



Federal Retirement Thrift Investment Board

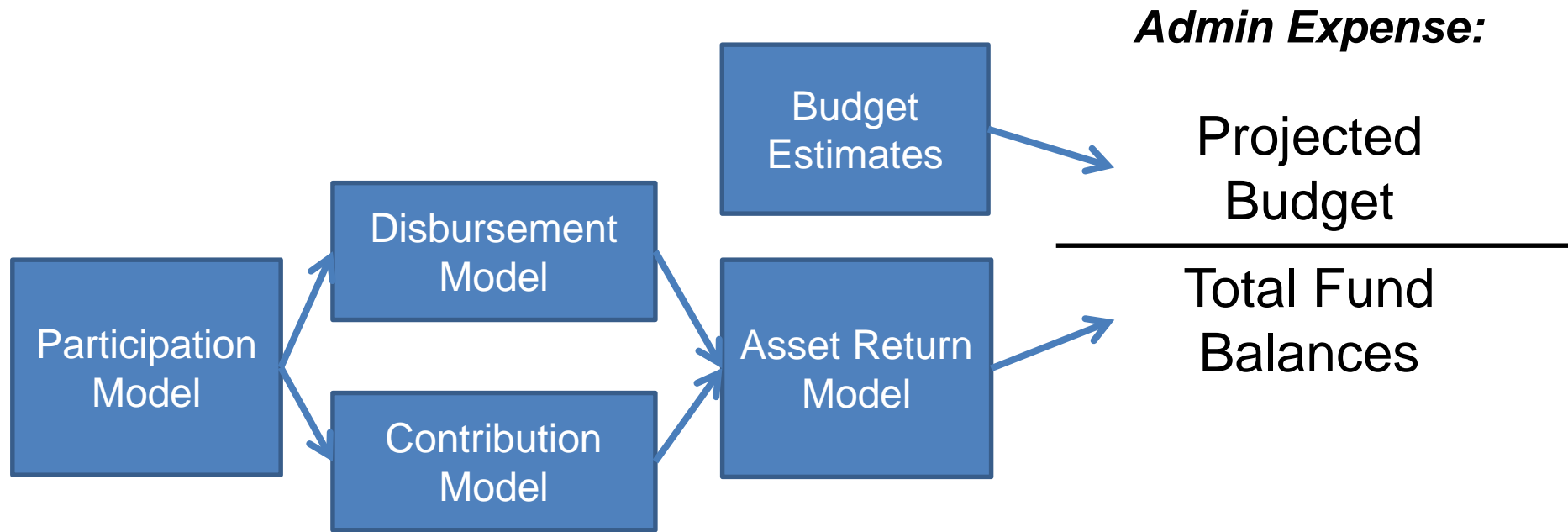
Simulation-Based Forecasts of Administrative Expense

Office of Enterprise Planning
Business Intelligence Division

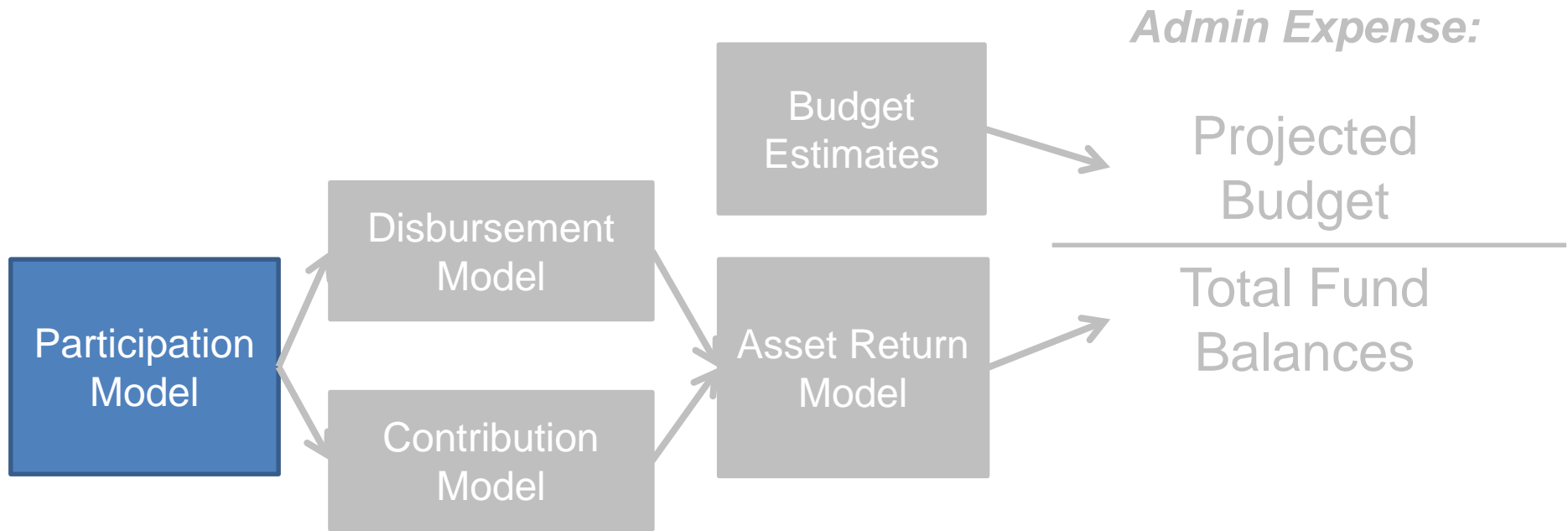
Key Question

What trend do we anticipate for the TSP's administrative expense ratio?

Road Map to Administrative Expense



First Step: Forecast Future Participation



Background on Participation Rate

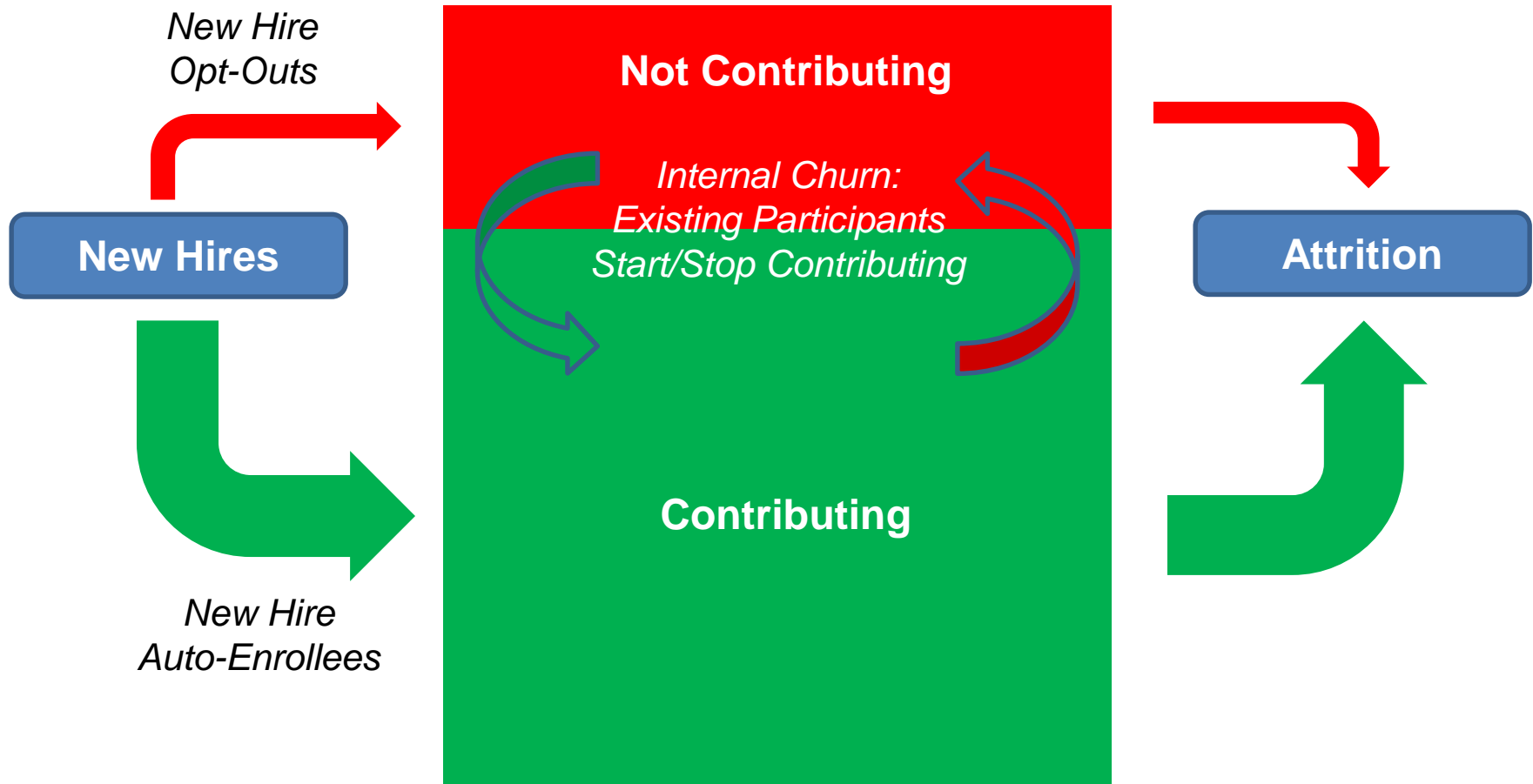
- Defined as:

$$\frac{\text{(Number of contributing participants)}}{\text{(Number of eligible participants)}}$$

- Key Performance Metric for both FERS and Uniformed Services (Active Duty only)
- Most recent results:

	FERS	Uniformed Services
Target	90.00%	44.00%
Threshold	85.00%	41.00%
Reported Value	89.07%	44.83%

Steady State Participation Rate



*New hire and attrition rates calculated from OPM and DoD data.
Start/stop contributing rates calculated from FRTIB data.*

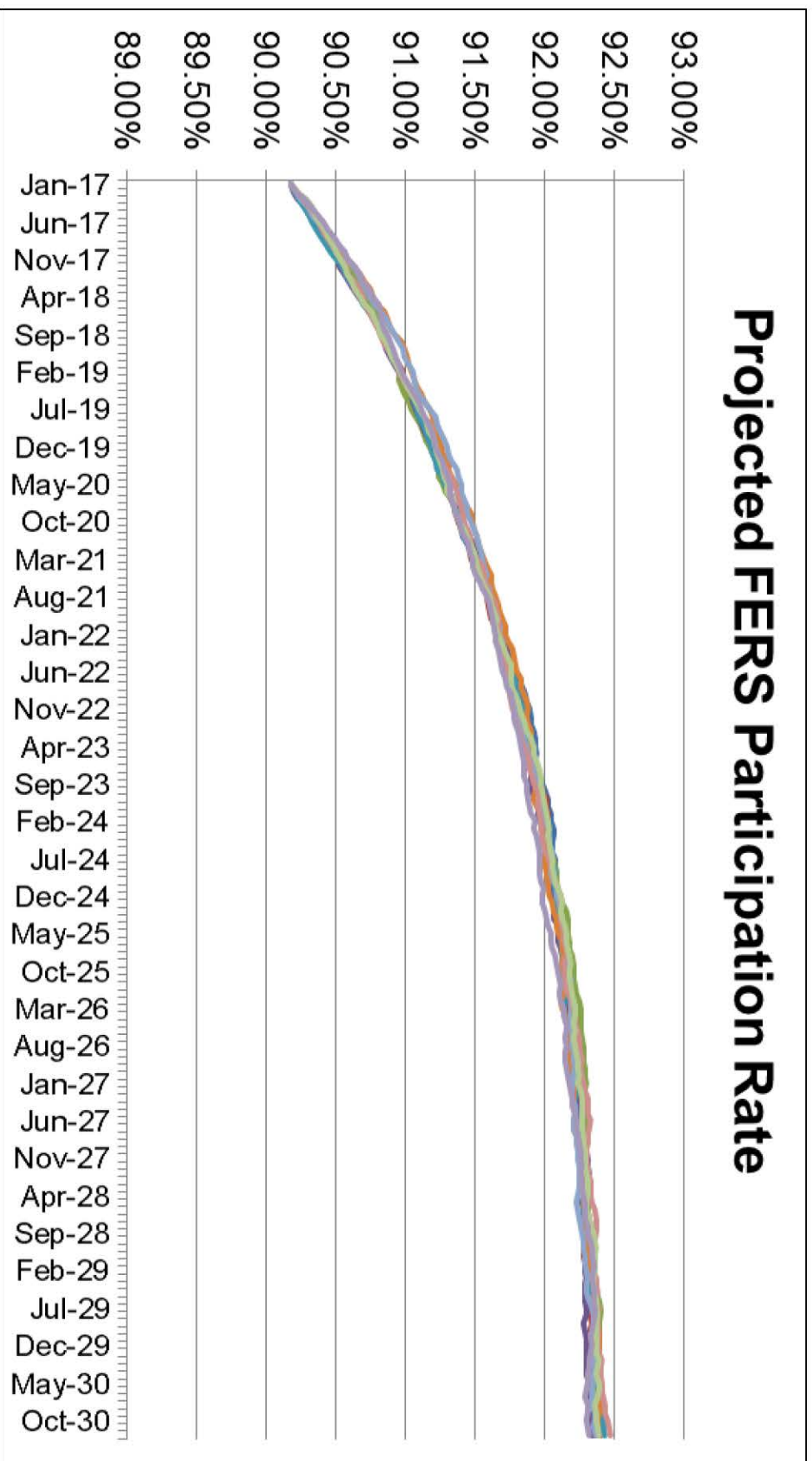
Participation Rate Simulation Inputs for FERS

Age Band	Attrition		New Hire Opt-Out		Existing Participants Stop Contributing		Existing Participants Start Contributing		Share of New Hires	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Under 20	60%	75%	2.75%	3.25%	0.00%	0.42%	0.00%	6.25%	0.25%	0.50%
20-24	45%	50%	2.75%	3.25%	0.45%	0.81%	3.17%	22.63%	9.50%	11.50%
25-29	15%	20%	2.75%	3.25%	0.85%	1.25%	8.56%	24.32%	16.50%	18.50%
30-34	8%	10%	2.75%	3.25%	1.18%	1.68%	9.93%	21.33%	14.50%	15.50%
35-39	5%	7%	2.75%	3.25%	1.36%	2.36%	9.83%	18.85%	11.50%	15.50%
40-44	5%	7%	2.75%	3.25%	1.25%	2.37%	9.08%	17.62%	9.50%	10.50%
45-49	4%	5%	2.75%	3.25%	1.05%	2.08%	9.17%	17.56%	9.50%	10.50%
50-54	4%	5%	2.75%	3.25%	0.87%	1.72%	8.55%	17.01%	9.50%	10.50%
55-59	7%	9%	2.75%	3.25%	0.69%	1.51%	6.58%	15.92%	4.50%	5.50%
60-64	15%	18%	2.75%	3.25%	0.54%	1.28%	3.43%	12.43%	2.50%	3.50%
65 and up	24%	27%	2.75%	3.25%	0.43%	1.11%	1.62%	7.82%	1.50%	2.50%

***Higher attrition among
younger employees;
rises again at retirement age***

***Consistent with median
age of FERS new hires = 37***

Participation Rate Simulation Results for FERS



FERS Participation Rate to stabilize at approximately 92.50%

Complicating Factors for Uniformed Services

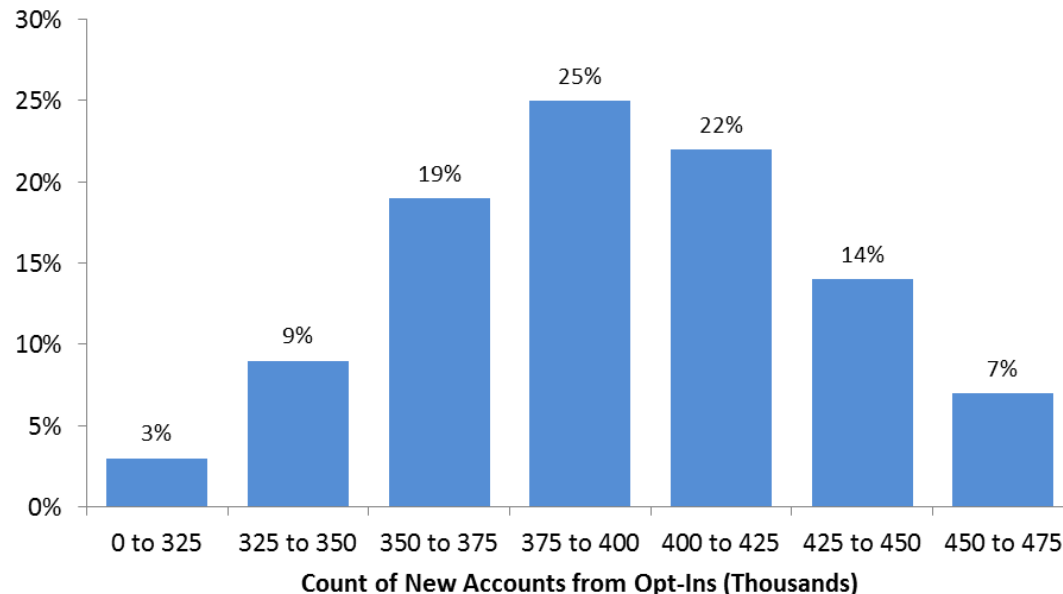
- Unlike FERS, there are three subgroups:
 - TSP participants who are contributing
 - TSP participants who are not contributing
 - Service members without TSP accounts
- Blended Retirement is coming
 - New service members will be automatically enrolled
 - Some current service members will opt in

Projected Growth in Participants

Historical and Projected Counts of New Uniformed Services Participants:

	2013	2014	2015	2016	2017	2018	2019	2020+
Voluntary / Opt-In	93k	99k	118k	110k	115-130k	300-475k	0	0
Auto-Enrolled	n/a	n/a	n/a	n/a	n/a	269k	276k	264k
Total New US Ppts	93k	99k	118k	110k	115-130k	569-744k	276k	264k

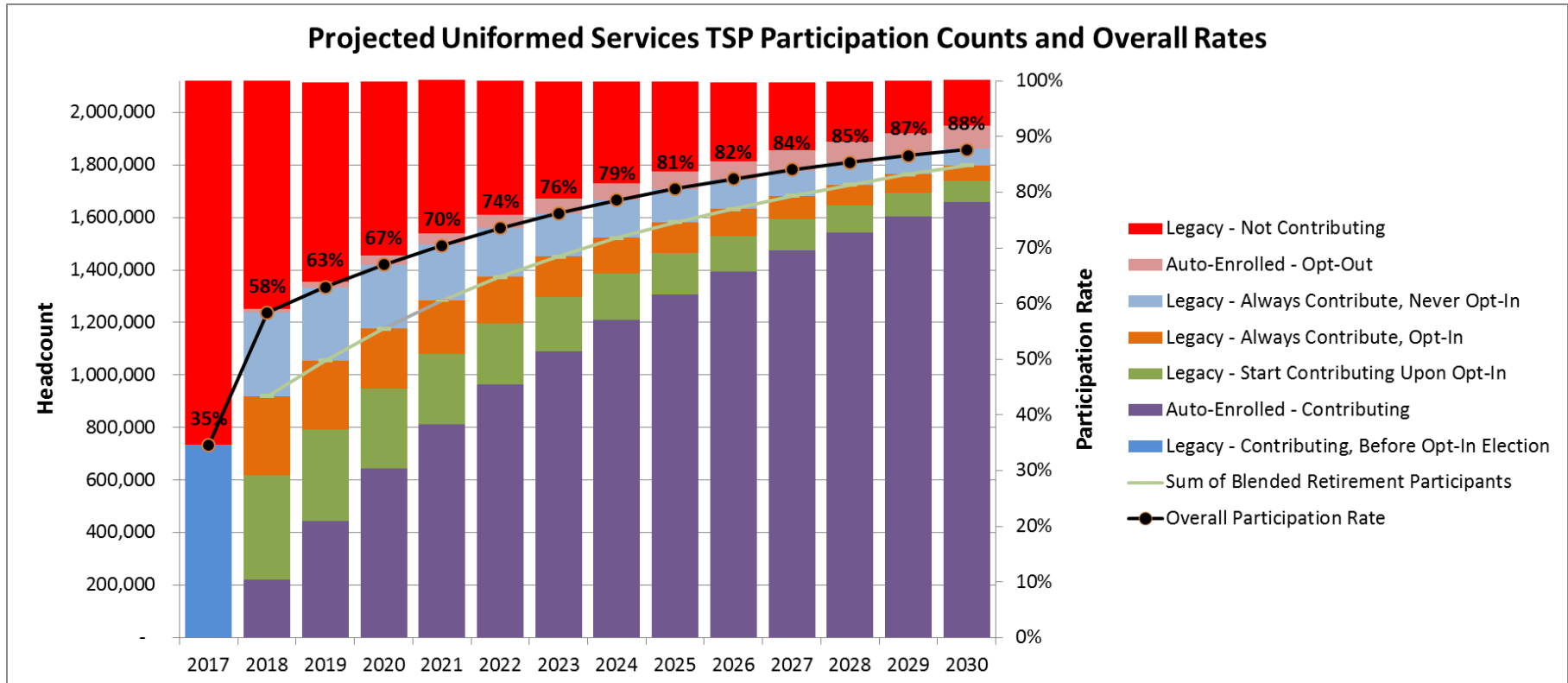
**Count of New TSP Accounts from Opt-Ins:
Distribution of 1,000 Outcomes**



Assumptions:

- Auto-enrollment counts match DoD recruiting goals
- Range of possible opt-in rates that vary by age and component (younger more likely than older, Active Duty more likely than Ready Reserve)
- 5-20% increase in voluntary enrollments in 2017 due to increased awareness of TSP

Participation Forecast for US: Initial Approach



Pros:

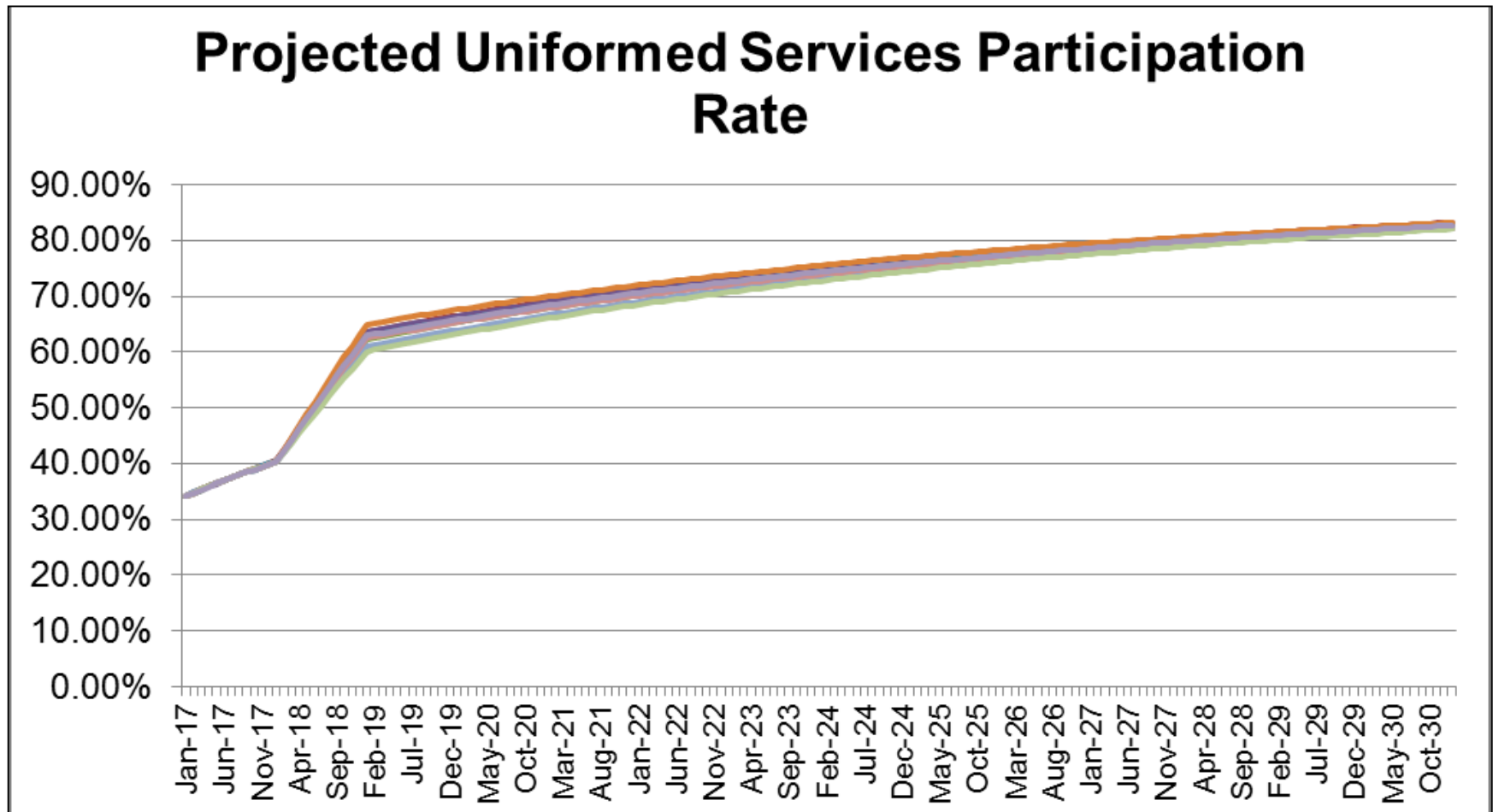
- Quick to produce and modify
- Visualization of groups

Cons:

- Requires one-size-fits-all assumptions (no distinctions for age, AD vs. RR)
- Not suitable for Monte Carlo simulation

Participation Forecast for US: Simulation Results

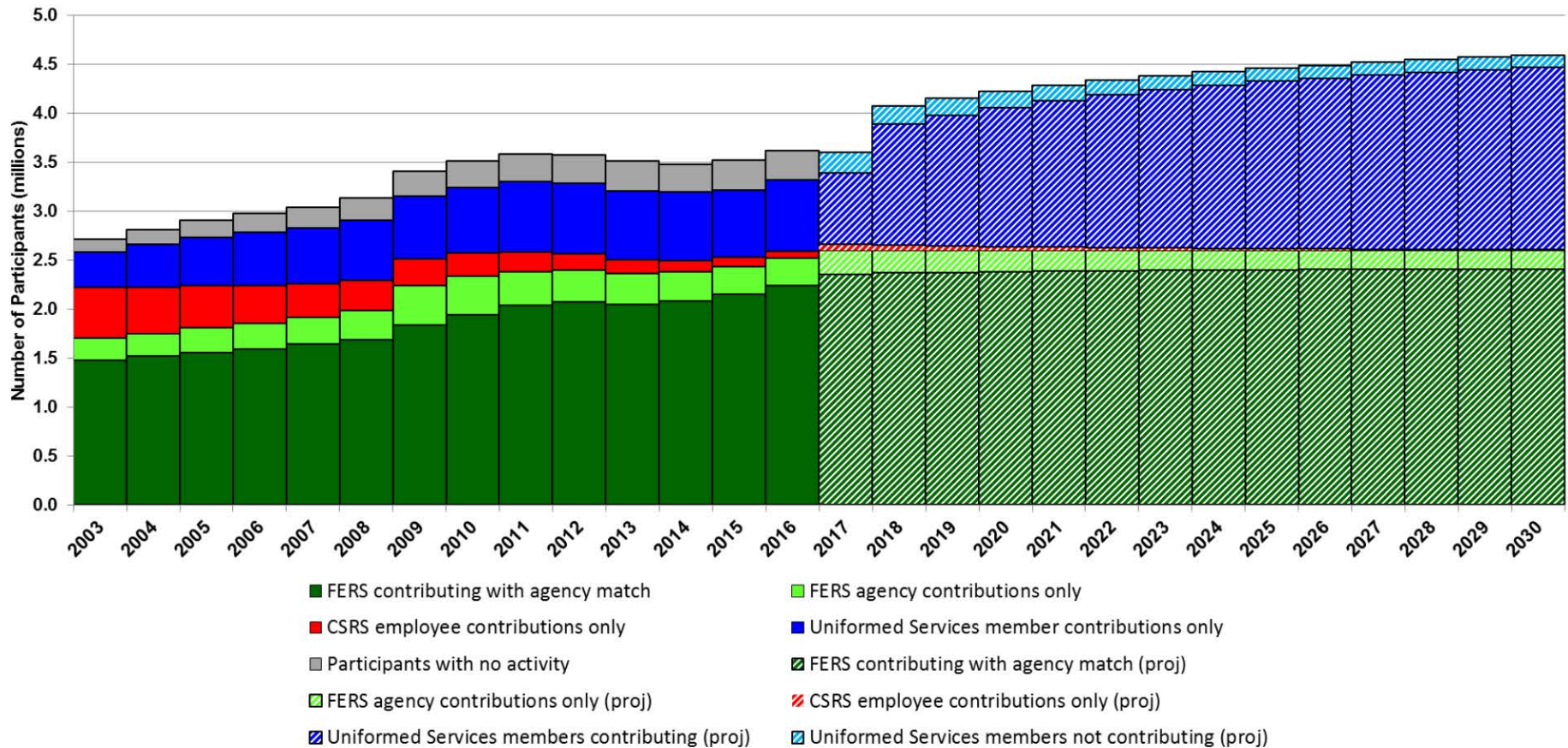
Using Same Start/Stop Rates as FERS



After 2018, US Participation Rate increases ~1% per year until 2030

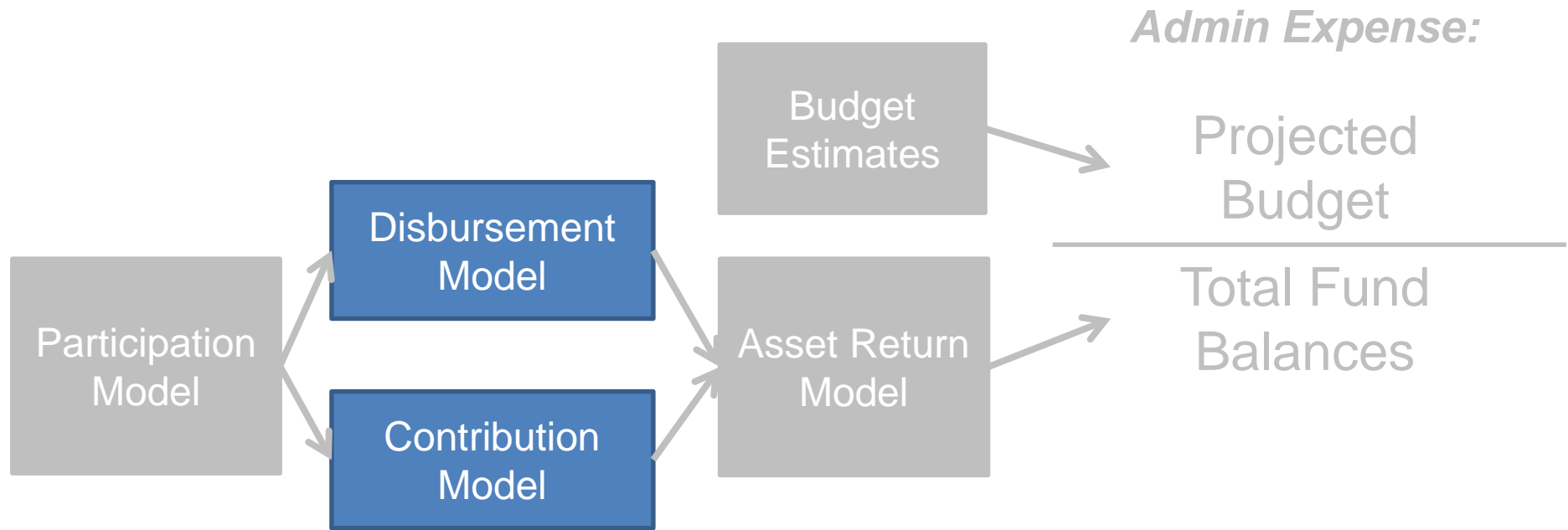
Total Active TSP Participant Counts

TSP Participant Counts 2003-2030 (Actives Only)



By 2030, US will account for roughly 43% of active participants

Next Step: Contributions and Disbursements



Contributions and Disbursements

Money In =

(# of Participants) * (Average Salary) * (Contribution Rate)

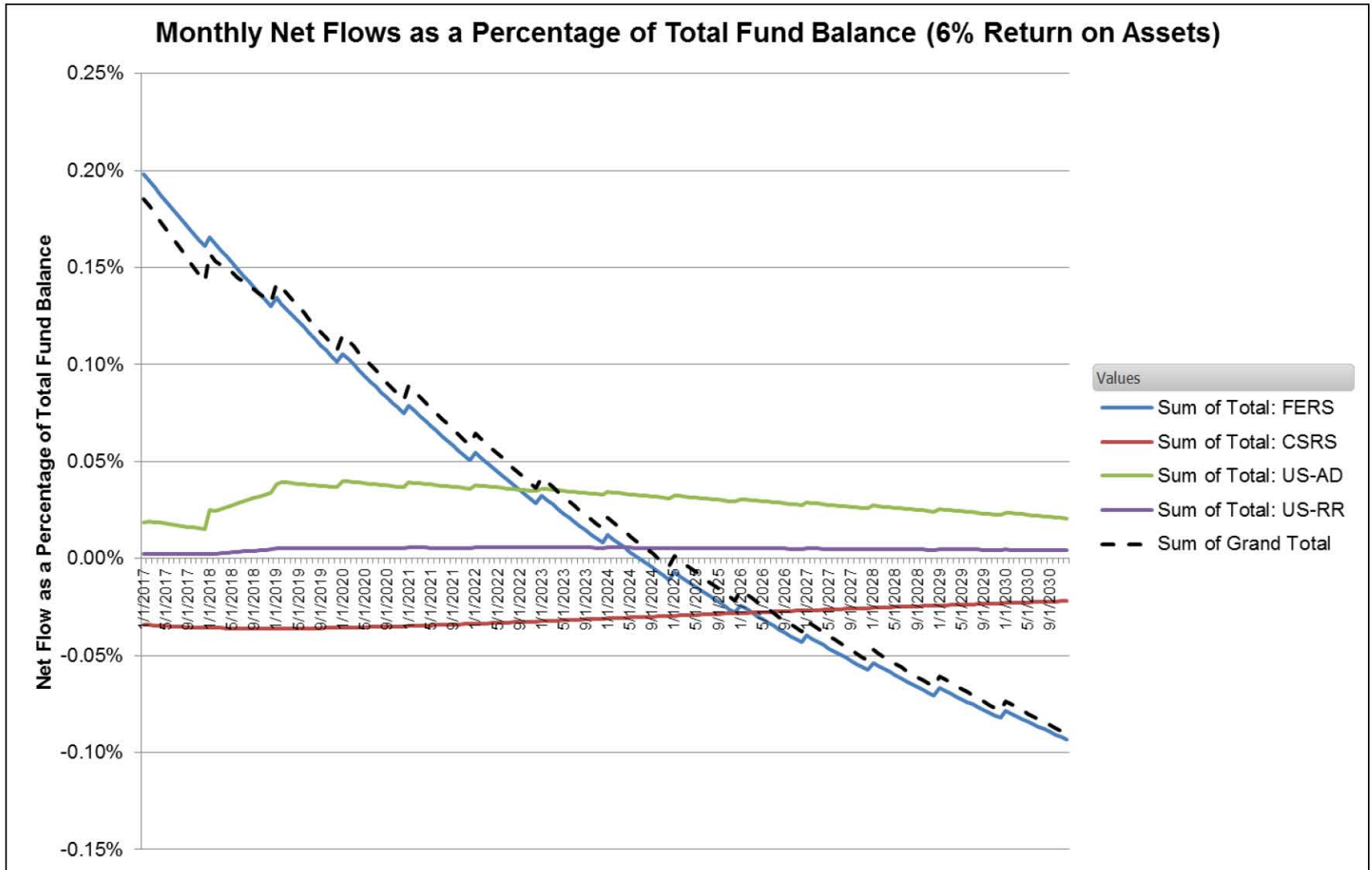
- Participation simulation provides number of participants
- Data analysis provides average salary and contribution rates
- Provisions made for looming changes to Uniformed Services matching and automatic contributions

Money Out =

(Total Assets by Age Band/Plan) * (% of Assets Disbursed)

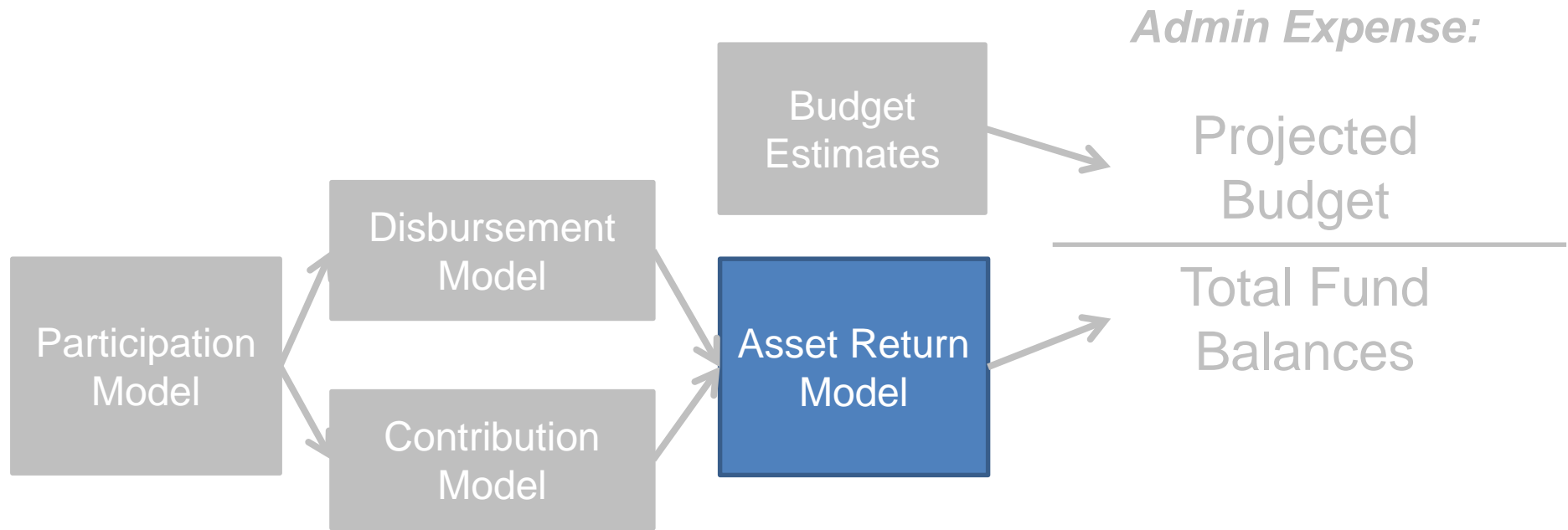
- Data analysis tells us percentage of assets disbursed per period
- Example: 2.46% of FERS 50-54 assets are disbursed each year

Cash Flow Forecast



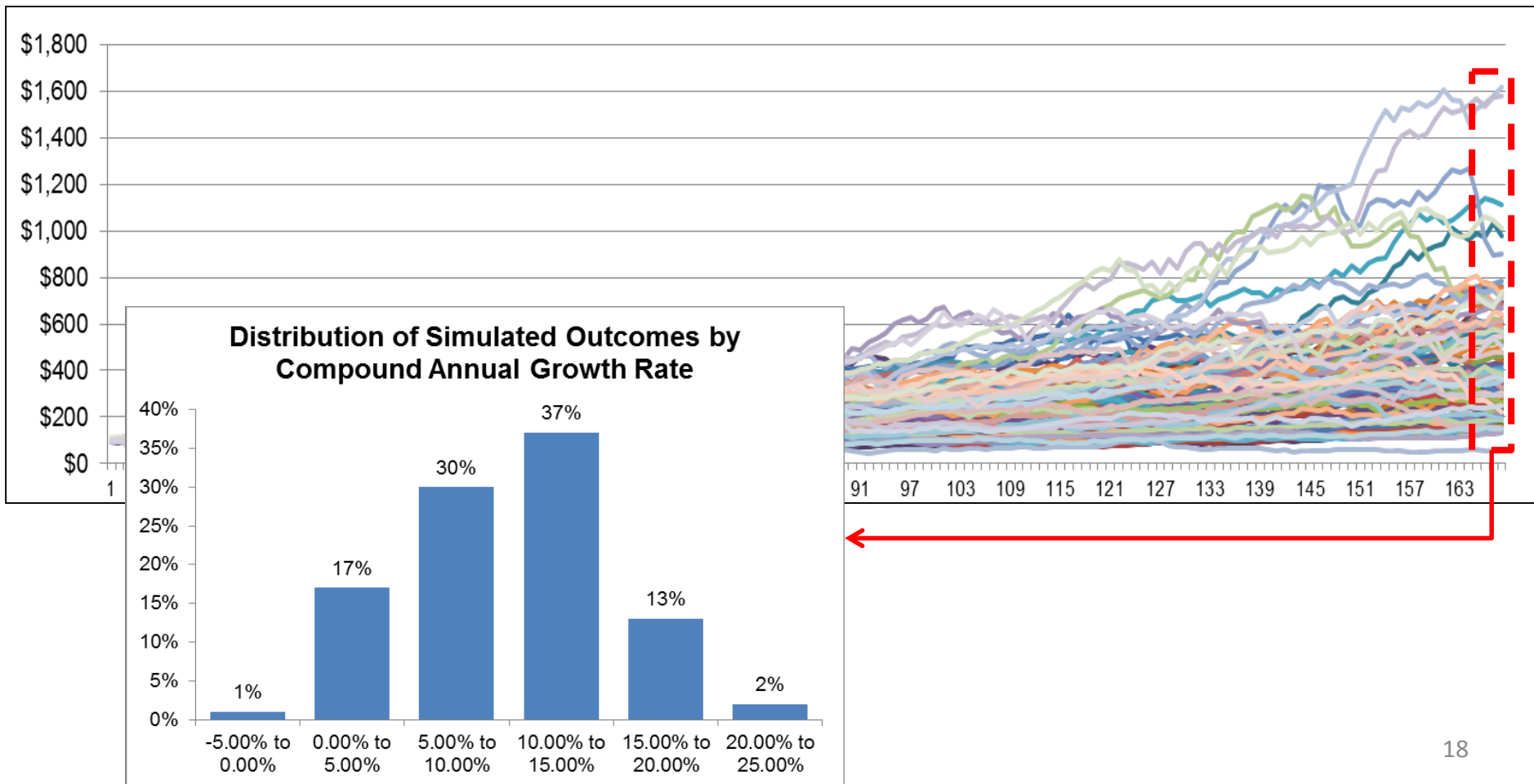
Anticipate change to negative cash flows in the 2020s

Next Step: Return on Assets

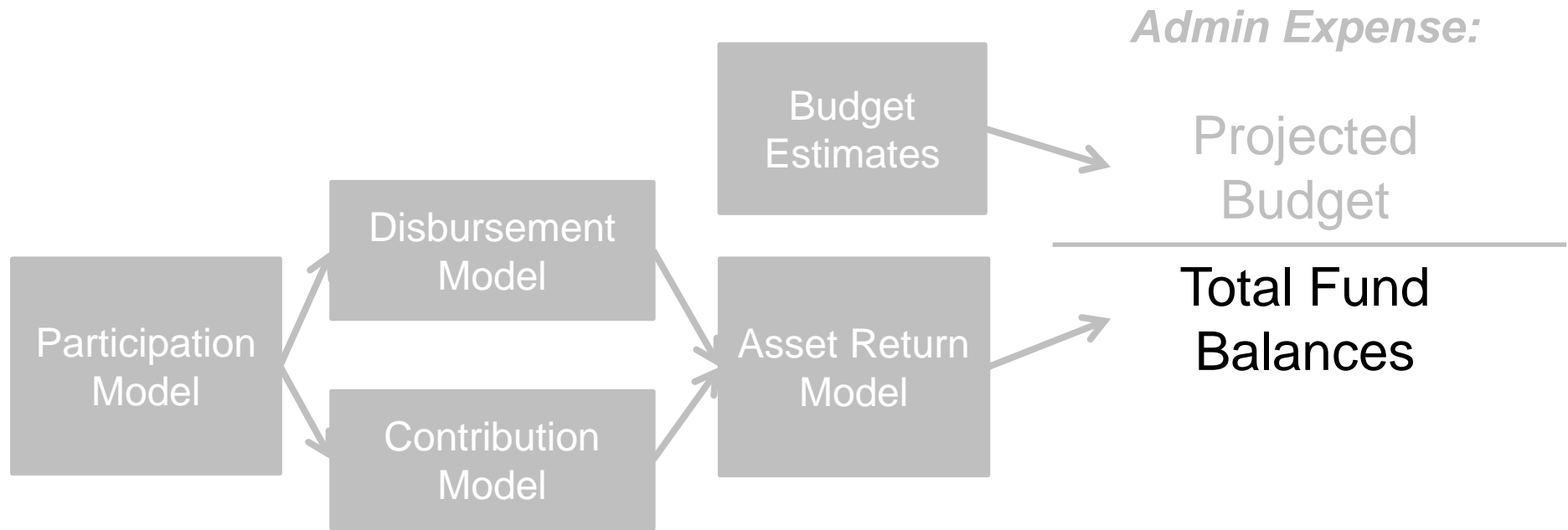


Simulated Asset Returns

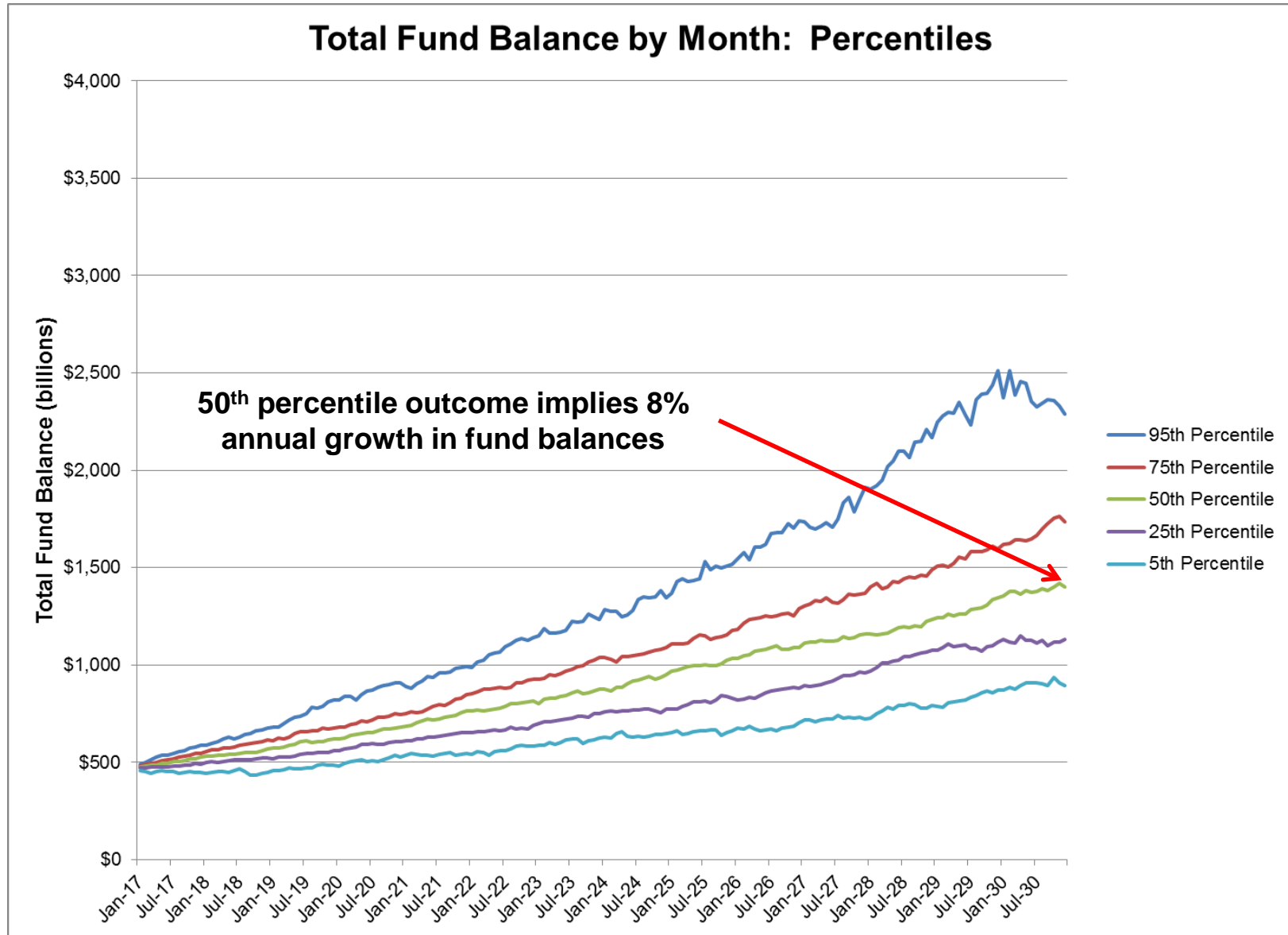
- Bootstrapping approach: Build simulated asset performance by randomly sampling six-month periods of benchmark's actual performance
- Example: For the C Fund, pull six-month segments actual fund returns



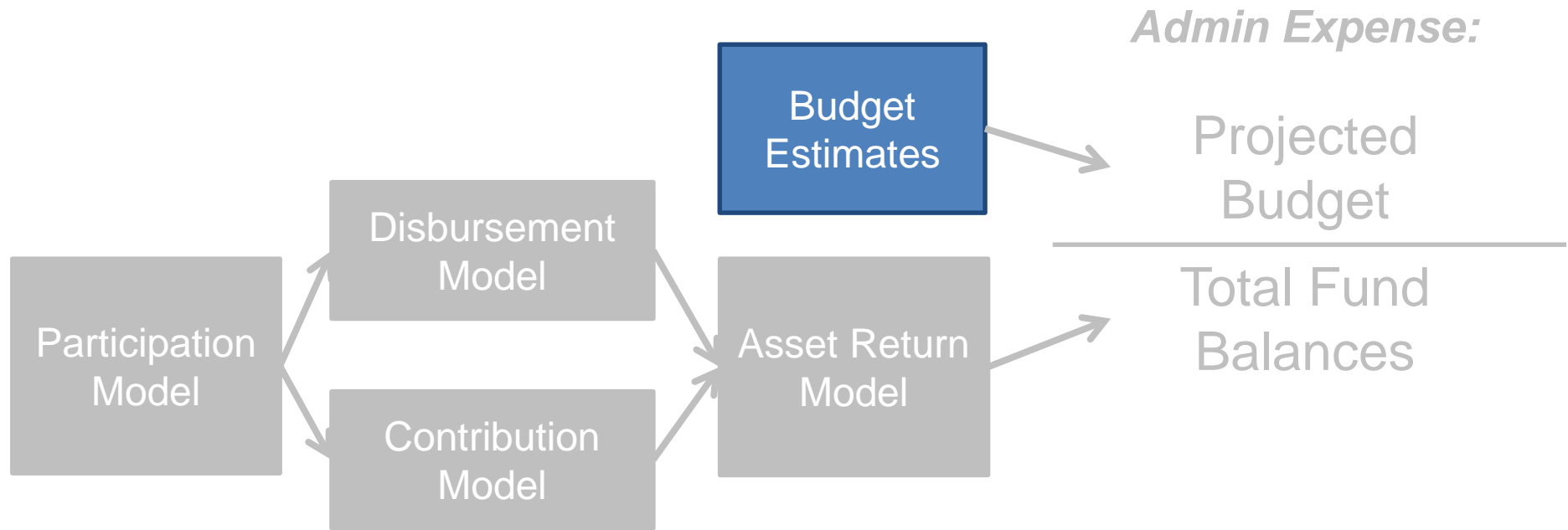
Next Step: Total Fund Balances



Forecast of Total Fund Balances



Next Step: Budget Growth

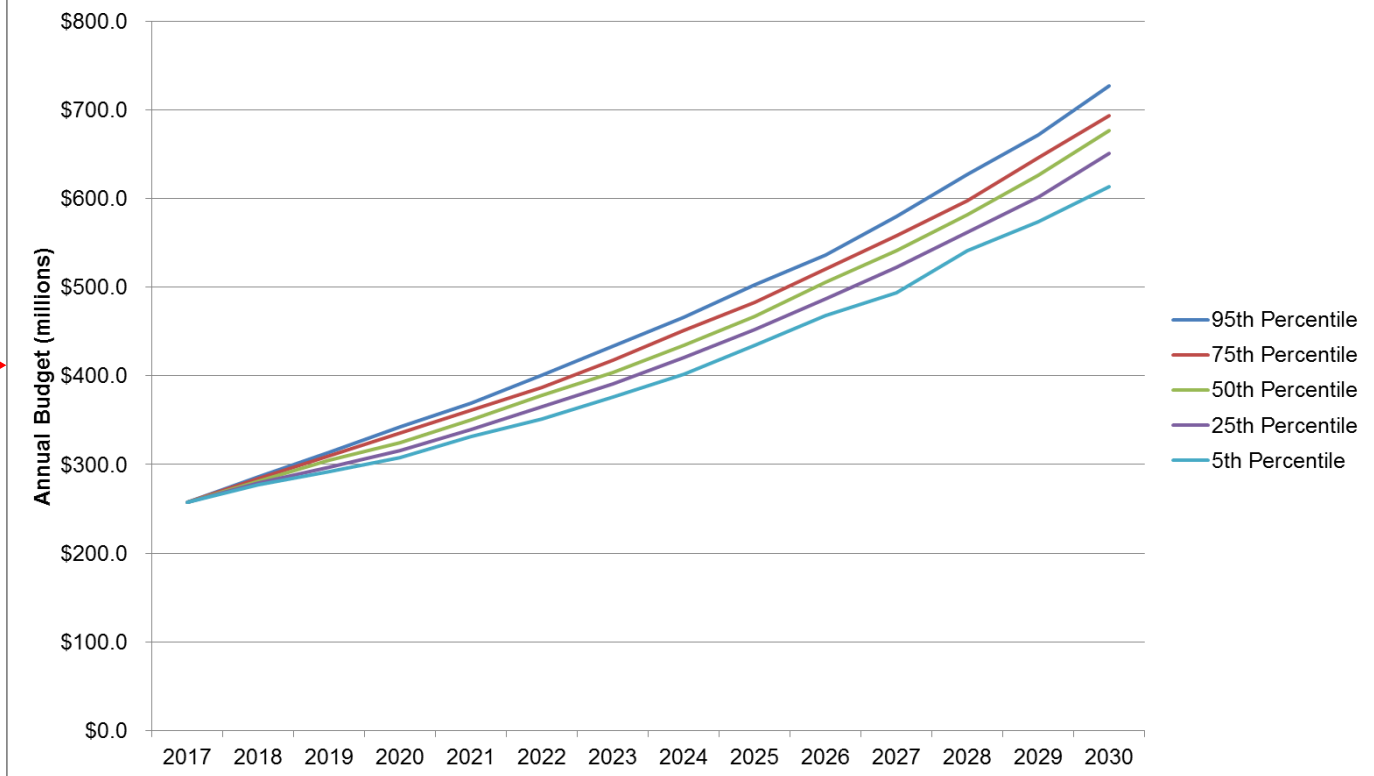


Estimated Budget Values

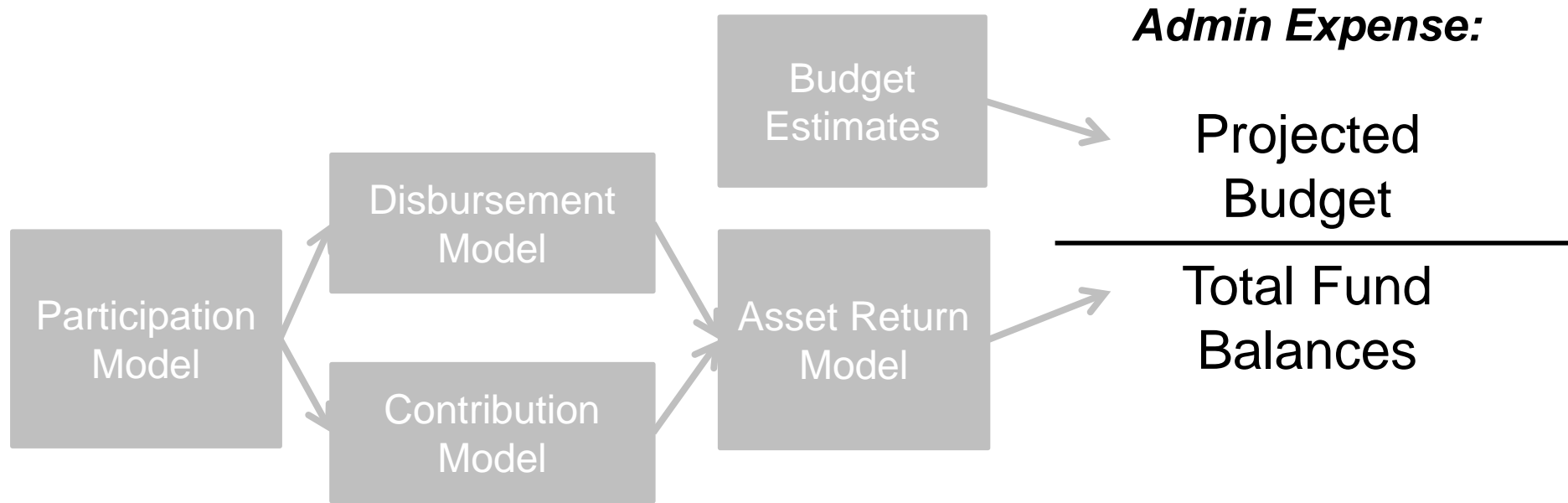
Set Budget Projection Assumptions (\$M)

	<u>Min</u>	<u>Max</u>
2017	257.2	257.2
2018	276.5	286.5
2019	290.0	315.0
2020	305.0	345.0
2021+	5%	10%

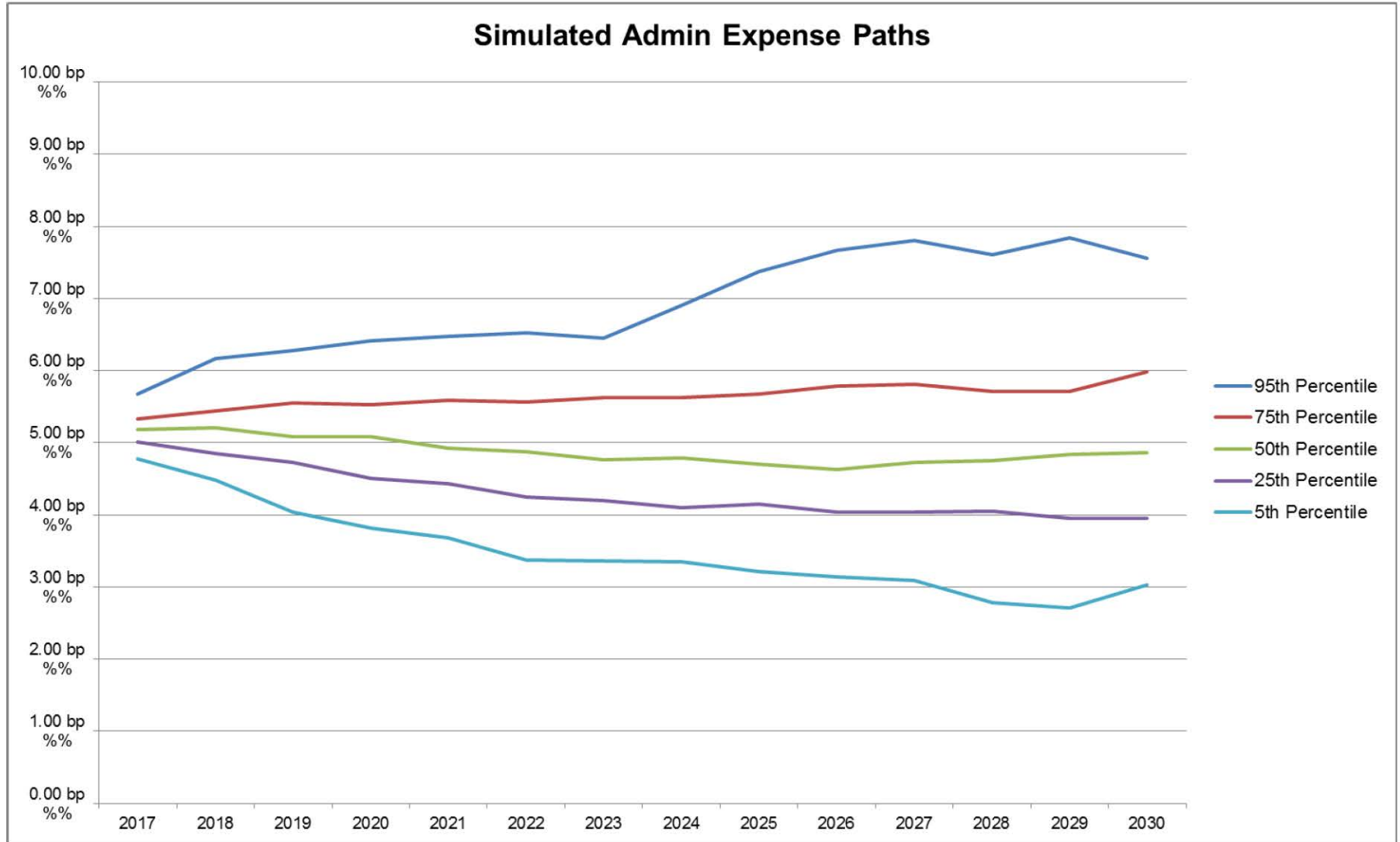
Simulated Budget Values



Last Step: Administrative Expenses

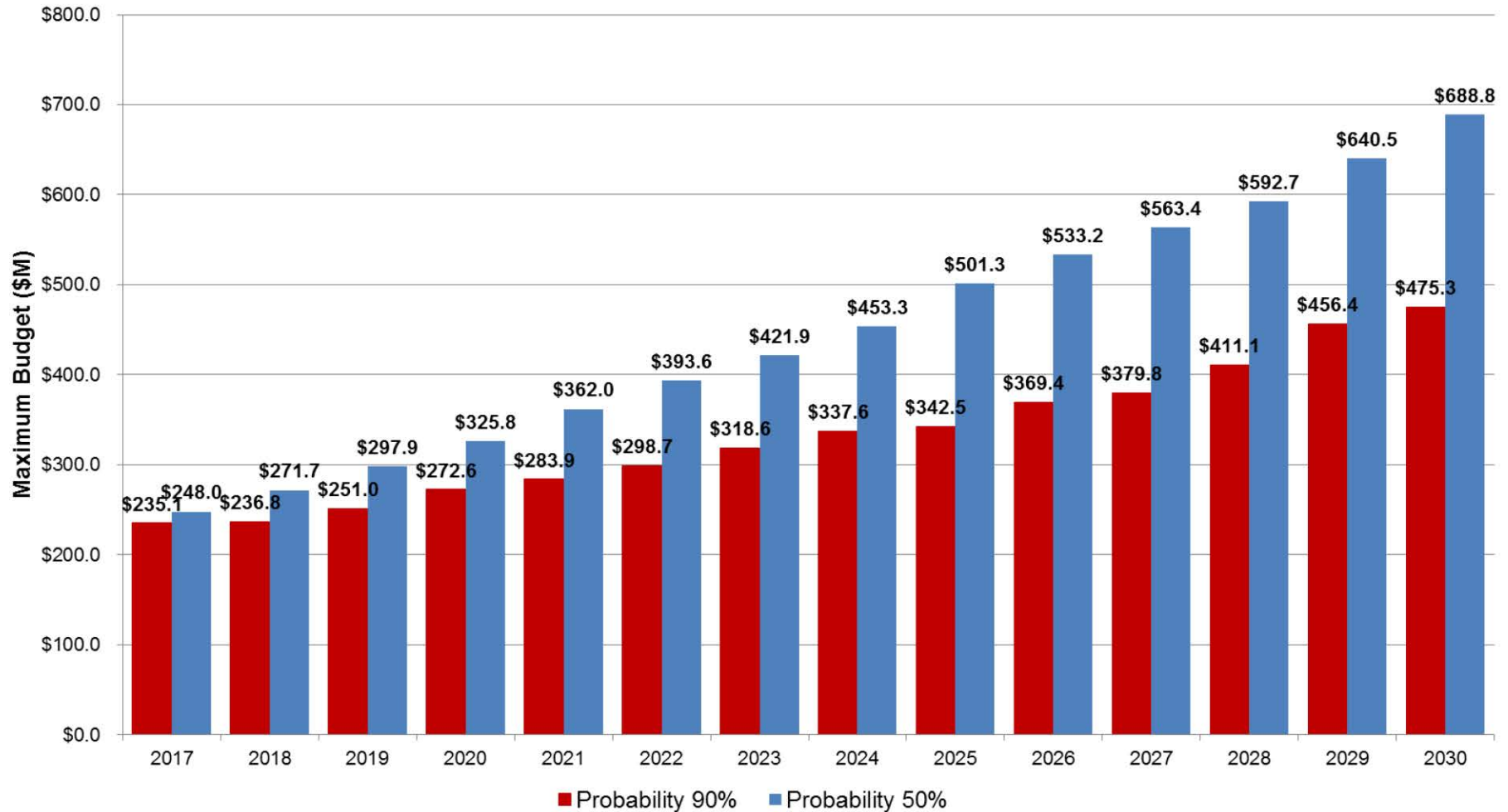


Forecasts of Administrative Expense



Impact of Admin Expense Target on Future Budgets

Budgets To Ensure Admin Expense Below 5.0bp (Probability 90% and 50%)



Summary

- We have tools to generate forecasts for admin expenses and the inputs that affect it
 - Participation: FERS is approaching steady state while US is poised for big changes
 - Trade-off between admin expenses target and budget growth can be quantified
- Next steps
 - Continue to validate models by monitoring participant behavior, particularly post-separation
 - Move models to a faster platform

Questions?

