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- With the NCCA Joint Inflation Calculator (JIC), prices have been normalized to base year 2016 using the raw indices of Other Procurement, Navy (OPN).
- Because the prices have been negotiated for each of the years of the contract's period of performance, outlays have not been applied.
- In addition, the prices represent actual expenditures.



# Product Description Categories

- Each product description can be categorized as a
  - **Licensed Product**
    - a set of rights granted by a publisher to a buyer for use of the publisher's software
  - **Maintenance and Support**
    - a standard vendor offering that entitles a customer to ongoing development and delivery of software bug fixes and product upgrades
  - **Service**
    - expertise from a vendor that enables an organization to develop, manage, or optimize their system; a vendor may offer additional personnel for training, consulting, etc.



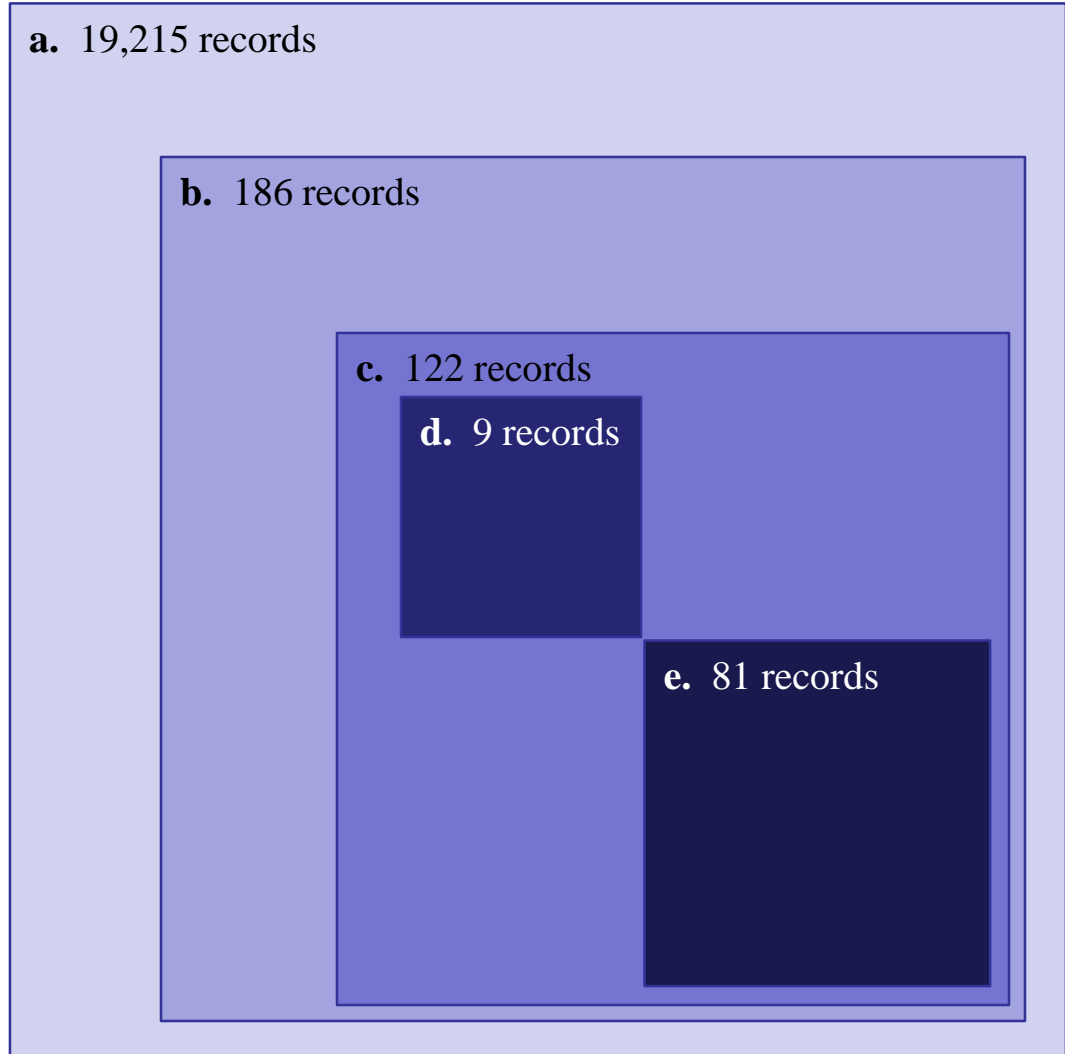
# Data Selected for Price Fluctuation Analysis

- More specifically, we have
  - 19,215 Vendor A records
  - 186 of these Vendor A records refer to a particular product, Product A
    - 122 of these records fall under the category, Licensed Product
      - 113 records are usable
      - 9 records are unusable
        - 8 records are without a Unit Price on Order
        - 1 record is questionable
    - » Product A has two license types: License A and License B; 81 of these records are considered License A



# Data Selected for Price Fluctuation Analysis

- a. Vendor A
- b. Vendor A, Product A
- c. Vendor A, Product A, Licensed Product
- d. Vendor A, Product A, Licensed Product, Unusable
- e. Vendor A, Product A, Licensed Product, Usable, License A

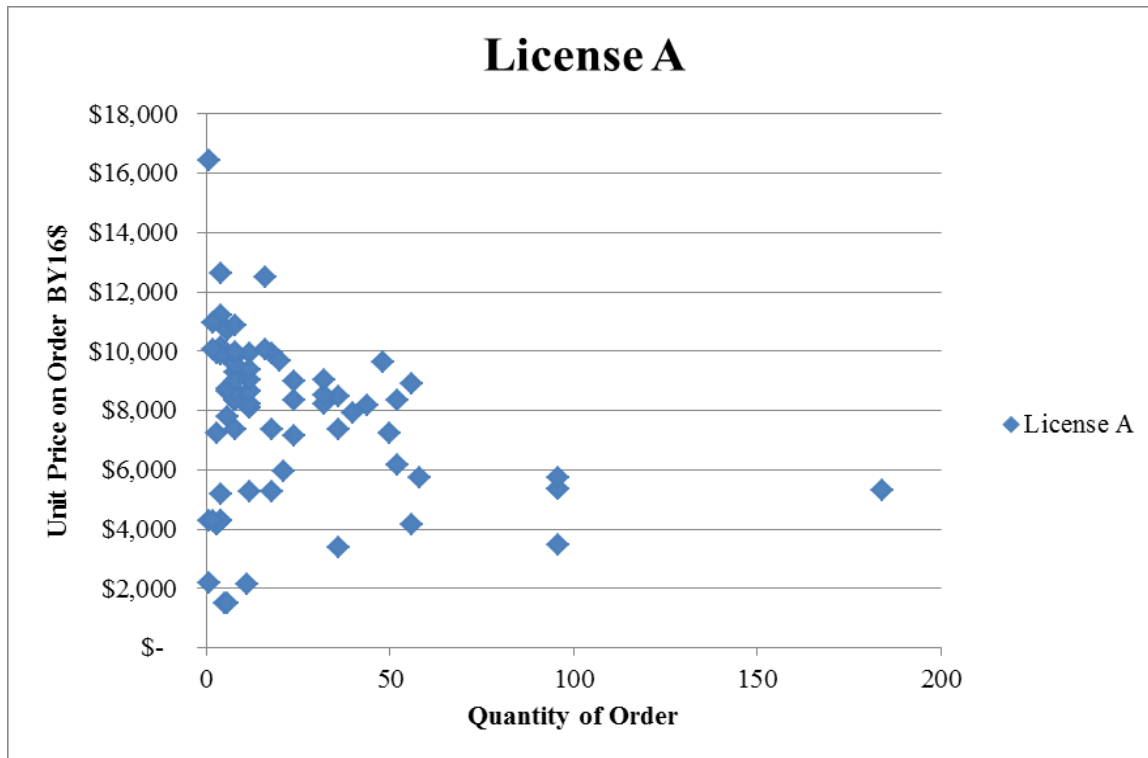




# Licensed Product Price Fluctuation

## Single Licensed Product

- 81 Vendor A, Product A, License A records



<i>License A</i>		
Mean	\$	7,766
Standard Error	\$	301
Median	\$	8,329
Mode	\$	8,329
Standard Deviation	\$	2,706
Sample Variance	\$	7,322,656
Kurtosis	\$	1
Skewness	\$	(0)
Range	\$	14,928
Minimum	\$	1,503
Maximum	\$	16,432
Sum	\$	629,044
Count		81

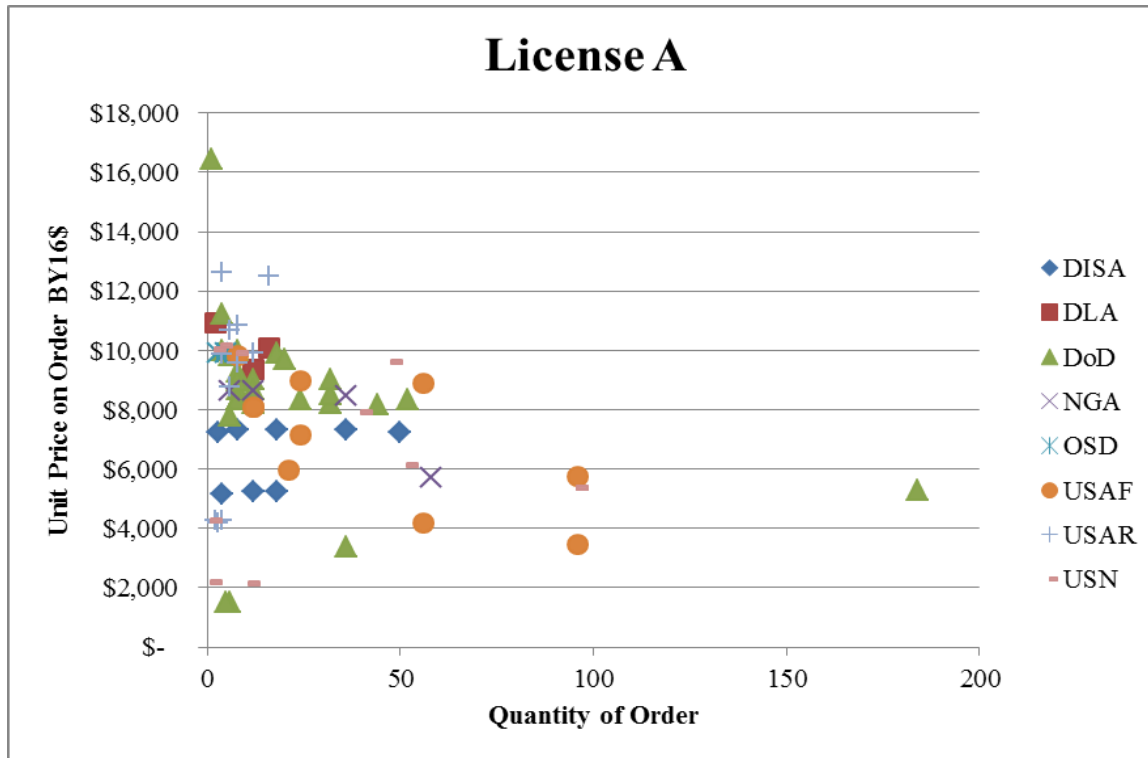
No significant trend exists. Could the fluctuation in prices be explained by identifying the licensed product by the End User Agency or Service?



# Licensed Product Price Fluctuation

Identified by End User Agency or Service

- 81 Vendor A, Product A, License A records



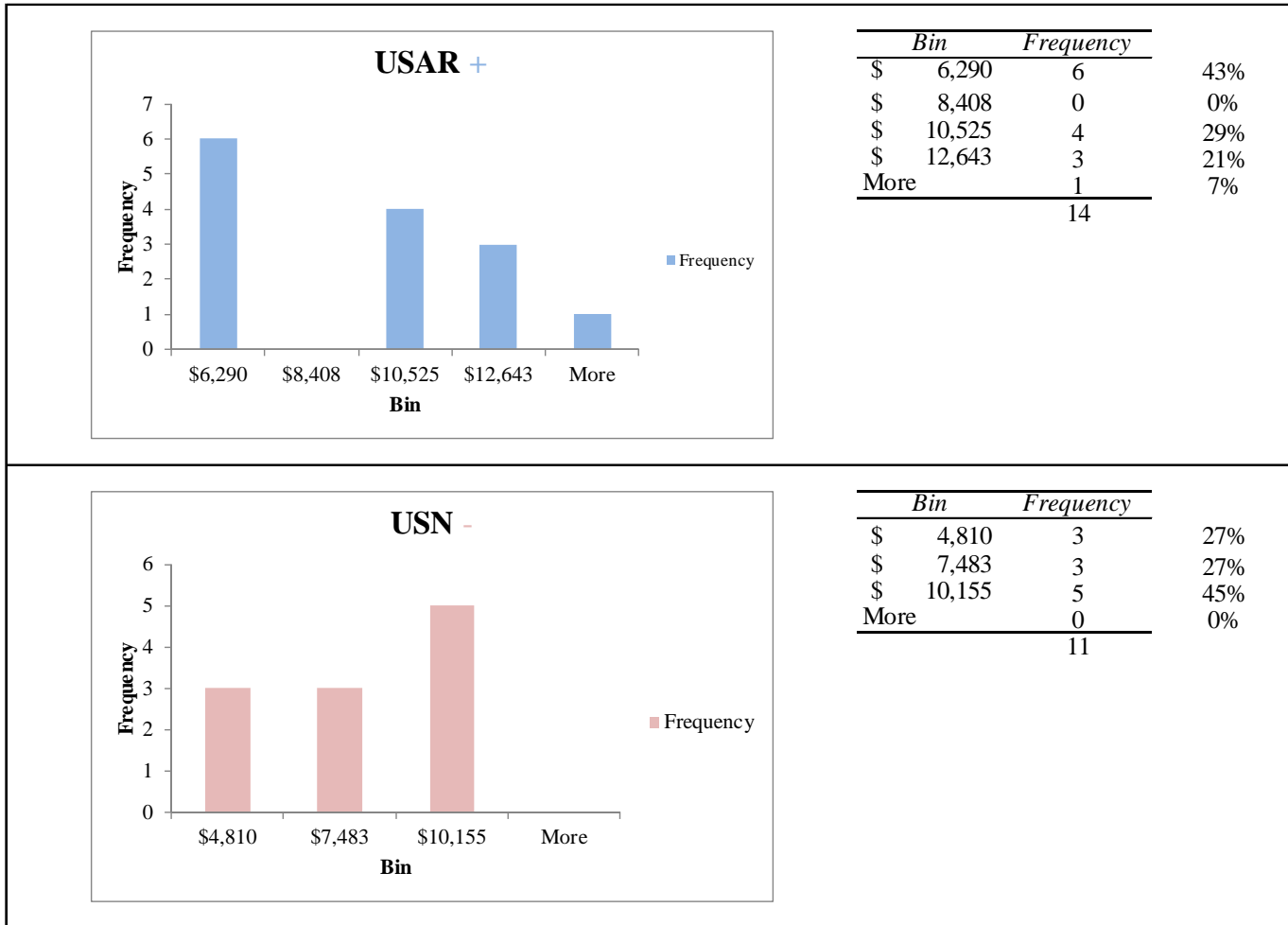
<i>License A</i>	
Mean	\$ 7,766
Standard Error	\$ 301
Median	\$ 8,329
Mode	\$ 8,329
Standard Deviation	\$ 2,706
Sample Variance	\$ 7,322,656
Kurtosis	\$ 1
Skewness	\$ (0)
Range	\$ 14,928
Minimum	\$ 1,503
Maximum	\$ 16,432
Sum	\$ 629,044
Count	81





# Licensed Product Price Fluctuation

## USAR & USN



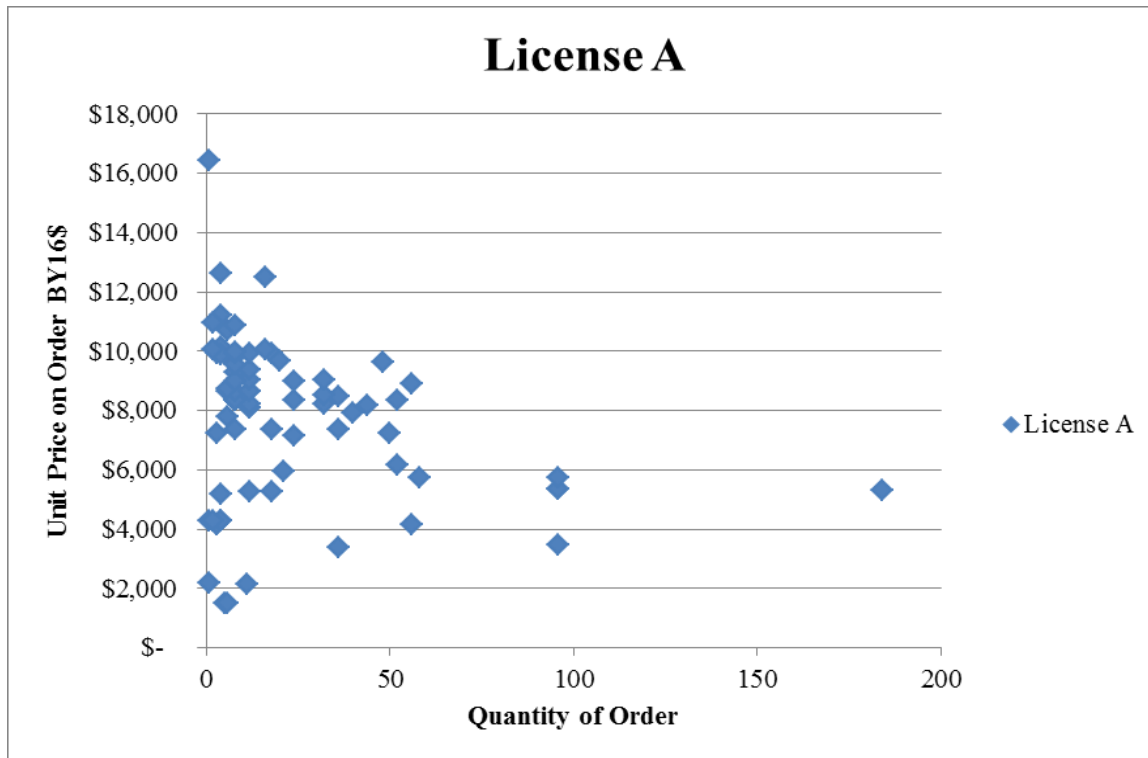
The price of a single licensed product fluctuates greatly within a single entity.



# Licensed Product Price Fluctuation

## Single Licensed Product

- 81 Vendor A, Product A, License A records



<i>License A</i>		
Mean	\$	7,766
Standard Error	\$	301
Median	\$	8,329
Mode	\$	8,329
Standard Deviation	\$	2,706
Sample Variance	\$	7,322,656
Kurtosis	\$	1
Skewness	\$	(0)
Range	\$	14,928
Minimum	\$	1,503
Maximum	\$	16,432
Sum	\$	629,044
Count		81

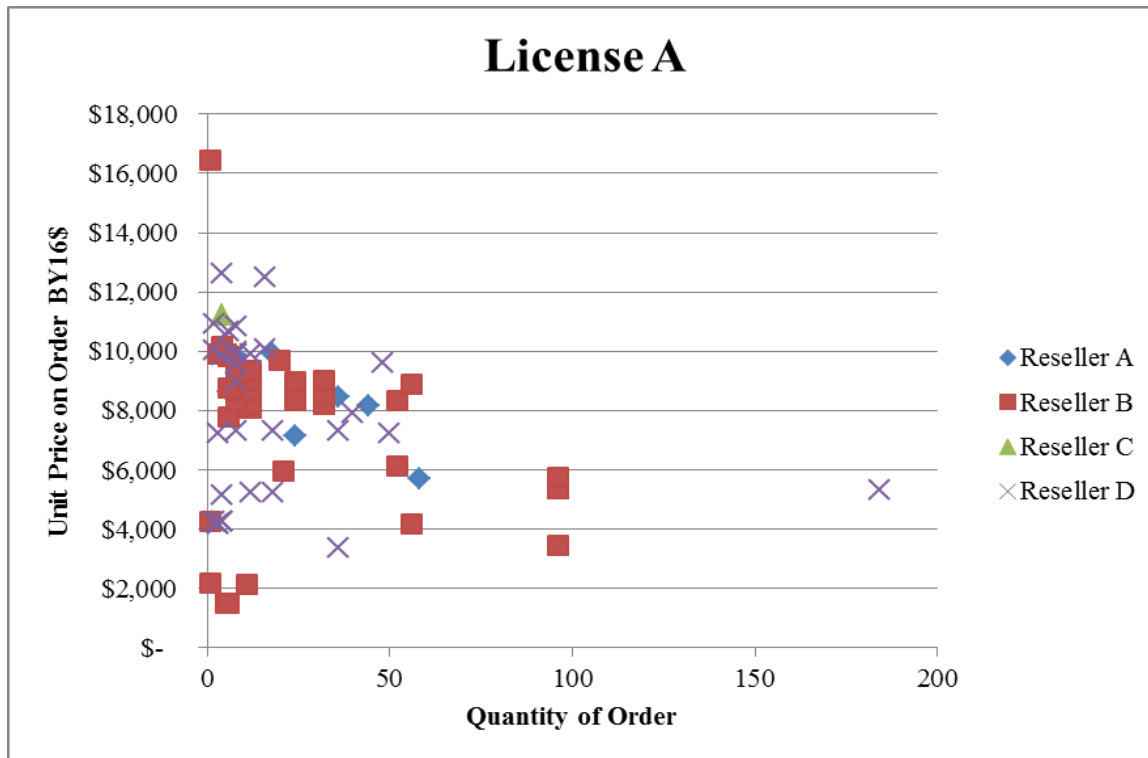
No significant trend exists. Could the fluctuation in prices be explained by identifying the licensed product by the Reseller?



# Licensed Product Price Fluctuation

## Identified by Reseller

- 81 Vendor A, Product A, License A records

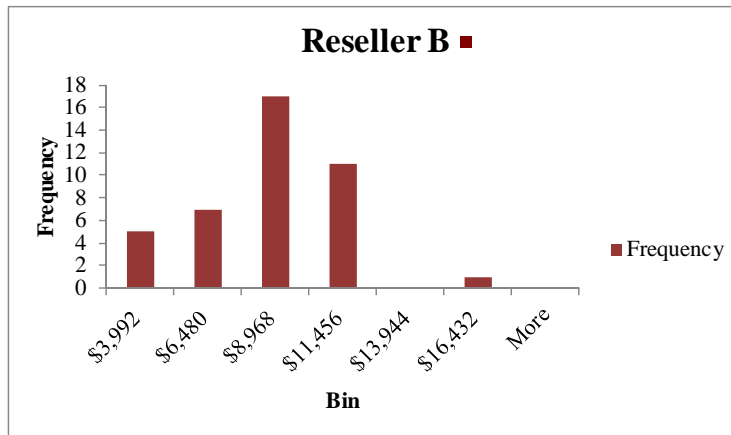


<i>License A</i>	
Mean	\$ 7,766
Standard Error	\$ 301
Median	\$ 8,329
Mode	\$ 8,329
Standard Deviation	\$ 2,706
Sample Variance	\$ 7,322,656
Kurtosis	\$ 1
Skewness	\$ (0)
Range	\$ 14,928
Minimum	\$ 1,503
Maximum	\$ 16,432
Sum	\$ 629,044
Count	81

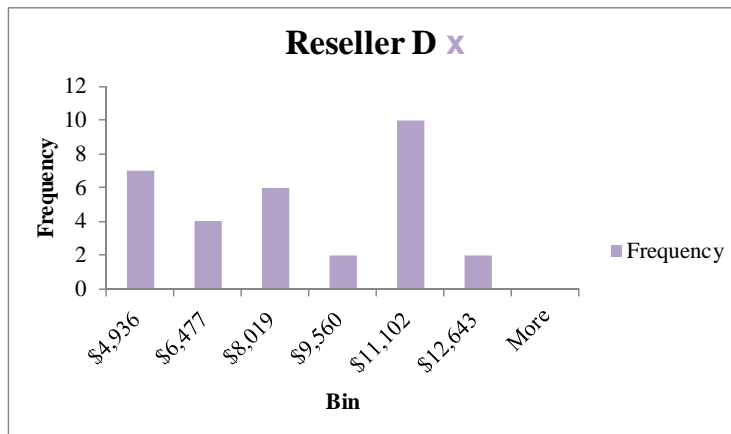


# Licensed Product Price Fluctuation

## Reseller B & Reseller D



<i>Bin</i>	<i>Frequency</i>	
\$ 3,992	5	12%
\$ 6,480	7	17%
\$ 8,968	17	41%
\$ 11,456	11	27%
\$ 13,944	0	0%
\$ 16,432	1	2%
More	0	0%
	41	



<i>Bin</i>	<i>Frequency</i>	
\$ 4,936	7	23%
\$ 6,477	4	13%
\$ 8,019	6	19%
\$ 9,560	2	6%
\$ 11,102	10	32%
\$ 12,643	2	6%
More	0	0%
	31	

The price of a single licensed product fluctuates greatly within a single entity.

























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# Questions



# Backup





# Frequently Used Terms

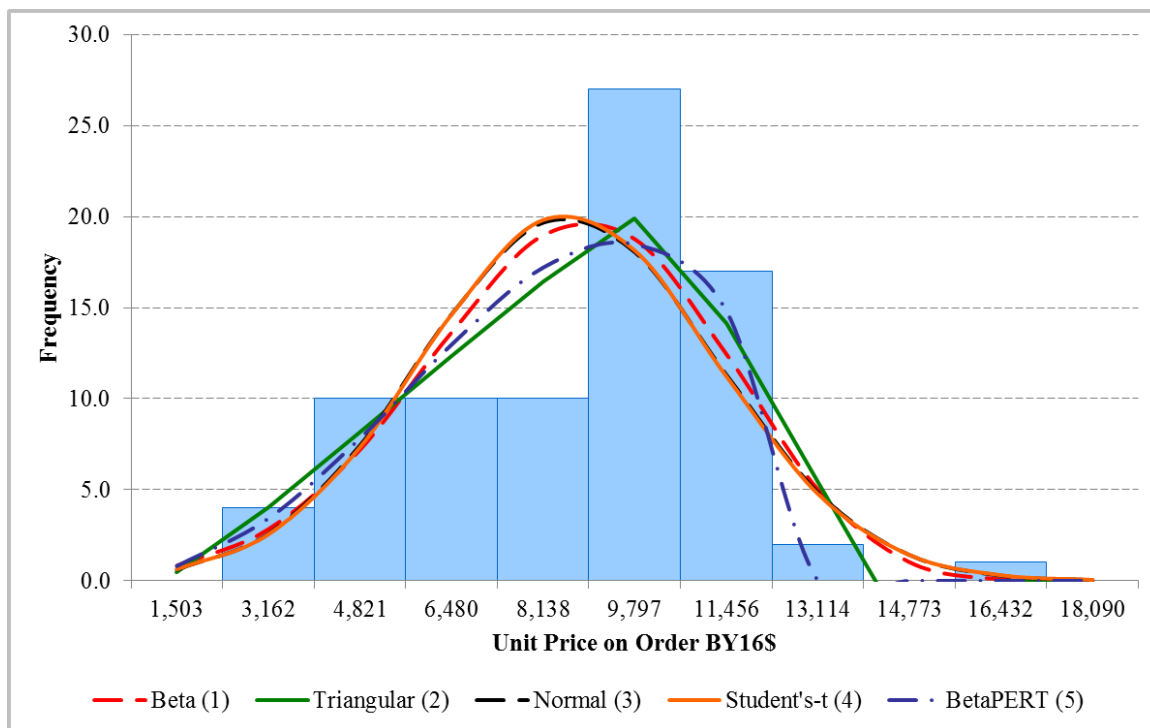
- **End User Agency or Service**
  - Army, Navy, Marine Corps, Air Force, along with other DoD and federal entities
- **Vendor**
  - the Original Equipment Manufacturer (OEM) that owns the Intellectual Property (IP)
- **Reseller**
  - the vendor's sales channel that was awarded an Enterprise Service Agreement (ESA)/Component Enterprise License Agreement/Joint Enterprise License Agreement to sell the product under a Blanket Purchase Agreement (BPA)
- **Licensed Product**
  - a set of rights granted by a publisher to a buyer for use of the publisher's software; licenses may be purchased as either perpetual or as an annual subscription
- **License Type**
  - use cases, i.e., how the software will be used by the licensee
- **Maintenance and Support**
  - a standard vendor offering that entitles a customer to ongoing development and delivery of software bug fixes and product upgrades
- **Service**
  - expertise from a vendor that enables an organization to develop, manage, or optimize their system; a vendor may offer additional personnel for training, consulting, etc.



# Licensed Product Price Fluctuation

## Single Licensed Product

- 81 Vendor A, Product A, License A records



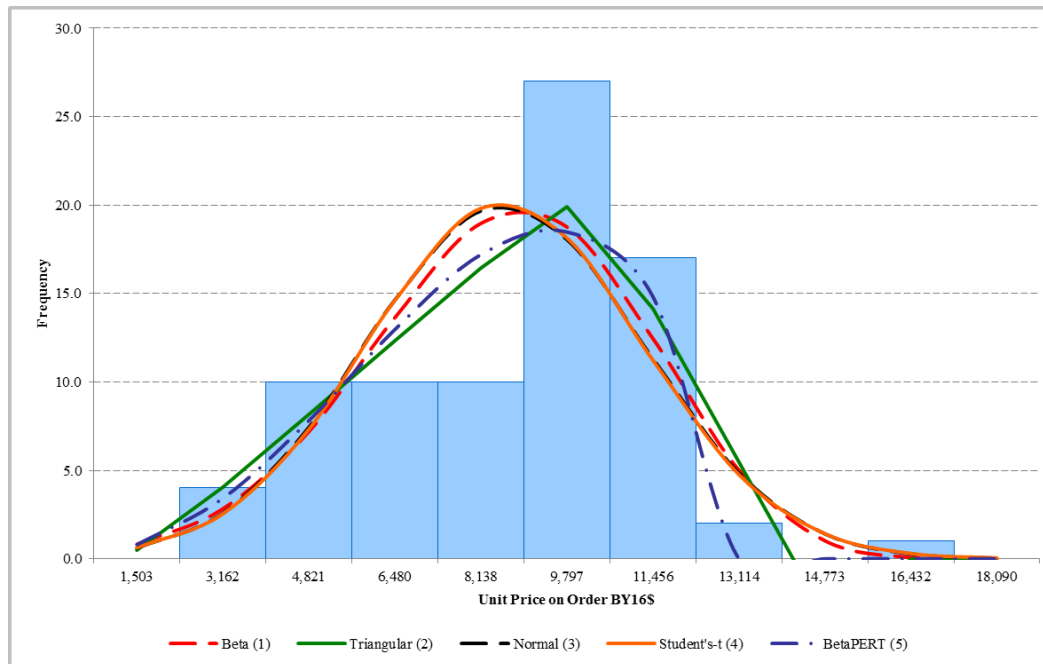
	<i>Bin</i>	<i>Frequency</i>	
\$	3,162	4	5%
\$	4,821	10	12%
\$	6,480	10	12%
\$	8,138	10	12%
\$	9,797	27	33%
\$	11,456	17	21%
\$	13,114	2	2%
\$	14,773	0	0%
\$	16,432	1	1%
<b>More</b>		<b>0</b>	<b>0%</b>
		<b>81</b>	

No significant trend exists. Could the fluctuation in prices be explained by identifying the licensed product by the End User or the Reseller?



# Licensed Product Price Fluctuation

## Single Licensed Product



	Sample	Beta	Triangular	Normal	Student's-t	BetaPERT
Mean	7,765.9813	7,765.1467	7,765.1891	7,765.6342	7,765.6264	7,764.1555
StdDev	2,706.0407	2,643.4696	2,628.1113	2,642.4494	2,645.3037	2,622.6358
CV	0.3484	0.3404	0.3384	0.3403	0.3406	0.3378
Min	1,503.4857	-17,713.8222	713.2657			-1,268.6864
Mode	8,329.4789	8,111.0308	9,255.3228	7,765.6342	7,765.6264	8,689.7973
Max	16,431.6538	19,492.2432	13,326.9787			13,094.4302
Alpha		28.5966				3.7733
Beta		13.1620				2.2267
Degrees of Freedom					79	
Count or % <= 0	81	0.30%	None	0.16%	100.00%	0.06%
Standard Error of Estimate		598.1993	603.8614	612.4512	613.0171	640.9762
Rank		1	2	3	4	5
SEE / Fit Mean		7.70%	7.78%	7.89%	7.89%	8.26%
Chi^2 Fit test 11 Bins, Sig 0.05		Poor (0%)	Poor (0%)	Poor (0%)	Poor (0%)	Poor (0%)