

# Complexity in an Unexpected Place: Quantities in Selected Acquisition Reports



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# Selected Acquisition Reports

**There are many sources for MDAP acquisition data, but SARs are the best data for many analyses**

**Program Definition**

**Full History**

**Full Projection**

**Inflation Adjustments**

Our meeting with AT&L staff yielded a few thought-provoking ideas

SARs are Congress' documents

SARs are the best data source for analysis

SARs are official

# SARs and the PB do not always agree

## Gray Eagle Program SAR and Budget Comparison

	FY 2015		FY 2016		FY 2017		FY 2018	
	Q	Cost (TY \$)	Q	Cost (TY \$)	Q	Cost (TY \$)	Q	Cost (TY \$)
PB 2017	19	\$246,490 k	17	\$355,445 k	0	\$60,117 k	0	\$10,806 k
Dec 2015 SAR	2	\$246,400 k	3	\$322,200 k	0	\$60,200 k	0	\$15,200 k
<b>Difference</b>	<b>17</b>	<b>\$90 k</b>	<b>14</b>	<b>\$33,245 k</b>	<b>0</b>	<b>-\$83 k</b>	<b>0</b>	<b>-\$4,394 k</b>

# Inspiration

# We've performed many root cause analyses



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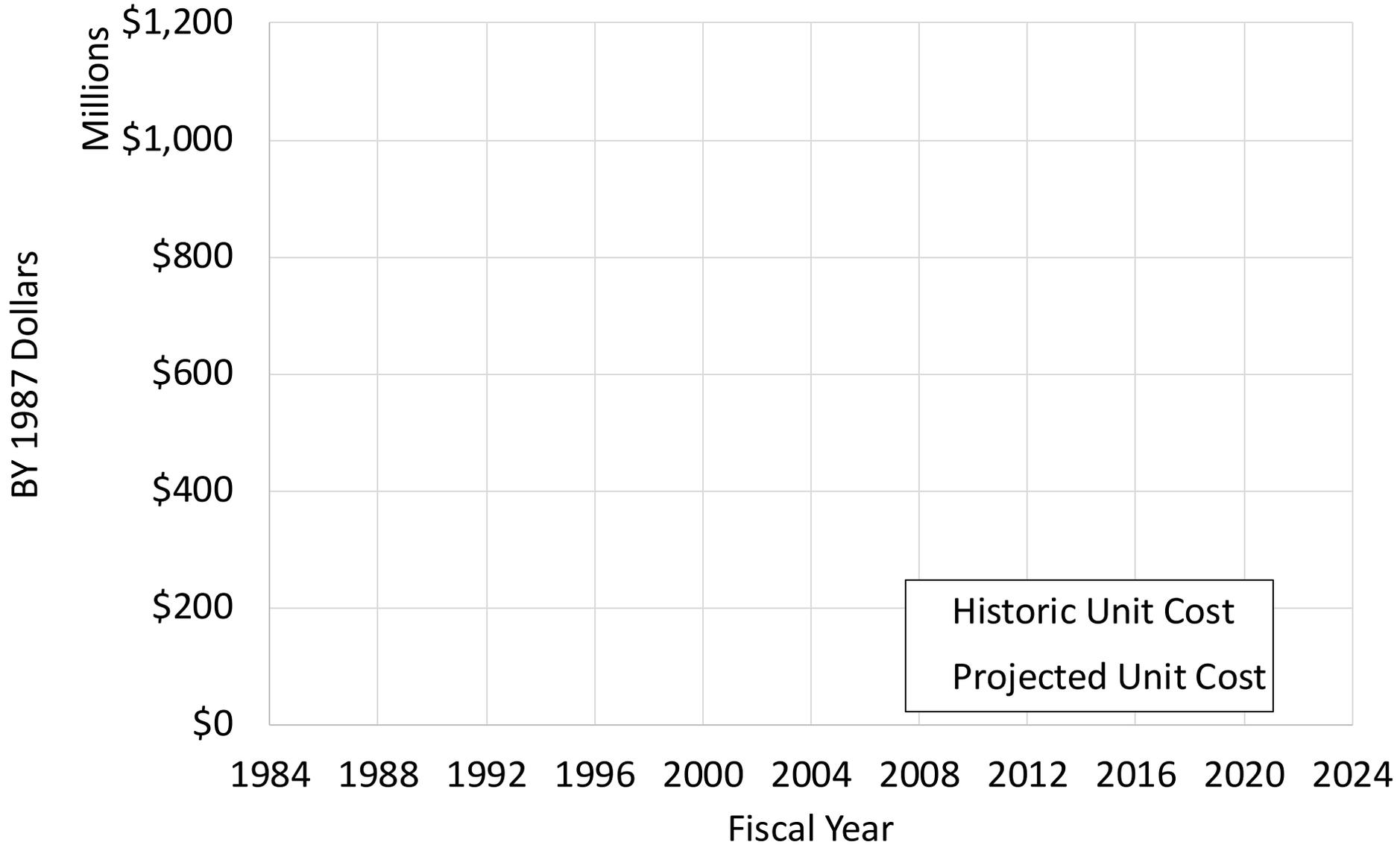
# We've created a taxonomy of quantity challenges

1. Changes over Time
2. Mixed Types
3. Accidents

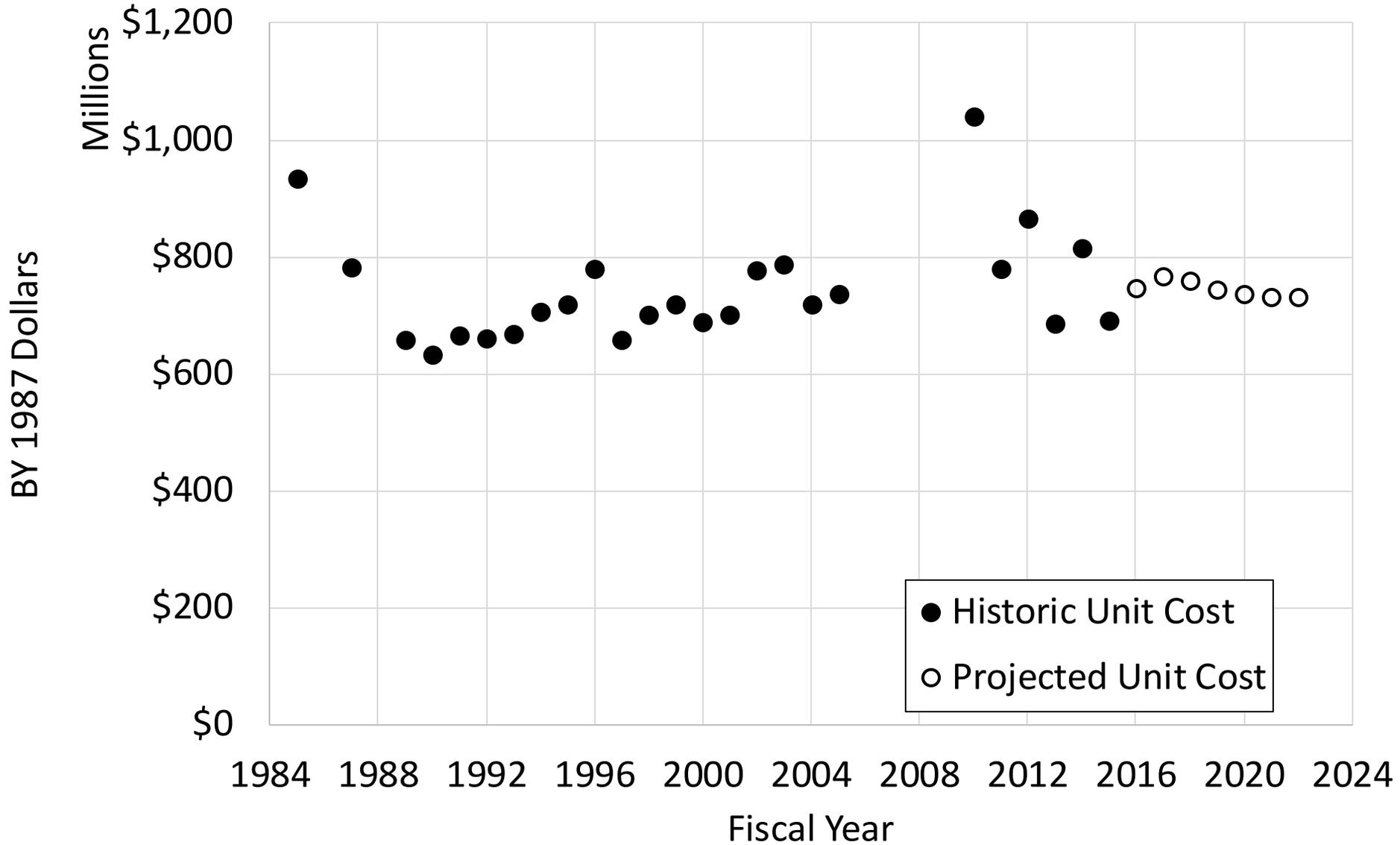
**Most programs have at least one, many have more**

# Changes over Time

# Annual Unit Lot Costs for the DDG 51 Program



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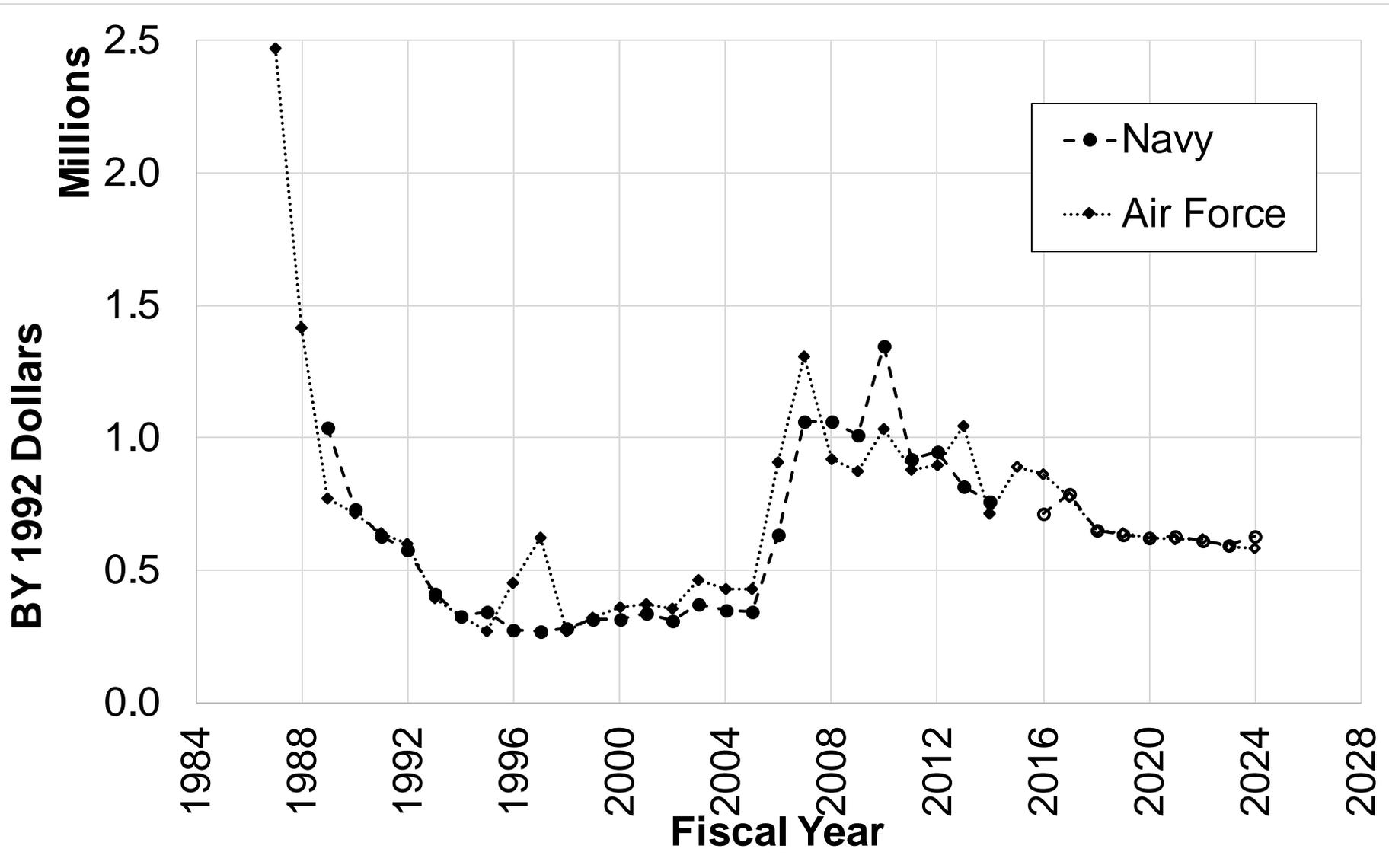


# Four DDG 51 Units in Guam





# Annual Unit Lot Costs for the AMRAAM Program

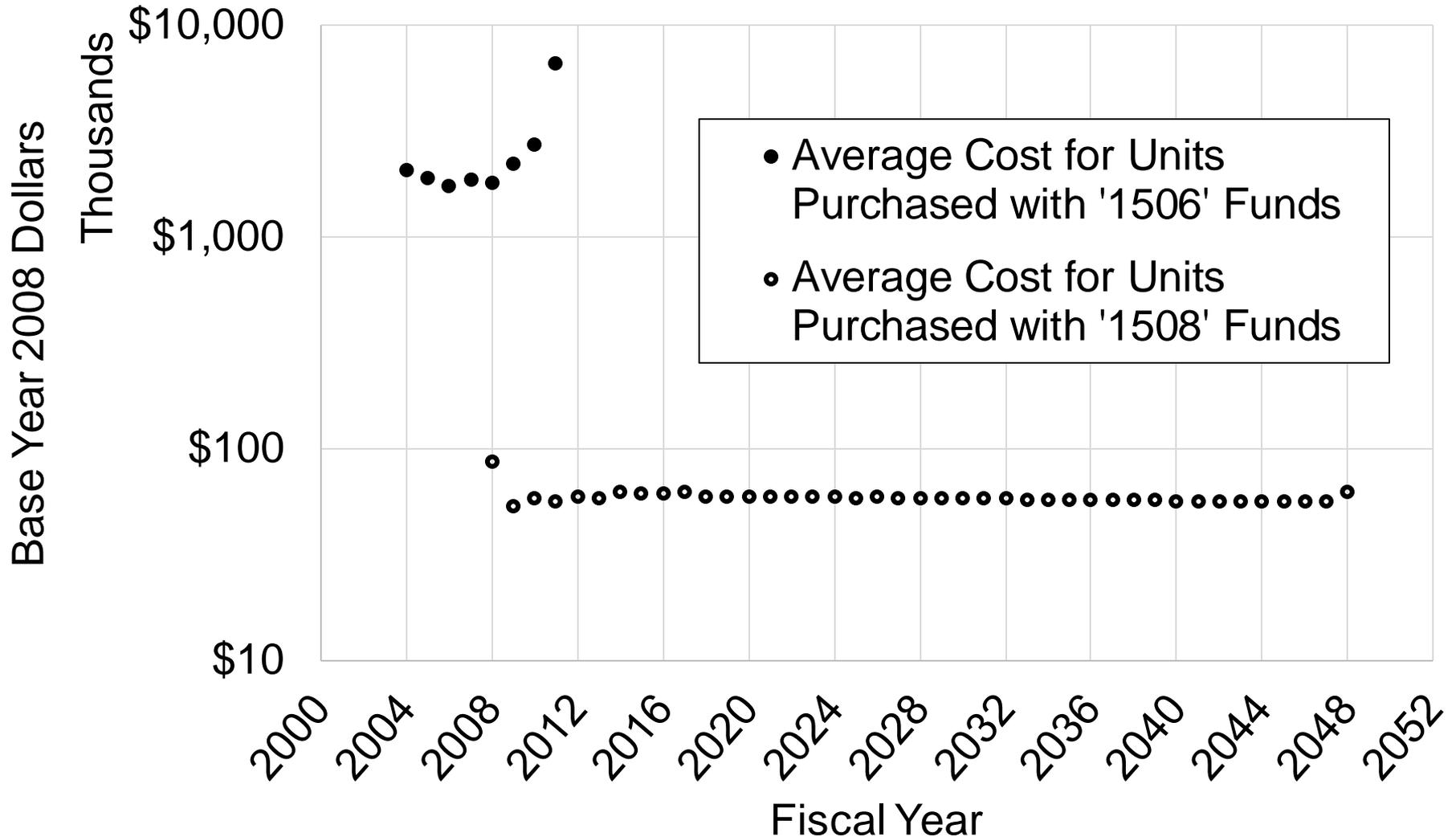


# Mixed Types

# IDECM (Integrated Defensive Electronic Countermeasures)



# Annual Unit Lot Costs for the IDECM Block 2/ 3 Subprogram by Appropriation



# FMTV (Family of Medium Tactical Vehicles)



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M1095 A1R MTV trailer produced by Stewart & Stevenson 2

# Accidents

Where to from here?

Avoid the obvious solution:  
Don't stand in the way of progress

Perhaps what you measure is what you get.  
More likely, what you measure is *all* you get.

-H. Thomas Johnson

# Why does this data matter?



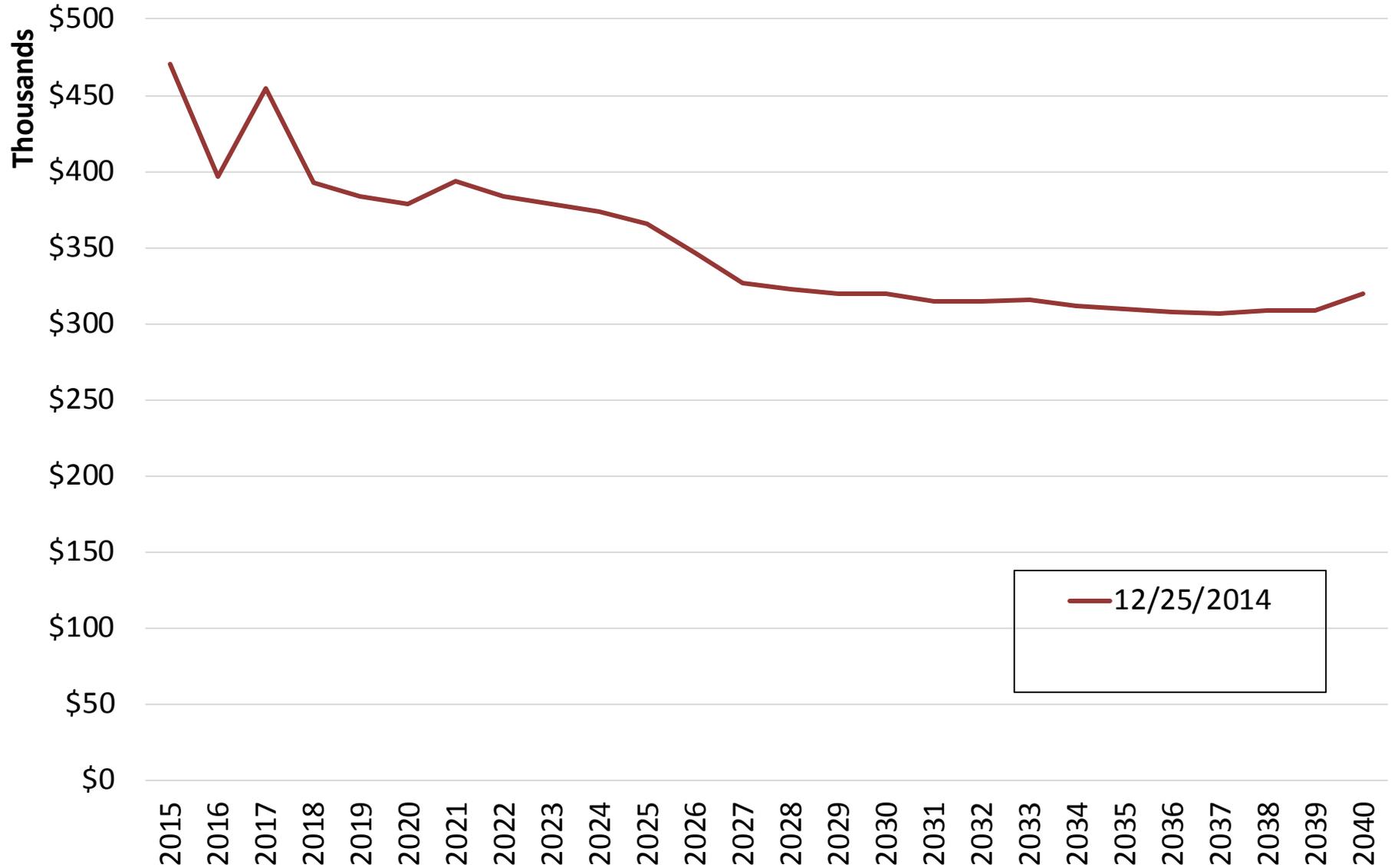
$$AUC = \frac{C}{Q}$$

# A “Wargame”: Joint Light Tactical Vehicle

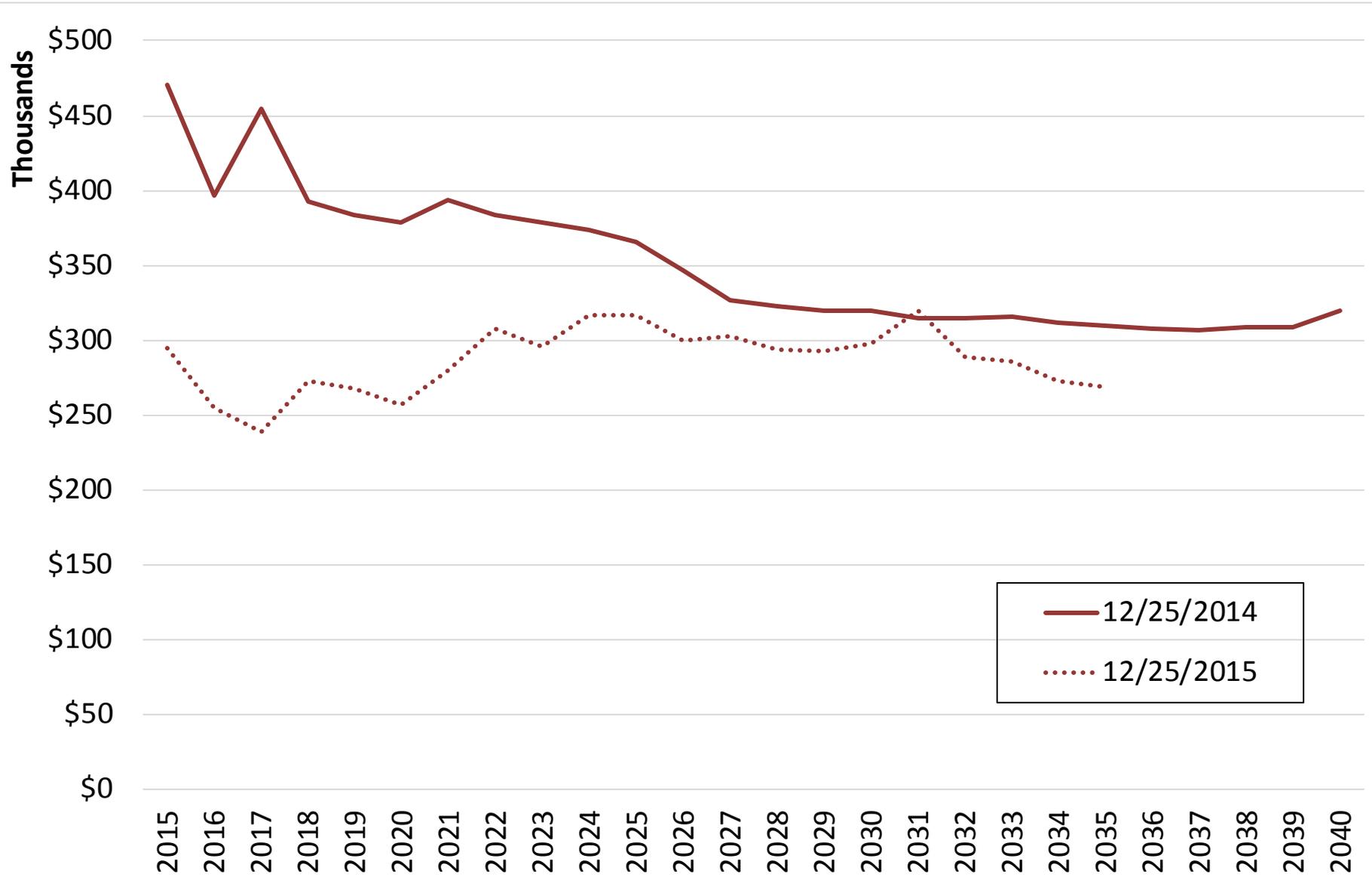
# JLTV is just a truck



# JLTV SAR Unit Costs



# JLTV SAR Unit Costs



# JLTV is four trucks



# List of Subprograms

<b>Number</b>	<b>Subprogram</b>	<b>Description</b>
1	Utility	Base design Utility Vehicle
2	General Purpose (GPV)	Base design GPV
3	Heavy Guns Carrier (HGC)	Base design HGC
4	Close Combat Weapons Carrier (CCWC)	Base design CCWC

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5	P3I – Common	P3I common to all variants
6	P3I – HGC and CCWC	P3I specific to HGC and CCWC
7	Support equipment	Trailers, armor kits, etc.

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7	Support equipment	Trailers, armor kits, etc.
8	Utility Block II	Revised design Utility Vehicle
9	Light Scout (LS)	New design Light Scout Vehicle
10	P3I – Light Scout	P3I specific to new LS variant
11	Heavy Guns Carrier Block II	Revised design HGC

## Take Aways

The usual assumption is rarely right

For the analyst: “Beware”

For policy makers: Opportunities Exist



**JOINT STRIKE FIGHTER**  
the next generation strike fighter

# Backup

# Does Chinook also have a mix problem? Yes



CH-47F



MH-47G

**This program has four variants**

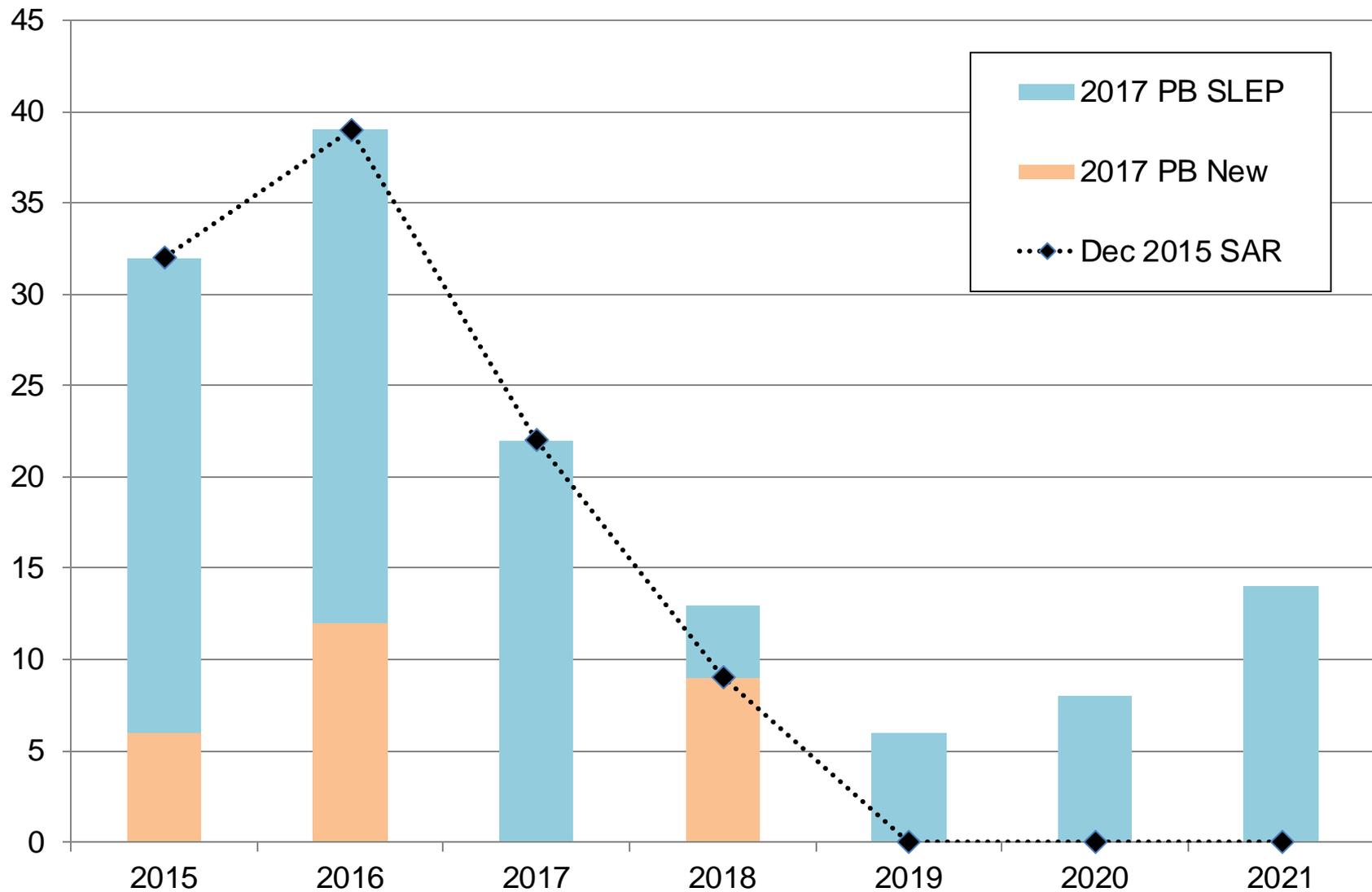
**SLEPs of CH-47D to CH-47F**

**SLEPs of MH-47E to MH-47G**

**New build CH-47F for active duty Army**

**New build CH-47F for National Guard**

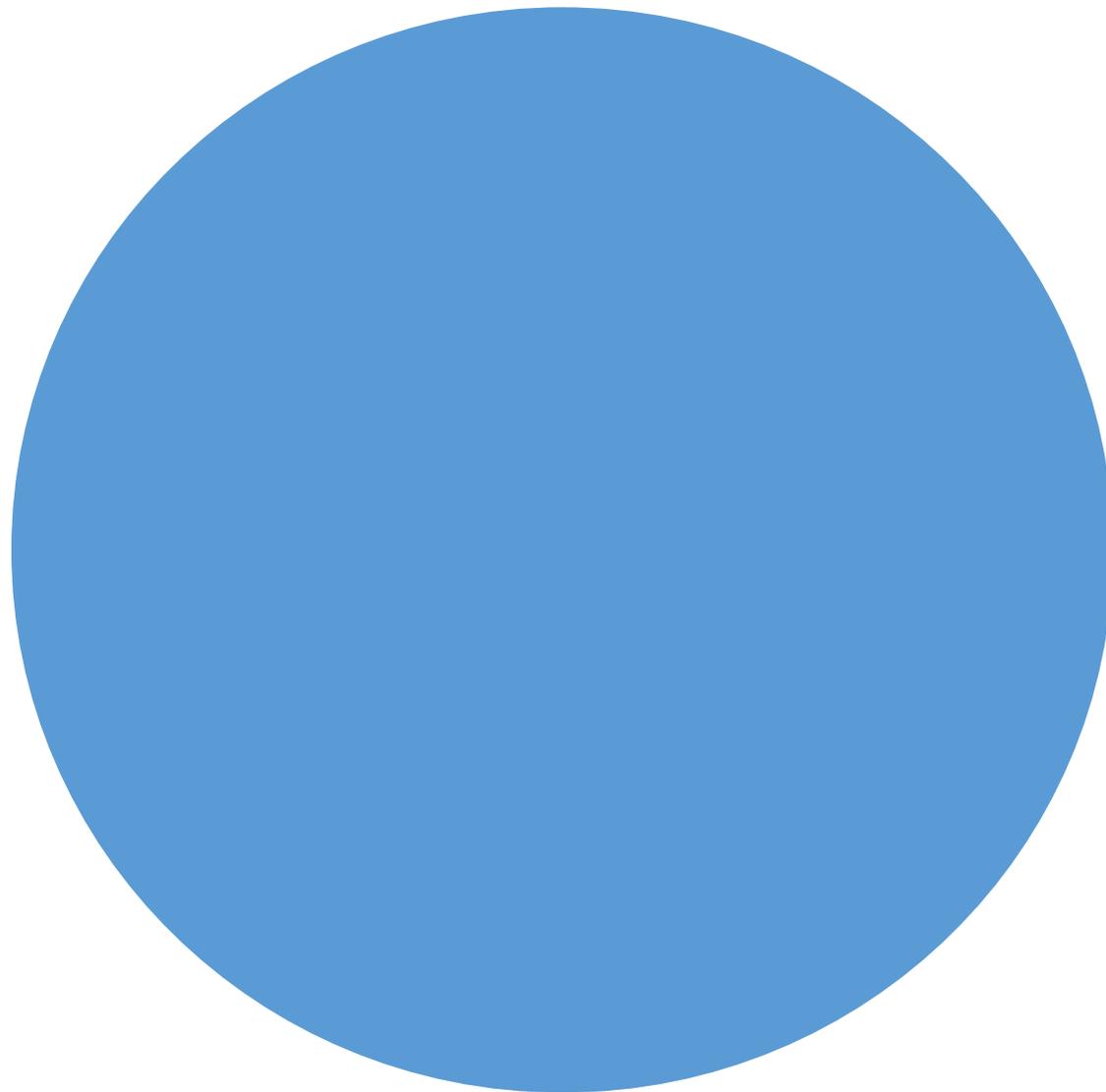
# SAR vs PB production quantities for CH-47F



# EELV (Evolved Expendable Launch Vehicle)

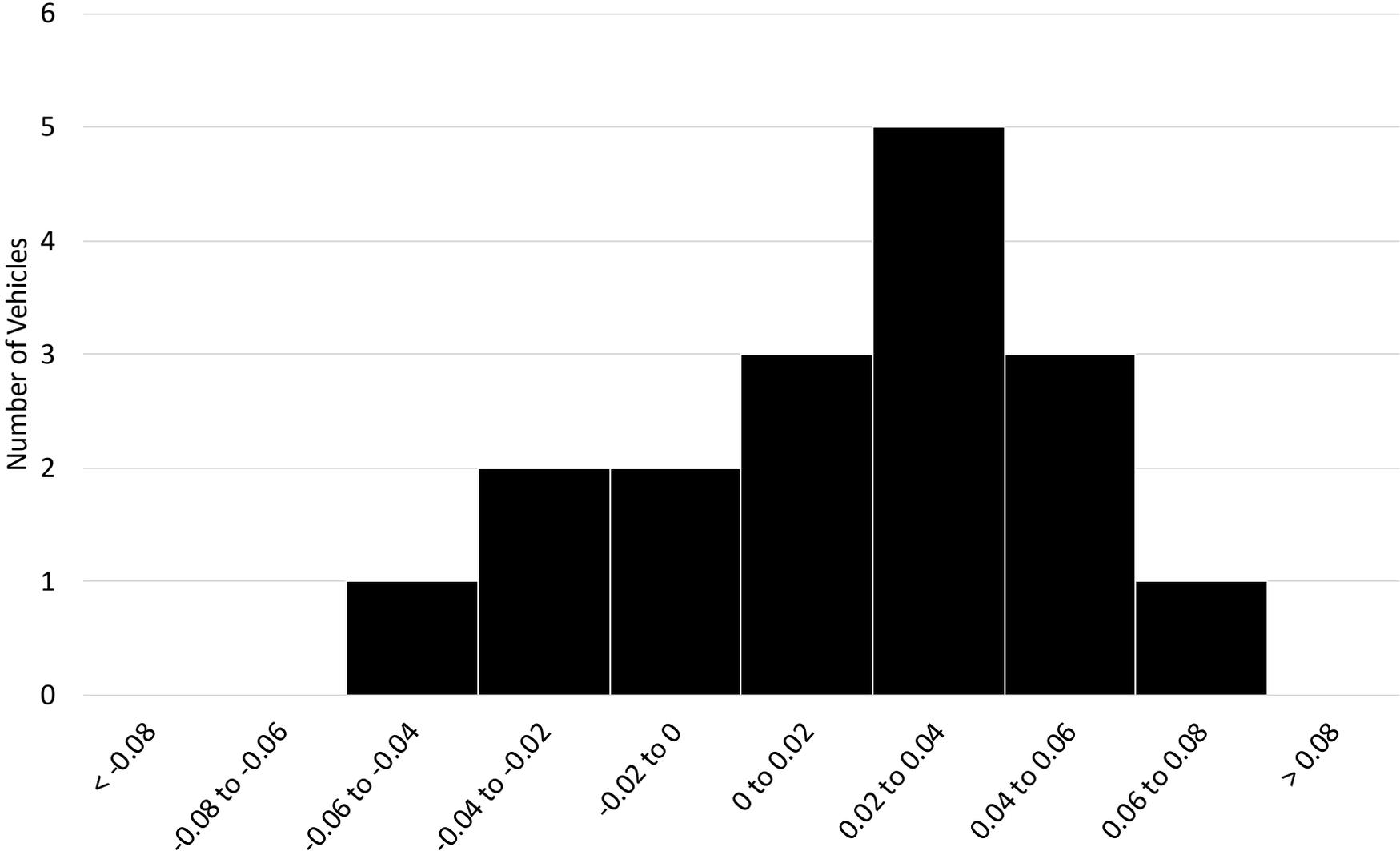


# SAR Distribution of EELV Procurement Funds



- End Item Recurring Flyaway
- Non End Item Recurring Flyaway
- Non Recurring Flyaway
- Total Support

# Average Annual Unit Price Growth (TY\$) in Land Vehicles



# Do nonidentical units really matter?

Ground vehicles show ~15% annual real price growth if you ignore content changes

This drops to ~5% after accounting for nonidentical units

