

Underinsurance and Multiple Surgical Treatments for Kidney Stones

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Background

- Low socioeconomic status (SES) is associated with increased stone burden and stone complexity, resulting in greater incidence of staged, or multiple, procedures^{1,2}
- Multiple stone interventions in an acute period has important implications for patient satisfaction, morbidity, and healthcare costs³
- Limited access to healthcare may be an important driver of disparities in stone burden and surgical outcomes

Objective

- To determine if **underinsurance** (Medicaid, Medicare or Self Pay) is associated with multiple procedures for kidney stones within one year

Methods

- Retrospective analysis of data from the California Department of Health Care Access and Information (HCAI) between 2009-2019
- Included adults with ≥ 1 urologic stone procedure (PCNL, URS, SWL) and followed within dataset for 1 year
- Multivariate logistic regression used to estimate odds of multiple surgeries
- Covariates:** age, race, gender, payer type, initial procedure, prior stent, and Charlson Comorbidity Index (CCI)

Results

Table 1. Cohort Characteristics			
	Subjects with 2 nd surgery	Subjects without 2 nd surgery	P-value
N	24,539	131,580	
Gender			<0.001
Male	13,678 (55.7%)	72,074 (54.8%)	
Female	17,015 (44.3%)	59,506 (45.2%)	
Race			<0.001
White/Non-Hispanic	15,514 (63.2%)	81,254 (61.8%)	
White/Hispanic	2,142 (8.7%)	10,664 (8.1%)	
Asian/Pacific	2,457 (10.0%)	13,785 (10.5%)	
Black/Non-Hispanic	910 (3.7%)	4,475 (3.4%)	
Other	3,516 (14.4%)	21,392 (16.2%)	
Initial surgery			<0.001
SWL	12,769 (52.0%)	33,220 (25.2%)	
URS	10,780 (43.9%)	86,424 (65.7%)	
PCNL	990 (4.0%)	11,936 (9.1%)	
Prior Stent/Neph Tube			
Yes	12,076 (49.2%)		
No	12,463 (50.8%)		
Insurance type			<0.001
Private insurance	15,717 (64.0%)	90,686 (68.9%)	
Medicaid	3,312 (13.5%)	13,976 (10.6%)	
Medicare	4,760 (19.4%)	23,021 (17.5%)	
Self-Pay/Indigent	20 (0.1%)	218 (0.2%)	
Age (mean, sd)	55.9, 15.4	54.9, 15.6	<0.001
CCI (mean, sd)	0.86, 1.51	0.7, 1.4	<0.001

Figure 1. Surgery at first encounter by payer type

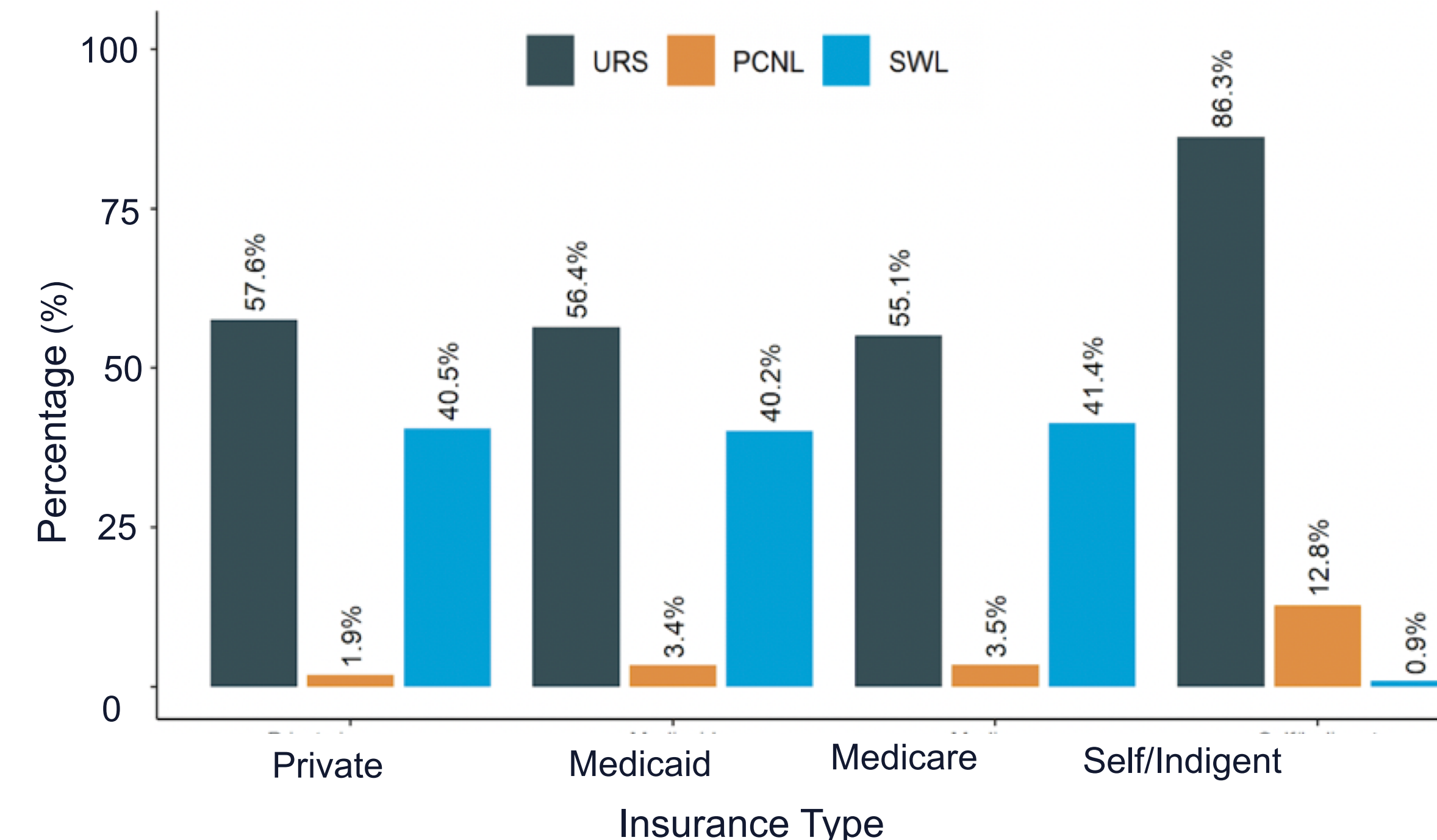


Figure 2. Incidence of multiple surgeries following initial surgery (PCNL)

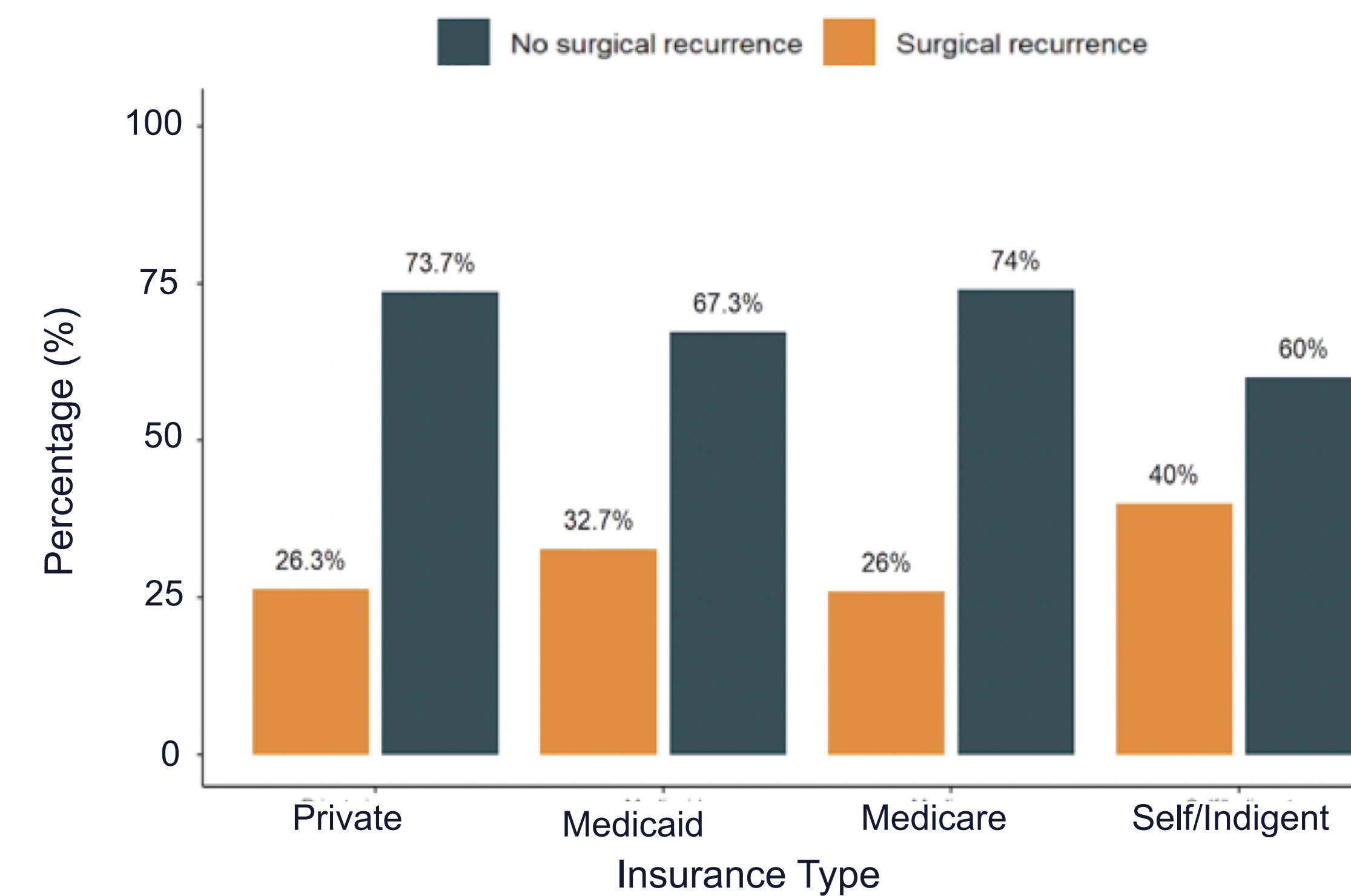


Table 2. Odds ratios for multiple surgeries within 1 year of initial intervention

	OR	95% CI	Adjusted P-value
Initial surgery			
URS	Ref	Ref	Ref
SWL	2.05	1.99, 2.12	<0.001
PCNL	2.59	2.39, 2.79	<0.001
Prior Stent			
No	Ref	Ref	Ref
Yes	1.37	1.33, 1.41	<0.001
Payer			
Private insurance	Ref	Ref	Ref
Medicaid	1.46	1.40, 1.53	<0.001
Medicare	1.15	1.10, 1.20	<0.001
Self-pay/indigent	1.35	1.33, 2.14	1.00
Other	1.19	1.09, 1.29	<0.001
Race			
White/Non-Hispanic	Ref	Ref	Ref
White/Hispanic	1.04	0.99, 1.08	0.35
Asian/Pacific	0.98	0.94, 1.02	0.73
Black/Non-Hispanic	1.14	1.05, 1.23	<0.001
CCI	1.07	1.06, 1.08	<0.001

*Holm method was used to adjust P-values to account for multiple comparisons

Discussion

- Underinsurance was associated with increased odds of multiple surgical procedures for kidney stones after adjusting for all other covariates in a state-wide, California dataset
- Greater barriers in healthcare access may result in more advanced disease requiring staged interventions
- PCNL for initial procedure, Black race, prior stent and higher CCI similarly increased odds for multiple procedures but to a lesser extent
- A main limitation was the inability to differentiate between stone persistence and stone recurrence
- This study adds to the expanding body of literature linking SES and disparate outcomes for individuals with kidney stones

References

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