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Variation in Generic Dispensing Rates in Medicare Part D

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Abstract

OBJECTIVES: The use of generics in Medicare Part D generates cost savings for plan sponsors, beneficiaries, and the federal government. However, there is considerable variation in generic use across plans, even within a therapeutic class. Our objective is to understand the extent of variation in generic use in Part D and to understand factors associated with generic use.

STUDY DESIGN: We used an observational study design using Medicare Part D claims from 2006 to 2016.

METHODS: We used descriptive statistics and regression analysis to examine the variation in generic and brand use across plans and the extent to which patient, plan, and area characteristics are associated with the choice of medication within a therapeutic class.

RESULTS: Although generic use has increased markedly over time in Part D, substantial variation across plans persists in a number of common therapeutic classes. Beneficiary characteristics such as gender and health status are associated with higher/lower generic use, as are plan characteristics such as plan type (stand-alone prescription drug plan or Medicare Advantage), premium, and parent company.

CONCLUSIONS: Because we cannot study the impact of brand-name drug rebates on generic use, we can study the variation in generic use across Part D plans as an indirect way to assess pharmacy benefit manager and plan incentives. We find circumstantial evidence that, in certain classes, rebates may play a role in influencing brand over generic use, although the exact relationship is unknowable given the proprietary nature of rebates.

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The growing gap between a drug's list (or "prerebate") price and what manufacturers actually receive after discounts or rebates (the net price) is at the center of an increasingly public debate over rising drug costs.¹ Pharmacy benefit managers (PBMs) typically negotiate rebates or discounts from drug manufacturers on behalf of plan sponsors ("plans") in return for preferred formulary placement. For example, off-patent brands such as Lipitor (atorvastatin), Nexium (esomeprazole), and Neurontin/Lyrica (pregabalin) remained top-selling medications in Medicare Part D despite widely available generic versions or over-the-counter substitutes.² A possible explanation for this is that PBMs or plans may place higher-cost drugs on lower cost-sharing tiers to increase the volume used of the drugs in exchange for larger rebates.^{3,4} Lower cost sharing for enrollees (involving lower co-payments or coinsurance, for instance) increases utilization.⁵⁻⁸ Favoring high-cost brands over lower-cost generics may reflect strategic behavior by plans or their sponsors (PBMs) to steer enrollees to heavily rebated drugs.

Medicare Part D is the federal prescription drug program for the disabled and those 65 years and older. Part D plans must use a pharmacy and therapeutics committee to establish formularies.⁹ Plans must cover at least 2 drugs in each class and must cover substantially all drugs in 6 protected classes (antidepressants, anti-psychotics, anticonvulsants, immunosuppressants for transplants, antiretrovirals, and antineoplastics).⁹ The standard Part D benefit includes a deductible, an initial coverage limit, a coverage gap, and a catastrophic phase that beneficiaries enter when they have spent \$6350 in out-of-pocket costs in 2020. In each benefit phase, the extent of cost liability shifts among the plans, manufacturers, beneficiaries, and the federal government.¹⁰

Although Part D plans are required to report rebates and other discounts to CMS, recent analyses find greater use of high-list price, high-rebate drugs in Part D than in commercial markets.^{4,11,12} This raises concerns that several structural features of Part D may increase plans' incentives to encourage costly, high-rebate drugs. A majority of drugs in stand-alone plans (but not Medicare Advantage plans with drug coverage) now require coinsurance rather than a co-payment¹³; in this situation, high prerebate prices increase the beneficiary's out-of-pocket cost, moving beneficiaries into the catastrophic phase of the benefit sooner—the fastest growing portion of the program's cost.^{10,14} Once a beneficiary reaches the catastrophic phase, plan liability is low and federal liability is high: The federal government pays 80% of the drug costs on average, the plan pays 15%, and nonsubsidized beneficiaries pay 5% of the prerebate price.¹⁰

Additionally, the Affordable Care Act and the Balanced Budget Amendment of 2018 restructured the Part D benefit to reduce beneficiary cost sharing in the coverage gap.^{15,16} The primary change required manufacturers to provide discounts on brand drugs purchased in the coverage gap, with the discount reaching 70% of the prerebate price in 2019. The manufacturer discount counts toward beneficiaries' out-of-pocket spending, which also pushed more beneficiaries into the catastrophic phase where plan liability is low.¹⁷

Because rebates are proprietary, we cannot directly assess their impact on plans' formulary design and medication use. (CMS requires plans to submit information on Direct and Indirect Remuneration in order to reconcile expenditures at the end of the year. However,

this information is proprietary and is not available to researchers.) Rather, we assess this indirectly by examining the extent of variation in generic use across Part D plans. We use Medicare Part D data from 2006 to 2016 to examine differences in brand and generic drug use within a therapeutic class and the extent to which beneficiary, plan, and area characteristics explain the variation.

METHODS

Data

We used Part D Prescription Drug Event (PDE) data from January 2006 through December 2016 for a 20% random sample of Medicare beneficiaries enrolled in Part D. Part D plans are sold either as stand-alone prescription drug plans (PDPs) or in conjunction with a Medicare Advantage plan that also includes medical benefits (MAPD). The PDE data capture drug name, National Drug Code (NDC), dosage, quantity, date of service, and payments made by the beneficiary, plan, and other third-party coverage. We aggregated individual NDCs into therapeutic classes based on First Databank (FDB) definitions, focusing on the 10 most commonly used classes in Part D: antiasthmatics, antihistamines, antidiabetics, antineoplastics, anticoagulants, antihypertensives, antihyperlipidemics, anticonvulsants, antidepressants, and antiulcerants. Antineoplastics, anticonvulsants, and antidepressants are 3 of the 6 protected classes. We linked the PDE data to the plan characteristics file, which contains detailed information on each plan's formulary and benefit design at the NDC level. This information was then linked to plan formulary files containing additional information on whether a given plan requires prior authorization or step therapy for a specific drug.

Formulary Design

Most Part D plans use tiered formularies to steer beneficiaries to preferred medications. In 2015, the vast majority of Part D enrollees were in plans that used 5 cost-sharing tiers: preferred and nonpreferred tiers for generic drugs, preferred and nonpreferred tiers for brand drugs, and a tier for high-cost specialty drugs, with average co-payments of \$1, \$4, \$38, and \$80 for the first 4 tiers, respectively, and coinsurance of 29% in the specialty tier.¹⁸ Plans may also combine formularies with other rules—such as step therapy and prior authorization—to manage beneficiaries' use of prescription drugs. Restrictive formularies that list fewer drugs in each therapeutic class will generate higher rebates because plans can drive volume toward these drugs.

We relied on FDB definitions to classify drugs as either single-source brand, multisource brand, or generic. Multisource brands have generic equivalents with the same active ingredient(s), and almost all prescriptions for multisource brand drugs are dispensed as generics.¹⁹ Single-source brands have no generic substitutes, so prescriptions written for single-source drugs limit Part D plans' opportunities for generic substitution.

Multivariate Analyses

Our key outcome is the generic dispensing rate (GDR), defined as the percentage of generic fills of all fills in a therapeutic class per year, weighted by the days supplied. We

additionally examined the rate of single-source drug use within a class, which is the inverse of the generic utilization rate minus the multisource use rate. We did not use the generic substitution rate because this is typically 95% or higher. Therapeutic substitution is where a generic is substituted for a brand of a different molecule. The appropriateness of therapeutic substitution is complex and beyond the scope of this paper.

We regressed a set of beneficiary and plan characteristics in a logit model to assess the odds that a given fill was for a generic drug, within a therapeutic class. The unit of analysis is the PDE (or claim). We adjusted for several beneficiary characteristics that come from the Master Beneficiary Summary and Enrollment files, including age, gender, race/ethnicity, and beneficiary status (dual eligible, low-income subsidy [LIS], non-LIS). We used the number of different drug classes that a beneficiary took in a year as a proxy for health status.¹⁴

We included several plan characteristics such as each plan's monthly premium and whether it provides some coverage in the coverage gap (also known as the "donut hole"). Managed plans tend to have more control over physician prescribing behavior and typically make greater use of utilization management tools, so we include a binary indicator for MAPDs. Given that 3 firms—UnitedHealth, Humana, and CVS Health—account for more than half of all Part D enrollees and the 10 largest sponsors account for nearly 90% of enrollment, we include binary indicators for each of the 10 largest plan sponsors to assess variation in generic use across parent companies.²⁰ Finally, we included state, year, and drug class fixed-effects to control for any unmeasured differences in generic use across states, years, or drug classes. We used Stata/MP 14.1 (StataCorp) for all analyses. Significance levels were determined using clustered standard errors at the plan level.

Our primary regression analyses report the years 2010-2016 because in those years the indicator about whether the fill required prior authorization was available. We provide the results for the full set of years (2006-2016) without the utilization management indicator in the eAppendix Table (eAppendix available at ajmc.com).

RESULTS

Following trends in the commercial market, the GDR in Part D reached 90% for MAPDs and 88% for PDPs in 2016 across all drug classes, up from 63% and 53%, respectively, in 2006 (Figure 1). Generic use remained higher in MAPDs compared with stand-alone PDPs, but the difference narrowed over time.

Figure 2 shows the distribution of GDRs in 2016 at the plan-class level for the 10 classes we examined in detail, separately for PDPs and MAPDs. The ends of the boxes show the interquartile range of GDRs (25th and 75th percentiles), and the whiskers represent the 10th and 90th percentiles of plans. The variation in generic use across drug classes is largely due to different product cycles. Classes such as antiasthmatics were brand dominant in 2016, with average generic dispensing rates of 20% to 25%. Plan-level variation in generic use tends to be lower in generic-dominant classes, such as antidepressants, and higher in classes with over-the-counter substitutes, such as antihistamines and antidiabetics.

More importantly, Figure 2 highlights variation in generic use *within* a therapeutic class. For example, in the treatment of type 2 diabetes, 10% of PDPs have GDRs of 50% or less, whereas 1 in 10 plans have GDRs higher than 70%. Given that each plan faces the same set of treatment options, large differences in generic use within a class may be due in part to nonclinical factors, such as coverage generosity, formulary restrictions, or differential strategies to favor high-rebate drugs. Not all plans cover the exact same mix of drugs in each class; however, there are 3 protected classes (antidepressants, anticonvulsants, and antineoplastics) shown in Figure 2 for which plans must cover substantially all of the active ingredients in the class, and there is still variation in generic use for these classes.

To better understand how plans differed in their generic use, the Table shows class-level market shares within selected classes among Part D plans in the top and bottom quartiles of generic dispensing in 2016. In each of the 4 classes, plans in the bottom quartile of GDR have higher use of a brand drug relative to the top-quartile GDR plans. For example, esomeprazole (Nexium) was the third most widely used antiulcerant in low GDR plans, with an average market share of 12.7%, but it was rarely filled in the highest GDR plans.

Another possible explanation for these differences is that some plans favor highly rebated drugs over lower-cost alternatives by placing them on a lower tier with lower patient cost sharing to encourage use. Although we cannot infer causality, we observe this pattern occurring in some classes. The Table includes a column for the most common tier placement for the highest utilized single-source drugs among plans in the bottom quartile of the distribution of GDR. Esomeprazole was often not covered in the highest GDR plans; most low GDR plans considered it a “preferred brand” (tier 3).

Thus far, our results have been descriptive and have not controlled for a range of beneficiary, plan, provider, and area characteristics that can also affect medication choices, ranging from health status to perceptions that generics are less effective.^{21,22} Figure 3 displays the odds ratios of filling a generic prescription from class-level regressions that control for patient, plan, and area characteristics. Dual-eligible beneficiaries and those receiving the LIS were 24% and 28%, respectively, less likely to receive a generic compared with nonsubsidized beneficiaries, conditional on receiving a drug in the class.

Plan-level factors also affect the mix of brand and generic drugs. Beneficiaries enrolled in plans with higher premiums were less likely to fill a generic drug, presumably because coverage of brand drugs was more generous in higher-premium plans. Those enrolled in stand-alone PDPs were 10% less likely to fill a generic prescription than similar beneficiaries in MAPDs.

As we noted earlier, the Part D market is highly concentrated,²⁰ and some of these plans also operate PBMs. We hypothesized that market concentration and other organizational features may play roles in influencing generic usage. Accordingly, we found that beneficiaries in Kaiser Permanente, a tightly managed staff model health maintenance organization, were 49% more likely to fill a generic than beneficiaries in other plans, and all of Kaiser’s plans are MAPD. They were followed closely by WellCare, a large insurer predominantly operating in government markets (Medicaid, Medicare Advantage, and Part D). On the other

end, GDRs were lowest in plans operating as both PBMs and Part D plans (Express Scripts, CVS Caremark, and UnitedHealth). Beneficiaries in UnitedHealth and CVS plans were 19% and 20%, respectively, less likely to fill generics than other beneficiaries.

Beyond beneficiary and plan characteristics, prior work has shown that Medicare spending on pharmaceuticals varies widely across areas of the country such as hospital referral regions, even after adjustment for demographic characteristics, insurance coverage, and individual health status.²³ Across the country, average GDRs across the 10 classes range from 0.83 to 0.88 (eAppendix Figure). The states with the lowest and highest predicted GDR are New Jersey and Massachusetts, respectively.

DISCUSSION

Despite high overall use of generic drugs in Part D, generic utilization rates within a therapeutic class vary across plans. Some of the variation is due to the mix of beneficiaries enrolled in a plan. Dual-eligible beneficiaries and those receiving the LIS face little or no cost sharing and thus are less price sensitive to high-cost drugs. Plan features also matter. Generic dispensing rates are higher in MAPDs compared with PDPs, although the gap is narrowing over time. Generic rates are lower in plans with higher premiums that typically have lower cost sharing.

Nonetheless, significant variation persists after controlling for beneficiary and plan characteristics, raising concerns that the program's design and institutional features may incentivize plans to favor high-list price, high-rebate drugs over lower-cost alternatives. A widely cited example of this is esomeprazole (Nexium), which accounted for the most spending in Medicare Part D in 2013 at \$2.5 billion, despite widespread availability of close therapeutic substitutes and over-the-counter antiulcerants.²⁴ Even after the drug lost patent protection in 2014, we still found that plans in the lowest quartile of GDR still had fills for the brand-name version.

In a competitive market, why would Part D plans favor a higher-cost drug? One possible explanation is the growth in rebates.²⁵ Rebates are most common for high-cost brand drugs in competitive therapeutic classes, where there are multiple choices of similar products. Within Medicare Part D, rebates have more than doubled as a share of total spending since the program's inception, from 9.6% in 2007 to 21.8% in 2017.²⁶ Previous work found that 70% of Part D plans place at least 1 brand drug on a lower tier when a generic version is available, which is often cited as evidence of increasing rebates in return for more favorable tier placement to increase volume.¹¹ Other work has found that a slight majority of generic drugs (53%) are placed on nongeneric tiers.²⁷ More recent work found that by 2019, plans generally covered the generic version of a drug instead of the brand, when both were available.²⁸ Besides more recent data, these findings may differ from those of prior work because the authors analyzed a small number of active ingredients and excluded brand drugs that did not have an exact generic equivalent in terms of form and dose.

While rebates lower plans' overall costs, the tier placement also affects beneficiary liability, which in turn affects plan spending in Part D. A majority of drugs in PDPs (but not in

MAPDs) now require coinsurance rather than a co-payment.¹³ Coinsurance on drugs with a higher preredbate price means that beneficiaries hit the catastrophic phase sooner, increasing costs to both beneficiaries and the federal government, but decreasing plan liability.^{12,29}

Consolidation at the parent level may allow the largest insurers to negotiate better discounts with manufacturers, but the potential for rebates to drive utilization becomes greater.^{3,30} We found lower generic utilization among firms operating as both a PBM and drug plan, specifically UnitedHealth, CVS, and Express Scripts. The Part D marketplace is dynamic and continues to undergo consolidation. In recent years, several large mergers have been completed or proposed between CVS Health and Aetna,³¹ Express Scripts and Cigna,³² and Centene and WellCare.³³ Although Anthem and WellPoint merged in 2004, WellPoint did not begin using the Anthem brand name until 2014.³⁴ Torchmark sold its Part D plans to SilverScript, a subsidiary of CVS, in 2016.³⁵ Increased consolidation and vertical integration in Part D may restrict competition and raise total program costs.

Stand-alone PDPs manage prescription drug coverage only, whereas MAPD plans are at risk for both medical and drug expenditures. Recent work suggests that MAPDs provide more generous coverage of drugs that reduce downstream medical costs (including generic maintenance drugs), which is consistent with our findings of modestly higher generic dispensing rates in MAPDs.^{36,37}

2016 is the most recent year of claims data available to us, meaning more recent changes in generic use are not reflected here. Some drugs may be more effective or have fewer adverse effects than other medications in the class, at least for some patients, and physicians may have different experiences that affect their prescribing behavior. These unmeasured factors could bias our results if they differ systematically across plans, but there is no evidence to suggest that it is a concern.

Despite some widely publicized examples of excess profiteering in generic markets, new medicines will continue to drive drug spending. However, there are still opportunities for significant cost savings from generics, given the variation in GDR we found. One option is for CMS to prohibit Part D plans from giving branded products more favorable formulary placement than generic products. Another option would be the Trump administration's proposal to apply rebates at the point of sale that was abandoned last year.^{1,38} One potential impact of that policy would be to reduce the incentive to place branded drugs on lower cost-sharing tiers, thus increasing generic use rates.

CONCLUSIONS

Variation in generic use has real consequences for plans, beneficiaries, and taxpayers. We find that overall generic utilization is increasing in Part D, but variation across plans within a class persists. Beneficiary and plan characteristics, state, and parent organization are all factors contributing to differences in GDR within a therapeutic class. We find evidence that rebates may be playing a role in discouraging generic use in particular therapeutic classes, but there is no public information on the extent of these rebates. Focusing on changing the

underlying benefit design to reduce incentives to use high-cost drugs or encouraging the use of more tightly managed formularies could increase generic use.

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eAppendix

eAppendix Table.

Full Regression Results

Variables	2010-2016, With PA Indicator	2006-2016
Age, odds ratio	0.9788***	0.9877***
[95% confidence interval]	[0.977 - 0.980]	[0.986 - 0.989]
Age, squared	1.0002***	1.0001***
	[1.000 - 1.000]	[1.000 - 1.000]
Female	0.9312***	0.9077***
	[0.926 - 0.936]	[0.904 - 0.912]
White	0.9763***	0.9878**
	[0.966 - 0.987]	[0.977 - 0.999]
Dual	0.7652***	0.8049***
	[0.748 - 0.782]	[0.790 - 0.820]
LIS	0.7245***	0.7610***
	[0.715 - 0.735]	[0.752 - 0.770]
AK	1.0940	1.1083*
	[0.976 - 1.227]	[0.998 - 1.230]
AL	1.1923***	1.1850***
	[1.093 - 1.301]	[1.087 - 1.292]
AR	1.1709***	1.1470***
	[1.074 - 1.277]	[1.059 - 1.242]
AZ	1.2311***	1.3003***
	[1.114 - 1.361]	[1.175 - 1.438]
CA	ref	ref
CO	1.1531***	1.2047***
	[1.063 - 1.251]	[1.115 - 1.302]
CT	0.9155*	0.9192*
	[0.832 - 1.007]	[0.842 - 1.004]
DC	0.9981	1.0071
	[0.898 - 1.109]	[0.916 - 1.108]
DE	0.9843	0.9881

Variables	2010-2016, With PA Indicator	2006-2016
	[0.900 - 1.076]	[0.909 - 1.074]
FL	1.0547	1.0647
	[0.953 - 1.167]	[0.961 - 1.179]
GA	1.0943**	1.1001**
	[1.006 - 1.190]	[1.014 - 1.194]
HI	1.0508	1.0070
	[0.955 - 1.156]	[0.906 - 1.120]
IA	1.3007***	1.2859***
	[1.196 - 1.415]	[1.183 - 1.398]
ID	1.2713***	1.1906***
	[1.164 - 1.389]	[1.092 - 1.298]
IL	1.1945***	1.2133***
	[1.098 - 1.300]	[1.120 - 1.315]
IN	1.0916**	1.1026**
	[1.000 - 1.191]	[1.015 - 1.198]
KS	1.1723***	1.1638***
	[1.070 - 1.284]	[1.065 - 1.272]
KY	1.2156***	1.2365***
	[1.114 - 1.326]	[1.139 - 1.342]
LA	0.9239*	0.9301*
	[0.843 - 1.012]	[0.855 - 1.012]
MA	1.5184***	1.4806***
	[1.386 - 1.663]	[1.363 - 1.608]
MD	1.0506	1.0345
	[0.962 - 1.148]	[0.952 - 1.124]
ME	1.1116*	1.1858***
	[0.996 - 1.240]	[1.066 - 1.319]
MI	1.2936***	1.3062***
	[1.189 - 1.408]	[1.206 - 1.415]
MN	1.3148***	1.2678***
	[1.211 - 1.427]	[1.166 - 1.379]
MO	1.1864***	1.2374***
	[1.089 - 1.293]	[1.143 - 1.339]
MS	1.0966**	1.1112**
	[1.006 - 1.195]	[1.024 - 1.206]
MT	1.2022***	1.2105***
	[1.101 - 1.313]	[1.117 - 1.311]
NC	1.0917**	1.0790*

Variables	2010-2016, With PA Indicator	2006-2016
	[1.001 - 1.190]	[0.994 - 1.171]
ND	1.1200**	1.1640***
	[1.010 - 1.242]	[1.054 - 1.286]
NE	1.1796***	1.1616***
	[1.084 - 1.283]	[1.071 - 1.260]
NH	1.1711***	1.1955***
	[1.077 - 1.273]	[1.104 - 1.294]
NJ	0.8555***	0.8195***
	[0.778 - 0.941]	[0.754 - 0.890]
NM	1.2885***	1.3304***
	[1.181 - 1.405]	[1.228 - 1.442]
NV	1.3159***	1.3450***
	[1.157 - 1.496]	[1.192 - 1.517]
NY	0.8671***	0.8727***
	[0.791 - 0.950]	[0.802 - 0.949]
OH	1.1358***	1.1344***
	[1.048 - 1.231]	[1.051 - 1.225]
OK	1.1366***	1.1382***
	[1.044 - 1.237]	[1.051 - 1.233]
OR	1.3582***	1.3097***
	[1.248 - 1.479]	[1.208 - 1.419]
PA	1.1090**	1.0967**
	[1.013 - 1.214]	[1.013 - 1.187]
RI	1.3962***	1.3338***
	[1.284 - 1.519]	[1.233 - 1.443]
SC	0.9987	1.0016
	[0.918 - 1.086]	[0.924 - 1.085]
SD	1.2018***	1.1988***
	[1.085 - 1.331]	[1.095 - 1.312]
TN	1.2033***	1.2365***
	[1.109 - 1.306]	[1.139 - 1.343]
TX	0.9221*	0.9427
	[0.848 - 1.003]	[0.870 - 1.021]
UT	1.1914***	1.1597***
	[1.098 - 1.293]	[1.075 - 1.252]
VA	1.1508***	1.1763***
	[1.060 - 1.249]	[1.088 - 1.272]
VT	1.2500***	1.2196***

Variables	2010-2016, With PA Indicator	2006-2016
	[1.143 - 1.367]	[1.119 - 1.329]
WA	1.3617***	1.3548***
	[1.249 - 1.485]	[1.249 - 1.469]
WI	1.3193***	1.3138***
	[1.212 - 1.436]	[1.213 - 1.423]
WV	1.0765	1.0990**
	[0.985 - 1.177]	[1.010 - 1.196]
WY	1.1502***	1.1738***
	[1.052 - 1.258]	[1.084 - 1.271]
Enrollment over 1000	0.9794**	0.9947
	[0.963 - 0.997]	[0.978 - 1.012]
Premium <\$20	ref	ref
Premium 21-30	0.8743***	0.9161***
	[0.851 - 0.898]	[0.893 - 0.940]
Premium 31-40	0.8423***	0.8764***
	[0.817 - 0.868]	[0.852 - 0.902]
Premium >40	0.7637***	0.8271***
	[0.736 - 0.793]	[0.799 - 0.856]
Prescription Drug Plan	0.9028***	0.8278***
	[0.879 - 0.927]	[0.805 - 0.851]
Gap coverage, Tier 1		
Gap coverage, Tier 2		
Humana	1.0213	0.9138***
	[0.990 - 1.054]	[0.882 - 0.947]
UnitedHealth	0.8083***	0.8189***
	[0.776 - 0.842]	[0.791 - 0.848]
Aetna	1.0118	1.0104
	[0.979 - 1.046]	[0.979 - 1.043]
Cigna	0.9944	0.9972
	[0.961 - 1.029]	[0.967 - 1.029]
Express Scripts	0.8963***	0.9224***
	[0.860 - 0.935]	[0.884 - 0.963]
CVS	0.7989***	0.8355***
	[0.766 - 0.833]	[0.804 - 0.868]
Kaiser	1.4865***	1.7779***

Variables	2010-2016, With PA Indicator	2006-2016
	[1.379 - 1.603]	[1.640 - 1.928]
Wellcare	1.4373***	1.5413***
	[1.354 - 1.526]	[1.459 - 1.628]
BCBS	0.8946***	0.8843***
	[0.860 - 0.930]	[0.856 - 0.914]
Torchmark	0.9855	0.9417*
	[0.913 - 1.064]	[0.878 - 1.010]
	0.9937	0.9553*
	[0.945 - 1.045]	[0.912 - 1.001]
	1.0867***	1.1030***
	[1.031 - 1.146]	[1.057 - 1.151]
2006		ref
2007		1.1631***
		[1.144 - 1.183]
2008		1.4624***
		[1.435 - 1.490]
2009		1.7467***
		[1.706 - 1.788]
2010	ref	2.0887***
		[2.034 - 2.144]
2011	1.1554***	2.3957***
	[1.136 - 1.175]	[2.330 - 2.463]
2012	1.7053***	3.4569***
	[1.671 - 1.740]	[3.362 - 3.555]
2013	2.3819***	4.7627***
	[2.331 - 2.433]	[4.633 - 4.896]
2014	2.8364***	5.5471***
	[2.766 - 2.909]	[5.379 - 5.720]
2015	2.9249***	5.7465***
	[2.852 - 2.999]	[5.577 - 5.921]
2016	3.0763***	6.0167***
	[2.993 - 3.162]	[5.829 - 6.211]
Antiasthmatics	ref	ref
Anticoagulants	10.0907***	7.8616***
	[9.727 - 10.468]	[7.587 - 8.146]
Anticonvulsants	38.9079***	22.3234***

Variables	2010-2016, With PA Indicator	2006-2016
	[37.057 - 40.851]	[21.391 - 23.296]
Antidepressants	52.3194***	31.4851***
	[49.873 - 54.885]	[30.074 - 32.963]
Antidiabetics	6.7630***	6.9367***
	[6.442 - 7.100]	[6.670 - 7.214]
Antihistamines	30.7850***	29.4752***
	[26.181 - 36.198]	[26.713 - 32.523]
Antihyperlipidemics	18.4121***	11.2013***
	[17.416 - 19.465]	[10.660 - 11.770]
Antihypertensives	36.9467***	22.7337***
	[34.540 - 39.521]	[21.590 - 23.938]
Antineoplastics	24.8821***	16.2906***
	[23.646 - 26.183]	[15.626 - 16.983]
Antiulcerants	28.1585***	17.2592***
	[25.563 - 31.018]	[16.115 - 18.484]
Number of classes beneficiary is taking (1-3)	ref	ref
Number of classes (4-5)	1.0386***	1.0484***
	[1.032 - 1.046]	[1.043 - 1.054]
Number of classes (6-7)	0.9916	1.0178***
	[0.981 - 1.002]	[1.009 - 1.026]
Number of classes (7+)	0.8562***	0.9003***
	[0.841 - 0.871]	[0.888 - 0.913]
Percent of drugs with Prior Authorization/Step Therapy	0.8771**	
	[0.787 - 0.977]	
Constant	0.3079***	0.1399***
	[0.276 - 0.343]	[0.128 - 0.153]
Observations	34,832,682	50,761,797

eAppendix Figure.
Predicted Generic Dispensing Ratio by State, 2016

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TAKEAWAY POINTS

Generic use has increased markedly over time in Medicare Part D, but substantial variation across plans persists in a number of common therapeutic classes.

- Beneficiary and plan characteristics are associated with generic use.
- We find circumstantial evidence that, in certain classes, rebates may play a role in influencing brand over generic use, although the exact relationship is unknowable given the proprietary nature of rebates.
- Changing Part D's underlying benefit design to reduce incentives to use high-cost drugs or encouraging the use of more tightly managed formularies could increase generic use.

FIGURE 1. Generic, MS, and SS Dispensing Rates by Plan Type (MAPD and PDP), 2006-2016^a
 GDR, generic dispensing rate; MA, Medicare Advantage; MAPD, Medicare Advantage prescription drug plan; MS, multisource; PDP, stand-alone prescription drug plan; SS, single-source.

^aFigure 1 shows the percentage of fills on average across all Part D plans that are generic, SS, or MS, separately for MAPDs and PDPs. Although overall generic prescribing is high, PDPs use more SS and MS brand drugs than MAPDs.

FIGURE 2. Class Specific GDR Distribution by MAPD and PDP, 2016^a

GDR, generic dispensing rate; MAPD, Medicare Advantage prescription drug plan; PDP, stand-alone prescription drug plan.

^aData in Figure 2 exclude plans with fewer than 200 enrollees and show the variation in GDRs for each of 10 drug classes. The ends of the bars represent the 25th and 75th percentiles of the distribution, while the whiskers represent the 10th and 90th percentiles. The dark blue bars show the GDR for MAPDs and the light blue bars for PDPs.

FIGURE 3. Selected Regression Results, Odds of Filling a Generic Prescription in 10 Selected Classes, 2010-2016^a

BCBS, Blue Cross/Blue Shield; LIS, low-income subsidy; PA, prior authorization; PDP, prescription drug plan.

^aThe parent company designations are as of 2016. “BCBS affiliate” includes any parent company selling Blue Cross and/or Blue Shield plans, except Anthem/WellPoint. The bars indicate the selected odds ratios and the whiskers indicate the 95% CI from our regression results. N = 34,832,682 prescription drug events from 2010-2016. The full regression results can be found in the eAppendix Table.

TABLE.

Market Share for Top Active Ingredients, Comparing Plans in the Top and Bottom Quartile of GDR, by Selected Classes, 2016^a

Class	Plans in top quartile of GDR			Plans in bottom quartile of GDR		
	Generic name	Market share (%)	Modal tier for selected SS	Generic name	Market share (%)	Modal tier for selected SS
Antihistamine	Hydroxyzine (G)	37.7		Olopatadine (MS)	35.7	Tier 3
	Promethazine (G)	30.0		Hydroxyzine (G)	20.6	
	Levocetirizine (G)	16.0		Levocetirizine (G)	17.8	
	Olopatadine (MS)	4.6	Not covered	Promethazine (G)	13.4	
	Loratadine (G)	3.6		Azelastine (G)	5.8	
	Cyproheptadine (G)	1.9		Desloratadine	1.4	
Antitumorants	Cetirizine (G)	1.8		Bepotastine ophthalmic (SS)	1.2	
	Omeprazole (G)	50.4		Omeprazole (G)	43.1	
	Pantoprazole (G)	21.8		Pantoprazole (G)	16.1	
	Ranitidine (G)	15.5		Esomeprazole (MS)	12.7	Tier 3
	Famotidine (G)	6.2		Ranitidine (G)	11.8	
	Lansoprazole (G)	2.1		Famotidine (G)	7.4	
Anticonvulsants	Esomeprazole (MS)	1.4	Not covered	Dexlansoprazole (SS)	4.2	
	Gabapentin (G)	50.4		Gabapentin (G)	36.7	
	Clonazepam (G)	20.8		Clonazepam (G)	14.3	
	Levetiracetam (G)	4.9		Pregabalin (SS)	9.4	Tier 3
	Divalproex (G)	4.9		Divalproex (G)	9.1	
	Lamotrigine (G)	4.3		Levetiracetam (G)	6.7	
Antihyperlipidemics	Pregabalin (SS)	3.1	Tier 4	Lamotrigine (G)	5.9	
	Atorvastatin (G)	41.5		Atorvastatin (G)	36.2	
	Simvastatin (G)	30.4		Simvastatin (G)	23.6	
	Pravastatin (G)	11.1		Pravastatin (G)	11.9	
	Lovastatin (G)	6.5		Rosuvastatin (MS)	9.9	Tier 3
	Rosuvastatin (MS)	2.4	Tier 3	Lovastatin (G)	3.6	
	Ezetimibe (SS)	1.2		Ezetimibe (SS)	3.5	

G, generic; GDR, generic dispensing rate; MS, multisource; SS, single-source.

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This table is limited to plans with more than 200 beneficiaries and shows the active ingredients with the highest proportion of prescriptions in plans in the bottom and top quartiles of GDR. We shade table rows for specific MS or SS drugs with high utilization in low GDR plans. For instance, olopatadine is a MS antihistamine that is not commonly filled among plans in the top quartile of GDR, accounting for only 4.6% of the prescriptions filled (including both the brand and generic versions). These plans tend to place this drug in higher tiers (3 is the mode) or not cover it at all. By contrast, the drug accounts for 35.7% of the prescriptions filled among plans in the bottom quartile of GDR.