Comparative Assessments of the Prescription Drug Abuse Climate in Europe and the United States: Scientific, Regulatory, and Cultural Factors

RADARS System: International Pre-Symposium

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Previous Conflicts of Interest/Disclosure

- **Scott Novak has received direct funds through paid consultancy through:**
  - Daiichi Sankyo
  - Endo
  - Indivior
  - Reckitt Benckiser
  - Pfizer
  - Zogenix
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  - Indivior
  - Reckitt Benckiser
  - Pfizer
  - Shire

Acknowledgements

- The data are from public source documents, and any interpretation are solely the author and neither the funder(s) nor any government agency

Goals of Today's Talk

- **Identify the prevalence of nonmedical prescription drug in the E.U.**
- **Compare E.U. data to the U.S.**
- **Assess cultural and regulatory differences across countries**

Surveillance Systems in the U.S.

- **The U.S. has numerous government sponsored systems to monitor drug abuse**
  - National Survey on Drug Use and Health (SAMHSA)*
  - Monitoring the Future (NIDA/NIH)
  - Behavioral Risk Factor Surveillance Survey (BRFSS)
  - MEDWATCH/Adverse event systems

- **Commercial Systems in the U.S.**
  - RADARS System
  - Others

*NSDUH is a congressionally mandated system ($45 million per year)

Surveillance Systems in the E.U.

- **The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)**
  - Established in 1993, ratified in Lisbon in 1995
  - Decentralized agency, comprised of volunteer member states
  - Serve a data clearinghouse to capture secondary data sources
  - Typically doesn't fund primary data collection

- **Types of Surveillance data collected by EMCDDA**
  - Population-based surveys (Occasionally)
  - Drug trafficking/arrests
  - Drug Treatment Admissions
  - Groundwater analyses for discarded medications

European Monitoring Centre for Drugs and Drug Addiction

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The European Medicine Study

- **What is the prevalence of non-medical drug use in the European Union, as reported by the general population?**
- **Definitional Challenges**
  - Non-medical use:
    - self-treat without a prescription
    - Use for euphoria
  - **Types of drugs approved in each country**
    - Different types of drugs approved in each country
    - Different levels of prescriptive authority (pharmacist-approved codeine)

The European Medicine Study

- **Which countries do you choose?**
  - 28 member countries* (minus UK/Great Britain)
- **How's the best the way to reach the population?**
  - Internet Survey
  - Mail Survey
  - Telephone Survey
- **At what cost?**
  - $1 to $2 million versus $45 million (or equivalent Euros)

The European Medicine Study

- **Funded by Shire to investigate prevalence of nonmedical prescription drug use for lifetime and past year prevalence:**
  - Prescription Stimulants
  - Prescription Benzodiazepines
  - Prescription Opioids
- **Purposively selected 5 E.U. countries**
  - Denmark
  - Germany
  - Great Britain
  - Spain
  - Sweden

Data Collection Design

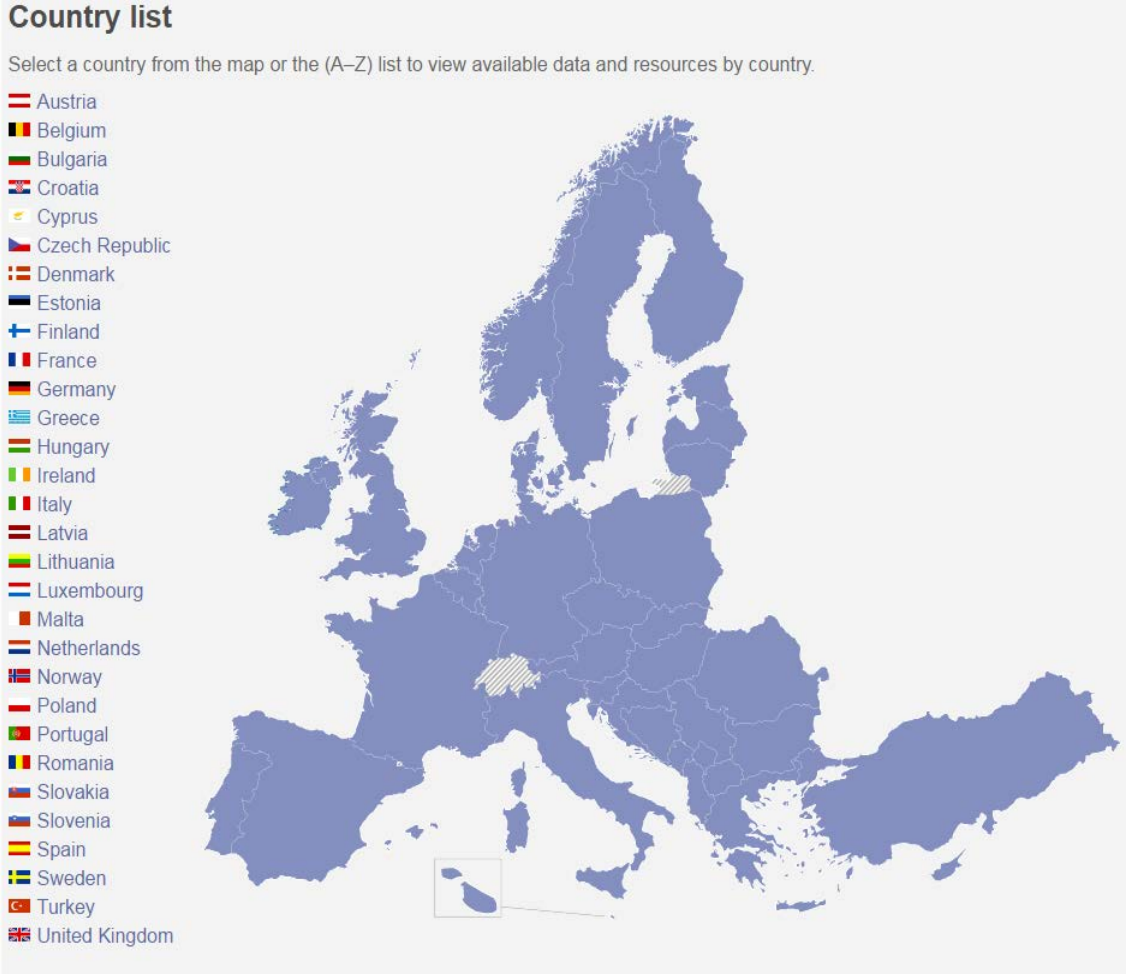
- **Wanted a hybrid model to capture youth (ages 12-17) and adults (ages 18 or older)**
- **Need ability to capture data in-person, especially for high-risk groups for methodological validity**
- **Balance costs against scientific rigor**

The E.U. Landscape

In 1993, 12 Countries
After 1992, 28 Countries*

Over 500 million residents

4 administrative bodies covering Judicial and political aspects



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Country Selection

- **Five key countries represent a target population of 160,360,360 of the entire EU population of 507,416,607, corresponding to approximately 32% of the EU population and 27% of the total land mass**

- **Represent significant geographic and cultural diversity across the region**

- **Hypothesized that G.B./U.K. would be most similar to U.S.**

Hybrid Data Collection

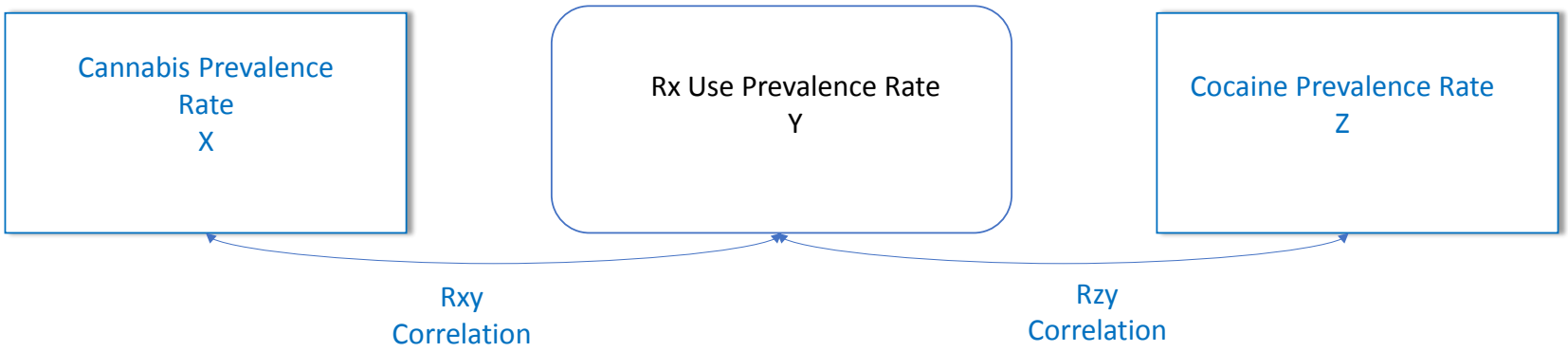
- **Multi-Stage Quota Sampling and post-hoc weights to generalize to each country's population**
  - Step 1: Identify 4-5 key population characteristics (i.e., demographics) to recruit proportionate to size
  - Step 2: Identify 1-2 related drug abuse characteristics (i.e., cannabis, cocaine) with high correlations to Rx Abuse (r=.6 or more)
  - Recruit to fill quotas

Hybrid Data Collection

- **Theory behind weighting in Step 2.**
  - In typical sampling and weighting, use post-hoc weights to balance sample based on some neglected characteristic (i.e., Hispanic males less likely to be in survey)
  - But, if you know the correlation between your desired outcome (i.e. Rx abuse) and a highly correlated instrument (i.e. cigarette use) then you can weight on instrument and adjust based on Corr X and Y.

Weighting Scheme Illustrated

Solving for Y using X, Z, and bivariable correlations



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Sampling and Data Collection

- **Contracted with several web-panels in the E.U. to select participants aged 18-49**
  - Peak age of onset for Rx abuse
  - Peak age of use of Internet

- **Contracted with local market research firms**
  - In-house survey administration
  - Collect data onsite to verify consent and answer questions
  - Collect data on ages 12-17, for parental consent
  - Collect data on high-risk groups (street intercept sampling in high-risk areas)

Final Sampling Catchment Areas

5 Countries

29 Cities

Data Collected May to Sept through 2014

6 IRB's:

RTI International and 1 per country

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EU-Meds Co-Investigator Team

Lead Country Investigators

Anders Hakasson, MD, PhD (Denmark, Sweden)

Internal Medicine, Unit for Psychosocial Interventions and for Addiction, Lund University

Jose Martinez-Raga,MD, PhD (Spain)

Prof. Asociado, Hospital Universitario Dr. Peset and University of Valencia

Jens Reimer, MD (Germany)

Psychiatrist, Center for Interdisciplinary Addiction Research at the University of Hamburg

Sampling Results (n=22,075)

Youth Study (ages 12-17)	Enrolled*	Completed	Refused #	Incomplete Interviews	Total Enrolled	Total Refuse
Germany (n=500 target)	524	498	2	24	524	2
Spain (n=500 target)	524	492	0	23	524	0
Denmark (n=250 target)	234	219	0	15	234	0
Sweden (n=250 target)	263	241	2	16	263	2
Great Britain (n=500 target)	592	532	2	54	592	2
Totals (n=2000 target)	2137	1982	6	132	2137	6
Adult Study (Ages 18-49)	Enrolled*	Completed	Refused #	Incomplete Interviews	Total Enrolled	Total Refuse
Germany (n=5000 target)	6354	5013	332	769	6354	332
Spain (n= 5000 target)	6371	5015	123	796	6371	123
Denmark (n=2500 target)	3550	2516	357	573	3550	357
Sweden (n=2500 target)	3249	2509	124	435	3249	124
Great Britain (n=5000 target)	6681	5040	230	1005	6681	230
Totals (n=20000 target)	26205	20093	1166	3578	26205	1166

Source: Novak, S.P., Hakannson, A., Martinez-Raga, J., Reimer, J., Krotki, K., and Varughese, S. (2016). The European Medicine Study: Rationale, Design, and Fieldwork Procedures. *Unplublished Manuscript.*

Weighting Validation Check

	Denmark		Germany		Great Britain		Spain		Sweden	
	Target	EU-Med	Target	EU-Meds	Target	EU-Meds	Target	EU-Meds	Target	EU-Meds
Age										
12-17	17%	9%	12%	9.2%	16%	9.9%	14%	9.1%	14%	8.9%
18-30	33%	37%	32%	34.7%	34%	35.7%	35%	32.7%	35%	34.3%
31-49	50%	54%	56%	56.1%	50%	54.4%	51%	58.2%	51%	45.8%
Sex										
Male	49%	49%	52%	53%	49%	36%	48%	40%	51%	47%
Female	51%	51%	48%	47%	51%	64%	52%	60%	49%	53%
Marital Married (18+)	35%	32%	43%	34%	47%	38%	44%	38%	32%	28%
Education Secondary	74%	67%	52%	50%	61%	61%	58%	52%	69%	65%
Cigarettes Past 30 Day	33%	29%	30%	39%	34%	28%	33%	33%	22%	29%

Source: Novak, S.P., Hakannson, A., Martinez-Raga, J., Reimer, J., Krotki, K., and Varughese, S. (2016). The European Medicine Study: Rationale, Design, and Fieldwork Procedures. *Unplublished Manuscript.*

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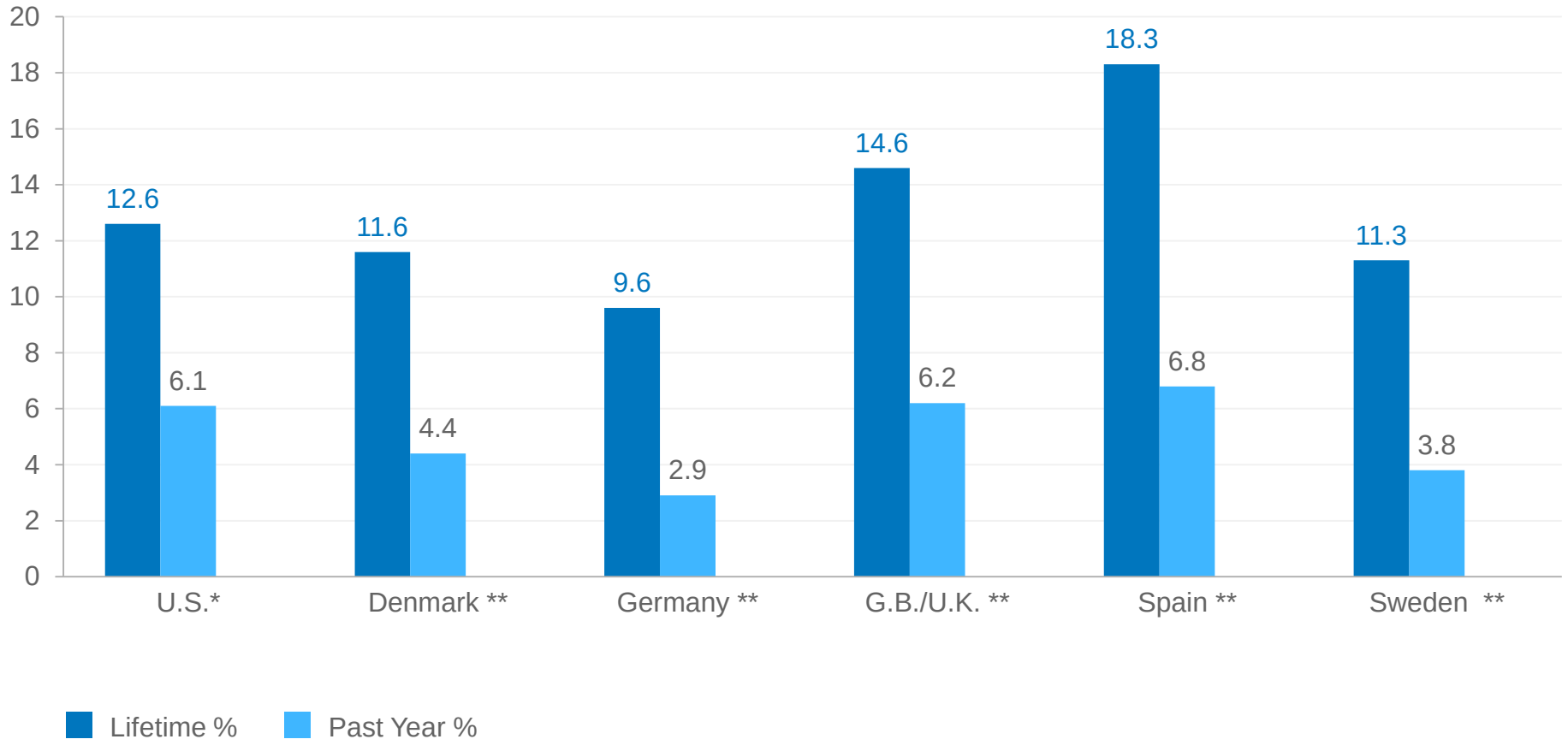
EU Meds Study and EMCDDA Study

DRUG	COUNTRY	EMCDDA YEAR	AGE RANGE	EU Meds % (se)	EMCDDA %	Diff
Cannabis	Denmark	2010	16-34	43.6 (1.5)	44.5	-0.9
	Germany	2009	18-34	35.2 (0.9)	38.5	-3.3
	Great Britain	2011	16-34	41.2 (1.2)	37.3	4.9
	Spain	2011	15-34	47.1 (1.3)	39.6	7.5
	Sweden	2011	16-34	27.5 (1.4)	21.4	6.1
Cocaine	Denmark	2010	16-34	13.7 (1.1)	8.9	4.8
	Germany	2009	18-34	6.2 (0.4)	5.0	1.2
	Great Britain	2011	16-34	15.4 (1.0)	13.6	1.8
	Spain	2011	15-34	10.2 (0.8)	11.1	-0.9
	Sweden	2011	15-34	5.3 (0.7)	4.6	0.7

Source: Novak, S.P., Hakannson, A., Martinez-Raga, J., Reimer, J., Krotki, K., and Varughese, S. (2016). The European Medicine Study: Rationale, Design, and Fieldwork Procedures. *Unplublished Manuscript.*

Lifetime and Past-Year: 2015 EU-Meds Study

Nonmedical Prescription Opioid Use-Ages 12-49

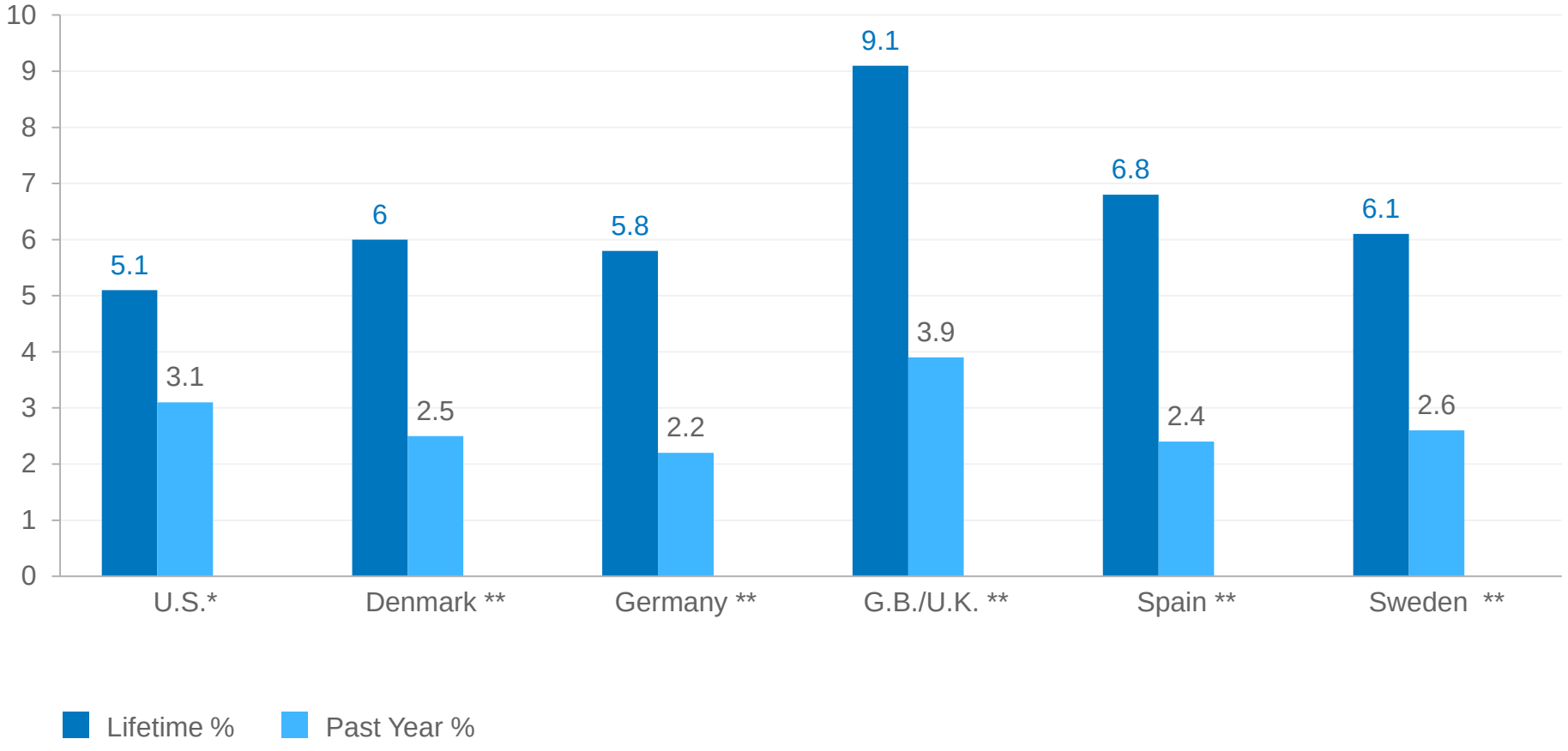


*Source: 2015 National Survey on Drug Use and Health Public Use File (SAMHDA Archives)

**Source: Novak, S.P., Hakannson, A., Martinez-Raga, J., Reimer, J., Krotki, K., and Varughese, S. (2016). Nonmedical use of prescription drugs in the European Union. *BMC Psychiatry*, 16, 274-281.

Lifetime and Past-Year: 2015 EU-Meds Study

Nonmedical Prescription Stimulant Use-Ages 12-49



*Source: 2015 National Survey on Drug Use and Health Public Use File (SAMHDA Archives)

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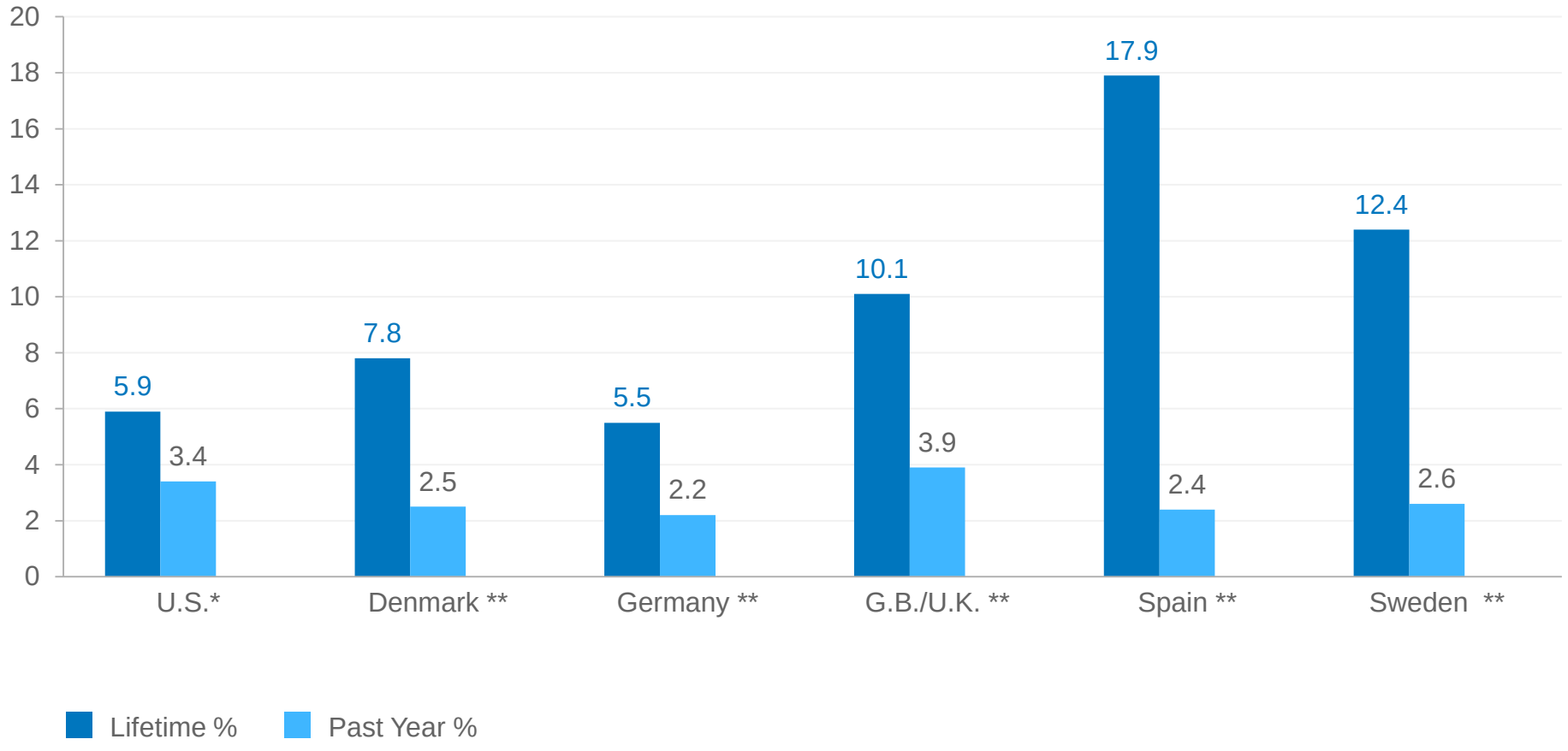
Lifetime and Past-Year: 2015 EU-Meds Study

Nonmedical Prescription Sedative Use-Ages 12-49



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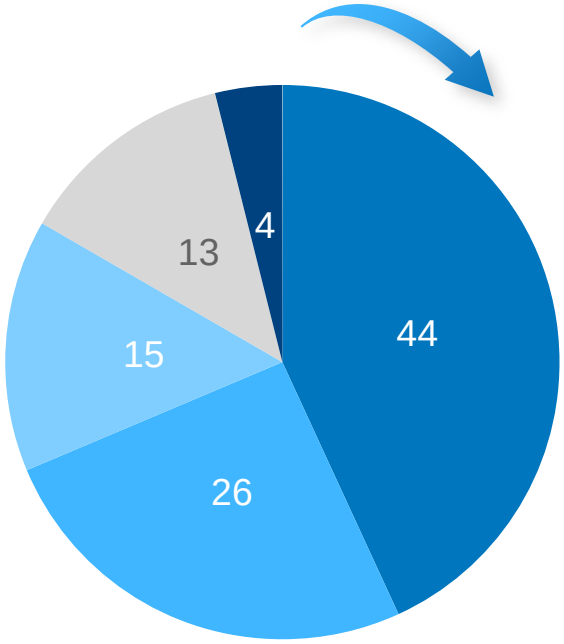
Methods of Acquisition: 2015 EU-Meds Study

Nonmedical Prescription Opioid Use-Ages 12-49

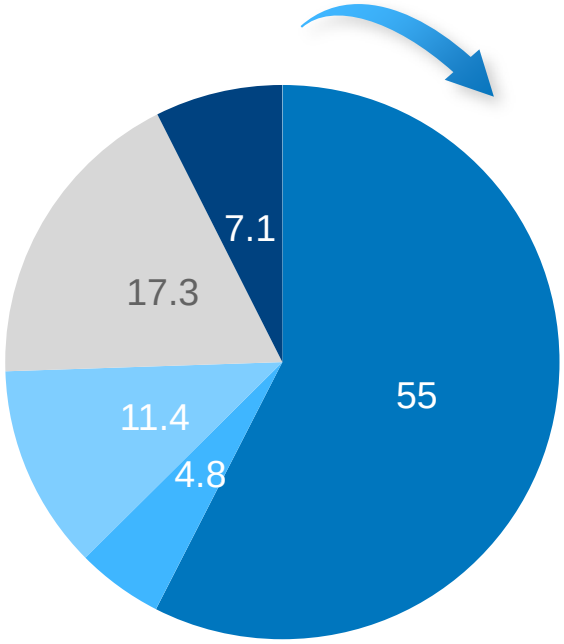


- Category 1: Shared: Friend/Family
- Category 2: Taken/Stolen
- Category 3: Doctor/Phamary Shopping
- Category 4: Bought Friends/Dealer
- Category 5: Internet Pharmacy

Source: Novak, S.P., Hakannson, A., Martinez-Raga, J., Reimer, J., Krotki, K., and Varughese, S. (2016). Nonmedical use of prescription drugs in the European Union. *BMC Psychiatry*, 16, 274-281.

Methods of Acquisition: 2015 NSDUH

Nonmedical Prescription Opioid Use-Ages 12-49



- Category 1: Shared: Friend/Family: 55%
- Category 2: Taken/Stolen 4.8%
- Category 3: Bought Friends/Dealer (11.4%)
- Category 4: Prescribed/Dr. Shopping
- Category 5: Other

Source: SAMHSA, 2015 National Survey on Drug Use and Health Public Use Files (SAMHDA Data Archive)

Predictors of Nonmedical Use

Odd Ratios of Past-Year Use of Selected Prescription Drug

Predictors	Opioids O.R.	Stimulants O.R.	Sedatives O.R.
Female (v. male)	0.7**	0.5***	0.8**
18y-29, (v. 12-17) 30y-49, (v. 12-17)	3.4*** 3.6***	3.6*** 2.5***	5.5*** 5.4***
Had Prescription	8.8***	7.8***	10.5***
Mental Dx	3.2***	4.5***	4.2***
STD/STI	4.6***	7.2***	3.9***
HIV	18.9***	15.1***	12.2***
Arrested<15	2.9***	2.6***	2.1***
ADHD/ADD Dx	3.5***	9.5***	5.1***

*** p<.05, ** p<.01, *** p<.001**

**Source: Novak, S.P., Hakannson, A., Martinez-Raga, J., Reimer, J., Krotki, K., and Varughese, S. (2016). Nonmedical use of prescription drugs in the European Union. *BMC Psychiatry*, 16, 274-281.

Study Conclusions

- Prevalence of nonmedical use similarly high across E.U. and U.S., risk factors more strongly related to NMPDU.
- Primary difference between E.U. and U.S. is the prevalence of harms associated with opioid abuse in the U.S. that is not present in E.U.
- What can account for differences in harm, given similar levels of exposure:
  - Availability of OTC codeine (mid-level product)
  - Opioids “last-line of defense”
  - Patient culture not focused on “immediate gratifications” like in the U.S.

Study Limitations

- Rapid method with high degree of reliability with other national studies, but limitations are:
  - Larger standard errors compared to stratified random, address-based sampling limit comparison across rare events or cell sizes
  - With Internet panel studies, often concern of “gaming” but identity was confirmed for payment, and addressed checked
  - Due to methodological differences in survey sampling, administration, and coding cannot directly compare NSDUH and EU Meds

NSDUH Survey Recodes (ages 12+)

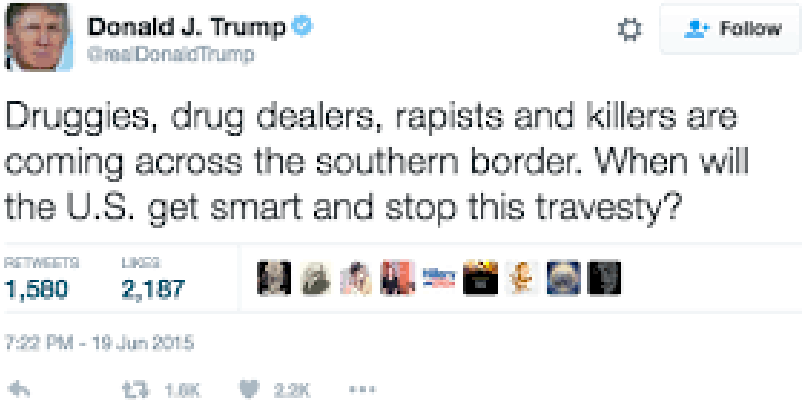
Ever used for any reason in Lifetime

Survey Answer-Life	Opioids*	Stimulants*
1=Answered YES	22.59%	4.92%
2=Answered NO	42.88%	86.25%
5=Logically Assigned	33.65%	8.34%
94=Don’t Know	0.73%	0.32%
97=Refused	0.04%	0.04%
98=Blank	0.11%	0.13%

Source: Public Use File, 2015 NSDUH; Unweighted estimates presented

Overall Conclusions

- Web panels can be very helpful for monitoring trends, even in the E.U.
- Modifications can help improve precision of estimates
- Is the E.U. on the same trajectory as U.S., circa 1995-2000?
- How does the flow of information across the Internet and travel create new opportunities



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Thank You

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