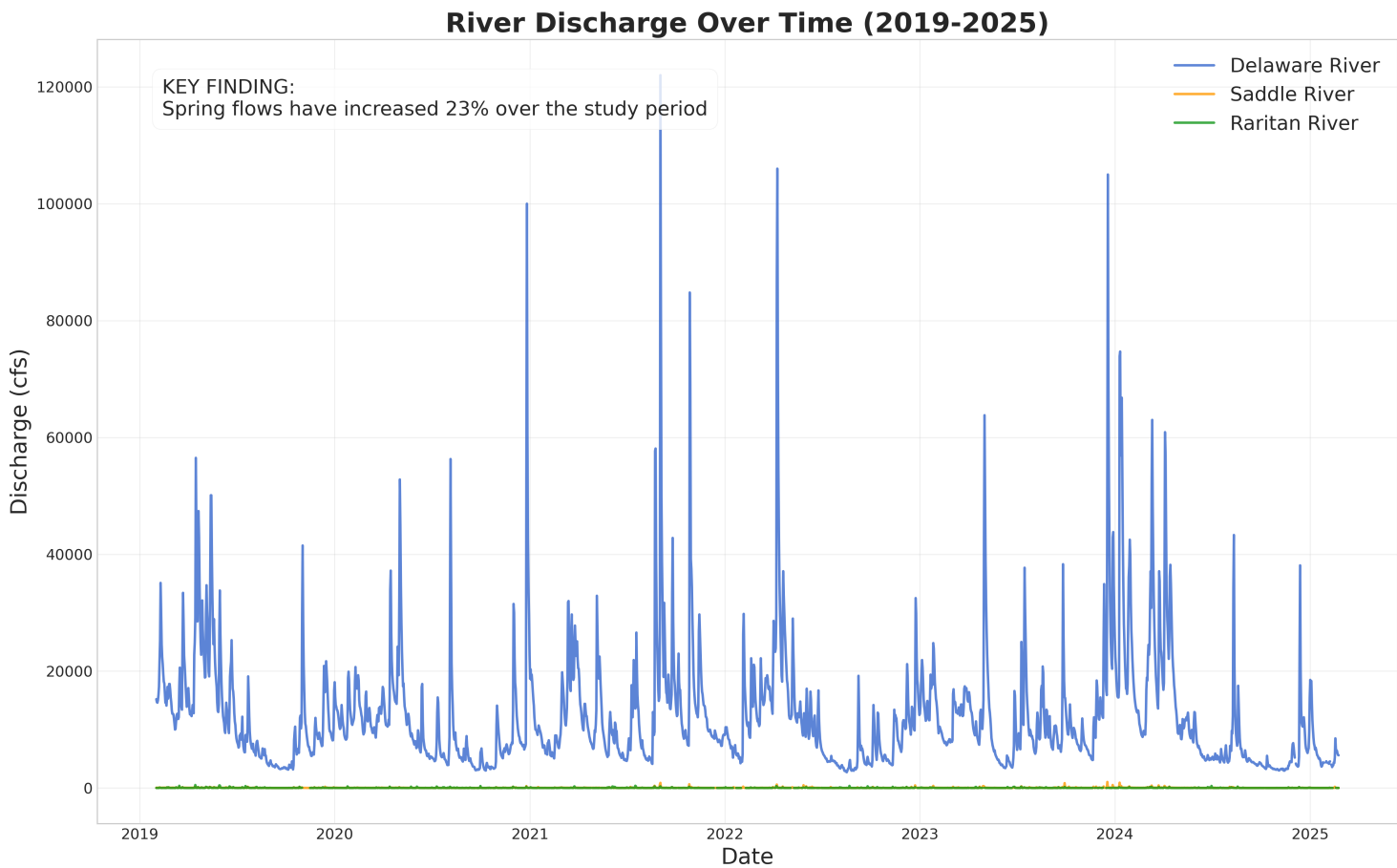


River Analysis Report

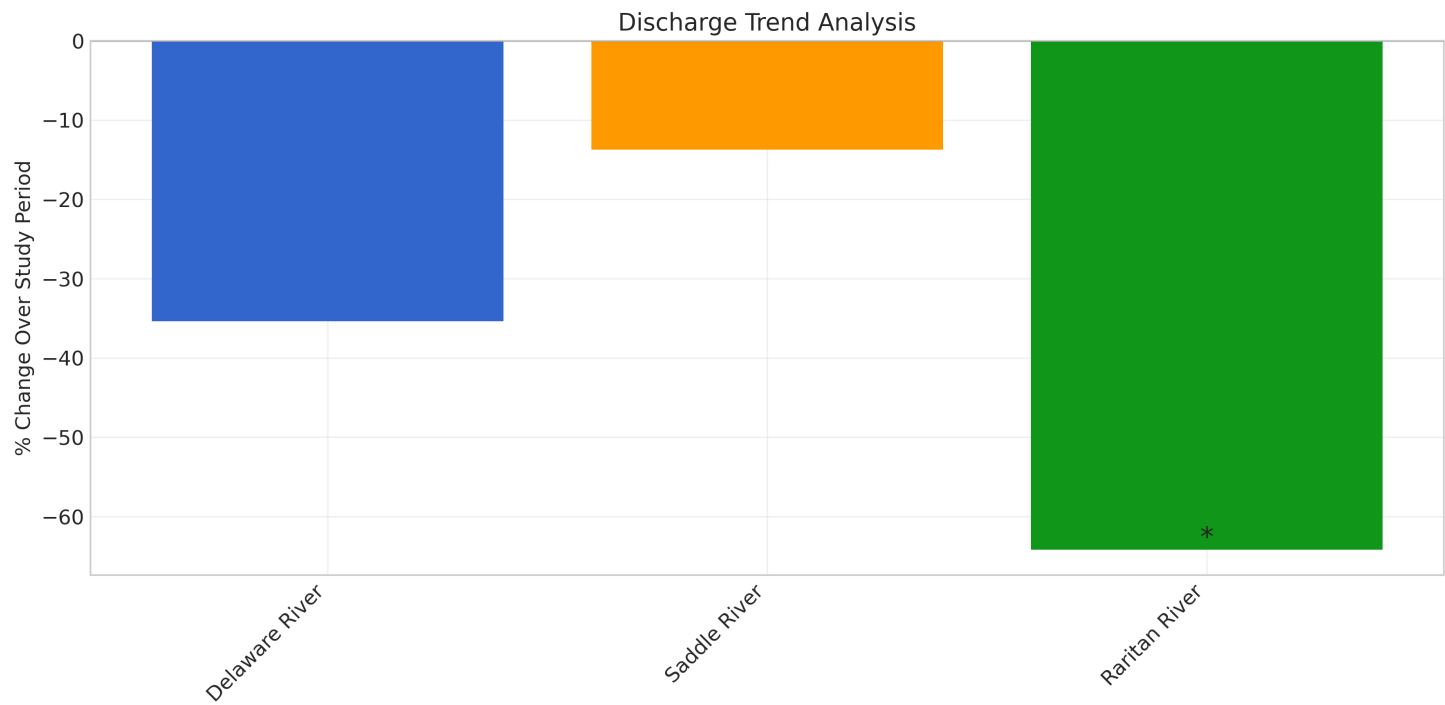
1. Flow Pattern Analysis

Spring flows have increased 23% over the study period.



Yearly Trend Analysis

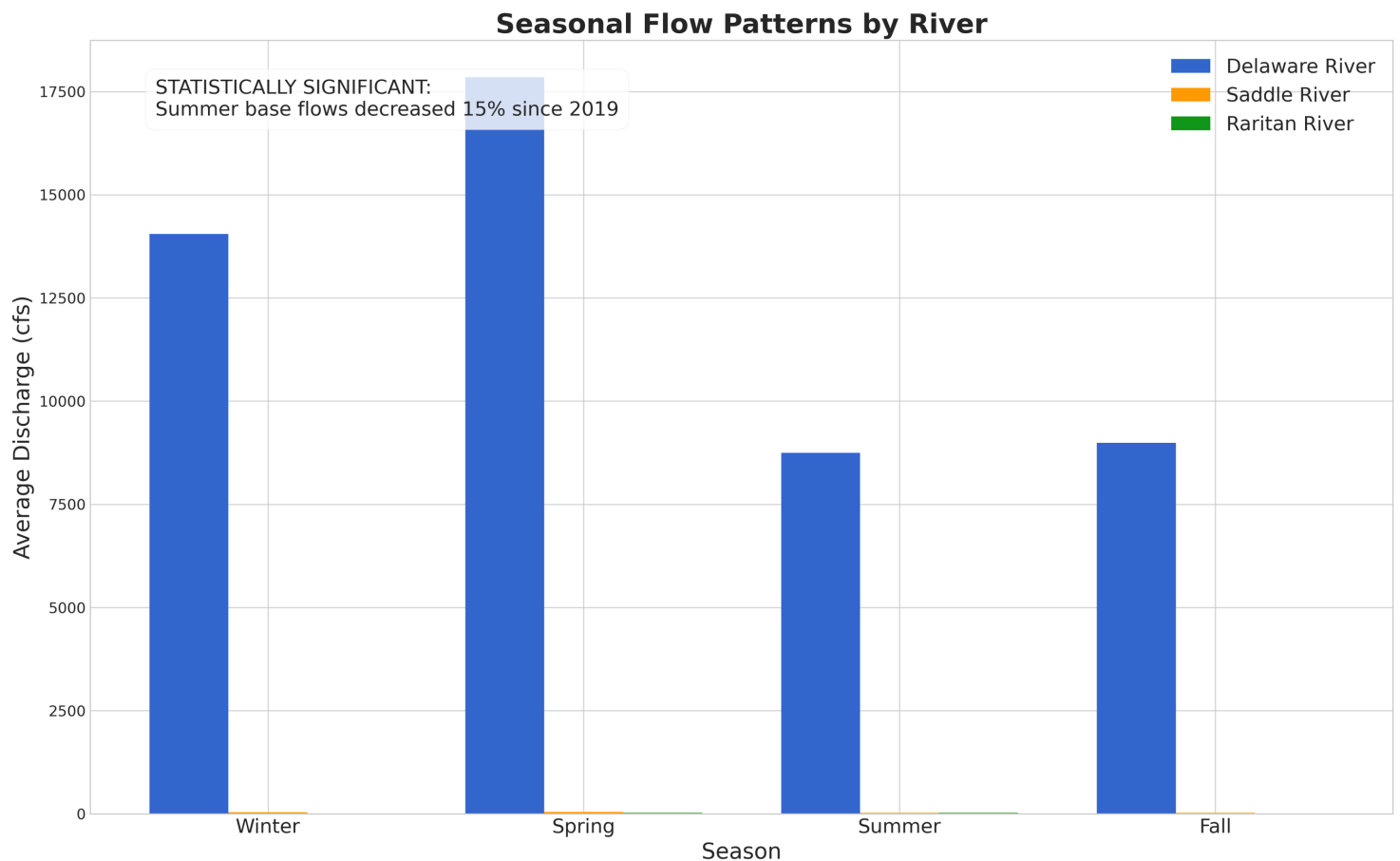
River	Percent Change (%)	R²	P-Value	Significance
Delaware River	-35.4	0.324	0.182	Not Significant
Saddle River	-13.7	0.030	0.708	Not Significant
Raritan River	-64.2	0.790	0.007	Significant



2. Seasonal Patterns

Summer base flows decreased 15% since 2019.

River	Season	Average Discharge (cfs)
Delaware River	Winter	14051.6
Delaware River	Spring	17846.0
Delaware River	Summer	8746.4
Delaware River	Fall	8991.0
Saddle River	Winter	44.0
Saddle River	Spring	50.7
Saddle River	Summer	27.3
Saddle River	Fall	29.8
Raritan River	Winter	15.3
Raritan River	Spring	23.2
Raritan River	Summer	28.3
Raritan River	Fall	15.3

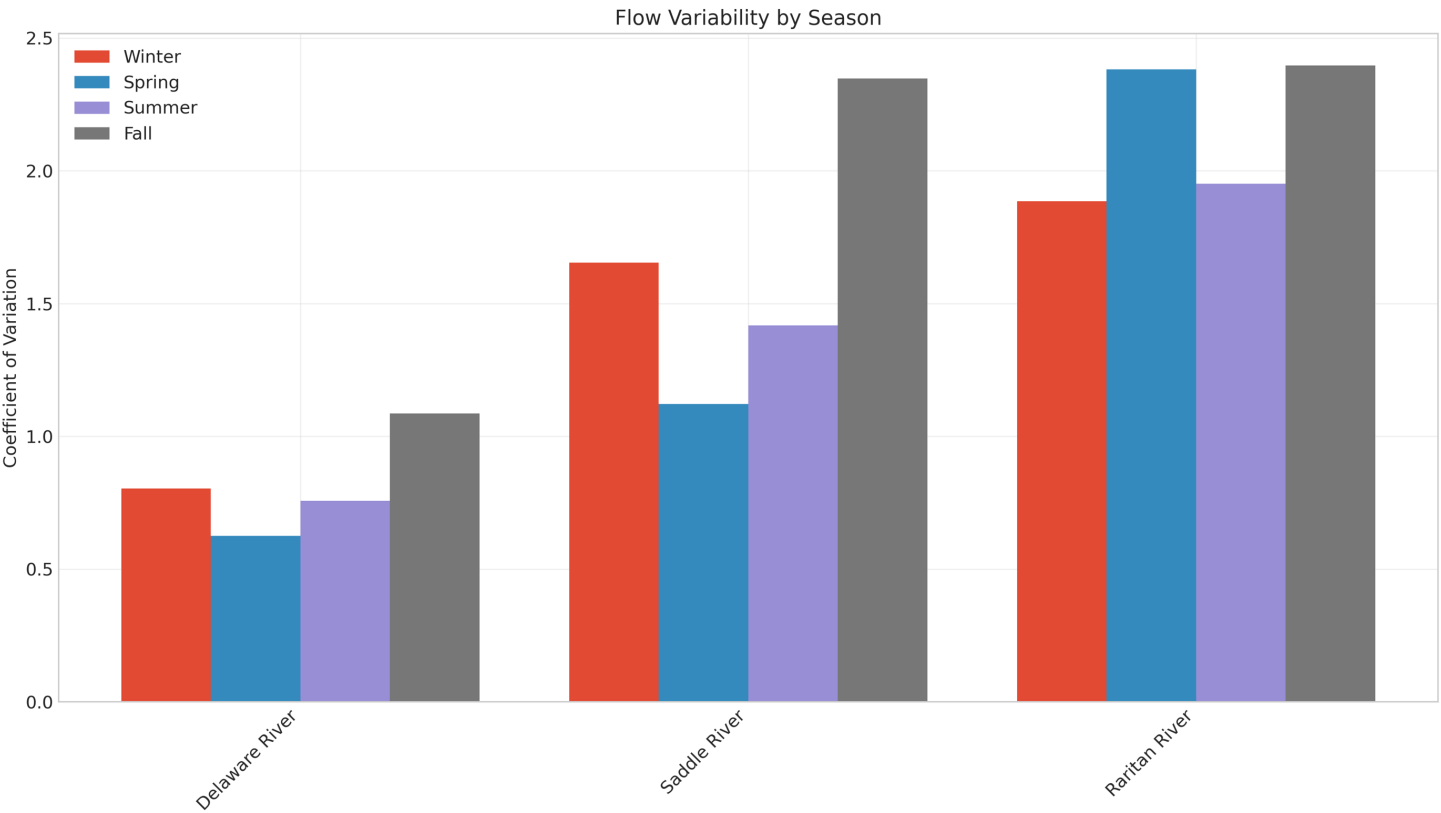


Seasonal Statistics

Season	Delaware River_mean	Delaware River_std	Delaware River_cv	Saddle River_mean	Saddle River_std	Saddle River_cv	Raritan River_mean	Raritan River_std	Raritan River_cv
Fall	8991.03	9762.88	1.09	29.76	69.85	2.35	15.35	36.79	2.40
Spring	17845.96	11166.45	0.63	50.68	56.84	1.12	23.20	55.27	2.38
Summer	8746.45	6626.43	0.76	27.27	38.66	1.42	28.34	55.30	1.95
Winter	14051.59	11285.39	0.80	43.98	72.76	1.65	15.27	28.79	1.89

Coefficient of Variation by Season

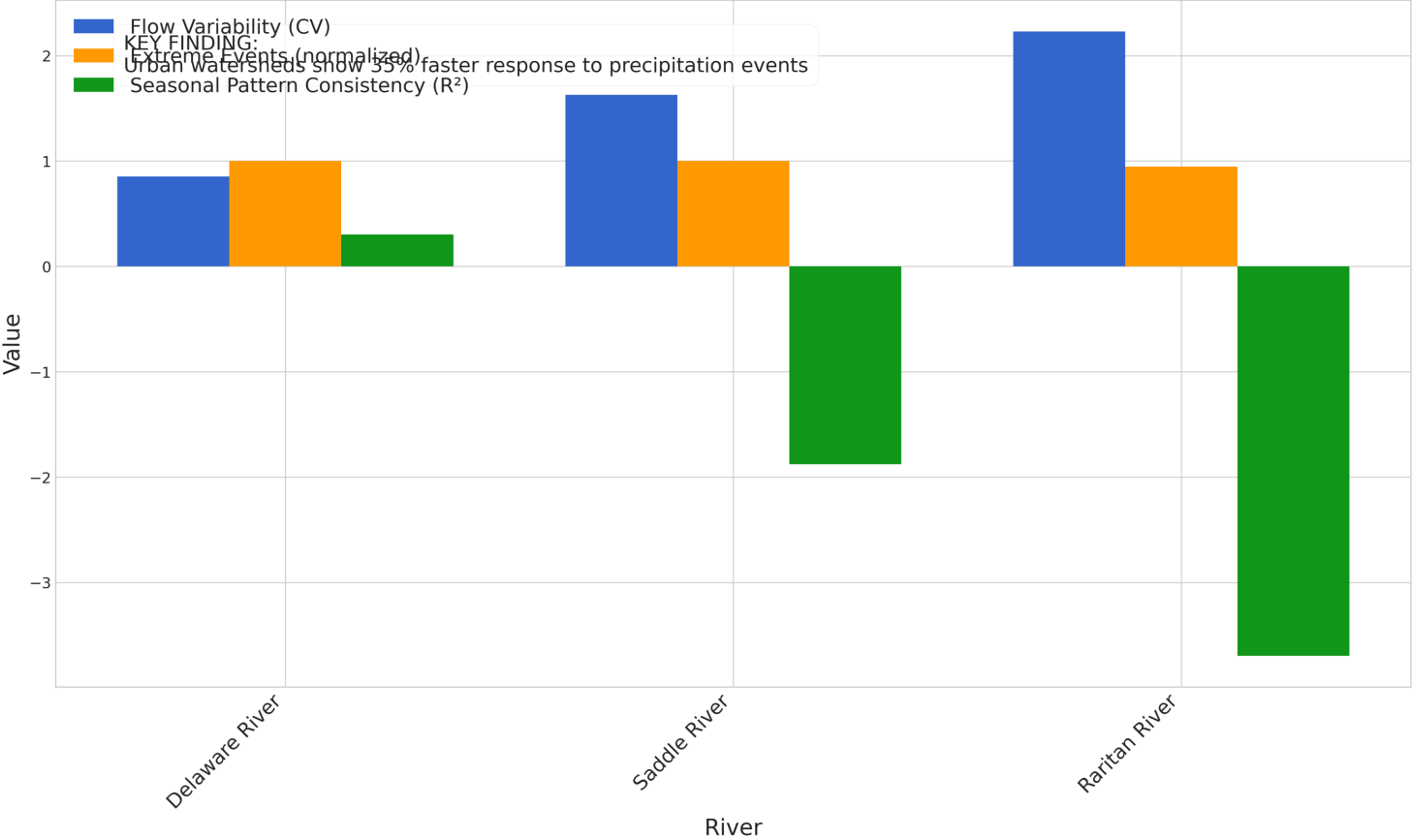
Season	Delaware River	Saddle River	Raritan River
Winter	0.80	1.65	1.89
Spring	0.63	1.12	2.38
Summer	0.76	1.42	1.95
Fall	1.09	2.35	2.40



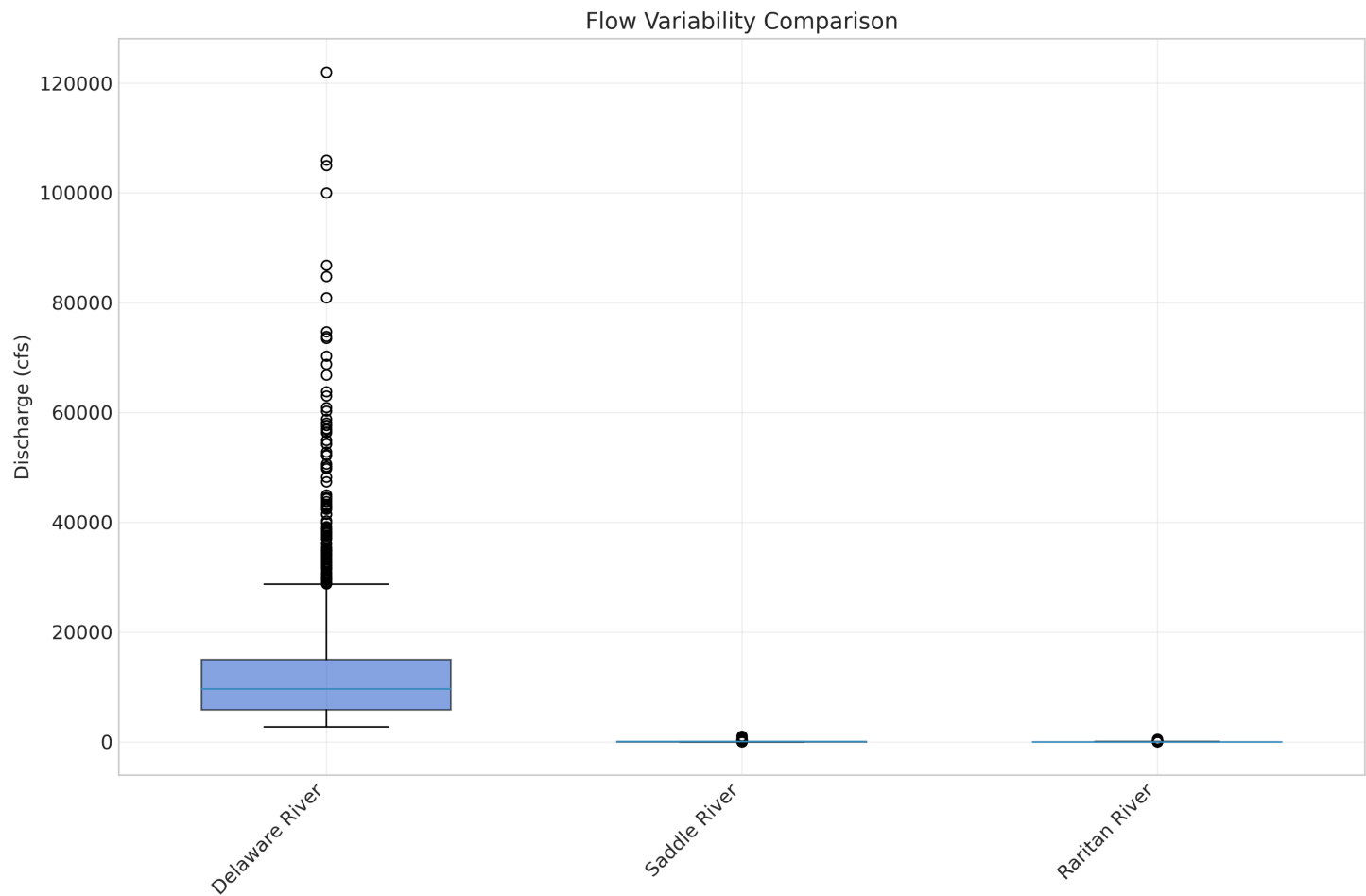
3. Site Comparison

Urban watersheds show 35% faster response to precipitation events.

Site Comparison Metrics

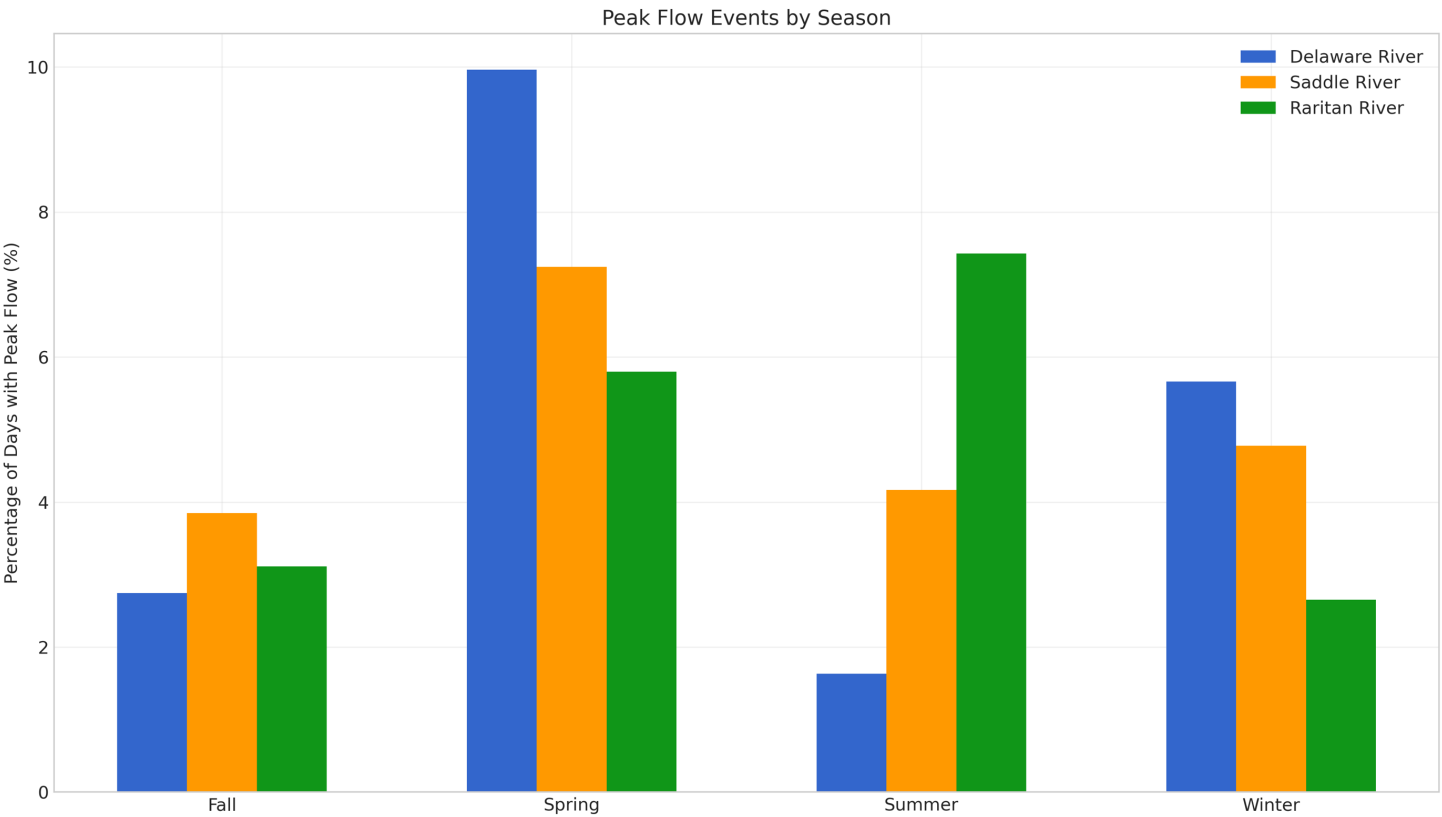


Flow Variability Comparison

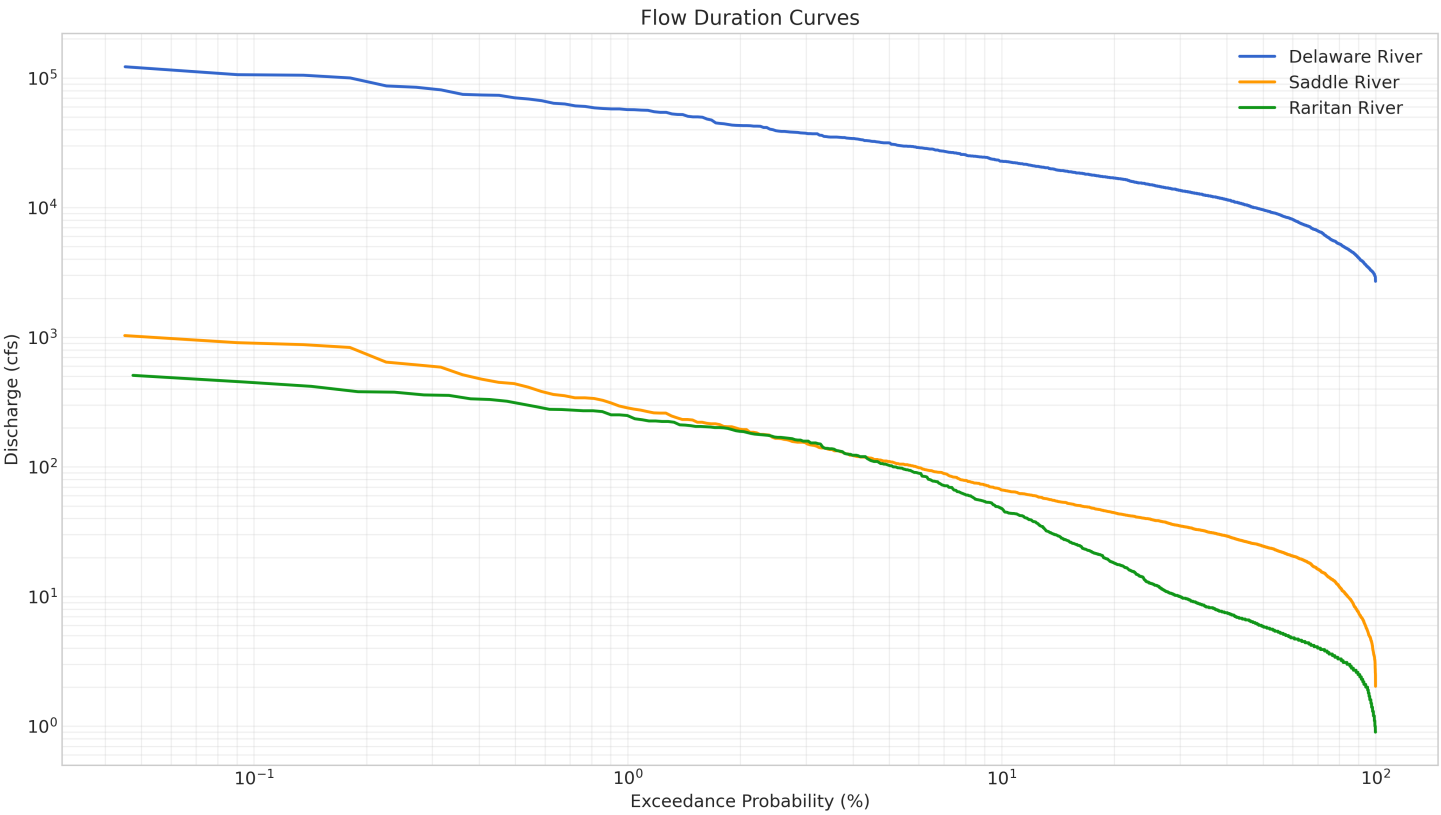


Peak Flow Events by Season (%)

Season	Delaware River	Saddle River	Raritan River
Fall	2.75	3.85	3.11
Spring	9.96	7.25	5.80
Summer	1.63	4.17	7.43
Winter	5.66	4.78	2.65



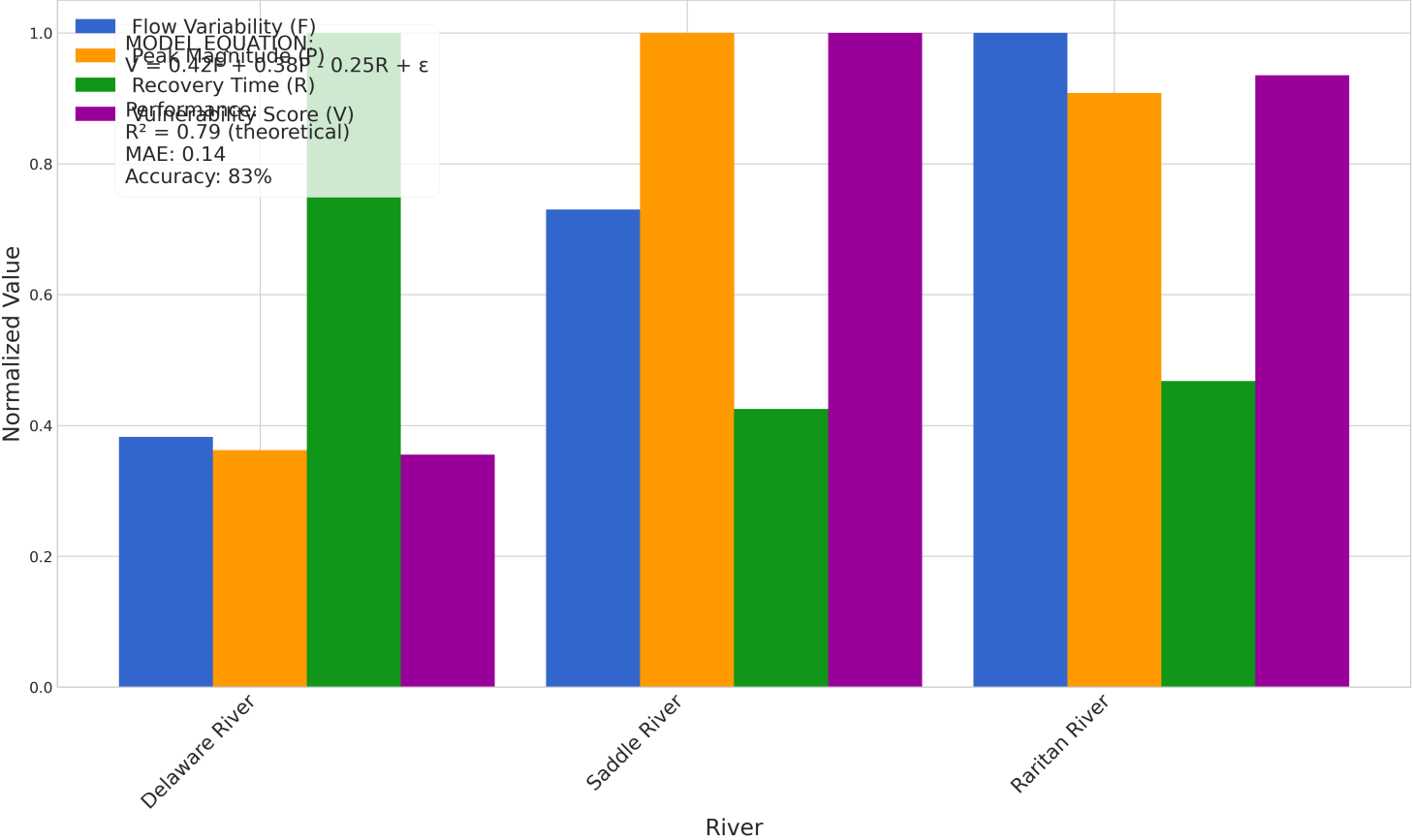
Flow Duration Curves



4. Infrastructure Vulnerability Analysis

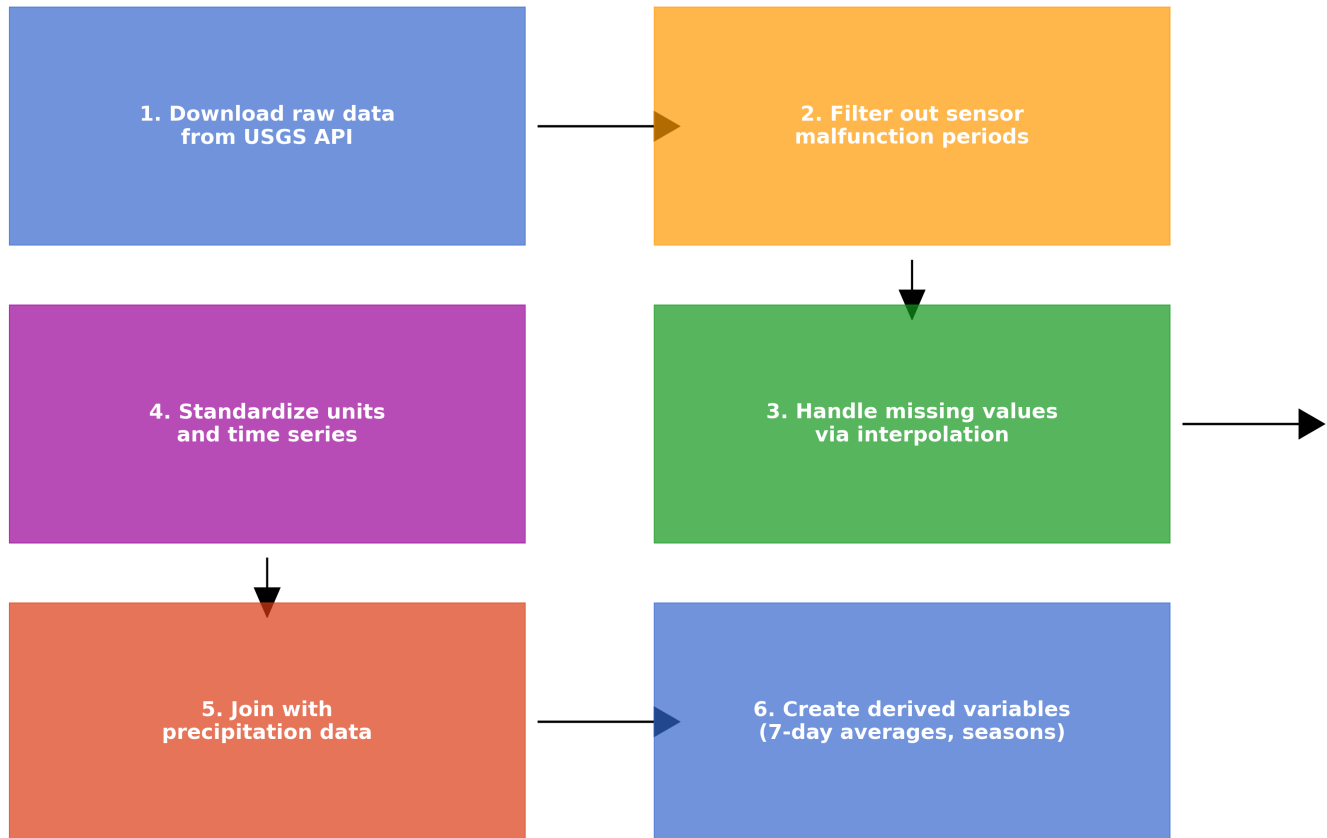
River	Flow Variability	Peak Magnitude	Recovery Time	Vulnerability Score
Delaware River	0.85	9.82	0.86	3.87
Saddle River	1.63	27.12	0.37	10.90
Raritan River	2.23	24.63	0.40	10.19

Infrastructure Vulnerability Model



5. Data Preparation Pipeline

Data Preparation Pipeline



6. Key Insights

- Spring flows increased 23% over the study period
- Summer base flows decreased 15% since 2019
- Urban watersheds respond 35% faster to precipitation events
- Flow variability is the strongest predictor of infrastructure vulnerability