



Washington State ballast water data program
2021 report and program impact evaluation

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Ballast Water Program

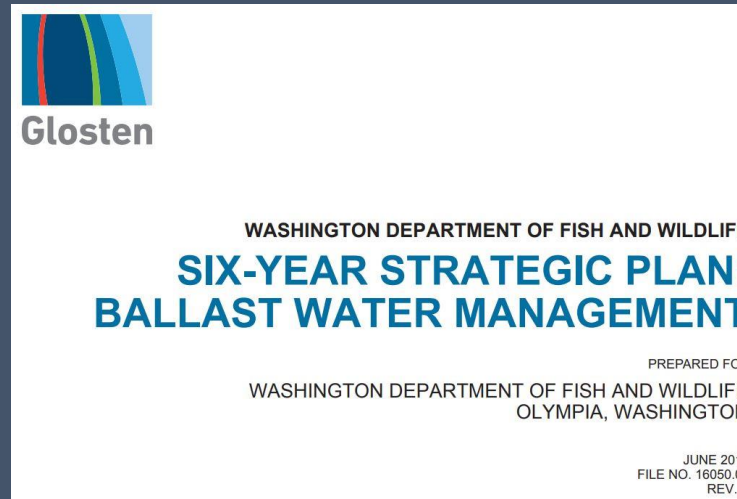
Vessel arrivals to Washington State

- 2021 data summary
 - Ballast discharge
 - Compliance and WDFW Inspections
 - Management and technology adoption trends
- Program impact evaluations
 - Strategic Plan 2012
 - Current trends
 - Future directions



Vessel arrivals to Washington State

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	Data source	2021						
		First	Second	Third	Fourth	Total	Avg	Stdev
Total arrivals	Arrivals	814	858	879	898	3449	862	36
Noncompliant arrivals	Arrivals	26%	24%	22%	28%	N/A	N/A	N/A
Discharging arrivals	Arrivals	331	337	306	378	1352	338	30
Unique discharging vessels	Discharging arrivals	261	251	212	283	821*	252	30
Utilized BWMS	Discharging arrivals	263	221	212	251	947	237	24
Discharge volumes (MMT)	Discharging arrivals	4.6	4.3	3.5	5.6	18	5	1
Vessel Inspections	Inspected arrivals	60	65	69	41	235	59	12
Percent boarded vessels (WDFW only)	Arrivals	7%	8%	8%	5%	N/A	N/A	N/A
	Discharging arrivals	17%	18%	22%	10%	N/A	N/A	N/A
*Calculated from entire year								

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- ~1/3 vessel arrivals involve ballast water discharge
- Non-compliant vessel arrivals between 20-30%
- 18MMT discharged to WA in 2021
- Emerging trends
 - Discharging arrivals primarily utilize ballast water management systems (BWMS)
 - What proportion utilize exchange + treatment?
 - Inspection program recovering to pre-COVID capacity



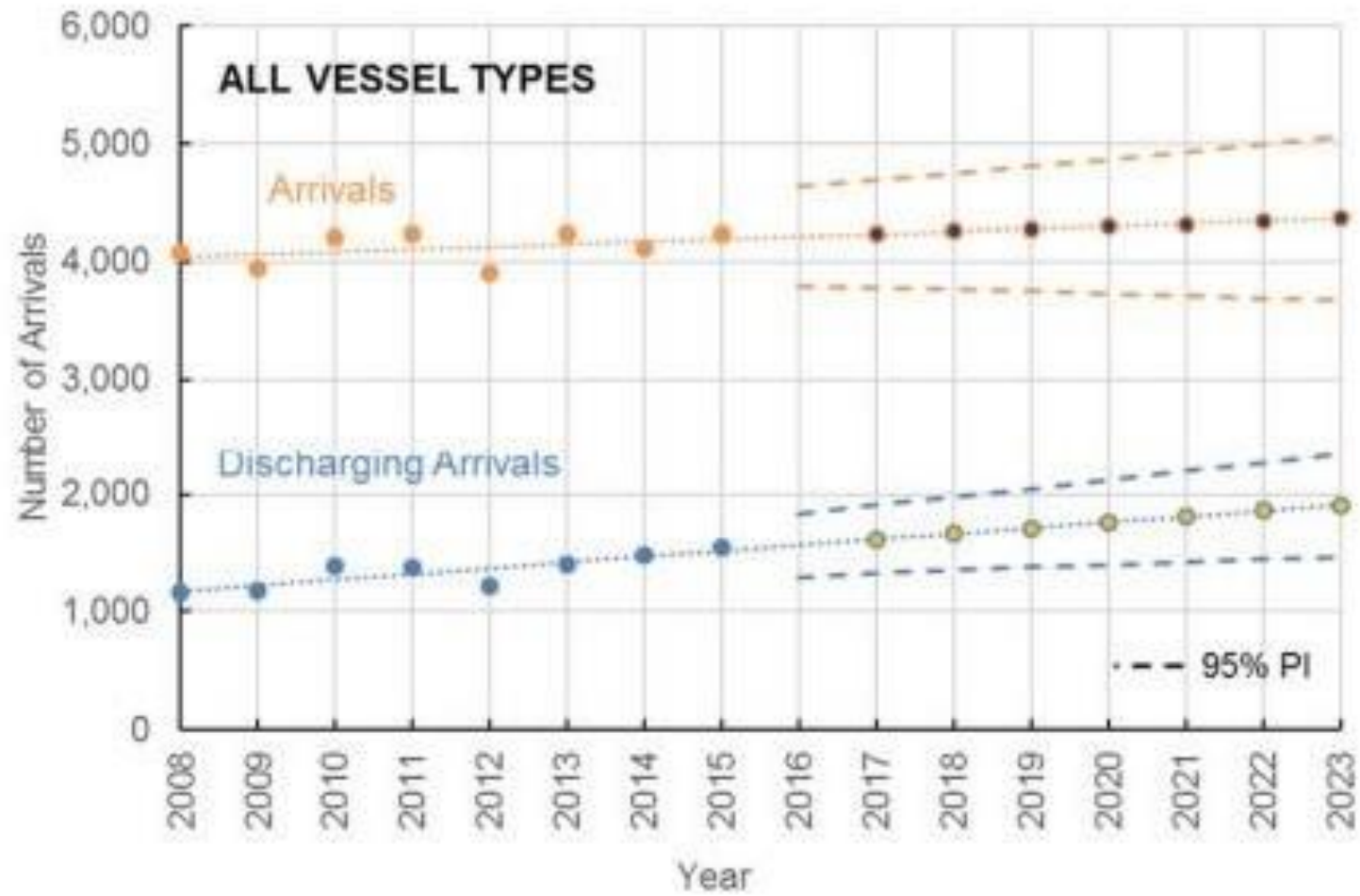
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WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

**SIX-YEAR STRATEGIC PLAN:
BALLAST WATER MANAGEMENT**

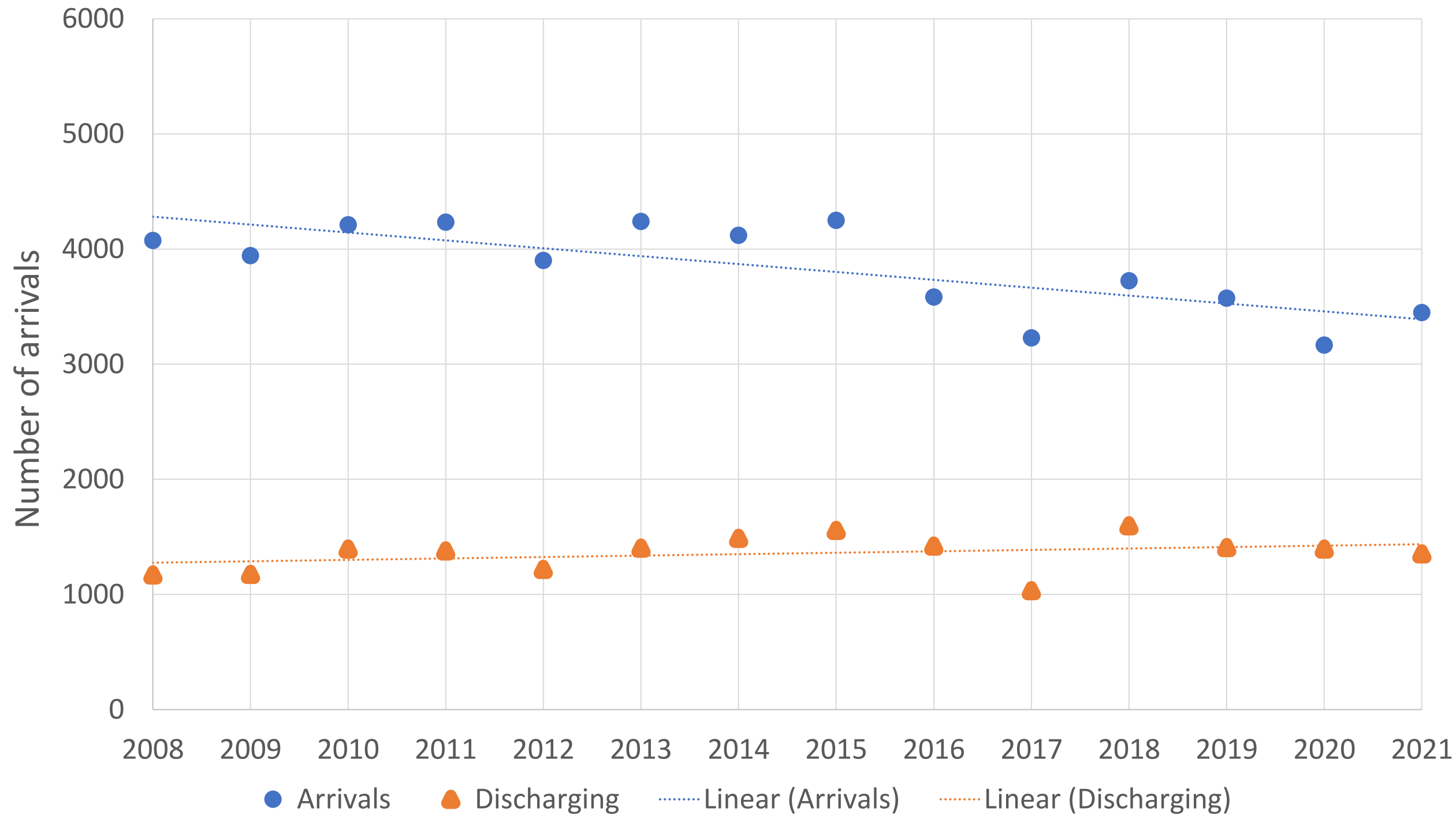
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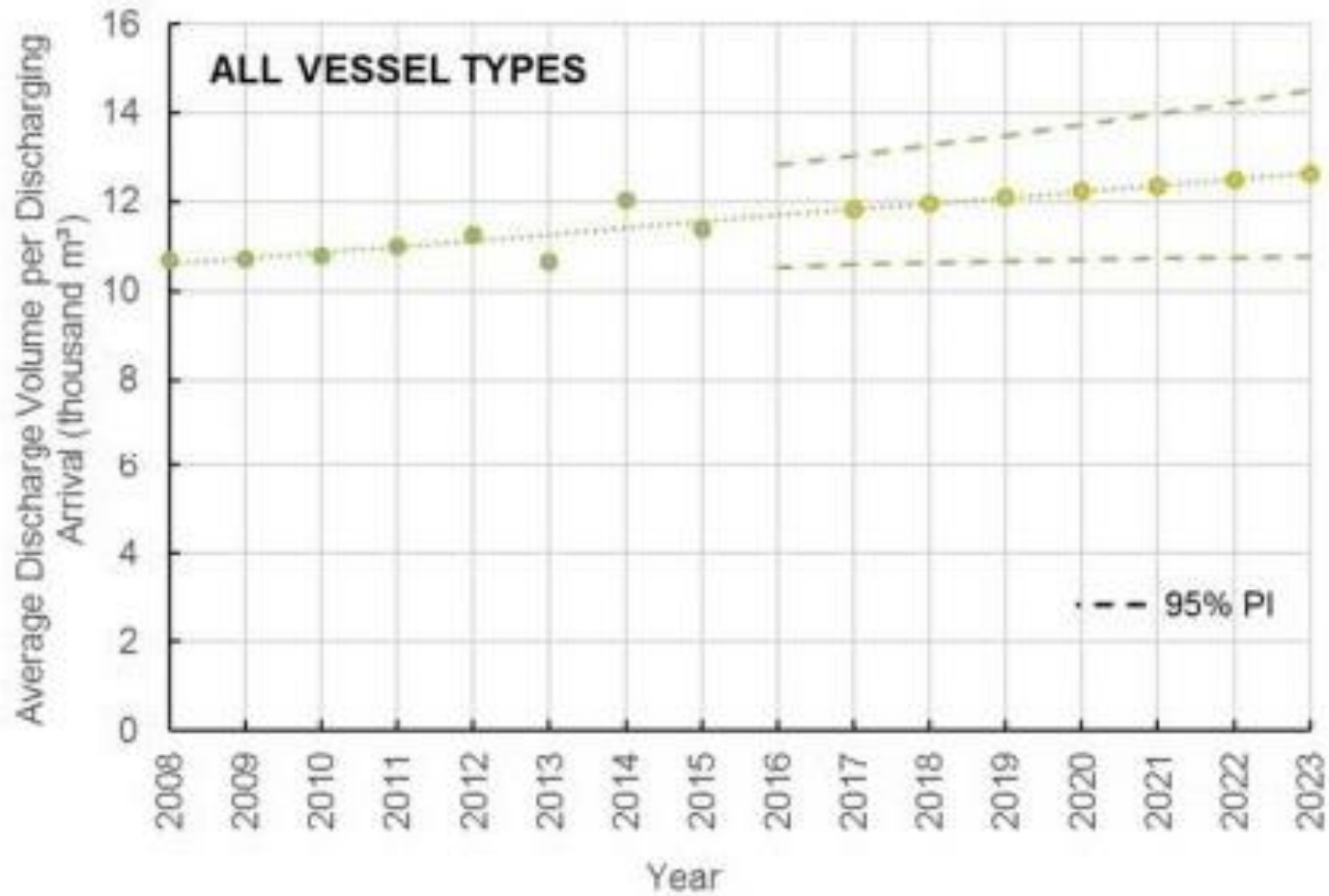
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Projected increase in overall and discharging arrivals

Figure 15 Washington State vessel traffic forecast

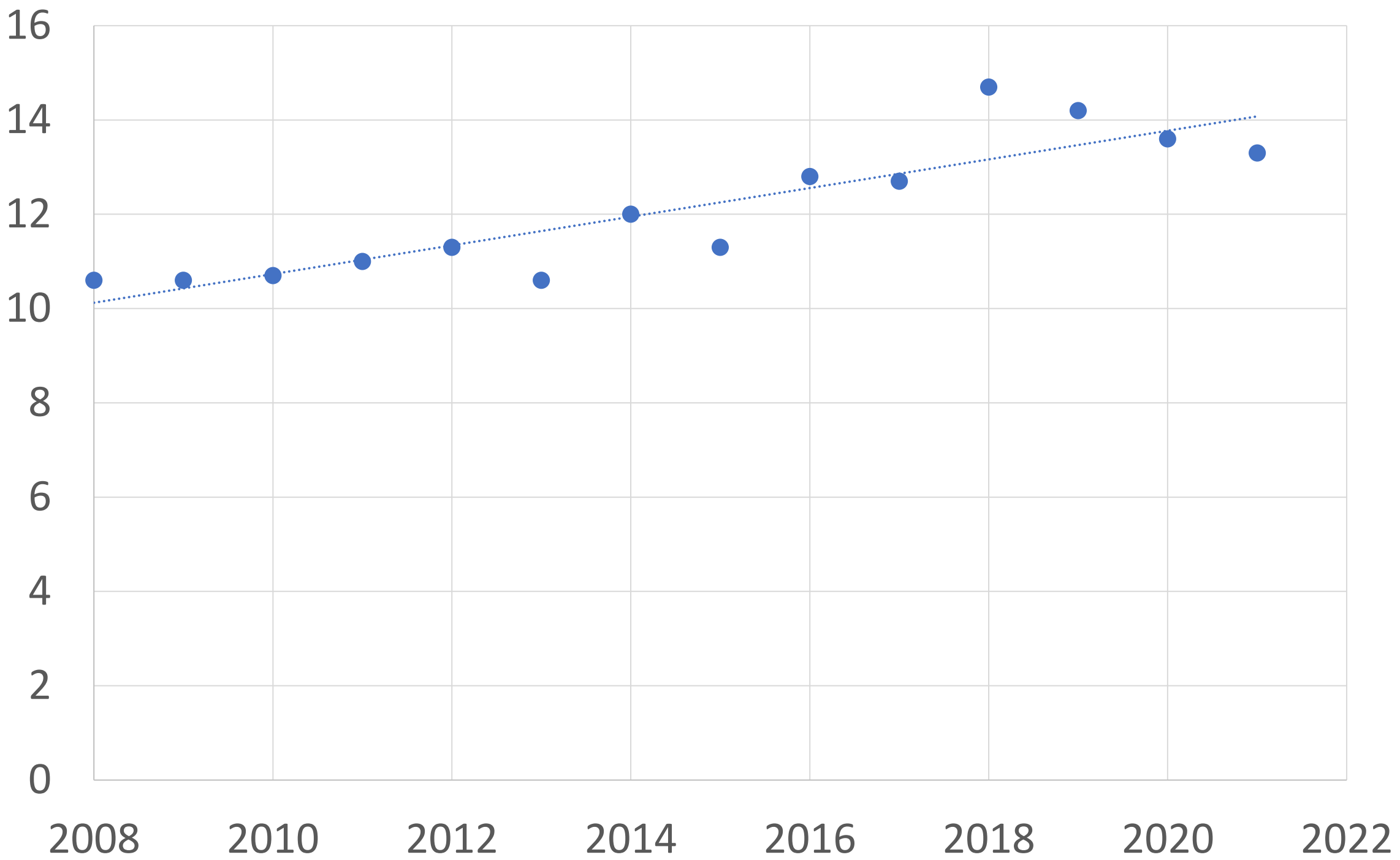




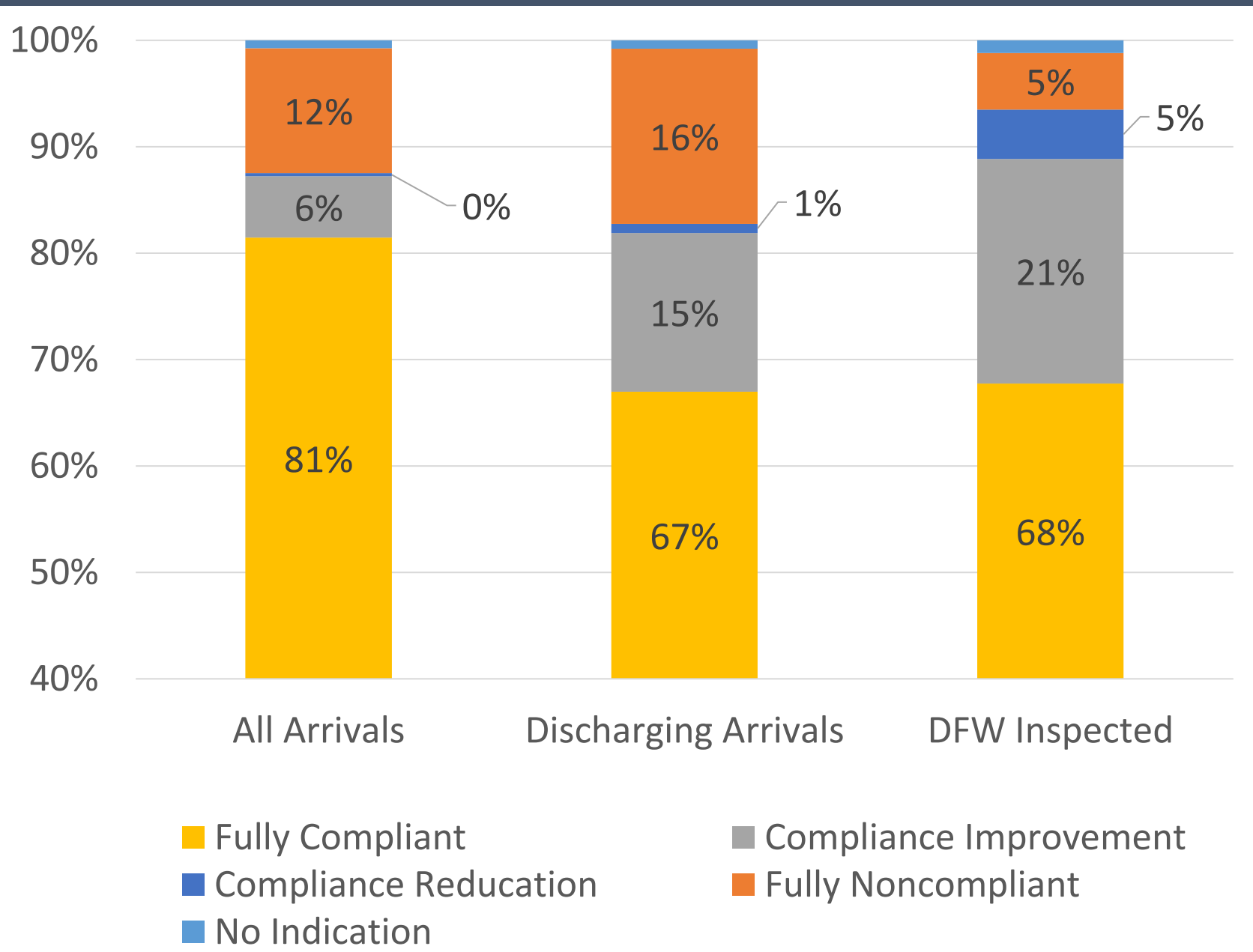
Projected increase in average volume per discharge event

Figure 16 Washington State discharge volume (per discharging arrival) forecast

Average Volume per Discharging
Arrival (thousand m³)

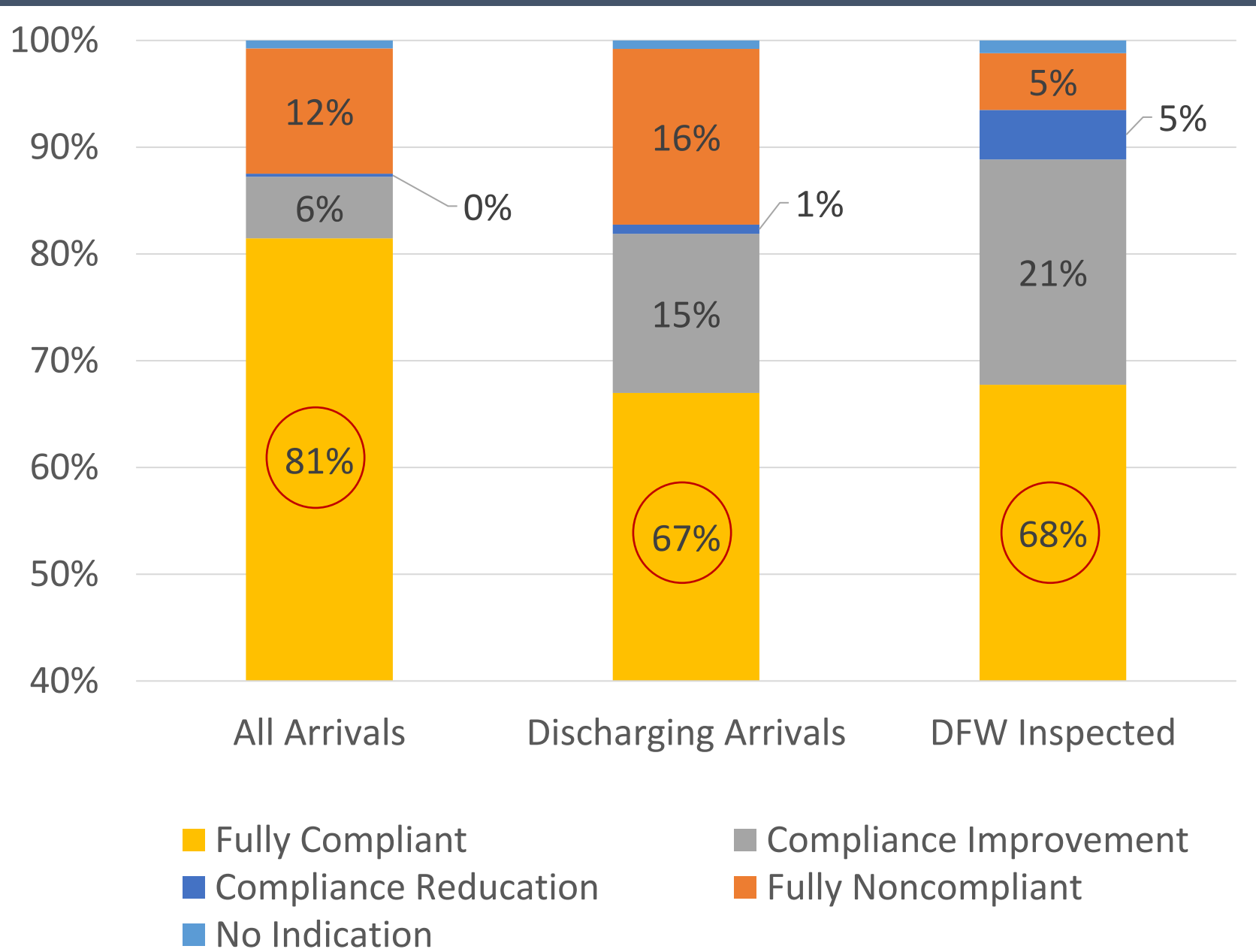


Program impact evaluation



Compliance assessment for 2008-2012

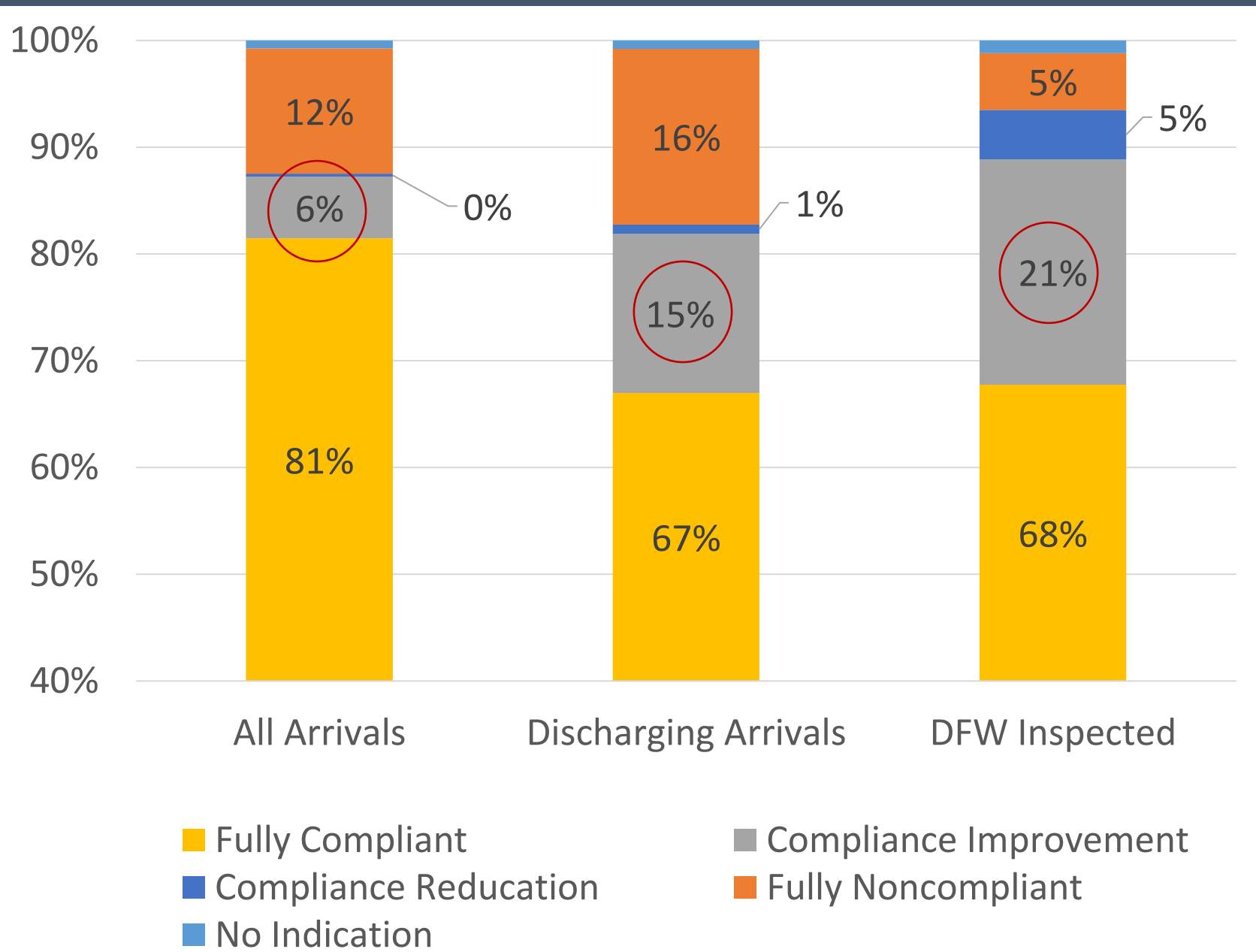
Most arrivals
compliant



Compliance assessment for 2008-2012

Most arrivals compliant

DFW increases compliance (21% for inspected vessels)

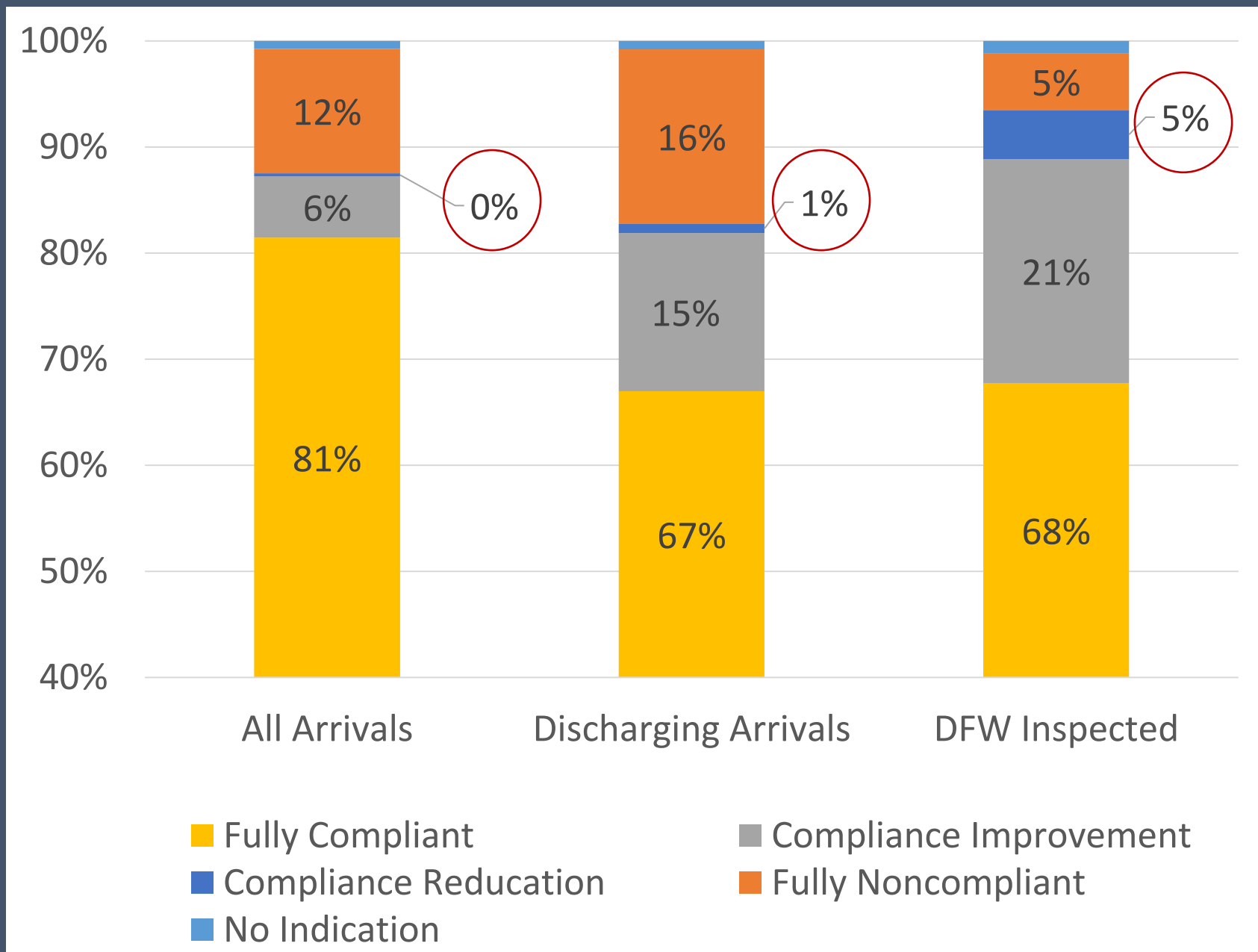


Compliance assessment for 2008-2012

Most arrivals compliant

DFW increases compliance (21% for inspected vessels)

DFW inspection uncovers hidden compliance issues

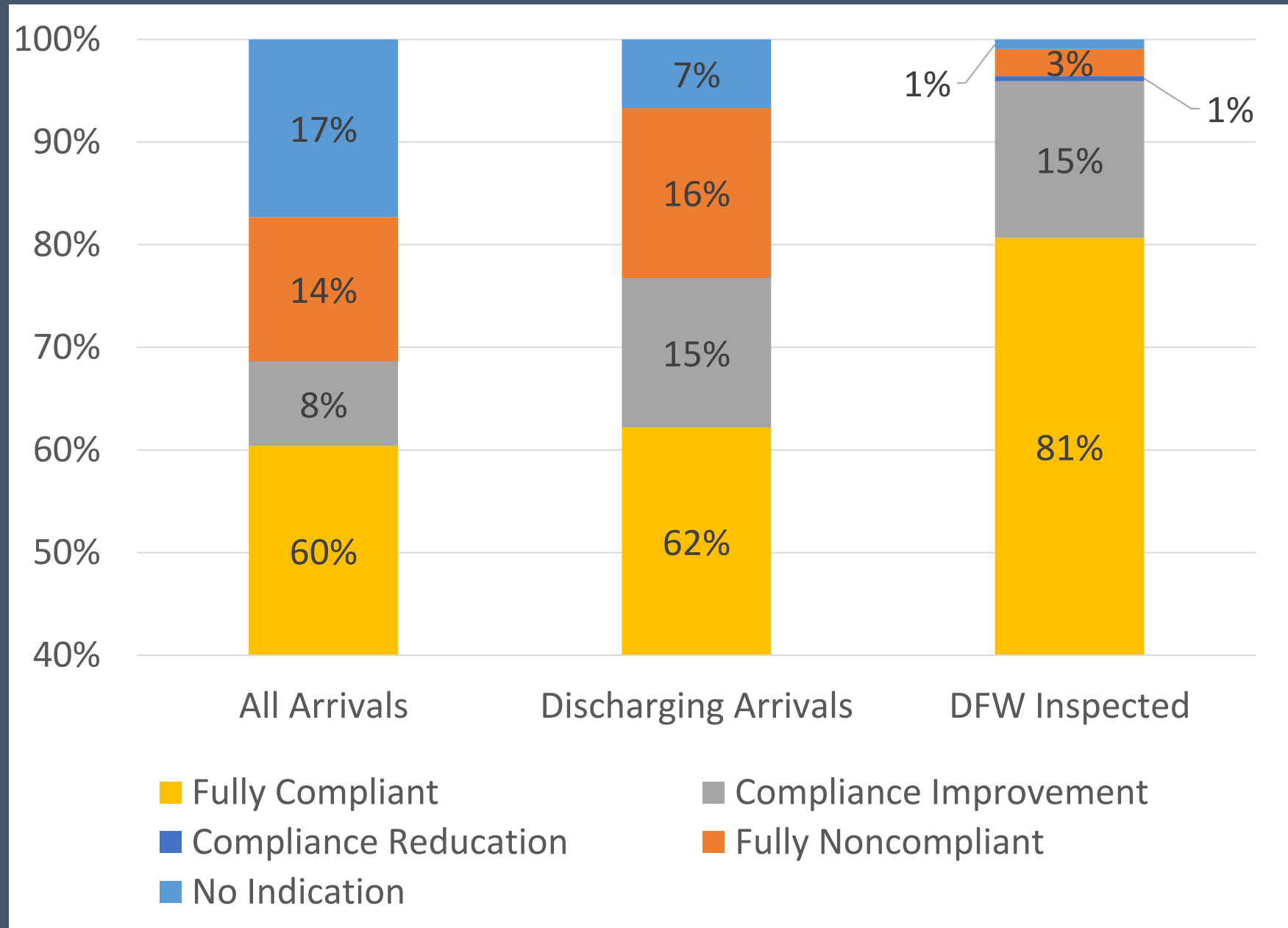


Compliance assessment for 2008-2012

Most arrivals compliant

DFW increases compliance (15% for inspected vessels)

DFW uncovered fewer hidden compliance issues in this time period



Compliance assessment for 2018-2021

Vessel arrivals to Washington State

- 2021 data summary
 - 18 MMT ballast discharged to WA in 2021
 - ~1/3 arrivals involve ballast discharge
 - Majority of discharging vessels use BWMS
 - Inspection program returning to pre-COVID capacity
- Forecast evaluations
 - Overall decrease in arrivals from 2008-2021, slight increase in discharge
 - Average discharge per arrival increased
 - Ballast water program continues to improve compliance

