


Quest Diagnostics

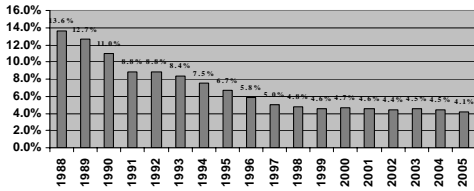
Statistical Trends in Workplace Drug Testing

R. H. Barry Sample, Ph.D.
 Director of Science and Technology
 Employer Solutions
 Quest Diagnostics Incorporated


3/6/2007 

Quest Diagnostics

Overall Positivity Combined Workforce

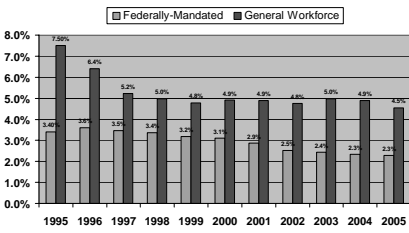


Year	Positivity Rate
1988	12.6%
1989	12.7%
1990	11.8%
1991	9.8%
1992	9.8%
1993	9.4%
1994	7.5%
1995	7.7%
1996	5.8%
1997	5.8%
1998	4.8%
1999	4.6%
2000	4.7%
2001	4.6%
2002	4.4%
2003	4.5%
2004	4.5%
2005	4.1%


3/6/2007 

Quest Diagnostics

Overall Positivity Federally-Mandated Safety-Sensitive / General Workforce



Year	Federally-Mandated	General Workforce
1995	5.4%	7.5%
1996	3.8%	6.6%
1997	3.3%	5.2%
1998	3.4%	5.8%
1999	3.2%	4.8%
2000	3.1%	4.9%
2001	2.8%	4.9%
2002	2.3%	4.6%
2003	2.4%	5.0%
2004	2.3%	4.9%
2005	2.3%	4.3%


3/6/2007 

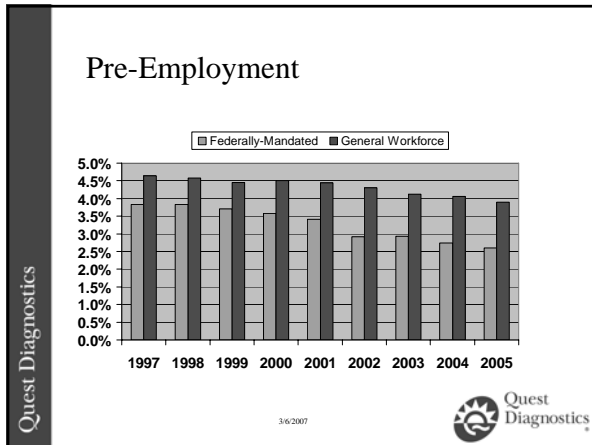
Quest Diagnostics

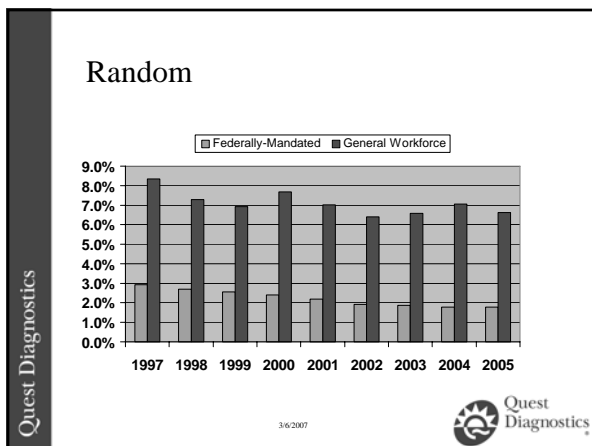
FMSS Detail

Type	2005	2006	Jan-Feb 2007
TDP	1.0%	0.9%	1.1%
DOT	2.1%	1.9%	1.8%
NRC	3.3%	3.2%	2.5%

3/6/2007





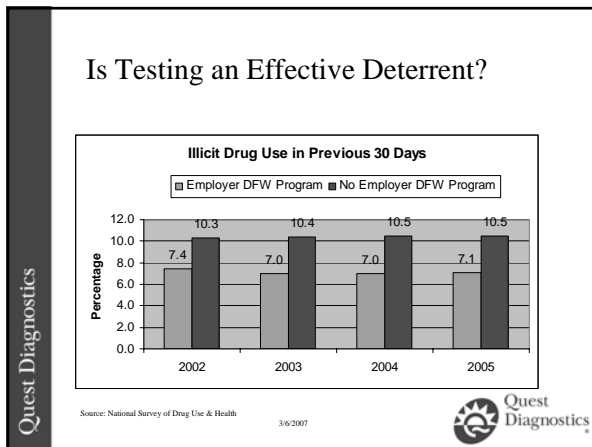


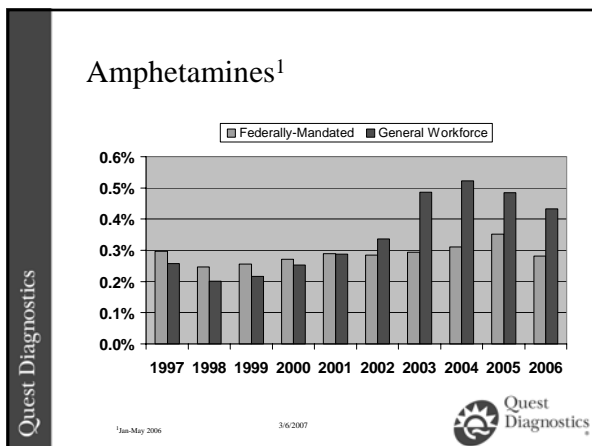
Quest Diagnostics

Percent of Specimens Tested by Testing Reason, 2001-2005

	FMSS (N=4.7 million)	GW (N=23 million)
Pre-Employment	45%	78%
Random	43%	9%
Other	12%	13%

3/6/2007 Quest Diagnostics






Quest Diagnostics

Amphetamine Class Positivity (GW – 1000/500)


	2002	2003	2004	2005	Jan-May 2006
N (Millions)	5.6	5.6	5.8	5.8	2.4
Overall	0.33%	0.48%	0.52%	0.48%	0.43%
Amp	0.28%	0.41%	0.44%	0.42%	0.38%
Methamp	0.19%	0.32%	0.33%	0.26%	0.18%
Both Amp & Methamp	0.14%	0.24%	0.25%	0.19%	0.13%

3/6/2007 

Quest Diagnostics

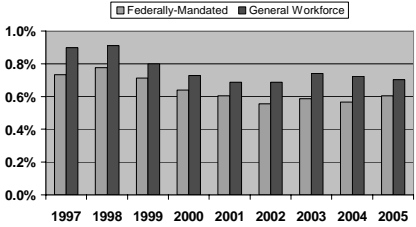
Amphetamine Class Positivity (FMSS – 1000/500)

	2002	2003	2004	2005	Jan-May 2006
N (Millions)	1.2	1.2	1.2	1.3	0.5
Overall	0.29%	0.29%	0.31%	0.35%	0.28%
Amp	0.21%	0.22%	0.24%	0.28%	0.23%
Methamp	0.21%	0.22%	0.23%	0.25%	0.18%
Both Amp & Methamp	0.14%	0.15%	0.16%	0.18%	0.12%


3/6/2007 

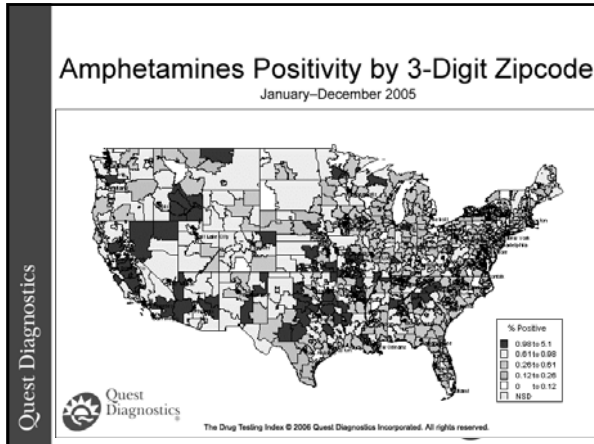
Quest Diagnostics

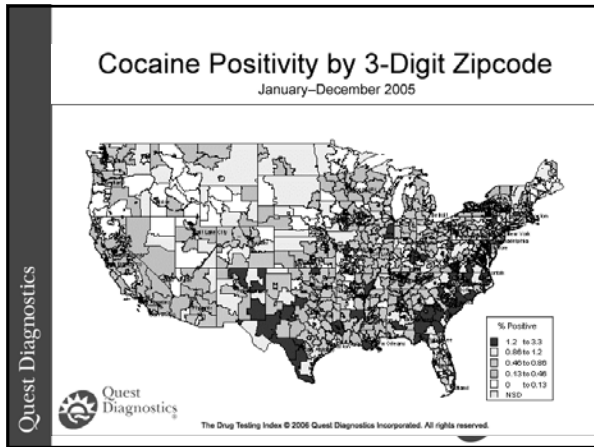
Cocaine

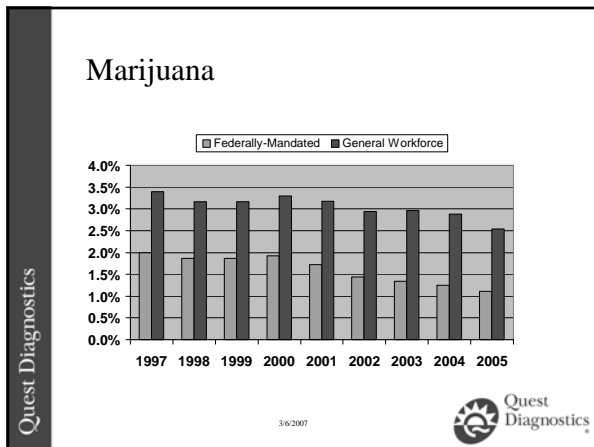


Year	Federally-Mandated (%)	General Workforce (%)
1997	0.75	0.90
1998	0.78	0.92
1999	0.72	0.80
2000	0.65	0.72
2001	0.62	0.68
2002	0.58	0.65
2003	0.60	0.70
2004	0.58	0.70
2005	0.60	0.70

3/6/2007 








Quest Diagnostics

Marijuana Positivity Changes

	2003	2004	2005
N (GW-50/15)	5.1	5.2	5.4
Total Positive	0.1%	-3.3%	-12.0%
N (GW-100/15)	0.4	0.3	0.3
Total Positive	-9.0%	-4.0%	-12.9%
N (GW-20/15)	0.1	0.1	0.1
Total Positive	4.9%	0.3%	-21.8%
N (FMSS)	1.3	1.3	1.3
Total Positive	-16.2%	-6.9%	-7.1%




3/6/2007

Quest Diagnostics

Laboratory Detection of Devices and Products Used to Defeat Drug Tests

- **Cleansing Agents/Detoxifiers**
 - ◆ Primarily cause dilution
 - ◆ Creatinine & specific gravity
- **Oxidants/Adulterants**
 - ◆ pH
 - ◆ Oxidizing Adulterants
 - ◆ Aldehydes
 - ◆ Surfactants
- **Devices**
 - ◆ No laboratory methods of detection!




3/6/2007

Quest Diagnostics

Legal Status

- **Congressional Hearing in May 2005**
“Subversion of Drug Testing Programs”
 Subcommittee on Oversight and Investigations
 House Energy and Commerce Committee
 - ◆ 9 Drug-testing industry and government witnesses
 - ◆ 3 Witnesses that sell/manufacture products designed to defeat drug tests<http://energycommerce.house.gov/108/Hearings/05172005hearing1525/hearing.htm#List>
- **State laws**




3/6/2007

Quest Diagnostics

State Laws


- Scope
 - ◆ Attempt to defraud drug test
 - ◆ Manufacturing products intended to defraud drug test
 - ◆ Selling products intended to defraud drug test
 - ◆ Transporting products intended to defraud drug test
 - ◆ Manufacturing or providing synthetic/human urine to defraud drug test
- Penalties
 - ◆ Generally, misdemeanors (fines \$500-\$5000)
 - ◆ Felony in several states (fines \$5000-\$10000)
 - ◆ Several permit imprisonment

3/6/2007 

Quest Diagnostics

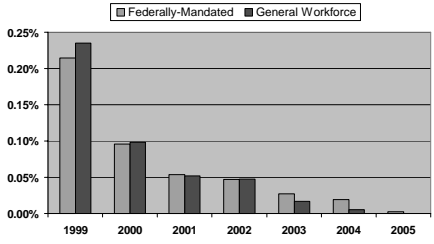
State with Laws Regarding Use or Sale of Products Intended to Defeat Drug Tests

1. Arkansas	8. North Carolina
2. Illinois	9. Oklahoma
3. Kentucky	10. Oregon
4. Louisiana	11. Pennsylvania
5. Maryland	12. South Carolina
6. Nebraska	13. Texas
7. New Jersey	14. Virginia


3/6/2007 

Quest Diagnostics

Adulterated




Year	Federally-Mandated (%)	General Workforce (%)
1999	0.21	0.23
2000	0.10	0.10
2001	0.05	0.05
2002	0.05	0.05
2003	0.03	0.02
2004	0.02	0.01
2005	0.01	0.01

3/6/2007 

Quest Diagnostics

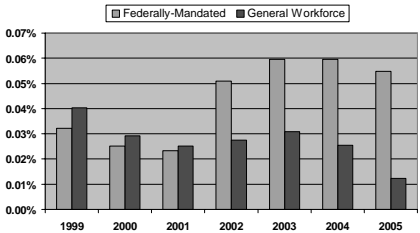
FMSS - Adulterated

Type	2005	2006	Jan-Feb 2007
TDP	0.00%	0.00%	0.03%
DOT	0.01%	0.00%	0.00%
NRC	0.01%	0.01%	0.01%

3/6/2007 


Quest Diagnostics

Substituted



The bar chart displays the percentage of substituted testing from 1999 to 2005. The y-axis ranges from 0.00% to 0.07%. Two categories are shown: Federally-Mandated (light gray bars) and General Workforce (dark gray bars). Federally-Mandated testing shows a general upward trend, peaking in 2003 and 2004 at approximately 0.06%, while General Workforce testing remains relatively stable between 0.02% and 0.04%.


Year	Federally-Mandated (%)	General Workforce (%)
1999	0.032	0.041
2000	0.025	0.030
2001	0.022	0.025
2002	0.051	0.028
2003	0.061	0.031
2004	0.061	0.025
2005	0.055	0.014

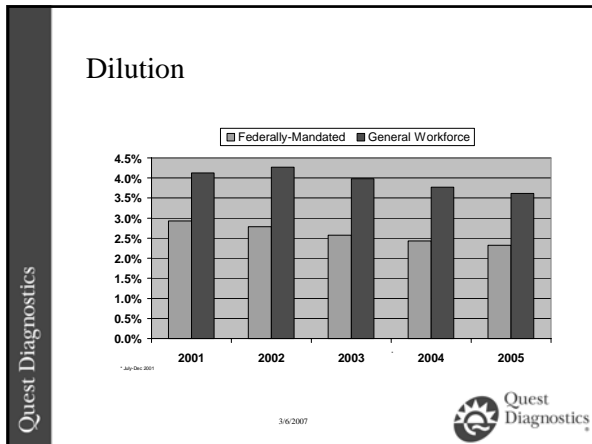
3/6/2007 

Quest Diagnostics

FMSS - Substituted

Type	2005	2006	Jan-Feb 2007
TDP	0.18%	0.09%	0.13%
DOT	0.05%	0.05%	0.04%
NRC	0.03%	0.03%	0.02%

3/6/2007 



FMSS - Dilute

Type	2005	2006	Jan-Feb 2007
TDP	2.36%	1.72%	1.43%
DOT	2.36%	2.26%	2.01%
NRC	0.76%	0.70%	0.75%

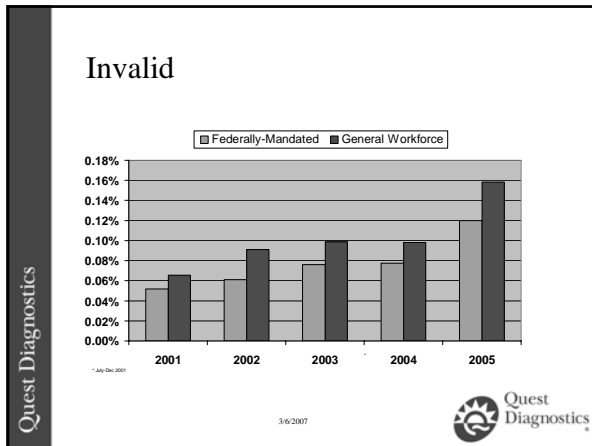
Quest Diagnostics
3/6/2007

Initial Test Detection Rates for Cocaine Metabolite and Marijuana Metabolite

		Drug Detection Rate	Creatinine <20 mg/dL
Overall			6.0%
Marijuana Metabolite	Below Cutoff	2.6%	14.7%
	Above Cutoff	3.5%	11.7%
Cocaine Metabolite	Below Cutoff	1.0%	8.1%
	Above Cutoff	0.9%	10.2%

- Similar prevalence of specimens containing drug above and below cutoff
- Higher incidence of low (<20 mg/dL) creatinine in specimens that contain marijuana metabolite below cutoff (*donor may be viewed as having successfully diluted?*)

Quest Diagnostics
3/6/2007



FMSS - Invalid

Type	2005	2006	Jan-Feb 2007
TDP	0.17%	0.26%	0.20%
DOT	0.14%	0.12%	0.09%
NRC	0.08%	0.08%	0.09%

Quest Diagnostics
3/6/2007

Invalid Reasons: FMSS

	2004	2005	2006	Jan-Feb 2007
N (Thousands)	1.0	1.5	1.6	0.3
Bottle	8%	4%	4%	7%
Characteristics	0.6%	0.3%	0.8%	0.7%
Creatinine	17%	9%	15%	9%
GCMS	11%	6%	6%	6%
Immunoassay	19%	17%	14%	14%
Oxidant Activity	12%	26%	27%	33%
pH	32%	22%	20%	20%
Specific Gravity	6%	19%	17%	15%


Quest Diagnostics
3/6/2007

Quest Diagnostics

Invalid Reasons: FMSS Detail

Oct. 2006 – Feb. 2007


	TDP	DOT	NRC
N (Thousands)	0.1	0.7	0.0
Bottle	0%	5%	10%
Characteristics	1.6%	1.0%	0.0%
Creatinine	0%	13%	5%
GCMS	0%	6%	0%
Immunoassay	2%	12%	30%
Oxidant Activity	29%	34%	45%
pH	60%	17%	0%
Specific Gravity	8%	17%	10%

3/6/2007 

Quest Diagnostics

Invalid Reasons: GW

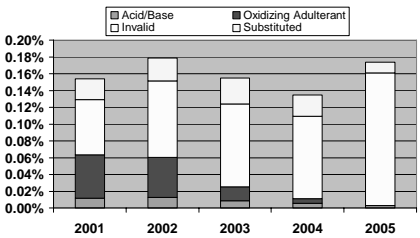
	2004	2005	2006	Jan-Feb 2007
N (Thousands)	5.6	9.2	9.7	1.3
Bottle	1.6%	0.8%	1.5%	1.6%
Characteristics	0.9%	0.3%	0.7%	0.7%
Creatinine	12%	7%	12%	8%
GCMS	15%	6%	6%	8%
Immunoassay	22%	16%	16%	16%
Oxidant Activity	13%	23%	17%	18%
pH	33%	19%	19%	13%
Specific Gravity	8%	32%	28%	31%

3/6/2007 


Quest Diagnostics

Overall Trends in SVT

(7/2001-12/2005)




Year	Acid/Base	Invalid	Oxidizing Adulterant	Substituted
2001	0.02%	0.06%	0.06%	0.06%
2002	0.02%	0.06%	0.06%	0.06%
2003	0.02%	0.06%	0.06%	0.06%
2004	0.02%	0.06%	0.06%	0.06%
2005	0.02%	0.06%	0.06%	0.06%

3/6/2007 

Quest Diagnostics

Alternative Specimens & Technologies

- Specimens
 - ◆ Hair
 - ◆ Oral-Fluid
 - ◆ Sweat
- Technologies
 - ◆ POCT
 - ◆ IITF


3/6/2007 

Quest Diagnostics

Oral-Fluid vs. Urine

(January 2005 – December 2006)

	Oral-Fluid	Urine GW
N (Millions)	~2	~14
Positive	4.0%	4.4%
BY DRUG		
Amphetamines	0.16%	0.46%
Methamphetamine	0.33%	N/A
Cocaine	1.04%	0.73%
Marijuana	2.12%	2.45%
Opiates	0.40%	0.32%
PCP	0.02%	0.02%


3/6/2007 

Quest Diagnostics

Oral-Fluid Positive Opiates Frequency

(as Percentage of Opiate Positive Specimens)

	2003	2004	2005	2006
Codeine	21%	13%	12%	12%
Morphine	5%	9%	5%	6%
6-MAM	3%	3%	2%	2%
Hydrocodone	78%	81%	84%	83%

3/6/2007 

Quest Diagnostics

Questions ?

3/6/2007

