

Drug Screening



***Examination of Job Applicants at Medical
Services of Fraport AG
February 2002 – December 2009***

Over 60.000 employees working at Frankfurt Airport



***A normal day at Frankfurt Airport.
How many use drugs ????***



Our daily business



From our criminal statistics:

- Highest proportion of convictions is for possession of cannabis, reflecting the substantial increase in cases in recent years.
- Substantial increase of convictions for possession of amphetamine-derivates, especially ecstasy.
- Declining numbers of cases involving heroine and LSD.
- Large cities with more than 500,000 inhabitants are substantially over-represented with cases of heroine and cocaine.

Social problems

- More than 11% of all admissions to intensive care units are addicts (Backmund et al, 1998).
- About one third of all prisoners in large cities are addicts.
- 10-15% of all trainees at medical examinations for starting a new job in the chemical industry are cannabis-positive.
- The number of driving licensees, against whom a legal proceeding is in process due to offences contravening the *Narcotics Act* has increased.
- 6-8% of all prescribed medicines have an abuse and addict potential. (Jahrbuch Sucht 2002).

Result: Consumption of drugs and medicines is higher than most people believe.

Survey of figures 2002

month	persons tested	tested positive	corresponds to
Feb	69	10	14,50 %
March	93	14	15,10 %
April	128	14	10,94 %
May	74	8	10,81 %
Jun	76	3	3,95 %
Jul	90	2	2,22 %
Aug	51	3	5,88 %
Sep	59	5	8,47 %
Oct	54	1	1,85 %
Nov	47	1	2,13 %
Dec	54	2	3,70 %
total	795	63	7,92 %

Survey of figures 2002-2003

month	persons tested	tested positive	corresponds to
total 2002	795	63	7,92 %
Jan	120	4	3,33 %
Feb	67	2	2,99 %
March	76	3	3,95 %
April	22	2	9,10 %
May	8	0	0,00 %
Jun	44	4	9,10 %
Jul	40	6	15,00 %
Aug	48	3	6,25 %
Sep	27	1	3,70 %
Oct	32	3	9,38 %
Nov	17	2	11,80 %
Dec	37	0	0,00 %
total	538 (1333)	30 (93)	5,58 % (6,98 %)

Survey of figures 2002-2004

month	persons tested	tested positive	corresponds to
total 2002/3	1333	93	6,98 %
Jan	59	3	5,08 %
Feb	38	1	2,63 %
March	23	1	4,35 %
April	23	1	4,35 %
May	51	1	1,96 %
Jun	49	0	0,00 %
Jul	39	2	5,13 %
Aug	46	2	4,35 %
Sep	38	1	2,63 %
Oct	35	2	5,71 %
Nov	17	0	0,00 %
Dec	30	2	6,67 %
total	448 (1781)	16 (109)	3,57 % (6,12 %)

Survey of figures 2002-2005

month	persons tested	tested positive	corresponds to
total 2002/4	1781	109	6,12 %
Jan	115	2	1,74 %
Feb	246	9	3,66 %
March	30	1	3,33 %
April	26	2	7,69 %
May	23	0	0,00 %
Jun	61	3	4,92 %
Jul	59	2	3,39 %
Aug	53	2	3,77 %
Sep	14	0	0,00 %
Oct	29	1	3,45 %
Nov	38	1	2,63 %
Dec	83	4	4,82 %
total	777 (2558)	27 (136)	3,47 % (5,32 %)

Survey of figures 2002-2006

month	persons tested	tested positive	corresponds to
total 2002/5	2558	136	5,32 %
Jan	66	0	0,00 %
Feb	102	0	0,00 %
March	67	2	2,99 %
April	35	2	5,71 %
May	64	0	0,00 %
Jun	41	2	4,88 %
Jul	28	1	3,57 %
Aug	58	2	3,45 %
Sep	38	1	2,63 %
Oct	47	1	2,13 %
Nov	120	0	0,00 %
Dec	54	0	0,00 %
total	720 (3278)	11 (147)	1,53 % (4,48%)

Survey of figures 2002-2007

month	persons tested	tested positive	corresponds to
total 2002/6	3278	147	4,48 %
Jan	98	0	0,00 %
Feb	94	1	1,06 %
March	48	1	2,08 %
April	57	0	0,00 %
May	32	0	0,00 %
Jun	48	2	4,17 %
Jul	31	0	0,00 %
Aug	61	1	1,64 %
Sep	36	0	0,00 %
Oct	64	3	4,69 %
Nov	100	1	1,00 %
Dec	176	4	2,27 %
total	845(4123)	13 (160)	1,54 % (3,88 %)

Survey of figures 2002-2008

month	persons tested	tested positive	corresponds to
total 2002/7	4123	160	3,88 %
Jan	109	4	3,67 %
Feb	66	0	0,00 %
March	43	1	2,33 %
April	50	1	2,00 %
May	29	0	0,00 %
Jun	66	0	0,00 %
Jul	71	1	1,41 %
Aug	47	0	0,00 %
Sep	52	0	0,00 %
Oct	48	0	0,00 %
Nov	51	0	0,00 %
Dec	15	0	0,00 %
total	647(4770)	7 (167)	1,08 % (3,5 %)

Survey of figures 2002-2009

month	persons tested	tested positive	corresponds to
total 2002/8	4770	167	3,50 %
Jan	69	0	0,00 %
Feb	37	1	2,70 %
March	27	1	3,70 %
April	22	0	0,00 %
May	13	0	0,00 %
Jun	17	0	0,00 %
Jul	50	0	0,00 %
Aug	10	0	0,00 %
Sep	57	3	5,26 %
Oct	50	3	4,00 %
Nov	38	1	2,63 %
Dec	32	0	0,00 %
total	422(5192)	9 (176)	2,13 % (3,38 %)

2002

7,92 % positive
(n = 795)

2003

5,58 % positive
(n = 538)

2002-2003

6,98% positive
(n = 1333)

2004

3,57 % positive
(n = 448)

2005

3,47 % positive
(n = 777)

2006

1,53 % positive
(n = 720)

2007

1,54 % positive
(n = 845)

2008

1,08 % positive
(n = 647)

2009

2,13 % positive
(n = 422)

2002-2009

3,38 % positive
(n = 5192)

Concept (1)

Principle:

Absolutely no (!) illegal drugs at Fraport or subsidiary companies

Implementation:

Drug screening for all job applicants at:

- Fraport
- FraSec
- FraCare
- FCS
- ACS
- APS
- United
- RMZ
- Acciona
- GCS
- Unfallkasse Hessen
- Gedas
- Fraport Immobilienservice und –entwicklungs GmbH & Co. KG

Concept (2)

Job Applicant Examinations:

Illegal drugs - positive

no job, no second chance
examination by external lab if person
questions the results

Apprentices:

If positive
(depending on abused substance)

1. Decision of HR dept. (PSL+PSL G)
2. One chance, that is employment contract
with stipulations

Possible tools

that is
a. Inform parents
b. Inform superiors
c. Regular drug testing

If positive again

Termination of employment (**2x in 2002,**
1x in 2004; 1 x in 2007))

Concept (3)

Employees :

1. Employee states voluntarily that he/she has a problem
2. Employee caught during routine physical examinations
3. Employee involved in an accident
4. Employee comes upon insistence of his/her superior

Depending on job responsibilities there are several possibilities

1. Treatment by company doctor
2. Treatment by drug counselor
3. Employee is removed from specific job duties for a limited period of time (driving or instrument control activities, security tasks, etc....)
4. Regular drug testing
5. Start of withdrawal measures and procedures
6. Participation in therapy groups at Fraport

Analytics of drugs:

Different methods:

- Drug of abuse rapid tests: 1-step-urine-tests, which are based on the principle of an immuno-assay;
- Screening-method
- Fluoreszenz-Polarisations-Immuno-Assay (FPIA):
- Automate immuno-assay
- GC/MS = Gaschromatography with mass-spectroscopy; reference method
- Thin Layer Chromatography
- High Pressure Liquid Chromatography

Limit of detection, cut-off, cross-reactivity

Limit of detection : The detection limit is the theoretically possible, lowest detectable concentration of a substance.

Cut-off: The concentration, beneath which the result is negative. The result is positive above the cut-off.

Cross-reactivity: Reaction of the antibodies with likely substances in different degrees.

Sensitivity and specificity

Specificity: probability that a really negative result leads to a negative result with screening.

Sensitivity: probability that a really positive result with screening leads to a positive result with GC/MS.

With a drug of abuse rapid test the specificity is higher than the sensitivity.

Drug Screen

In short time and without complex preparation a high number of samples can be sorted into negative and positive cases quite cheaply and economically.

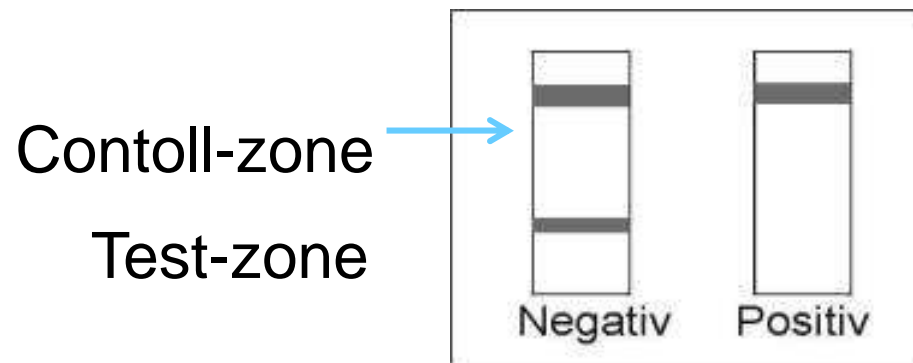
As the modern screening-methods don't give many false negative results, with negative samples normally no more tests are required.

Positive results should be confirmed by a second method (e.g. GC/MS).



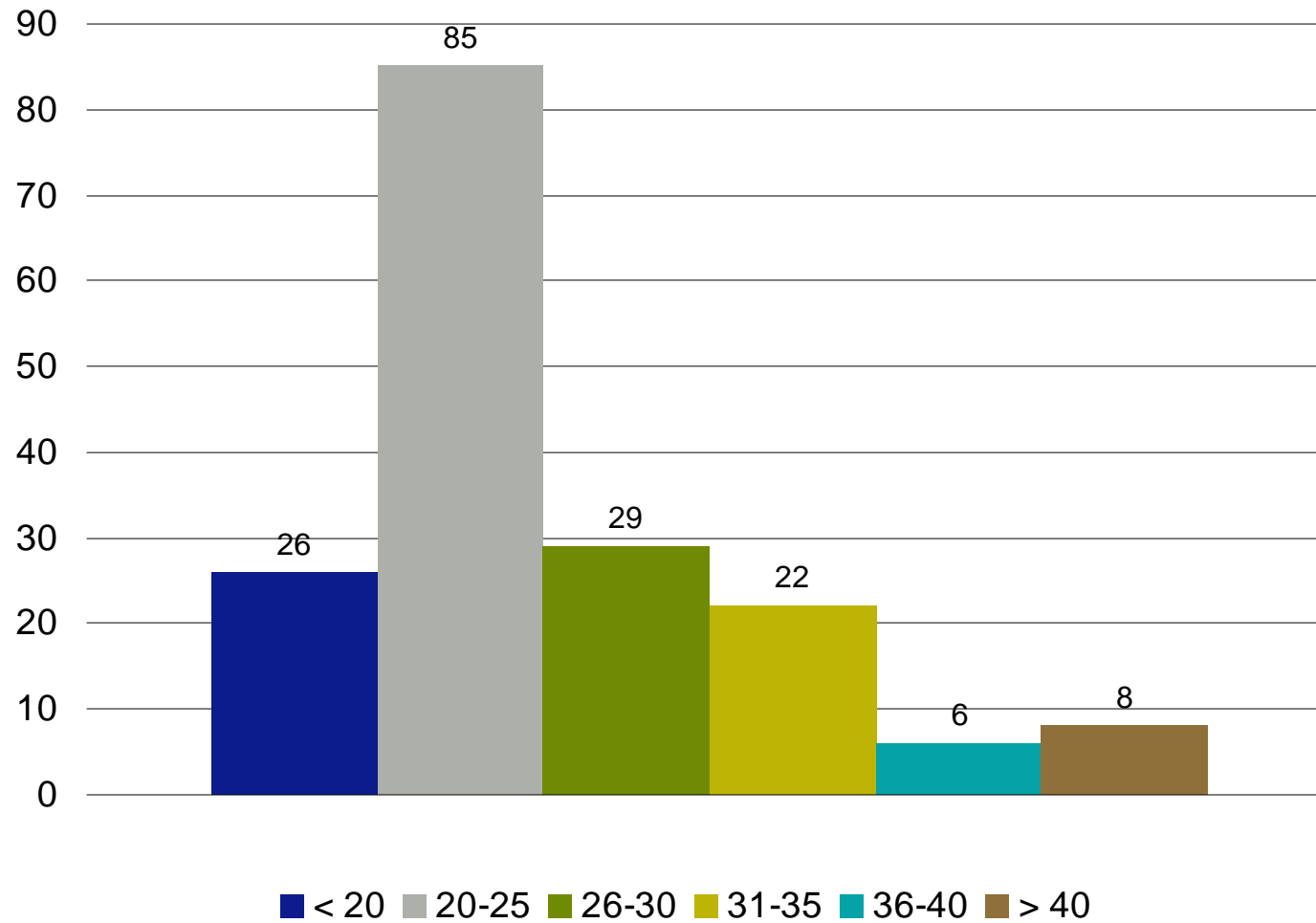
The urine must visibly rise into all test-zones.

Result

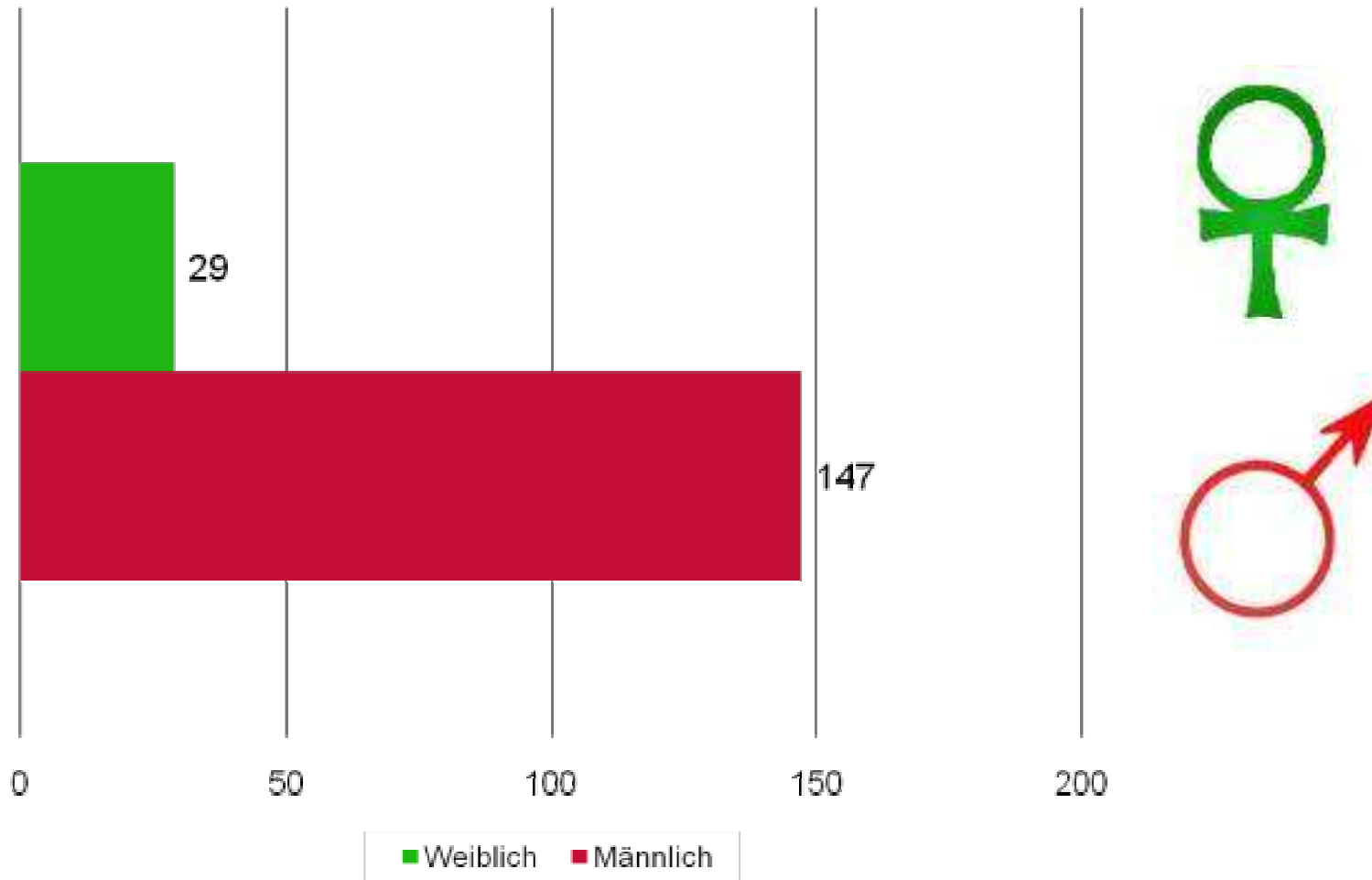


- The colour-bands in the different regions can show different grades of colours because of different sensitivities of the substances.
- The test is positive only when the band disappears completely.

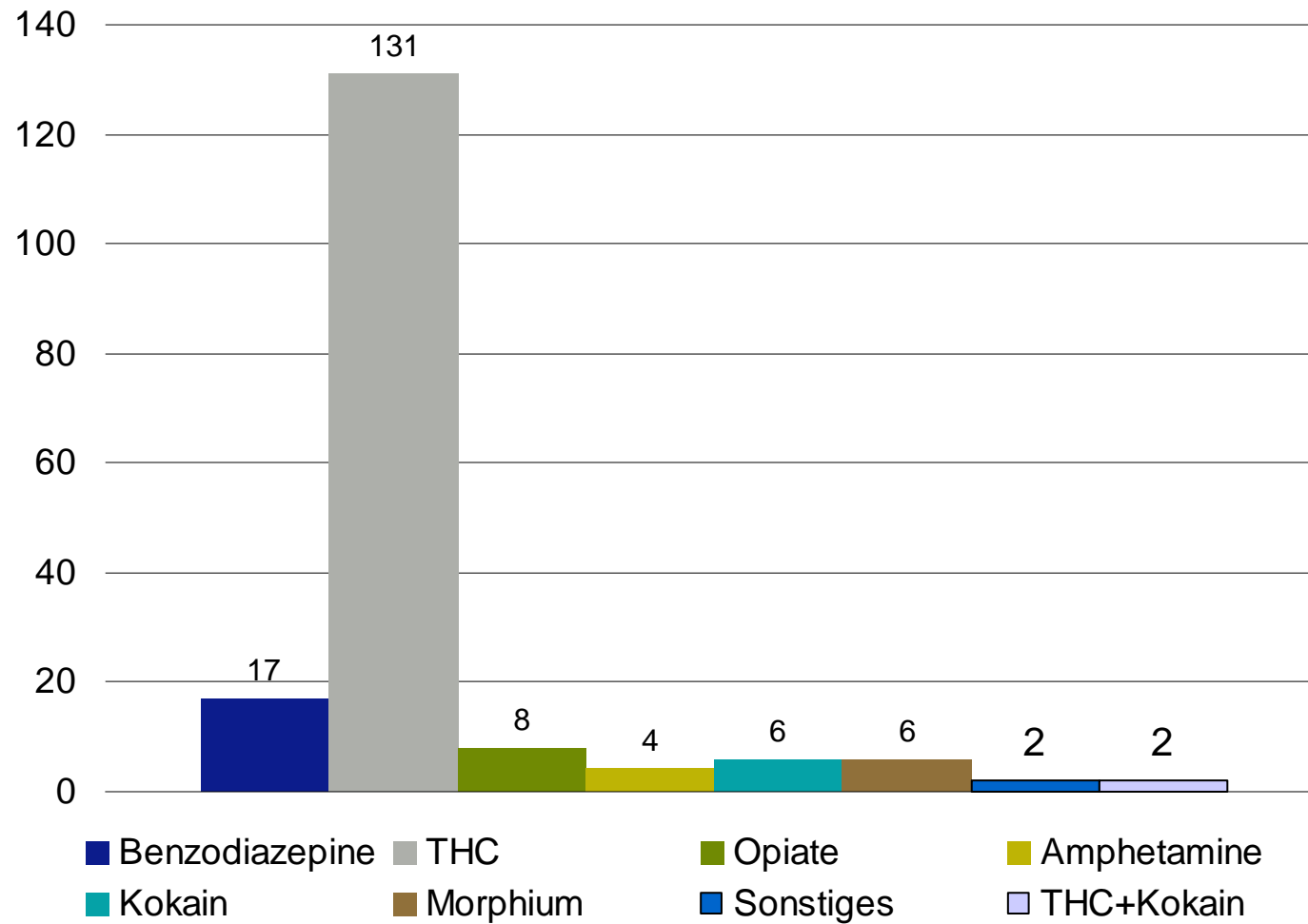
Number of persons tested positive according to age group(n=176) 2002-2009 total



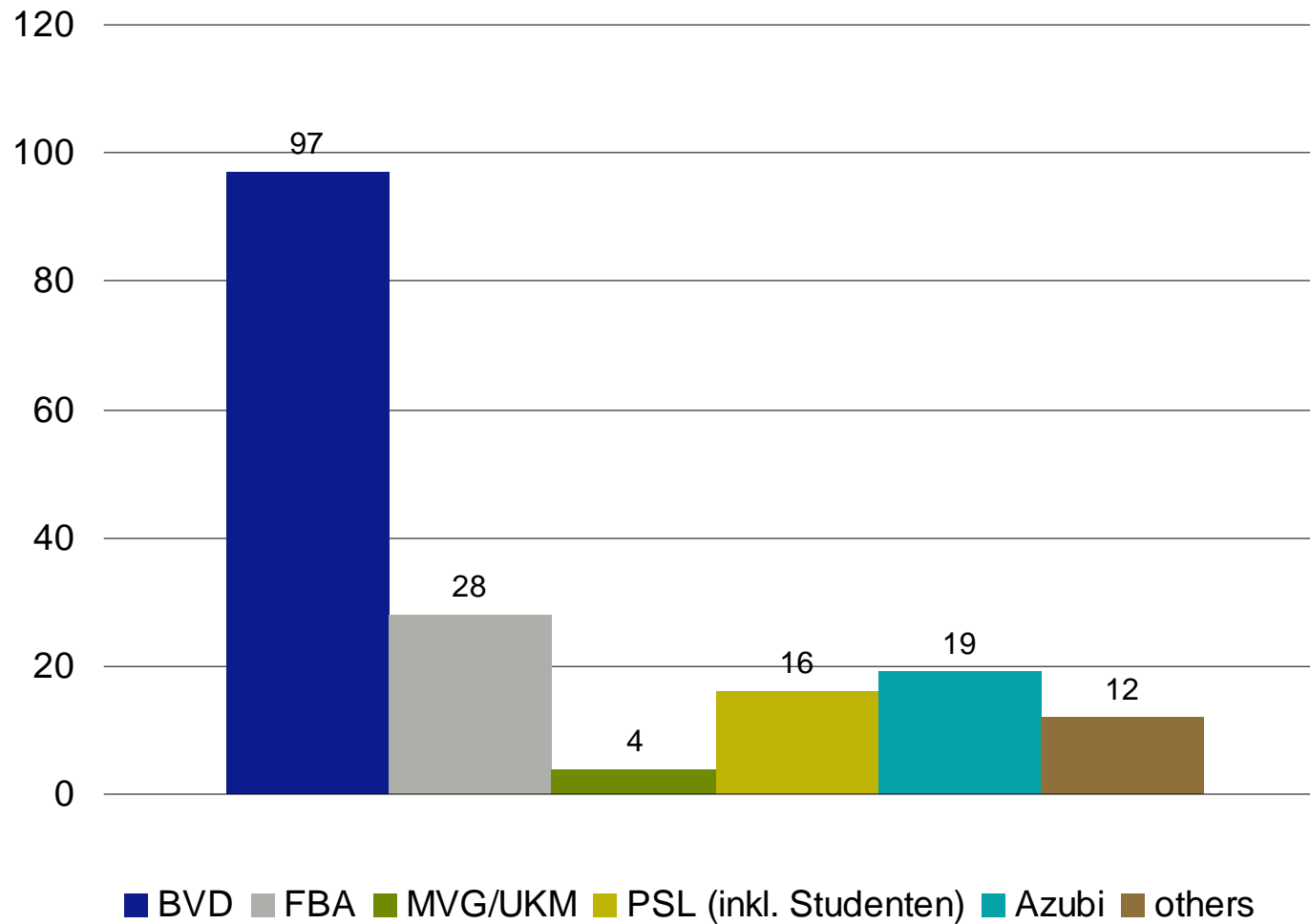
Number of persons tested positive according to sex(n=176) 2002-2009 total



Number of persons tested positive according to type of drug (n=176) 2002-2009 total



Number of persons tested positive according to type of Department (n=176) 2002-2009 total



Manipulation

- In-vitro or in-vivo-dilution of the urine
- Addition of cleaning agents, disinfectants, soap or other substances
- Urine from another person

Countermeasures

- Urine-sampling on sight
- Use of urine-control-sticks



Survey of parameters of the multi-tests

Multi 3	Opiates	Cocaine	Benzo.			
Multi 4V	Opiates	Cocaine			Cannabis	Amphet.
Multi 4M	Opiates	Cocaine	Benzo.	Methadon		
Multi 5	Opiates	Cocaine	Benzo.		Cannabis	Amphet.
Multi 5M	Opiates	Cocaine	Benzo.	Methadon		Amphet.
Multi 5S	Opiates	Cocaine	Benzo.	Methadon	Cannabis	
Multi 6	Opiates	Cocaine	Benzo.	Methadon	Cannabis	Amphet.



Communication !!!!



Thank you for your attention!

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Any Questions ?

