



# **Standardization of Spend Analysis Data**

**September 10, 2012**

# Project Team

- **Jeff Westhoven**
  - Deputy Director, DAS General Services Div.
- **Gretchen Adkins**
  - State Chief Procurement Officer, DAS General Services Div.
- **Wayne McCulty**
  - Procurement Administrator, DAS General Services Div.
- **Chris Dunlap**
  - Procurement Support, DAS General Services Div.
- **Julie Trackler**
  - Director's Office, DAS Administrative Support Div.

# Problem Statement

- OAKS FIN procure-to-pay data contains defects
- Defective data impacts validity of the data sets
- Data sets are not reliable for spend analyses
  - Defective data cannot be omitted from the data sets
  - Incomplete data sets result in adverse and unreliable spend analysis findings
- Inaccurate data sets may result in costly strategic sourcing decisions.

# Goal

- Increase the accuracy of the OAKS procure-to-pay data by reducing the number of errors introduced into the spend category data sets.

# Design Phase - Tools

- **SIPOC**
  - Exposure of the main process steps and factors
- **Team charter (i.e., Project Approval Form)**
  - Description of problem, scope and goals
- **TRAIL chart**
  - Identification of team resources
- **Critical-to-Quality flowdown**
  - Confirmation of mission-critical process elements
- **Voices**
  - Perspectives of Customer, Business, Employee, Process
- **Project plan**
  - Management of tasks, time, resources, quality

# SIPOC

SIPOC  
Spend Analysis Data Project  
(Main steps: procure through payment)

Suppliers (Contributor)	Inputs	Processes	Outputs	Customers (Receiver)
agency employee	requests item below \$1000 (OOO)	Needs an item	preliminary approval (OOO)	requisitioner
	enters RTP for items above \$1000 (OOO)		approved RTP (OOO)	requisitioner
requisitioner	enters requisition	Procures an item	approves requisition	approver
DAS Printing, Fleet Procurement	reviews requisition for sourcing decision		approval/denial	agency
OAKS automation	sources requisition to a purchase order		Purchase Order (PO) is created and dispatched to vendor	vendor
agency employee	receives the item	Receives an item (OOO)	item is delivered	agency employee who requested item
			item is entered into OAKS AM (optional)	Agency AM table
			confirms receipt, approves invoice	voucher processor
agency voucher processor	creates voucher	Pays for an item	Receives an item in OAKS Pre-AM	Agency AM table
agency fiscal office	pushes voucher to OSS		Voucher	OSS
OSS	Voucher is processed		Payment prepared	Vendor

# TRAIL Chart

TRAIL Chart  
 (Anticipated Utilization of Project Participants)  
 Spend Analysis Data Project  
 March/April 2012

Project Participants	Define	Measure	Analyze	Improve	Control
Jeff Westhoven	T, A, L (6 hrs)				
Gretchen Adkins	T, R (6 hrs)				
Wayne McCully	T, R (6 hrs)				
Chris Dunlap	T, R (12 hrs)	T, R (12 hrs)	T, R (12 hrs)	T, R (6 hrs)	T, R (6 hrs)
Deven Mehta	R (0 hrs)	R (4 hrs)	R (4 hrs)	R (0 hrs)	R (0 hrs)
Molly Burris (OBM-OAKS FIN)	R, A (0 hrs)	R, A (0 hrs)	R, A (2 hrs)	R, A (2 hrs)	R, A (2 hrs)
Joe Banicki (DAS-OAKS FIN)	R, A (0 hrs)	R, A (2 hrs)			
Joe Orme (Procurement)	R (0 hrs)	R (4 hrs)	R (4 hrs)	R (4 hrs)	R (4 hrs)
Ish Garcia (AP)	R (0 hrs)	R (4 hrs)	R (4 hrs)	R (4 hrs)	R (4 hrs)
Rene Weber (AP)	R (0 hrs)	R (2 hrs)	R (2 hrs)	R (2 hrs)	R (2 hrs)
Tim Gobble (eBid)	R (0 hrs)	R (1 hr)	R (1 hr)	R (0 hrs)	R (0 hrs)
Shirley Whaley (AM)	R (0 hrs)	R (1 hr)	R (1 hr)	R (0 hrs)	R (0 hrs)
Tom Holsinger (OBM)	A (0 hrs)	A (0 hrs)	A (1 hr)	A (1 hr)	A (0 hrs)
Tammy Brown (DAS)	A (0 hrs)	A (0 hrs)	A (1 hr)	A (1 hr)	A (0 hrs)
Mark Meyer (Accenture)	I (0 hrs)	I (2 hrs)	I (2 hrs)	I (2 hrs)	I (4 hrs)
Steve Wall	I (2 hrs)				
Julie Trackler	T, L (62 hrs)	T, L (40 hrs)	T, L (40 hrs)	T, L (24 hrs)	T, L (24 hrs)

Key:

- T = Team Member (assigned, involved in the process)
- R = Reviewed (submitted, major decisions, II, change orders, etc.)
- A = Approver (actions who affected/assess/oversee/own team members)
- I = Informed (status reports/decisions who need to be aware of status)
- L = Leader (owner, team lead)

# Survey of P2P users – 628 responses

## Use of Category (UNSPSC) Codes & Account Codes

### *An OAKS Procure-to-Pay Analysis*

Dear OAKS procure-to-pay user:

The purpose of this survey is to gain your perspective and to learn about the various processes that agencies are using to enter category (UNSPSC) codes and account codes during the OAKS procure-to-pay processes. The DAS Office of Procurement Services and OBM Accounting Administration understand that these codes may cause challenges; therefore, we are attempting to better understand the ease or challenges that users may face in determining the proper UNSPSC code and account code that should be used.

Through this survey, we're attempting to gather additional data in conjunction with the procure-to-pay activity analysis conducted last fall. This survey is the first of what may be several more detailed analyses to determine how we might improve our administrative processes.

You should be able to complete the survey in 2-5 minutes. Your responses to this survey are anonymous; there are no employee or agency identifiers collected with your survey response. As such, we ask that you respond to the questions based on your day-to-day practices and perspectives. Your survey responses will be combined with the responses of other procure-to-pay users across state government.

Thank you for taking the time to complete this important survey and for providing your perspectives which will be valuable in our analyses.

Sincerely,

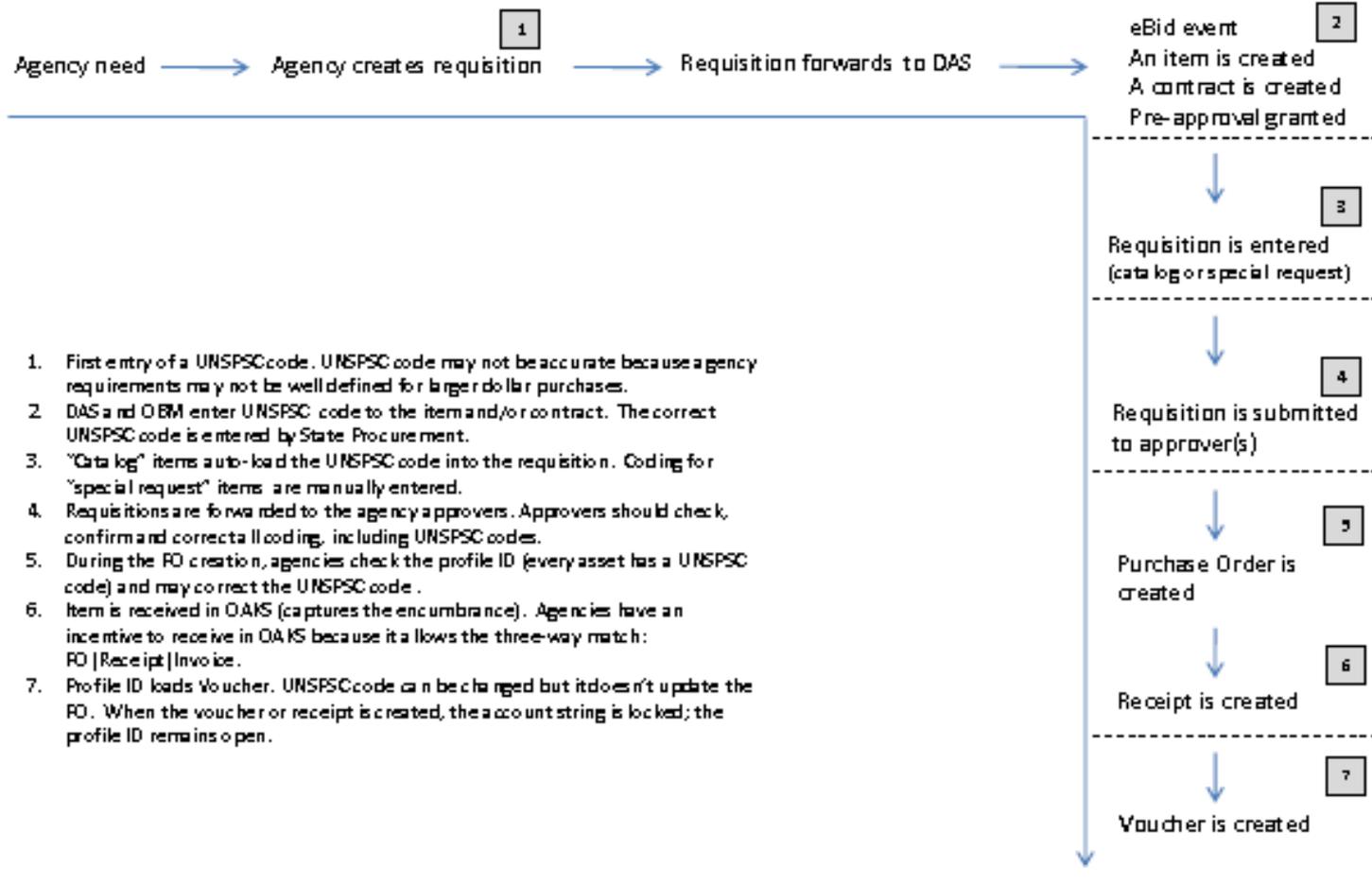
DAS Office of Procurement Services & OBM Accounting Administration



# Workflows – points of entry of UNSPSC code

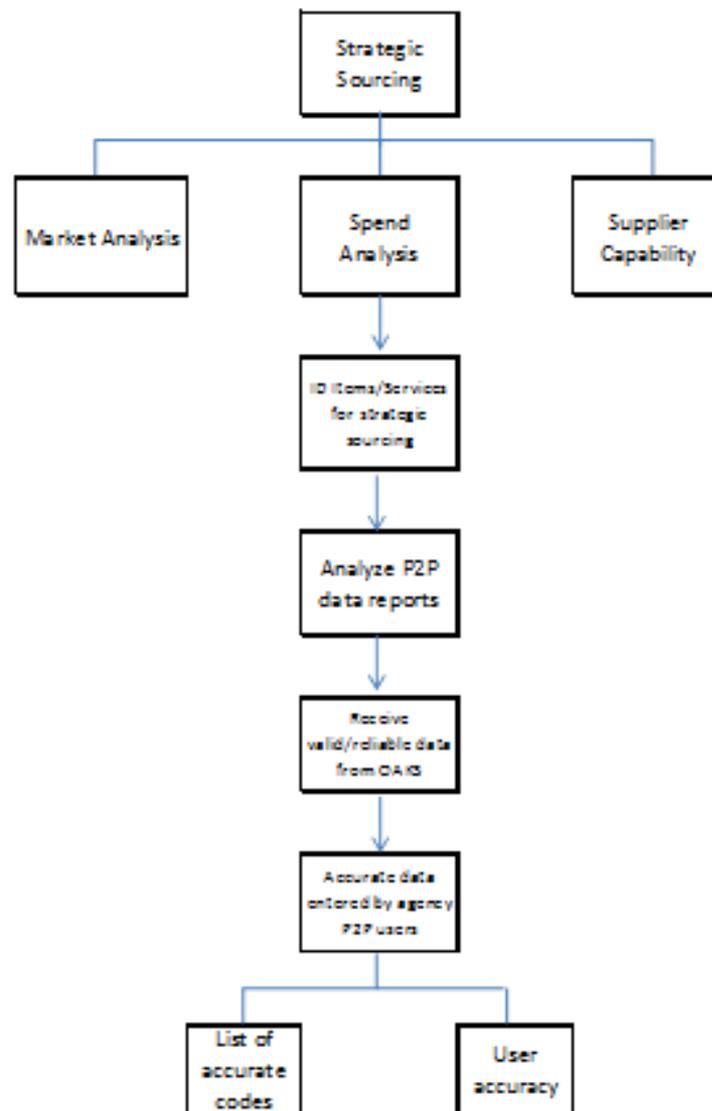
## OAKS requisition through payment – entry/correction of UNSPSC/category code

*This chart (Steps 1-7) is intended to show where UNSPSC codes can be entered or corrected in the OAKS procurement and payment modules. The ----- (black broken line) indicates where OAKS does not permit prior coding corrections to be made. For example, if a UNSPSC code is corrected in step 3, the UNSPSC code entered in steps 1-4 will remain unchanged.*



# Critical-to-Quality Flowdown Standardization of Spend Analysis Data

April 2012



# Project Plan

Gantt Chart

	Task Name	Duration	Start	Finish	Reso Nam	% Complete
1	<b>DEFINE (Initiation &amp; Planning)</b>	<b>16 days</b>	<b>Fri 3/16/12</b>	<b>Fri 4/6/12</b>		<b>96%</b>
2	<b>Project Charter</b>	<b>11 days</b>	<b>Fri 3/16/12</b>	<b>Fri 3/30/12</b>		<b>100%</b>
3	Develop Project Charter (aka Project Approval Form PAF)	1 day	Fri 3/16/12	Fri 3/16/12		100%
4	Attain approval of PAF from project sponsor	5 days	Fri 3/16/12	Thu 3/22/12		100%
5	Make modifications as needed, resubmit for sponsor approval	1 day	Mon 3/19/12	Mon 3/19/12		100%
6	Attain approval of PAF from MBB & Mentor	9 days	Tue 3/20/12	Fri 3/30/12		100%
7	<b>Scope Management</b>	<b>8 days</b>	<b>Wed 3/21/12</b>	<b>Fri 3/30/12</b>		<b>100%</b>
8	Determine key deliverables and due dates	1 day	Wed 3/21/12	Wed 3/21/12		100%
9	Establish operational definitions	1 day	Fri 3/23/12	Fri 3/23/12		100%
10	Determine "definition" of successful project	1 day	Fri 3/23/12	Fri 3/23/12		100%
11	Identify required project elements	1 day	Fri 3/30/12	Fri 3/30/12		100%
12	Determine spend categories to be studied	1 day	Fri 3/30/12	Fri 3/30/12		100%
13	<b>Engagement</b>	<b>14 days</b>	<b>Tue 3/20/12</b>	<b>Fri 4/6/12</b>		<b>100%</b>
14	<b>Create high-level visuals of current process(es)</b>	<b>1 day</b>	<b>Fri 3/23/12</b>	<b>Fri 3/23/12</b>		<b>100%</b>
15	Develop SIPOC diagram (high-level workflow)	1 day	Fri 3/23/12	Fri 3/23/12		100%
16	<b>Identify stakeholders &amp; customers</b>	<b>6 days</b>	<b>Fri 3/23/12</b>	<b>Fri 3/30/12</b>		<b>100%</b>
17	Brainstorm to identify key stakeholders & customers	1 day	Fri 3/23/12	Fri 3/23/12		100%
18	Determine stakeholder roles in project	1 day	Fri 3/23/12	Fri 3/23/12		100%
19	Determine customer roles in project	1 day	Fri 3/23/12	Fri 3/23/12		100%
20	Identify stakeholder communication needs	1 day	Fri 3/30/12	Fri 3/30/12		100%
21	<b>Identify VOC, VOB, VOP, VOE</b>	<b>11 days</b>	<b>Fri 3/23/12</b>	<b>Fri 4/6/12</b>		<b>100%</b>
22	Voice of the Customer - key requirements & gaps	1 day	Fri 3/23/12	Fri 3/23/12		100%
23	Voice of the Business - key requirements & gaps	1 day	Fri 3/23/12	Fri 3/23/12		100%
24	Voice of the Process - key requirements & gaps	11 days	Fri 3/23/12	Fri 4/6/12		100%
25	Voice of the Employee - key requirements & gaps	11 days	Fri 3/23/12	Fri 4/6/12		100%
26	<b>Identify project roles and responsibilities</b>	<b>6 days</b>	<b>Fri 3/23/12</b>	<b>Fri 3/30/12</b>		<b>100%</b>
27	Determine expertise needed to complete project	1 day	Fri 3/23/12	Fri 3/23/12		100%
28	Establish TRAIL chart	1 day	Fri 3/23/12	Fri 3/23/12		100%
29	Secure team members	5 days	Mon 3/26/12	Fri 3/30/12		100%
30	<b>Estimate financial benefit of this project</b>	<b>11 days</b>	<b>Fri 3/23/12</b>	<b>Fri 4/6/12</b>		<b>100%</b>
31	Determine where cost-savings can be validated	11 days	Fri 3/23/12	Fri 4/6/12		100%
32	Establish budget/requirements for this part	1 day	Tue 3/27/12	Fri 4/6/12		100%

# Measure/Analysis Phases - Tools

- **Data Collection Plan**
  - Describes data to be gathered and used on the project
- **Data Integrity Audit**
  - Ensures data and data source was suitable for use, valid and reliable (for both project analysis and future quarterly evaluation)
- **MSA Attribute study**
  - Study user performance to prove hypothesis
- **Cause and Effect (Ishikawa diagram)**
  - Confirm the critical Xs (variables)
- **Project plan**
  - Management of tasks, time, resources, quality

# Data Collection Plan

## Data Collection Plan Standardization of Spend Analysis Data

Type of data	Source of data	Required Fields	Operational definitions of core fields	Purpose	Time period(s)
PO's Contract spend	OAKS BI Data Warehouse	Business Unit, Voucher ID, Vendor ID, Vendor name, Contract #, Accounting Date, Account Code, Account Description, Contract #, Contract Index #, PO ID, Category (UNSPSC) Code, Category (UNSPSC) Description, Voucher Amount	UNSPSC Codes: Designated (approved) list of UNSPSC Codes for wearing apparel  Account Codes: Designated (approved) list of Account Codes for wearing apparel	Analyze PO contract spend data to study error patterns and potential causes	Fiscal Year 2010 Fiscal Year 2011 Fiscal Year 2012  Data will be cordoned by fiscal quarter within each fiscal year to establish a future measurement system for quarterly improvement and control metrics
PO's Direct spend	OAKS BI Data Warehouse	Business Unit, Voucher ID, Vendor ID, Vendor name, Contract #, Accounting Date, Account Code, Account Description, Contract #, Contract Index #, PO ID, Category (UNSPSC) Code, Category (UNSPSC) Description, Voucher Amount	UNSPSC Codes: Designated (approved) list of UNSPSC Codes for wearing apparel  Account Codes: Designated (approved) list of Account Codes for wearing apparel	Analyze PO Direct spend data to study error patterns and potential causes	Fiscal Year 2010 Fiscal Year 2011 Fiscal Year 2012  Data will be cordoned by fiscal quarter within each fiscal year to establish a future measurement system for quarterly improvement and control metrics
Qualitative user perspectives	Personal interviews: DAS and OBM business owners	n/a	n/a	Gain a basic understanding of DAS and OBM business owners' perspectives as they pertain to UNSPSC coding and Account coding	Conduct interviews during Measure phase; consider follow-up interviews during Control phase
Quantitative user perspectives	Novi Systems - survey	Collect end user perspectives on: 1) ease of use (of UNSPSC and Account codes), 2) coding consistency and accuracy, tolerance level in finding codes, awareness of the coding lookups/coding resources,	Users included in the survey must have entered P2P transactions into OAKS within the last 12 months	To better understand the individual users' (and agencies') perspectives and processes that may be contributing to the entry of UNSPSC code and Account code errors into the OAKS data	Deploy survey during Measure phase; re-assess value in re-deploying once improvements are implemented (during Control phase)

# Data Integrity Audit “Light”

- Is the data “Suitable for Use?”
  - Is the data “Valid?”
    - ✓ Standards: Operational definitions are standardized
    - ✓ Alignment: Operational definitions of data and project are aligned
    - ✓ Repeatable: Data field management supports a repeatable analysis
  - Is the data “Reliable?”
    - ✓ Accurate: Operational definitions exist for each data field
    - ✓ Consistent: An OAKS BI Report can be auto-generated each fiscal quarter
    - ✓ Nightly update: Each day’s P2P transactions are auto-loaded and auto-updated nightly into OAKS BI
    - ✓ Stability: OAKS BI control measures affirm stability of the data warehousing processes

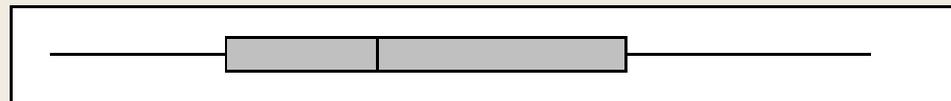
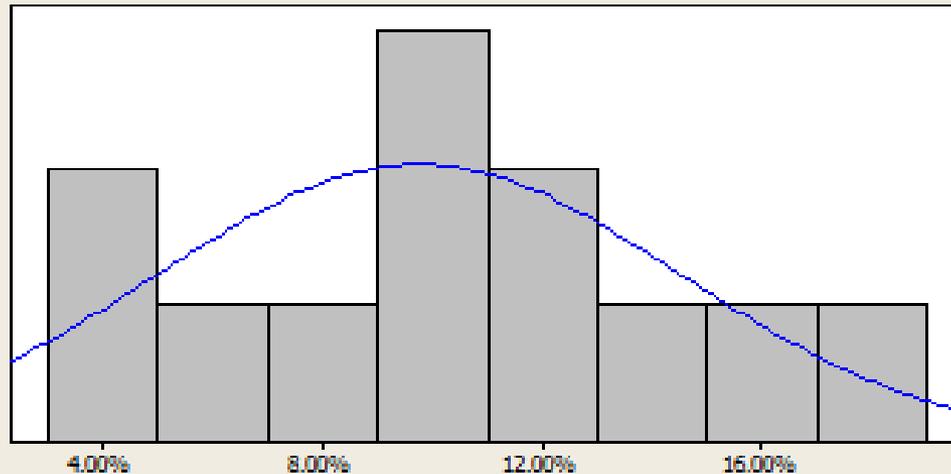
# Is the data “Normal?”

- Shape (histogram)
- Spread (range, sigma)
- Central Tendency (1 sample t)
- Stability (control chart)

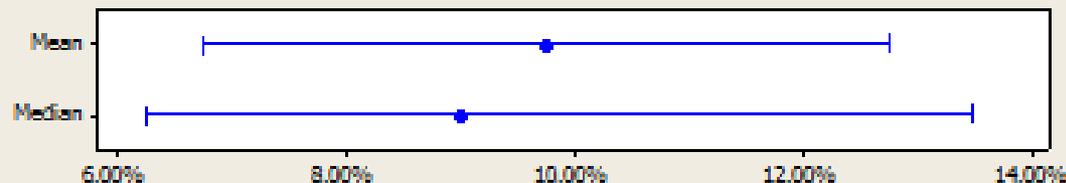
# Percent of UNSPSC errors across FY10, FY11, FY12 when purchases were made using a state contract

Histogram: *Does the data have a normal "shape?"*

## Summary for On Contract\_% of UNSPSC errors



### 95% Confidence Intervals

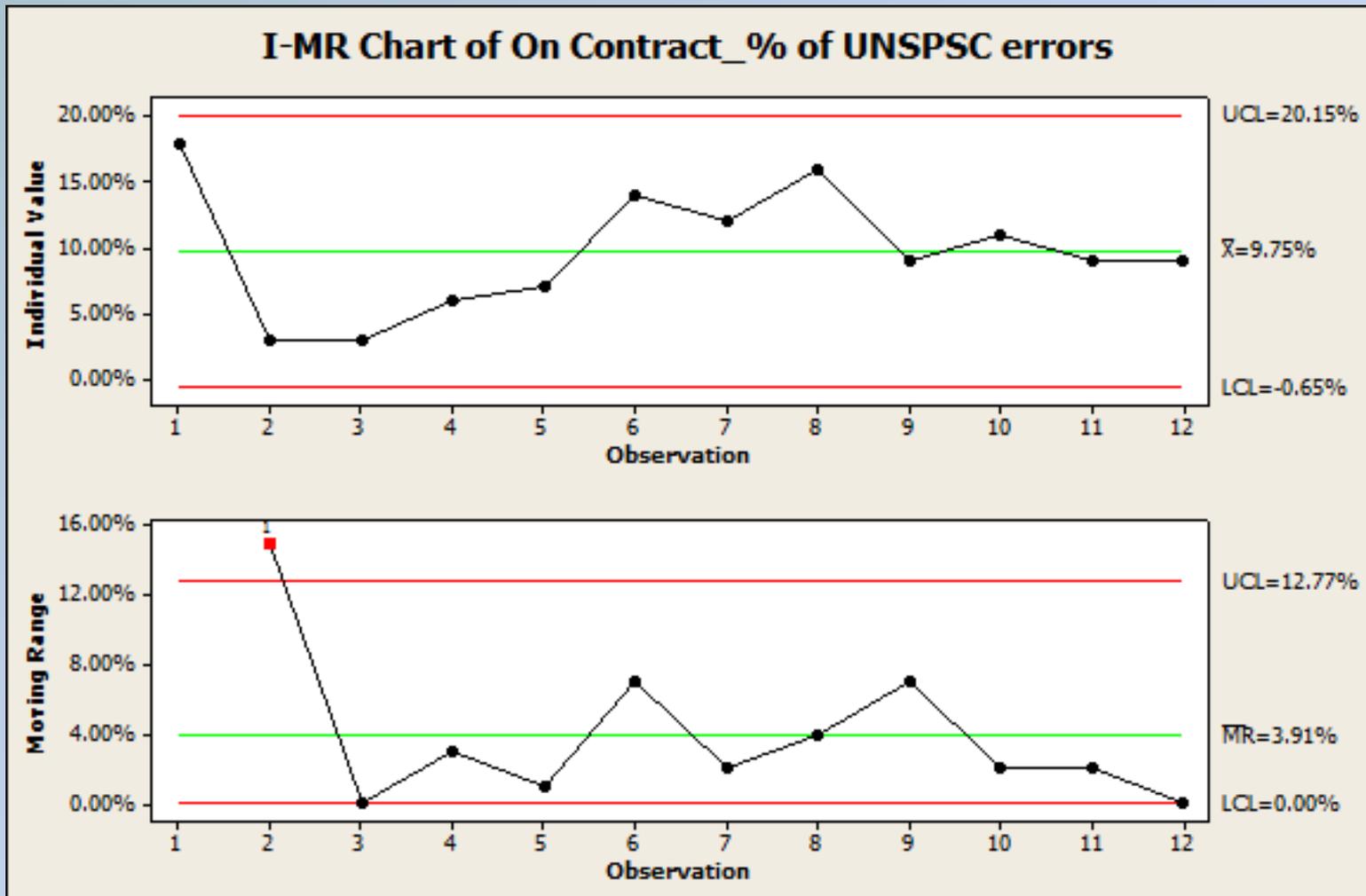


### Anderson-Darling Normality Test

A-Squared	0.20
P-Value	0.856
Mean	0.097500
StDev	0.047314
Variance	0.002239
Skewness	0.212040
Kurtosis	-0.599619
N	12
Minimum	0.030000
1st Quartile	0.062500
Median	0.090000
3rd Quartile	0.135000
Maximum	0.180000
95% Confidence Interval for Mean	0.067438    0.127562
95% Confidence Interval for Median	0.062631    0.134738
95% Confidence Interval for StDev	0.033517    0.080334

# Percent of UNSPSC errors across FY10, FY11, FY12 when purchases were made using a state contract

Control Chart: *Does the data have "stability?"*

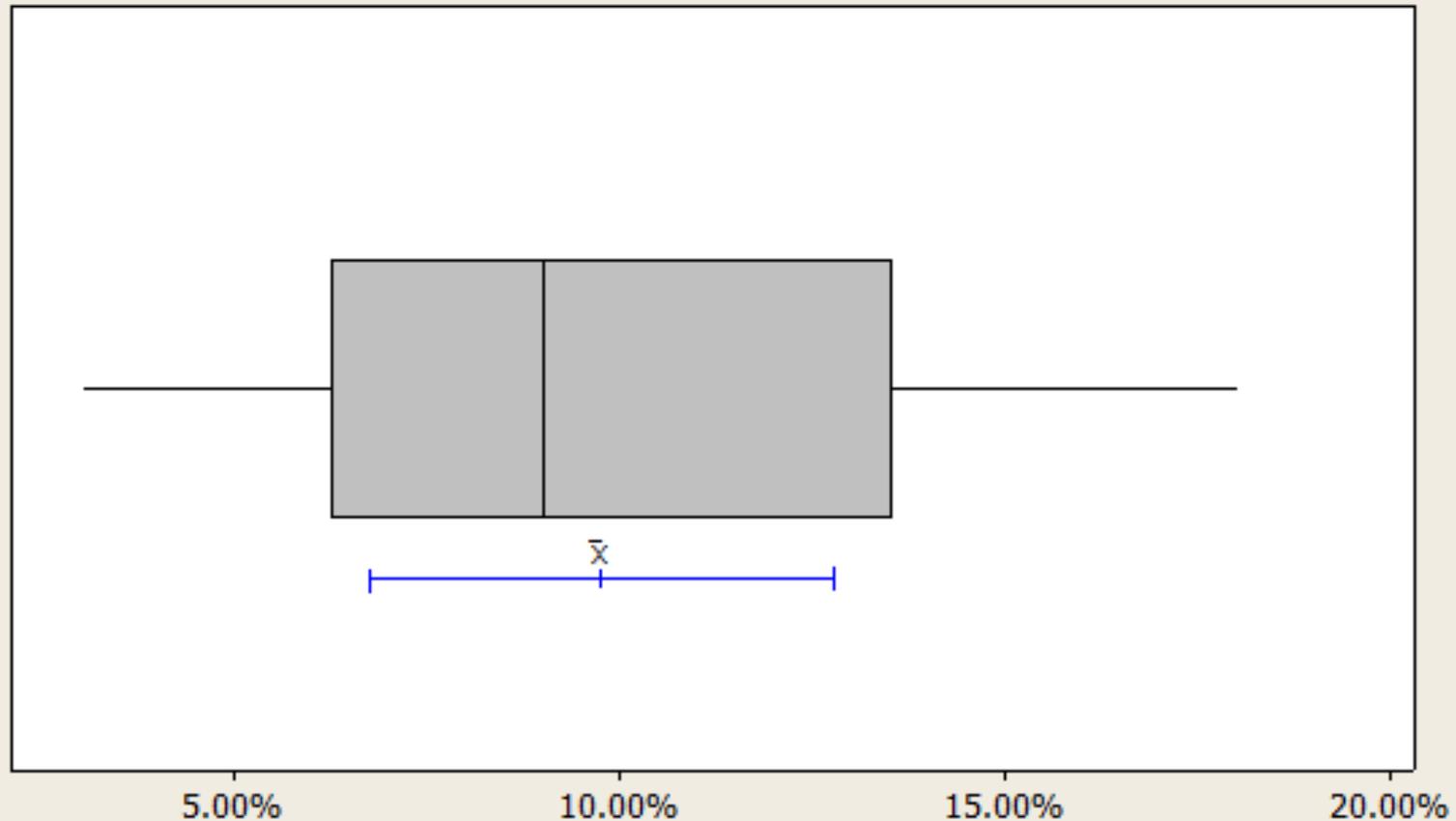


# Percent of UNSPSC errors across FY10, FY11, FY12 when purchases were made using a state contract

1 sample t test: *Does the data have a "central tendency?"*

**Boxplot of On Contract\_% of UNSPSC errors**

(with 95% t-confidence interval for the mean)



# Quarterly performance metric: Sigma level: On Contract Purchases

Purchases made on contract:

- Correct Yield 84.77%
- Defects 15.23%
- DPMO 152,252/1,000,000
- Process Sigma **2.53**

# Quarterly performance metric: Sigma level: Direct Spend Purchases

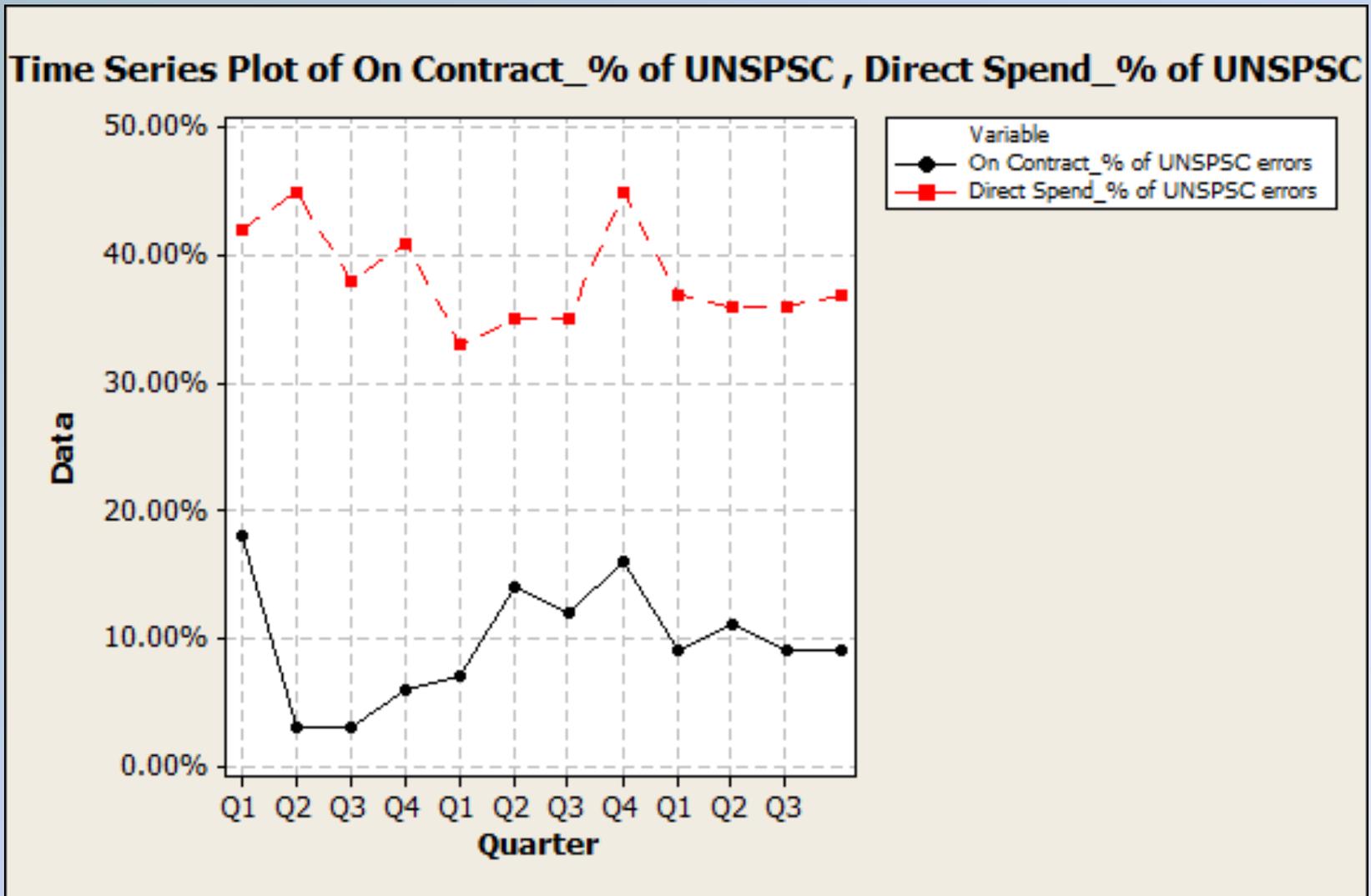
Purchases made on contract:

- Correct Yield                      56.25%
- Defects                                43.85%
- DPMO                                 438,542/1,000,000
- Process Sigma                      **1.65**

# Comparison of Procurement types: On Contract versus Direct Spend

## Percent of UNSPSC errors across FY2010, FY2011, FY2012

*Control Chart - Time Series Plot*



# Analysis plan

Studied a year's worth of data across a spend category



Category (UNSPSC) Codes

Requisitions

Purchase Orders

Vouchers

Contract usage



Account Codes

PO Vouchers

Debit Vouchers

P-card Vouchers

Contract usage



Survey to gain users' perspectives

UNSPSC Codes

Account Codes

Resources

Training

# OAKS Procure-to-Pay

## OAKS data fields used for spend analyses

### **UNSPSC:**

- More than 49,000 code choices
- United Nations Standard Products and Services Code
- Used to describe a purchased item or service
- Code updates maintained in OAKS by Ohio DAS
- OAKS is configured to validate that the code exists – but does not validate that the code is correctly used

### **Account Code:**

- More than 700 code choices
- One of five required OAKS accounting fields (Dept, Program, ALI, Fund, Account)
- Used in budgeting to assign funds to be used for “types” of purchases
- Code updates maintained in OAKS by Ohio DAS
- OAKS is configured to validate that the code exists – but does not validate that the code is correctly used

# OAKS Procure-to-Pay

## OAKS data fields used for spend analyses

<b>PURCHASE Method</b>	<b>UNSPSC Field?</b>	<b>Account Code Field?</b>
Purchase Orders/Contract-based	Required	Required
Purchase Orders/Non-contracts	Optional	Required
Direct Spend	Optional	Required
P-card (credit card)	No	Required

<b>PAYMENT Method</b>	<b>UNSPSC Field?</b>	<b>Account Code Field?</b>
PO Vouchers/Contract-based	Auto-populates	Required
PO Vouchers/Non-contracts	Optional	Required
Non-PO Vouchers	Optional	Required
P-card (credit card)	No	Required

# Candidates for strategic sourcing

Prior studies have determined that there are many categories that are candidates for strategic sourcing. They are:

- IT Software
- IT Hardware
- IT Services
- Telecom Services
- Temporary Labor
- Office Equipment
- Office Supplies
- Furniture
- Cleaning Supplies

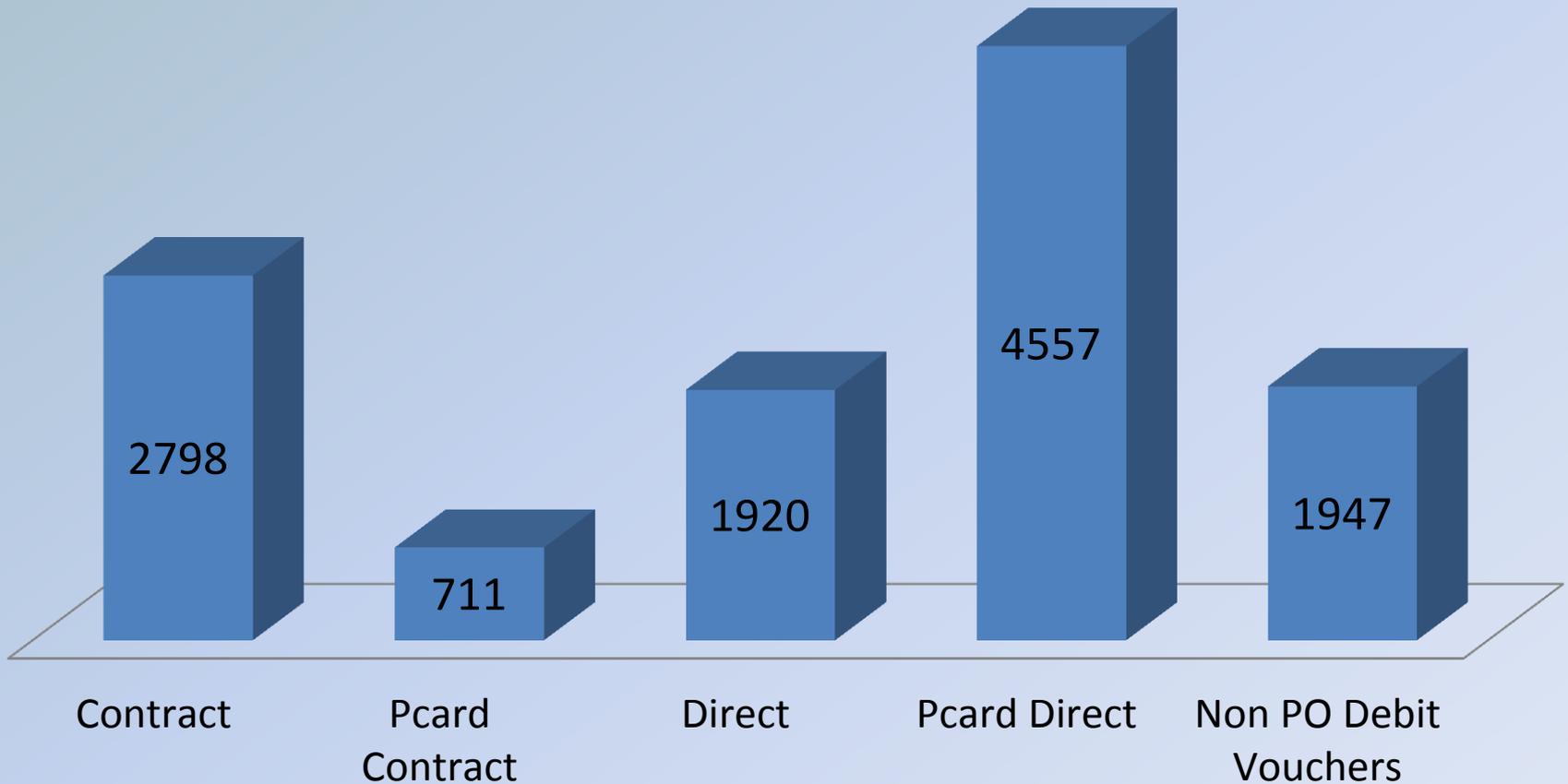
- Pharmaceuticals
- Fleet
- Utilities/Natural Gas
- Food
- Small Parcels
- Clothing
- Facilities – Security Services
- Facilities – Waste Removal
- Cafeteria Services/Supplies

\$81.5 million saved, to date

# 2012 Annual Clothing Spend

- State government spend: \$7,802,541.36
- Purchases that:
  - Reference a DAS contract \$4,662,241.00
  - Do not reference a DAS contract \$3,140,300.36
- # of vouchers: 11,933

# Clothing Transactions by Procurement Method



# What is a defect (error)?

- Our project definition:
  - For purposes of strategic sourcing, a “defect” is a data entry that weakens the accuracy of our statewide data
- Specifically, a data defect is...
  - Incorrect code
  - Omitted code

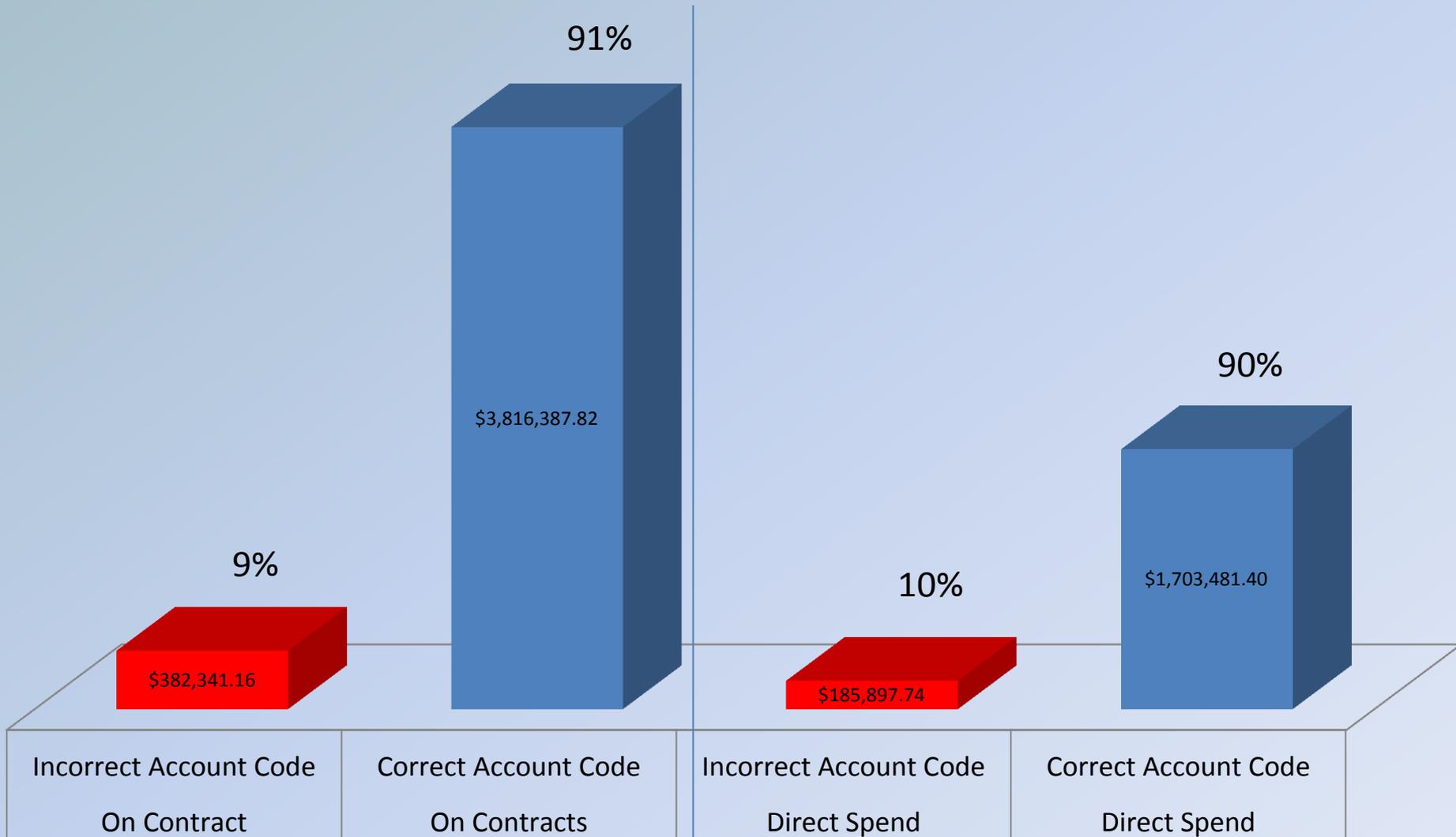
# Patterns of Data Errors

Type of Data Error	Correct Data	Incorrect Data
Transposition of number	25 <u>10</u> 3012	25 <u>01</u> 3012
Wrong number	2 <u>5</u> 103012	2 <u>6</u> 103012
Too few numbers	25103012	251030_
Code omissions	25103012	
Incorrect code	25103012	16507000
Incorrect vendor name	The Acme Co.	Acme Inc.
Incorrect vendor address	4500 Pointer Road Tallasse AL	4500 Pointe Road Tallahassee AL

# Account Codes - Clothing

OAKS	DESCRIPTION
CATEGORY 520	SUPPLIES AND MAINTENANCE
CLASS 5210	SUPPLIES, MATERIALS & MINOR EXPENDITURES
1. 521701	WEARING APPAREL EMPLOYEES
2. 521702	WEARING APPAREL-PATIENT&INMATE
3. 521703	WEARING APPAREL/VOLUNTEERS
4. 521704	WEARING APPAREL/EMPL ID-DNR&DHS
CATEGORY 520	SUPPLIES AND MAINTENANCE
CLASS 5260	MAINTENANCE & REPAIRS
5. 526115	CLOTHING MAINTENANCE-ST EMPLOY
6. 526117	CLOTHING MAINTENANCE PINW
CATEGORY 520	SUPPLIES AND MAINTENANCE
CLASS 5270	RENTALS
7. 527600	WEARING APPAREL-RENTAL
CATEGORY 550	SUBSIDIES & SHARED REVENUE
CLASS 5500	SUBSIDIES & SHARED REVENUE
8. 550101	ST ASSIST-NON-TAX-CLOTHING-JFS
CATEGORY 560	GOODS & SERVICES FOR RESALE
CLASS 5600	GOODS FOR RESALE (PASS-THROUGH CHARGES)
9. 560505	WEARING APPAREL(RPTC)

# Account Code Defects for Clothing By Procurement Method



# UNSPSC Codes - Clothing

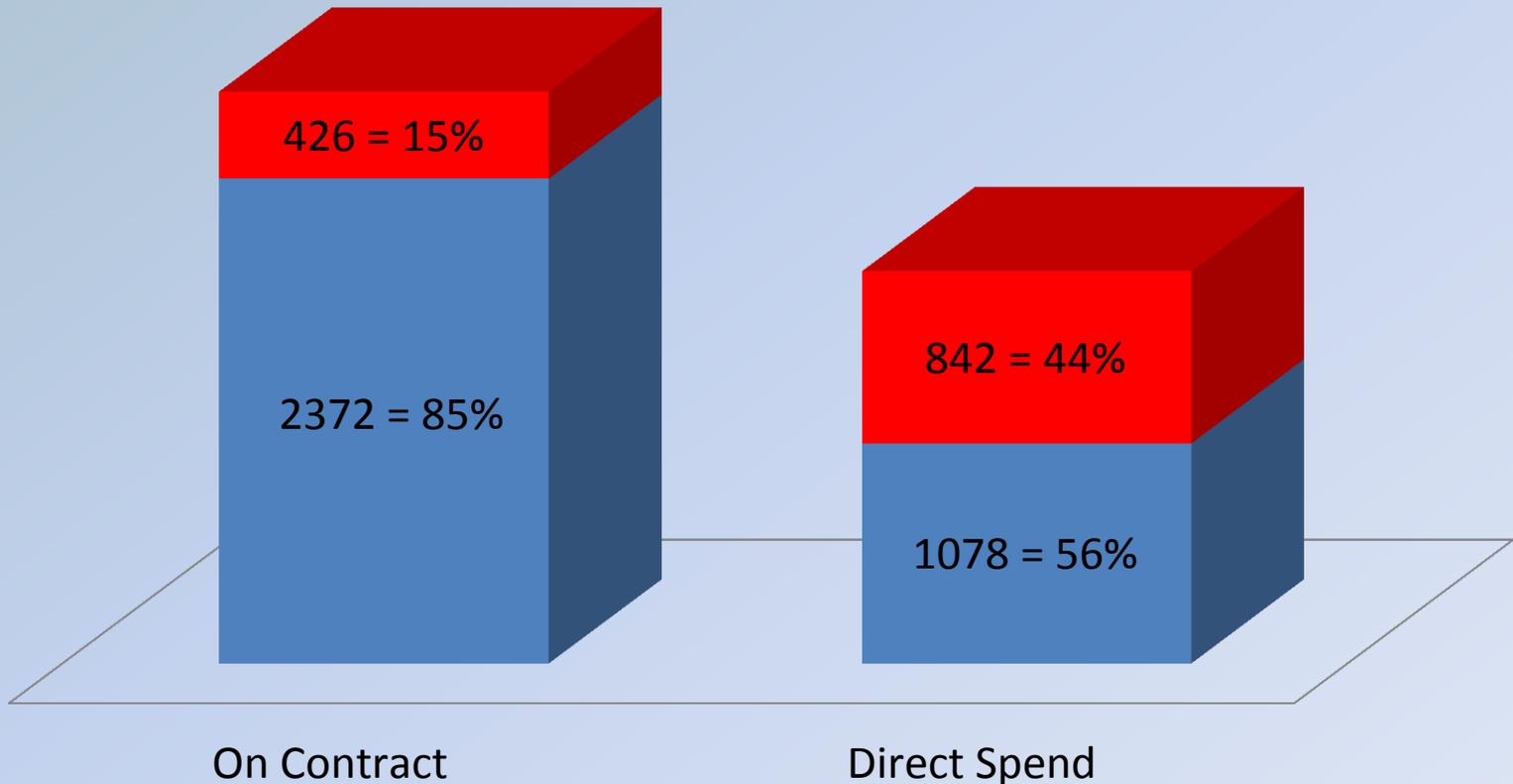
168 available  
UNSPSC Codes for  
Clothing

<u>UNSPSC Code</u>	<u>UNSPSC Code Description Name (used by State of Ohio)</u>
53000000	Apparel, Luggage Personal Care
53102900	Athletic wear
53102900	Athletic wear
53111500	Boots
53100000	Clothing
53102500	Clothing accessories
91101800	Clothing rental
60105800	Clothing, textile design instr
53101800	Coats and jackets
53103200	Disposable Clothes
53102000	Dresses, skirts, saris, kimono
53110000	Footwear
53102400	Hosiery
42130000	Medical apparel, textiles
42132200	Medical gloves, accessories

42131600	Medical staff clothing, relate
53102100	Overalls and coveralls
53102100	Overalls and coveralls
42131500	Patient clothing
46181500	Safety apparel
46181600	Safety footwear
53111800	Sandals
53101600	Shirts and blouses
53111600	Shoes
53101500	Slacks and trousers and shorts
53111700	Slippers
53101700	Sweaters
53103000	Tshirts
53102300	Undergarments
53102700	Uniforms
53103100	Waistcoats

# UNSPSC Defects for Clothing by Procurement Method

■ Correct UNSPSC Code    ■ Incorrect UNSPSC Code



**What is “clothing?”**

# Top UNSPSC Codes found in clothing data

Category Code	Category Descr	# of transactions
91101800	Clothing rental	873
53102700	Uniforms	683
53100000	Clothing	562
<b>47111700</b>	<b>Dry cleaning equipment</b>	<b>455</b>
53101500	Slacks and trousers and shorts	407
91100000	Personal appearance	211
53101600	Shirts and blouses	187
53111600	Shoes	135
53102300	Undergarments	135
<b>91111500</b>	<b>Laundering services</b>	<b>124</b>
53103000	T shirts	111
<b>10000000</b>	<b>Live Plant and Animal Material</b>	<b>94</b>
<b>76000000</b>	<b>Industrial Cleaning Services</b>	<b>89</b>
53102500	Clothing accessories	74
53101800	Coats and jackets	66
53102400	Hosiery	61
53111500	Boots	45
53102900	Athletic wear	31
<b>81141800</b>	<b>Facilities management</b>	<b>26</b>

# Examples of incorrect UNSPSC Codes found in clothing data

- Art design services
- Assembly services
- Bandages & dressings
- Beds
- Communication devices
- Collectibles
- Fabric & leather protection
- Freight container
- Hardware
- Identification documents
- Jewelry
- Lamps & light bulbs
- Live plant & animal material
- Mailing services
- Misc. Agriculture
- Personal care products
- Signage
- Tape
- Target games & equipment
- Transport. Svcs. equipment

# UNSPSC (Category) Codes

Question:

Should we broaden our operational definition of “clothing?”

Bandages  
& Dressings  
*UNSPSC: 42311500*



Live Plant and  
Animal Material  
*UNSPSC: 1000000000*



# Jewelry

*UNSPSC: 54100000*



I pity the fool  
who tries to use this  
clothing data!

# UNSPSC = OAKS Category Codes

Level	Count	Digits	Example
• Segment	56	2	xx000000
• Family	420	4	xxxx0000
• Class	3,819	6	xxxxxx00
• Commodity	49,022	8	xxxxxxxx

# **Extensive User Population with the Freedom to Choose (Clothing category)**

1,515 - Procure-to-pay users

x 168 - UNSPSC clothing code choices

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254,520 - Opportunities for errors

# Extensive User Population with the Freedom to Choose

1,515 - Procure-to-pay users  
x 3,819 - UNSPSC code choices

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5,785,785 - Opportunities for errors

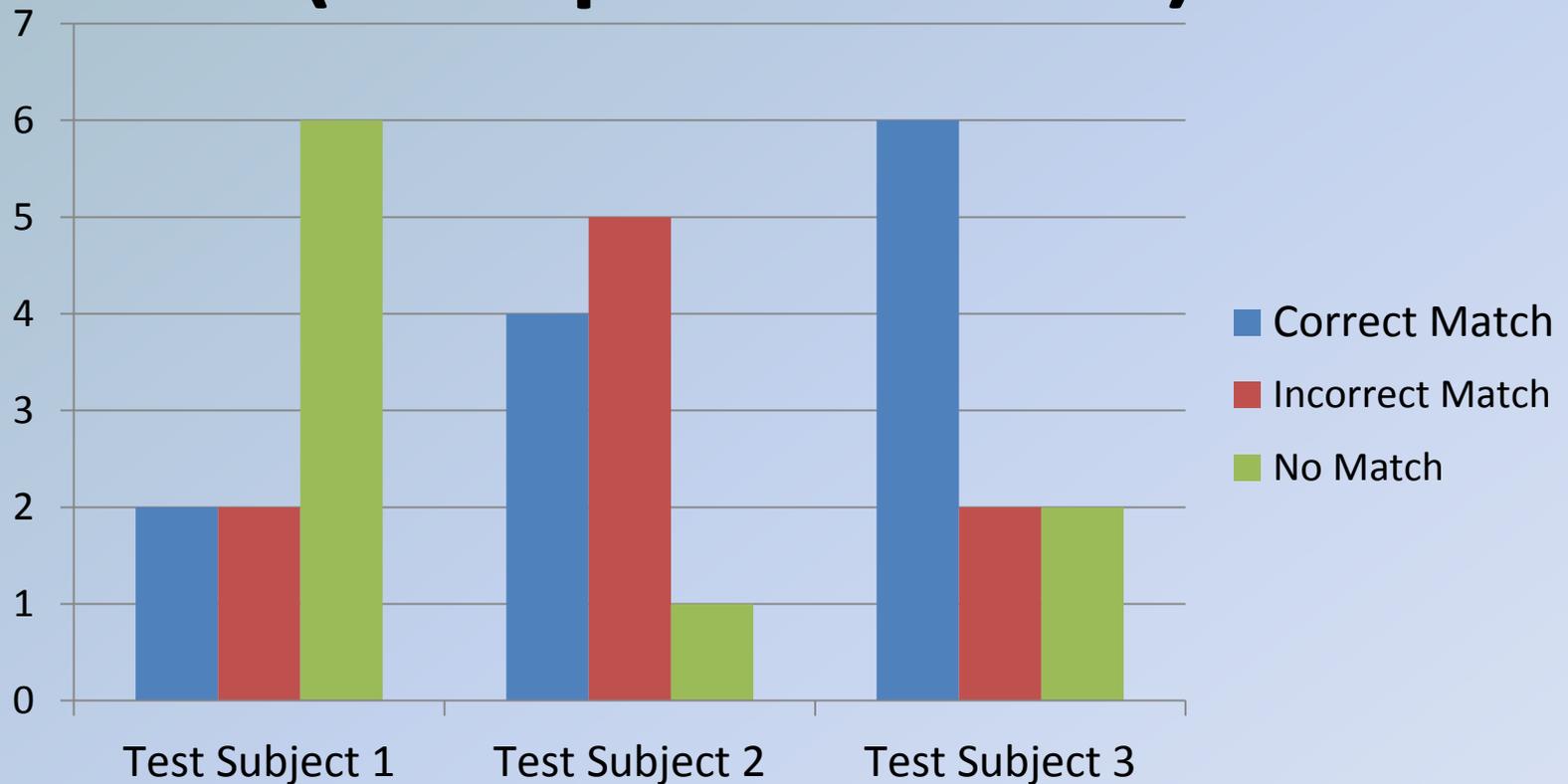
# MSA Attribute Study

- Question: Can agency users enter incorrect category (UNSPSC) codes without realizing it?
- Study:
  - Two blind tests given several days apart
  - Three test participants
  - Ten scenarios
- Test:
  - Can we achieve repeatability in the codes entered?
    - Individuals are able to provide the same “repeat” responses
  - Can we achieve reproducibility in the codes entered?
    - The group of individuals respond similarly across both tests

# MSA Attribute Study

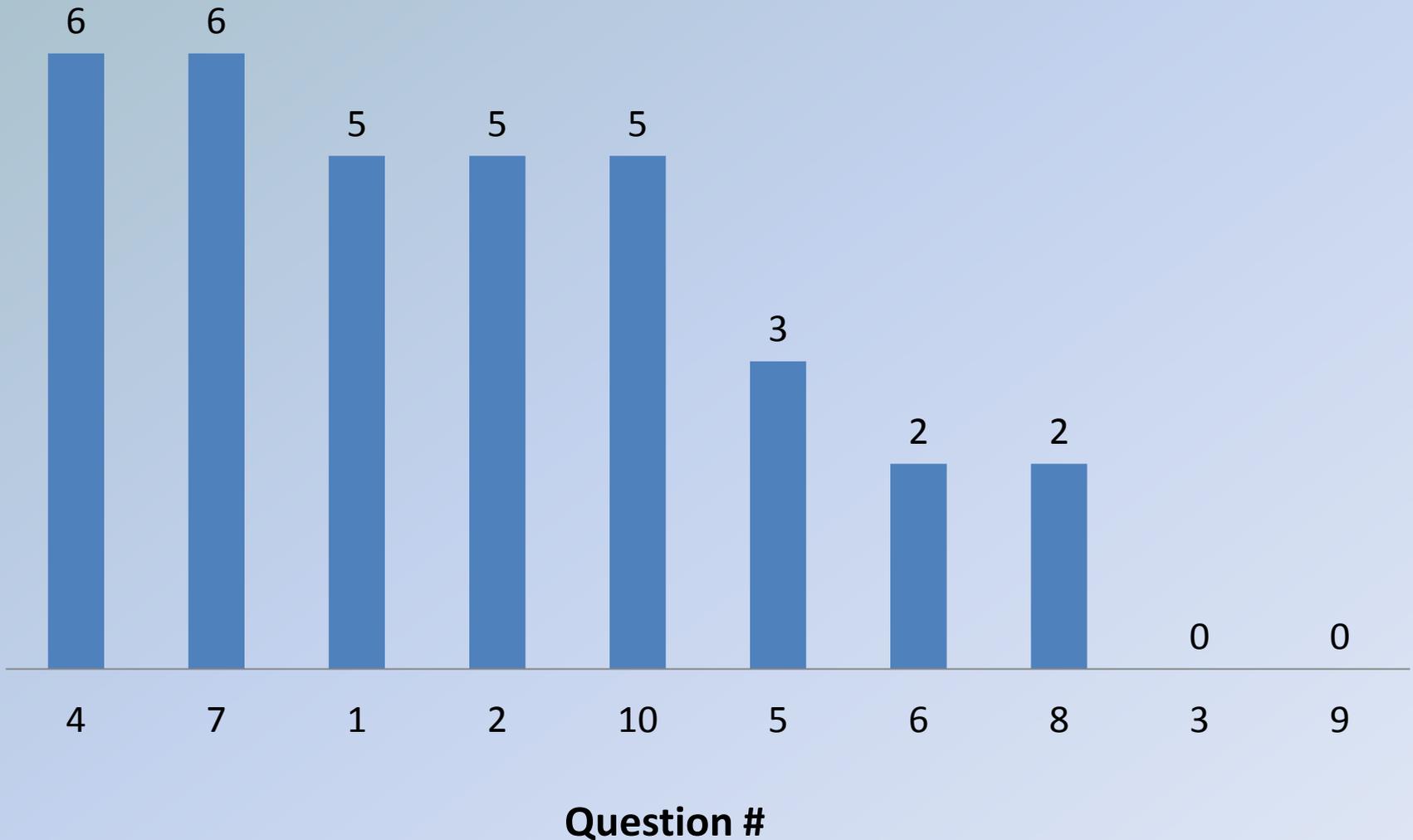
- Sample Scenarios:
  - You are purchasing a **fire extinguisher** for a new office. What category code would you enter for this item?
  - You are purchasing a **21 cubic foot refrigerator**. What category code would you enter for this item?
  - You are purchasing a **single user license of Visio Professional 2010**. What category code would you enter for this item.
  - You are buying **carpet** for your office's waiting area. What category code would you enter for this item?

# Repeatability at 6 digit level (Example: xxxxxx00)



	Test Subject 1	Test Subject 2	Test Subject 3	Total
Correct Match	2	4	6	12
Incorrect Match	2	5	2	9
No Match	6	1	2	9

**Reproducibility at the 6 digit level = 57%**  
**(Example: xxxxxx00)**



# Reproducibility

- Scenario 4: You are purchasing a **set of tires** for a state-owned car. What category (UNSPSC) code would you enter for these items?
  - Correct: 25172504 Automobile or light truck tires
- Scenario 3: You are purchasing a **case of Deep Woods Off** to protect employees from mosquitos. What category (UNSPSC) code would you enter for these items?
  - Correct: 10191500 Pesticides or pest repellents
  - Incorrect: 85111704 Mosquito management or control services
  - Incorrect: 49121500 Camping and outdoor equipment
  - Incorrect: 49120000 Camping and outdoor equip & accessories

# Analysis Observations

- Defects exist in the data and must be mitigated
- The current UNSPSC coding system is extensive
- Users want more descriptive Account codes
- There is no obvious consequence for entering an incorrect UNSPSC code
- Users are unknowingly contributing to the volume of defective data:
  - By entering incorrect codes (UNSPSC and Account codes)
  - By not populating the contract field
  - By not populating the UNSPSC field
- Direct spend purchases and p-card purchases made from a non-state contract results in non-descriptive data that is unusable for spend analyses

# Y = (f)X

## “the critical few”

Y = Problem	(f)X = critical contributor	(f)X – Variable (source)
Errors exist in the data sets	Too many choices	UNSPSC codes
Errors exist in the data sets	Choices that don't align with items & services we're buying	Account codes
Errors exist in the data sets	UNSPSC field is not a required field	OAKS procurement module
Errors exist in the data sets	Direct spend vouchers do not include UNSPSC field	OAKS voucher module
Errors exist in the data sets	Pcard transactions include only a funding strip (i.e., no UNSPSC field)	OAKS Pcard module

# Improve/Implement Phase - Tools

- **Sponsor concurrence**
  - Gaining approval of improvement/implementation strategies to mitigate problems caused by critical Xs
- **Sub-project plans**
  - Provides tactical steps to address and improve the problems caused by the critical Xs (variables)
- **Research**
  - Studying industry-based improvement actions to identify an expected improvement rate for a given action
- **Performance objectives/metrics**
  - Establishes a quarterly reporting process to assess and monitor error rates each quarter

# Improvements

- UNSPSC Codes
  - Reduce the coding choices
  - Identify categories targeted for strategic sourcing and ensure a viable list of choices exists
- Account Codes
  - Analyze and recommend enhancements to Account Code structure based on categories targeted for strategic sourcing
- Training
  - Establish minimum training requirements for OAKS P2P users
  - Enhance training programs to educate on use
  - Establish online & “quick hit” training sessions to refresh user awareness

# Improvements...

- We can expect modest to significant improvement in data entry accuracy based on the following improvement strategies:
  - Reduce choices – 55% (maintenance required)
  - Training – 25% (continuous or slippage will occur)
  - Minor automation – 10% (permanent)
  - Minor validation – 10% (permanent)

# Cost\* per UNSPSC entry

- Baseline cost\* per UNSPSC entry is \$.75
- Assuming improvements could cut the UNSPSC search time and entry time by 50%
- The cost of each UNSPSC entry is \$.38

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*\* Conservative cost estimate is based on an average hourly salary of P2P users and average time users spend searching for and entering a UNSPSC code.*

*Sources: OAKS HCM; P2P user survey*

# Cost\* per UNSPSC entry

- Clothing category (represents 1% of annual spend):
    - On contract purchases:
      - 2372 correct entries x \$.38 = \$901.36
      - 426 error entries x \$.38 = \$161.88
    - Direct spend purchases:
      - 1078 correct entries x \$.38 = \$409.64
      - 842 error entries x \$.38 = \$319.96
- \$1792.84

*Estimated annual statewide time avoidance: \$179,284.00*

# What's next...

- Implementation of improvement plans...
  - Reduce UNSPSC Code choices
  - Study/recommend Account Code improvements
  - Educational/awareness strategy
  - Amend training modules to educate on benefits of correct entries
- Monitor quarterly data behavior through performance metrics...
  - Starting now (first quarter of FY2013)
  - July 1-Sept. 30, 2012
  - Determining automation of delivered quarterly performance metrics through OAKS BI

## ...a 20-minute talk with APOs

- Advocate that every entry matters
  - Enter accurate UNSPSC codes
  - Enter correct Account codes
  - Enter contract numbers
- Examine internal processes for practices that could inhibit correct coding
- Encourage employees to attend OAKS training sessions
- Offer recommendations

# Hawthorne Effect?

- July 12, 2012: Talked with Agency Procurement Officers

Timeframe	Average Error Rate
Before July 12, 2012 (PO's only)	14.83%
After July 12, 2012 (July 13-Aug. 31) (PO's only)	1.81%



"That which is measured improves. That which is measured and reported improves exponentially."

- Karl Pearson (1857-1936)

# LEANOhio

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