at least one surcharged CC transaction during diary period. "Mean Share Surcharged" = average across respondents of (surcharged CC transactions / total CC transactions). A respondent-level OLS of ever-surcharged on income yields $\hat{\beta} = +0.0014$ ($t = 1.10$, $p = 0.27$), indicating no significant income gradient at the respondent level.

Figure 3 displays this contrast visually: the transaction-level gradient (panel a) disappears entirely at the respondent level (panel b).



Notes: Panel (a) shows the fraction of credit card transactions that are surcharged, by income group. Panel (b) shows the fraction of respondents who experienced at least one surcharge during the diary period. The 2.0× ratio at the transaction level inverts to 0.8× (n.s.) at the respondent level. Pooled 2022–2024 data.

Figure 3. Surcharge Incidence by Income: Transaction Level vs. Respondent Level.

Card segmentation as the primary channel.

Table 6 reports surcharge rates by rewards card status. Non-rewards cardholders face approximately twice the surcharge rate of rewards cardholders (pooled: 4.92% vs. 2.46%). Crucially, controlling for rewards status absorbs most of the income gradient in the transaction-level regression: the income coefficient falls from -0.0012 ($p = 0.10$) to -0.0011 ($p = 0.12$) after adding a rewards dummy. Since non-rewards cards are concentrated among lower-income consumers, the transaction-level income gradient is largely a reflection of card segmentation.

Table 6. Surcharge Rate by Rewards Card Status.

	2022		2024		Pooled	
	Rate (%)	*N*	Rate (%)	*N*	Rate (%)	*N*
Rewards cardholder	1.84	5,856	2.85	9,441	2.46	15,297
Non-rewards cardholder	2.17	184	6.84	263	4.92	447
Non-rewards / Rewards ratio	1.18×		2.40×		2.00×	

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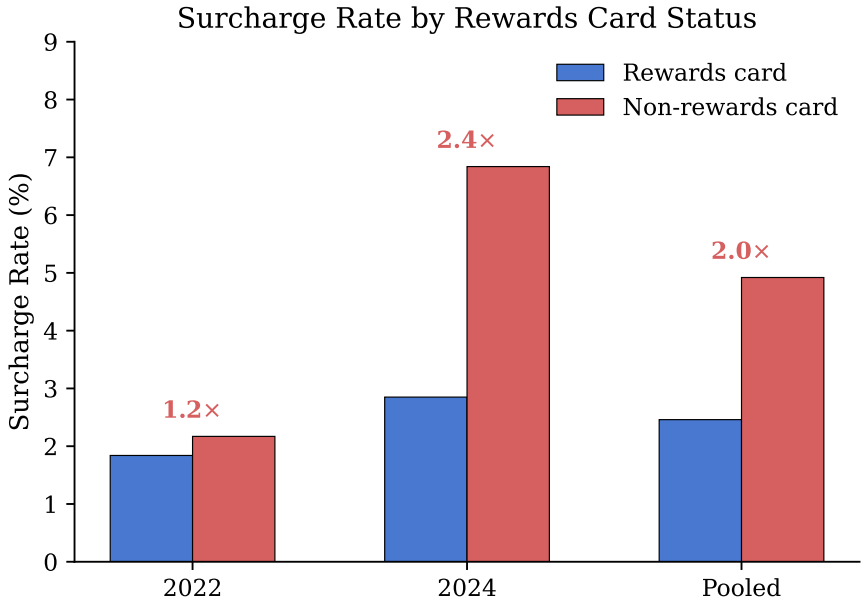

Notes: The non-rewards/rewards gap widens from 1.2× in 2022 to 2.4× in 2024. Non-rewards cards are disproportionately held by lower-income consumers.

Figure 4. Surcharge Rate by Rewards Card Status.

Decomposition.

Using the corrected income coding, we decompose the pooled transaction-level income gap (2.24 percentage points between low and high income) into a composition effect and a within-merchant effect:

- **Composition effect**: 0.75pp (34% of the gap). Low-income consumers are overrepresented in high-surcharging merchant categories.
- **Within-merchant effect**: 1.49pp (66% of the gap). Conditional on merchant category, low-income transactions are more likely to be surcharged—but this likely reflects card-type differences rather than differential merchant behavior.

4.4. Fact 4: Legal-Regime Heterogeneity

As a descriptive validation, we note that states with long-standing surcharge bans (Connecticut and Massachusetts) maintain near-zero surcharge rates (0.49% pooled), while California's 2024 transparency regulation (SB 478) had no measurable effect on surcharging—consistent with it being a disclosure requirement rather than an outright ban, and with its restaurant exemption (SB 1524) diluting its scope. We do not pursue this analysis further because the DCPC records consumer state of residence, not merchant location, limiting our ability to assign legal treatment correctly.[3]

5. A Sufficient-Statistics Correction

We extend the sufficient-statistics framework of Egan et al. (2026) to incorporate merchant surcharging. Their framework assumes merchants set a single uniform price p_j that depends on the composition of interchange fees across payment methods:

$$\log p_j = \log \bar{p}_j + \sum_k \mu_{jk} \tau_{jk}, \tag{1}$$

where $\bar{p}_j$ is the baseline price in the absence of interchange fees, μ_{jk} is the share of merchant j's sales from payment method k, and τ_{jk} is the ad valorem interchange fee.

[3] Full legal-regime tables are available from the authors on request.

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We modify this pricing rule to allow a fraction s_j of merchants to impose a payment-contingent surcharge σ_{jk} on credit card users ($k \in \mathcal{C}$). At a surcharging merchant, the common base price reflects only the non-surcharged portion of interchange:

$$\log p_j^S = \log \bar{p}_j + \sum_h \mu_{jh}(\tau_{jh} - \sigma_{jh}), \tag{2}$$

and a credit card user pays the total price $\log \tilde{p}_{jk} = \log p_j^S + \sigma_{jk}$.

Proposition 1 (Partial De-socialization of Interchange). *Let T_m^0 denote the contribution of merchant category m to the Egan et al. cross-subsidy under uniform pricing. Suppose a payment-contingent surcharge internalizes a fraction $\theta_m \equiv s_m \lambda_m \in [0,1]$ of the marginal interchange cost in category m, where s_m is the surcharge prevalence and $\lambda_m = \sigma_m / \tau_m$ is the surcharge-to-interchange ratio. Suppose quantities and other sufficient statistics are unchanged. Then the residual pooled consumer-to-consumer transfer is:*

$$T^S = \sum_m (1 - \theta_m) T_m^0 = T^0 (1 - \bar{\theta}_T), \tag{3}$$

where $\bar{\theta}_T \equiv \sum_m (T_m^0 / T^0) \theta_m$ is the transfer-weighted average internalization rate.

The welfare effect on type-k consumers, relative to the no-surcharge benchmark, is:

$$\frac{1}{\lambda_k} V_k^S = \frac{1}{\mu_k} \sum_m \omega_m \mu_{mk} \Big[\tau_{mk} - \bar{\tau}_m + s_m \sigma_m \big(c_m - \mathbf{1}\{k \in \mathcal{C}\} \big) \Big] + O(w_{\max}), \tag{4}$$

where $c_m = \sum_{h \in \mathcal{C}} \mu_{mh}$ is the credit card share in category m and $\bar{\tau}_m = \sum_h \mu_{mh} \tau_{mh}$.

Equation (3) nests Egan et al. (2026)'s Theorem 1 as a special case: when $s_m = 0$ for all m, the surcharge correction vanishes and $T^S = T^0$.

Corollary 1 (Distributional Incidence of Surcharging). *The welfare change from surcharging for consumer type k is:*

$$\Delta_k^S = \frac{1}{\mu_k} \sum_m \omega_m \mu_{mk} \cdot s_m \sigma_m \cdot \big(c_m - \mathbf{1}\{k \in \mathcal{C}\} \big). \tag{5}$$

Since $c_m < 1$ for all categories with non-trivial cash/debit usage:

1. *Cash and debit users ($k \notin \mathcal{C}$): $\Delta_k^S > 0$. These consumers gain from lower pooled prices.*
2. *Credit card users ($k \in \mathcal{C}$): $\Delta_k^S < 0$. These consumers lose because they now bear part of their own payment cost directly.*

Surcharging unambiguously reduces the cross-subsidy between credit and non-credit users. However, if surcharge exposure s_m is concentrated in merchant categories disproportionately used by low-income credit card users, surcharging increases regressivity within the set of card users.

5.1. Calibration

We calibrate Proposition 1 using sector-level parameters from Egan et al. (2026) and surcharge prevalence from the DCPC.

Sector parameters.

Table 7 reports the inputs to our calibration. Revenue weights (ω_m), credit card shares (c_m), and interchange rates (τ_m) are drawn from Egan et al. (2026)'s Figures 4, 6b, and Table 4. Surcharge prevalence (s_m) is measured from the DCPC 2024 transaction data, mapped to Egan et al. (2026)'s six sectors.

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Table 7. Sector-Level Calibration Parameters.

Sector	ω_m	c_m	τ_m (%)	s_m (%)	T_m^0/T^0 (%)
Travel	0.15	0.75	2.1	3.0	14.9
Restaurant	0.12	0.55	1.9	6.2	14.3
Merchandise	0.25	0.50	1.8	2.4	28.4
Grocery	0.25	0.35	1.4	1.3	20.1
Gas	0.08	0.30	1.5	5.1	6.4
Other	0.15	0.45	1.7	5.0	15.9

Notes: ω_m = revenue share, c_m = credit card payment share, τ_m = average interchange fee, s_m = surcharge prevalence from DCPC 2024. T_m^0/T^0 = each sector's contribution to the Egan et al. baseline transfer, computed as $\omega_m \cdot c_m(1-c_m) \cdot \tau_m$ normalized to sum to 1.

Transfer-weighted correction.

The key input to Equation (3) is the transfer-weighted internalization rate $\bar{\theta}_T = \sum_m (T_m^0/T^0) \cdot s_m \cdot \lambda_m$, where $\lambda_m = \sigma_m/\tau_m$ denotes the ratio of the surcharge rate to the interchange fee. We consider three scenarios for λ, applied uniformly across sectors:

Table 8. Correction to Egan et al. (2026) Transfer Estimate.

	Lower ($\lambda = 0.67$)	Baseline ($\lambda = 1.00$)	Upper ($\lambda = 1.50$)
Egan et al. gross transfer	\$30.0B	\$30.0B	\$30.0B
Their correction (sorting + fees)	−\$7.5B	−\$7.5B	−\$7.5B
Our correction (surcharging)	−\$0.7B	−\$1.0B	−\$1.5B
Net transfer	\$21.8B	\$21.5B	\$21.0B
Total attenuation (% of \$30B)	27%	28%	30%

Notes: Lower bound: typical surcharge (2%) on average interchange (3%), $\lambda = 0.67$. Baseline: surcharge equals interchange, $\lambda = 1.00$. Upper bound: surcharge exceeds interchange (3% surcharge on 2% fee), $\lambda = 1.50$. Egan et al.'s own correction for card-type sorting and fee pass-through is \$7.5B (25%).

The surcharging correction is modest: \$0.7–1.5 billion, or 3–7% of the baseline transfer. Combined with Egan et al. (2026)'s own 25% correction for sorting and fee heterogeneity, the total attenuation reaches 27–30%. The modesty of the surcharging correction is itself informative: even as surcharging has grown rapidly, it remains far too sparse and too small to meaningfully erode the aggregate cross-subsidy.

Distributional incidence.

Table 9 reports the welfare effect by consumer type from Corollary 1. Cash and debit users gain modestly from lower pooled prices (the "de-socialization" benefit), while credit card users bear the full surcharge cost.

Table 9. Distributional Incidence of Surcharging (Baseline: $\lambda = 1$).

Consumer Type	μ_k	Δ_k^S (bps)	Δ_k^S (\$B)	Direction
Cash	0.11	+4.6	+\$0.6B	Gains
Regulated debit	0.30	+4.6	+\$1.7B	Gains
Exempt debit	0.09	+4.6	+\$0.5B	Gains
Basic credit	0.20	−4.6	−\$1.1B	Loses
Premium credit	0.30	−4.6	−\$1.7B	Loses

Notes: Consumer type shares μ_k from Egan et al. (2026). Δ_k^S computed from Equation (5) using $\sigma = 3\%$ and count-weighted s_m. Dollar amounts scaled to \$12 trillion in aggregate consumer spending.

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Interpretation.

The calibration reveals a nuanced picture. In the aggregate, surcharging is mildly progressive: it shifts costs from non-credit to credit card users, partially correcting the cross-subsidy. But the magnitude is small—$1–2 billion against a $30 billion baseline—because surcharging remains sparse and concentrated in a few merchant categories. Within the set of credit card users, Corollary 1 shows that surcharging burdens all cardholders symmetrically *conditional on card type*. The distributional bite comes from the interaction of two facts: non-rewards cardholders face higher surcharge rates (Fact 3), and non-rewards cardholders receive smaller gains from the interchange system. For this group, surcharging compresses the already-smaller net gains from card use.

6. Conclusions

This paper documents the rise of merchant credit card surcharging in the United States and quantifies its aggregate and distributional effects using the sufficient-statistics framework of Egan et al. (2026).

We make two contributions. First, we extend Egan et al. (2026)'s welfare formula to incorporate surcharging. The correct aggregation uses transfer-weighted sector shares, not expenditure-weighted shares; the naive alternative overstates the correction approximately fivefold. Our calibrated correction is $1–2 billion (3–7% of the $30 billion baseline)—economically non-trivial but far too small to undo the aggregate interchange cross-subsidy.

Second, we examine the distributional incidence of surcharging within credit card users. At the transaction level, credit card purchases by lower-income consumers are surcharged at roughly twice the rate of higher-income consumers, but this gradient is fragile: it does not survive aggregation to the respondent level, is absent in 2022, and is largely explained by card segmentation—non-rewards cardholders face higher surcharge rates, and non-rewards cards are concentrated among lower-income consumers. The honest summary is that surcharging widens inequality in the net benefits of card use primarily through card segmentation rather than through an independent income channel.

Policy implications.

Our findings offer a qualified contribution to the debate over the Credit Card Competition Act and state-level surcharge regulation. The standard argument for permitting surcharging is that it restores efficient price signals. Our results suggest this argument is partially correct in aggregate—surcharging does modestly shift costs toward credit card users—but the incidence falls disproportionately on non-rewards cardholders rather than on premium cardholders who generate the highest interchange fees. If surcharging is to serve as a corrective mechanism, it is a blunt instrument that operates through the least-advantaged segment of the credit card market.

Limitations and future work.

Several limitations merit emphasis. Our analysis relies on consumer-reported surcharges and cannot observe the surcharge amount, merchant-side costs, or compliance with network rules. The 2023 gap in the DCPC surcharge variable limits our ability to trace annual dynamics. The transaction-level income gradient, while statistically significant with clustered standard errors, does not hold at the respondent level—a limitation we have documented transparently. Future work using merchant-side data, the 2025 DCPC wave (expected in 2026), or quasi-experimental variation in surcharge regulation could determine whether the card-segmentation pattern we document reflects differential merchant behavior or differential consumer sorting.

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Appendix A. Robustness of the Income Gradient

This appendix reports additional robustness checks for the transaction-level income gradient documented in Section 4. As noted in the main text, the gradient is fragile along several dimensions. We present the full evidence here.

Appendix A.1. Alternative Income Specifications

Table A1 reports transaction-level OLS regressions of surcharge incidence under alternative income specifications. All specifications include year fixed effects and merchant-category fixed effects, with standard errors clustered at the respondent level.

Table A1. Income Gradient Under Alternative Specifications.

	(1) Linear income	(2) Log income	(3) + Rewards control
Income (16-bracket)	-0.0019^{**}		-0.0011
	(0.001)		(0.001)
Log income midpoint		-0.0067^{*}	
		(0.004)	
Rewards card			-0.024^{*}
			(0.014)
Year = 2024	0.014^{***}	0.014^{***}	0.013^{***}
	(0.003)	(0.003)	(0.003)
Merchant FE	Yes	Yes	Yes
Clustered (respondent)	Yes	Yes	Yes
N	14,519	14,519	14,519

Notes: Dependent variable: `cc_surcharge` $\in \{0,1\}$. Respondent-clustered standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Column (3) shows that the income coefficient becomes insignificant after controlling for rewards card status, consistent with card segmentation as the primary mechanism.

Appendix A.2. Year-by-Year Estimates

The income gradient is absent in 2022 and present only in 2024:

Table A2. Income Gradient by Year.

	Low (<$25k)	High (≥$150k)	Ratio
2022	1.14% ($N = 263$)	1.50% ($N = 1{,}864$)	0.76× ($p = 0.65$)
2024	6.24% ($N = 497$)	2.64% ($N = 3{,}374$)	2.36× ($p < 0.001$)

Appendix A.3. Respondent-Level Outcomes

At the respondent level, none of the following outcomes show a significant income gradient (all $p > 0.20$):

- Ever surcharged (binary): $\hat{\beta}_{\text{income}} = +0.0014$ ($p = 0.27$)
- Share of CC transactions surcharged: $\hat{\beta}_{\text{income}} = -0.0004$ ($p = 0.48$)
- Weighted respondent-level OLS: $\hat{\beta}_{\text{income}} = +0.0003$ ($p = 0.86$)

The transaction-level gradient reflects differences in transaction intensity across income groups, not differences in the probability of encountering a surcharge.

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Appendix A.4. Legal-Regime Descriptive Statistics

Table A3. Surcharge Rate by Legal Regime (Pooled 2022–2024).

Legal Regime	Surcharge Rate (%)	*N* (CC transactions)
Always-banned (CT/MA)	0.49	410
California	3.29	1,635
Allowed (other states)	2.48	13,753

Notes: Classification based on consumer state of residence. Always-banned states maintain near-zero surcharge rates. California's rate exceeds the national average despite SB 478, consistent with the law being a transparency regulation rather than a surcharge ban.

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