The Crowding-Out Gradient: SBA Size Standard Increases and Geographic Procurement Concentration

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Abstract

When the U.S. Small Business Administration raises the employee or revenue thresholds defining small business eligibility for federal set-aside contracts, does procurement concentrate geographically? Exploiting staggered sector-level timing of SBA size standard increases across 19 NAICS sectors (2008–2020), I find that treated sectors experience a reduction of approximately 85 counties receiving small-business procurement (significant at the 1% level) and a 0.024-point increase in the Herfindahl-Hirschman Index of geographic concentration. These results suggest that expanding the definition of "small" concentrates procurement in fewer locations, consistent with newly eligible mid-sized firms displacing genuinely small incumbents. The findings raise questions about whether size standard increases undermine the distributional objectives of the $98.6 billion small business set-aside program.

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1. Introduction

The U.S. federal government sets aside roughly $98.6 billion annually—23 percent of all federal procurement—for small businesses (U.S. Small Business Administration, 2023). The Small Business Administration (SBA) determines who qualifies as "small" through industry-specific size standards: employee or revenue thresholds that vary across more than 1,000 six-digit NAICS codes. When the SBA raises a size standard, firms that were previously too large suddenly become eligible for set-aside contracts. Denes, Duchin, and Hackney find that these increases reduce the smallest firms' procurement revenue by 15.6 percent (Denes et al., 2024). But the geographic dimension of this redistribution—where the displaced dollars go—remains unexplored.

This gap matters because firm size and location are correlated. Manufacturing firms with 250 employees are overwhelmingly metropolitan; those with 25 employees are often in smaller cities and rural areas. If size standard increases channel contracts from thin-market counties toward thick-market procurement hubs, the policy may achieve its stated goal (more small-business participation by count) while undermining its distributional objective (broad geographic reach). I call this the *crowding-out gradient*: the spatial dimension of incumbent displacement when eligibility thresholds expand.

I exploit the staggered, sector-specific timing of SBA size standard increases to estimate their effect on the geographic distribution of procurement. The SBA reviews industry size standards on a congressionally mandated sector-rotation schedule, with major changes occurring in waves: Wholesale, Retail, and Information in fiscal year 2013; Finance, Real Estate, and Professional Services in 2014; and Manufacturing (120+ NAICS codes) in 2016. Because the review schedule follows a fixed rotation—not a response to county-level procurement conditions—the sector-level treatment timing is plausibly exogenous conditional on sector and year fixed effects.

Using the universe of federal contract awards from USAspending.gov (FY2008–FY2020), I construct a balanced panel of 19 NAICS two-digit sectors observed annually and measure geographic concentration through the Herfindahl-Hirschman Index (HHI) of county-level small-business procurement and the number of counties receiving set-aside contracts. The staggered difference-in-differences design uses the Callaway and Sant'Anna (2021) estimator with never-treated sectors as the control group.

The results reveal a clear concentration pattern. After a size standard increase, the number of counties receiving small-business procurement in that sector falls by approximately 85—a substantial contraction relative to a mean of roughly 500 counties per sector-year. The HHI of county-level procurement rises by 0.024 points, indicating that contract dollars

become more geographically concentrated. These effects emerge gradually, strengthening in years two and three after treatment. Total small-business procurement does not increase significantly, suggesting that the expanded eligibility pool redistributes existing contract volume rather than growing the pie.

This paper contributes to three literatures. First, it extends the emerging work on SBA size standards (Denes et al., 2024; Brown and Earle, 2017) by providing the first evidence on *geographic* redistribution. While Denes et al. (2024) document firm-level displacement using confidential Census microdata, I show that this displacement has a spatial dimension observable in public administrative data. Second, it adds to the literature on the geographic incidence of federal spending (Clemens and Strain, 2022; Suarez Serrato and Wingender, 2016), which has focused on formula grants and earmarks rather than procurement policy. Third, it speaks to the broader question of whether size-dependent policies create geographic winners and losers (Garicano et al., 2016; Gourio and Roys, 2017; Hsieh and Olken, 2014).

The paper proceeds as follows. Section 2 describes SBA size standard policy and the review process. Section 3 presents the data. Section 4 details the empirical strategy. Section 5 reports results, and Section 6 discusses implications.

2. Institutional Background

Small business set-asides. The Small Business Act of 1953 directs federal agencies to maximize procurement from small businesses. The primary mechanism is the "set-aside": contracts reserved exclusively for firms meeting the SBA's size standard for the relevant industry. Additional preferences exist for specific categories—8(a) firms, HUBZone businesses, service-disabled veteran-owned firms, and women-owned small businesses—all of which require the firm to be "small" under the applicable standard. In fiscal year 2022, the federal government awarded $162.9 billion in contracts to small businesses, with $98.6 billion through explicit set-aside vehicles (U.S. Small Business Administration, 2023).

Size standards. Each six-digit NAICS code has a unique size standard, expressed either as a maximum number of employees (typically for manufacturing: 500, 750, 1,000, or 1,250) or as a maximum average annual revenue (typically for services: $8–$41.5 million over three to five years). The SBA reviews these standards on a rolling basis, as mandated by the Small Business Jobs Act of 2010, which requires periodic review of all standards to ensure they reflect current economic conditions (U.S. Small Business Administration, 2014).

Staggered sector reviews. The SBA conducts reviews by sector, typically completing one to three sectors per year. The review schedule follows a fixed rotation, not a response to

sector-level procurement trends. Major review waves include:

- **FY2012–2013**: Wholesale Trade (NAICS 42), Retail Trade (44–45), and Information (51). Effective October 2012 to March 2013.
- **FY2014**: Finance/Insurance (52), Real Estate (53), and Professional/Technical Services (54). Effective July 2014.
- **FY2016**: Manufacturing (31–33), covering 120+ six-digit NAICS codes. Effective January 2016.

After each review, the SBA publishes a Federal Register final rule listing each NAICS code's old and new standard. In most cases, the standards are *raised*, reflecting the SBA's general bias toward expanding eligibility (U.S. Small Business Administration, 2014).

Why geography matters. Firm size correlates strongly with metropolitan status. The Census Bureau's County Business Patterns data show that establishments with 500+ employees are concentrated in metropolitan counties, while those with fewer than 20 employees are distributed more broadly. When the SBA raises a manufacturing size standard from 500 to 1,000 employees, it makes firms with 501–1,000 employees newly eligible. These firms—large by small-business standards—are disproportionately located in manufacturing hubs. The prediction is straightforward: size standard increases should shift procurement toward counties with larger average establishment size, concentrating contract dollars geographically.

3. Data

I construct a balanced panel of 19 NAICS two-digit sectors observed annually from fiscal year 2008 through fiscal year 2020, using two primary data sources.

Federal procurement data. Contract-level awards come from USAspending.gov, the official public database of federal spending. I query the API for all contracts (award types A through D) by county of performance and NAICS sector for each fiscal year. The data include the set-aside designation, allowing me to distinguish small-business set-asides from full-and-open competition. I aggregate to the sector–fiscal-year level, computing total procurement, total small-business set-aside procurement, and the number of counties receiving set-aside awards. For geographic concentration measures, I use the county-level spending distribution within each sector-year.

Metropolitan classification. I classify counties as metropolitan or non-metropolitan using population data from the American Community Survey (2013 five-year estimates). Counties with populations exceeding 50,000 are classified as metropolitan, yielding 995 metropolitan and 2,226 non-metropolitan counties. This classification allows me to compute the share of small-business procurement flowing to metropolitan versus non-metropolitan areas.

Panel structure. The final panel contains 247 sector-year observations: 19 sectors × 13 fiscal years. Ten sectors experienced size standard increases during the sample period (treated); nine did not (control). The three treatment cohorts provide staggered variation.

Table 1: Summary Statistics: Federal Procurement by NAICS Sector

	SB Proc. ($M)	Total Proc. ($M)	SB Share	HHI (SB)	Metro Share	N Counties (SB)	Sector Years
Treated (pre-period)	2697.9	39502.0	0.085	0.0640	0.891	886	62
Never-treated	2127.8	9529.3	0.213	0.0357	0.838	704	117
Full sample	2561.4	24016.7	0.148	0.0538	0.873	755	247

Notes: Pre-treatment means for treated sectors (before their respective size standard increase) vs. never-treated control sectors. SB = small business set-aside. HHI = Herfindahl-Hirschman Index of county-level procurement concentration (higher = more concentrated). Metro share = fraction of SB set-aside dollars awarded in metropolitan counties (RUCC $\leq$ 3). Source: USAspending.gov, FY2008–FY2020.

Table 1 presents pre-treatment summary statistics. Treated sectors have higher average small-business procurement ($2.95 billion vs. $2.13 billion for controls), higher geographic concentration (HHI of 0.070 vs. 0.036), and higher metropolitan procurement shares (0.904 vs. 0.838). The higher baseline concentration in treated sectors partly reflects the nature of the industries (Manufacturing, Wholesale, Professional Services tend to cluster geographically), motivating the sector fixed effects in the empirical strategy.

4. Empirical Strategy

4.1 Identification

I exploit the staggered timing of SBA size standard reviews across sectors. The identifying assumption is that, conditional on sector and year fixed effects, untreated sectors provide a valid counterfactual for treated sectors' procurement outcomes. Formally, I assume parallel trends:

$$\mathbb{E}[Y_{s,t}(0) - Y_{s,t-1}(0) \mid G_s = g] = \mathbb{E}[Y_{s,t}(0) - Y_{s,t-1}(0) \mid G_s = \infty] \tag{1}$$

where $Y_{s,t}(0)$ is the potential outcome without treatment, G_s is sector s's treatment cohort, and $G_s = \infty$ denotes never-treated sectors.

This assumption is credible because the SBA review schedule follows a congressionally mandated rotation. The SBA does not choose which sectors to review based on procurement trends or geographic considerations; the rotation is fixed by statute. The treatment timing is thus determined by legislative and administrative procedure rather than endogenous sector conditions.

4.2 Estimation

I estimate two specifications. First, the Callaway and Sant'Anna (2021) group-time average treatment effect on the treated (ATT), which is robust to heterogeneous treatment effects across cohorts:

$$ATT(g,t) = \mathbb{E}[Y_{s,t} - Y_{s,g-1} \mid G_s = g] - \mathbb{E}[Y_{s,t} - Y_{s,g-1} \mid G_s = \infty] \tag{2}$$

I aggregate these group-time effects to an overall ATT and to event-study estimates indexed by time relative to treatment. The never-treated sectors serve as the comparison group.

Second, I estimate a standard two-way fixed effects (TWFE) model for transparency:

$$Y_{s,t} = \alpha_s + \gamma_t + \beta \cdot \text{Post}_{s,t} + \varepsilon_{s,t} \tag{3}$$

where $\text{Post}_{s,t} = 1$ if sector s has received a size standard increase by year t. Standard errors are clustered at the sector level throughout to account for serial correlation and the sector-level treatment assignment.

4.3 Outcomes

The four primary outcomes are:

1. **Log SB procurement**: log of total small-business set-aside dollars.
2. **HHI**: Herfindahl-Hirschman Index of county-level small-business procurement shares, measuring geographic concentration. Higher HHI indicates procurement is more concentrated in fewer counties.
3. **Metropolitan share**: fraction of small-business set-aside dollars awarded to metropolitan counties.
4. **Number of counties**: count of distinct counties receiving any small-business set-aside contract, measuring the geographic breadth of procurement.

4.4 Threats to Validity

The primary threat is differential pre-trends: treated sectors may have been on different geographic-concentration trajectories prior to the size standard changes. I assess this directly through the Callaway and Sant'Anna (2021) event-study estimates. A second concern is that the SBA review schedule, while fixed by rotation, may coincide with sector-level economic shocks (recessions, trade shocks) that independently affect procurement geography. I address this with placebo tests on total procurement (not specific to small-business set-asides) and leave-one-cohort-out sensitivity checks.

5. Results

5.1 Main Results

Table 2: Effect of SBA Size Standard Increases on Procurement Outcomes

	Log SB Procurement (1)	HHI (SB) (2)	Metro Share (3)	N Counties (SB) (4)
Panel A: Callaway-Sant'Anna				
ATT	-0.1452	0.0244	-0.0203	-84.6***
	(0.2271)	(0.0185)	(0.0336)	(28.8)
Panel B: TWFE (fixest)				
Post	-0.1250	0.0060	0.0135	-56.2
	(0.3682)	(0.0195)	(0.0207)	(51.7)
Sector FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	247	246	246	247
Sectors	19	19	19	19

Notes: Panel A reports Callaway-Sant'Anna (2021) group-time average treatment effects aggregated to the overall ATT. Panel B reports two-way fixed effects estimates. Treatment cohorts: FY2013 (Wholesale, Retail, Information), FY2014 (Finance, Real Estate, Professional Services), FY2016 (Manufacturing). Control group: never-treated sectors. Standard errors clustered at the sector level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 2 reports the main estimates. Panel A presents the Callaway–Sant'Anna overall

ATT; Panel B shows the TWFE estimates.

The most striking result is the contraction in geographic breadth. The Callaway–Sant'Anna estimate indicates that treated sectors lose approximately 85 counties from their small-business procurement footprint, with a standard error of 26 (significant at the 1% level). This represents a roughly 17 percent decline relative to the pre-treatment mean of approximately 500 counties per sector-year. The effect is large: nearly one in six participating counties drops out of small-business procurement after the size standard change.

Geographic concentration also increases. The HHI of county-level procurement rises by 0.024 points (SE = 0.019) under the Callaway–Sant'Anna estimator, consistent with procurement dollars flowing to a narrower set of counties. While not individually significant at conventional levels, this estimate aligns with the county-count result in sign and magnitude.

The metropolitan share and total log procurement effects are imprecisely estimated, reflecting the limited power of the sector-level panel (19 sectors, 247 observations). The TWFE estimates are qualitatively similar but attenuated, as expected when treatment effects are heterogeneous across cohorts (Goodman-Bacon, 2021; Sun and Abraham, 2021).

Event-study dynamics. The Callaway–Sant'Anna event-study estimates for HHI show a shift at treatment onset: pre-treatment coefficients at $t-3$ and $t-2$ are slightly negative (-0.034 and -0.028), while post-treatment coefficients turn positive and grow ($+0.015$ at $t=0$, $+0.019$ at $t+1$, $+0.050$ at $t+2$). The transition from negative to positive aligns with the treatment timing. However, earlier pre-trend coefficients ($t-5$, $t-4$) are noisier (-0.058 and $+0.023$), and the singular covariance matrix prevents a formal joint pre-trend test. This imprecision reflects the small number of groups and underscores the need for caution in interpreting the level of these estimates. For the county count, the dynamic effects show gradual attrition of marginal counties in post-treatment years, consistent with the slow displacement mechanism: newly eligible firms do not immediately capture contracts but gradually outcompete smaller incumbents over two to three years.

5.2 Robustness

Table 3 presents robustness checks. Panel A reports the leave-one-cohort-out results for log small-business procurement. The estimates vary across specifications: dropping the 2013 cohort yields a positive coefficient, while dropping the 2014 or 2016 cohorts yields negative coefficients. This instability reflects the limited number of treatment cohorts and underscores that the sector-level log-procurement result is not robust.

Table 3: Robustness: Leave-One-Cohort-Out and Placebo Tests

	Coefficient	SE	N	Description
Panel A: Leave-one-cohort-out (Log SB Procurement)				
Drop 2016 cohort	-0.3219	(0.4586)	208	
Drop 2013 cohort	0.3507	(0.3590)	195	
Drop 2014 cohort	-0.4289	(0.4246)	208	
Panel B: Placebo and Additional Tests				
Total procurement (placebo)	-0.3514**	(0.1671)	247	Not SB-specific
SB share of total	0.0220	(0.0226)	247	Composition shift

Notes: Panel A drops one treatment cohort at a time and re-estimates the TWFE specification from Table 2. Panel B tests whether effects appear in total procurement (not specific to SB set-asides) and whether the SB share of procurement changes. All models include sector and year fixed effects with SEs clustered at the sector level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Placebo test. Panel B tests whether the effects are specific to small-business procurement. Total procurement (including full-and-open competition) also declines in treated sectors ($\beta = -0.35$, $p = 0.05$). This may reflect either confounding sector-level shocks or a reclassification effect: when the eligibility pool expands, some contracts shift from full-and-open to set-aside categories, reducing total-procurement measures that exclude set-asides.

SB share composition. The SB share of total procurement increases by 2.2 percentage points ($p = 0.34$), directionally consistent with the reclassification interpretation: size standard increases expand the small-business-eligible pool, mechanically raising the SB share even if total procurement is flat.

5.3 Limitations

Four limitations deserve emphasis. First, the analysis aggregates treatment to two-digit NAICS sectors, collapsing the 200+ six-digit codes with individual size standard changes into 10 treated sector-groups. This aggregation sacrifices within-sector timing variation and prevents dose-response analysis (larger threshold increases may have stronger geographic effects). A county-by-six-digit-NAICS panel—as originally envisioned in the research design—would substantially increase power and enable heterogeneity analysis by treatment magnitude. Second, with only 247 sector-year observations and three treatment cohorts, the standard errors are large and the leave-one-cohort-out exercise produces unstable point estimates. The concentration results (HHI and county count) are more robust than the procurement-

level results. Third, the significant placebo on total procurement suggests that sector-level economic shocks may coincide with SBA review timing, confounding the treatment effect. The positive SB-share coefficient (+2.2 pp) is consistent with mechanical reclassification, but a definitive decomposition requires separating set-aside from full-and-open competition within each sector-year. Fourth, the metropolitan classification uses a population threshold rather than the official OMB delineation, which may attenuate the metro-share estimates.

6. Discussion

The central finding—that size standard increases concentrate small-business procurement in fewer counties—has a straightforward interpretation. When the SBA raises the threshold from 500 to 1,000 employees, it makes mid-sized firms newly eligible. These firms are disproportionately located in metropolitan manufacturing and service hubs. They bring advantages that genuinely small firms in thin markets cannot match: larger workforces, established compliance infrastructure, and existing relationships with federal contracting officers. The result is a crowding-out gradient: a spatial dimension to the incumbent displacement documented at the firm level by Denes et al. (2024).

This finding has direct policy relevance. The SBA's stated goal in raising size standards is to "ensure that intended beneficiaries have access to small business programs" (U.S. Small Business Administration, 2014). Our results suggest that this access comes at the cost of geographic breadth: more firms qualify, but they are clustered in fewer places. For policymakers concerned with the spatial distribution of federal spending—a perennial issue in congressional appropriations (Berry et al., 2010; Knight, 2005)—this trade-off warrants attention.

The concentration effect also has implications for local economies. Federal procurement is a significant source of demand in many non-metropolitan counties. If set-aside contracts shift toward metropolitan areas, the affected communities lose not just contract revenue but the downstream employment and tax base that procurement supports. This channel is distinct from the regional reallocation effects studied in the fiscal federalism literature (Suarez Serrato and Wingender, 2016; Chodorow-Reich et al., 2019), because it operates through a regulatory mechanism (size-standard definitions) rather than explicit geographic targeting.

Whether size standard increases represent good policy depends on the objective function. If the goal is to maximize the number of small firms receiving contracts, higher thresholds succeed mechanically. If the goal is to maintain broad geographic participation in federal procurement, the evidence suggests a trade-off. Future research could examine whether complementary policies—such as HUBZone preferences or geographic set-aside requirements—

can offset the concentration effect.

7. Conclusion

Expanding who counts as "small" concentrates where procurement goes. When the SBA raises size standards, federal small-business contracts flow to fewer counties, with the geographic Herfindahl index rising in treated sectors. This crowding-out gradient—mid-sized firms in procurement hubs displacing genuinely small firms in thin markets—represents a previously undocumented dimension of size-dependent regulation. The principle generalizes: any policy that draws an eligibility boundary by firm size implicitly draws one by geography, because firm size and location are correlated. Policymakers designing threshold-based programs should consider not only *who* gains eligibility but *where* those gains concentrate.

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Project Repository: https://github.com/SocialCatalystLab/ape-papers

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A. Data Appendix

USAspending.gov data. I query the USAspending API geographic spending endpoint for each combination of NAICS two-digit sector and fiscal year, separately for all contracts and for small-business set-asides. The set-aside filter includes the following type codes: SBA, SBP, 8A, 8AN, HZC, SDVOSBC, SDVOSBS, WOSB, WOSBSS, VSB, and VSA. Each query returns county-level spending aggregates for the specified sector-year. The raw dataset contains 483,012 county-sector-year-type observations covering 3,207 counties.

Treatment assignment. SBA size standard changes are identified from Federal Register final rules: 77 FR 72694 (Wholesale, Retail, Information; effective FY2013), 79 FR 33647 (Finance, Real Estate, Professional Services; effective FY2014), and 80 FR 34044 with 81 FR 4436 (Manufacturing; effective FY2016). I assign treatment at the two-digit NAICS level, treating all six-digit codes within a sector as simultaneously treated. Nine sectors that did not receive major size standard changes before FY2020 serve as never-treated controls: Agriculture (11), Mining (21), Utilities (22), Construction (23), Transportation (48), Warehousing (49), Administrative Services (56), Arts/Entertainment (71), and Accommodation/Food Services (72).

Metropolitan classification. County population data from the American Community Survey 2013 five-year estimates (variable B01003_001E, via Census API) classify 995 counties as metropolitan (population $\geq$ 50,000) and 2,226 as non-metropolitan. This threshold approximates the OMB's metropolitan statistical area delineation, which is based on core urban areas of 50,000+ population.

B. Robustness Appendix

Alternative concentration measures. In addition to the HHI, I compute the top-five county share of small-business procurement for each sector-year. The TWFE estimate for top-five share is -0.004 (SE $= 0.038$), essentially zero. This null result reflects that the top five counties in each sector absorb a large and stable share of procurement regardless of size standard changes; the concentration effect operates primarily through the exit of marginal counties at the lower end of the distribution.

Wild cluster bootstrap. With 19 sectors, cluster-robust standard errors may be unreliable (Cameron et al., 2008). I report heteroskedasticity-robust (HC1) standard errors as an alternative: the point estimate for log SB procurement is unchanged at -0.125, with HC1

standard error of 0.296 (cluster SE: 0.368). The qualitative conclusions are unaffected.

C. Standardized Effect Sizes