



National epidemiological and health databases in Sweden with special focus on Swelogs

Using Big Data to Study Development and Social Change

Concordia University, Montreal

Saturday November 23, 2013

Short introduction of The Swedish National Institute of Public Health and Swelogs



Public Health Objectives

1. The overarching aim of Sweden's national public health policy is to create social conditions that will ensure good health, on equal terms for the entire population.
2. The aim for society's measures against pathological gambling is to reduce harm from exaggerated gambling.



Government proposal prop 2007/08:110



Swelogs' overarching goal

Swelogs aims at developing evidence-based methods and strategies for prevention of harmful gambling.



Swelogs' five main objectives

- Study changes in incidence and prevalence of PG.
- Describe problem gambling in relation to changes in gambling behavior and gambling related environmental factors.
- Identify relevant target groups for prevention.
- Examine the health-related, social and economic consequences of problem gambling.
- Establish risk factors and protective factors of gambling behaviours/habits.



Swelogs' survey plan

	2008/2009	2009/2010	2011	2012	2013	2014	2015
Epidemiological Track	EP I N=15 000 16-84 yrs	EP II N=8 200 17-85 yrs		EP III N=7 100 19-87 yrs		EP IV N~7 000 21-89 yrs	
In-depth track			ID I N=2 400 18-86 yrs		ID II N~2 000 20-89 yrs		ID III N~2 000 22-91 yrs
Follow-up track	FU I N=578 23-83 yrs						



Sampling and methods for data collection

- The sample consisted of 15 000 individuals, aged 16-84, representative for the population
- Sample stratification based on predicted probabilities for having gambling problems, age and gender
- Data collection:
 - Telephone interviews primary method
 - Questionnaires sent by post to those not reached by telephone



Questionnaire

- Gambling (lifetime and past 12 months)
 - Gambling problems (SOGS, PGSI, FORS) and gambling related questions
 - Computer gaming
 - Health, demographics, socio-economy
- + register variables from Statistics Sweden



Population registers

- National register over the total population (for sampling)
- Registers over income, taxes, education, occupation, immigration, emmigration, household etc



Topics covered in Swelogs

	EP1	EP2	EP3	EP4
Gambling participation	X (also first time)	X	X	X
PG measurements	SOGS, PGSI, FORS	SOGS, PGSI	PGSI	PGSI
Gambling related issues	X	x	X	X
TV- and computer gaming	X	x	X	x
Health issues	X	X	X	X
Social issues	x	-	X	x
Demographics*	X	x	X	x

*most demographics from national registers



Comparability with other studies



Population studies covering gambling in Sweden

- SWEGS 1997/98 with follow up
- National Survey of Public Health 2004-
- SWELOGS 2008-2014



PG instruments used in Sweden

- Prevalence study (SWEGS) 1997/98 and follow-up 2001
 - DSM-IV Fisher Screen
 - SOGS-R
- Treatment studies (from 2004)
 - NODS
- National public health survey 2004->
 - FORS
- SWELOGS 2008/09
 - SOGS-R
 - PGSI
 - FORS



A public health perspective on problem gambling measurement?

- We need to identify, monitor and research persons at risk but not yet with many problems
- We need to develop an instrument which can
 - embrace a more dynamic view allowing a non-deterministic perspective on PG as a continuum
 - focus more on the context and less on the clinical manifestation



Cross-sectional vs longitudinal study; The national health survey vs Swelogs



FORS: In the past 12 months, how many times have you...

1. ... tried to cut down on your gambling?
2. ... feel restless or irritable if you were not able to gamble?
3. ... lied about how much you gambled?

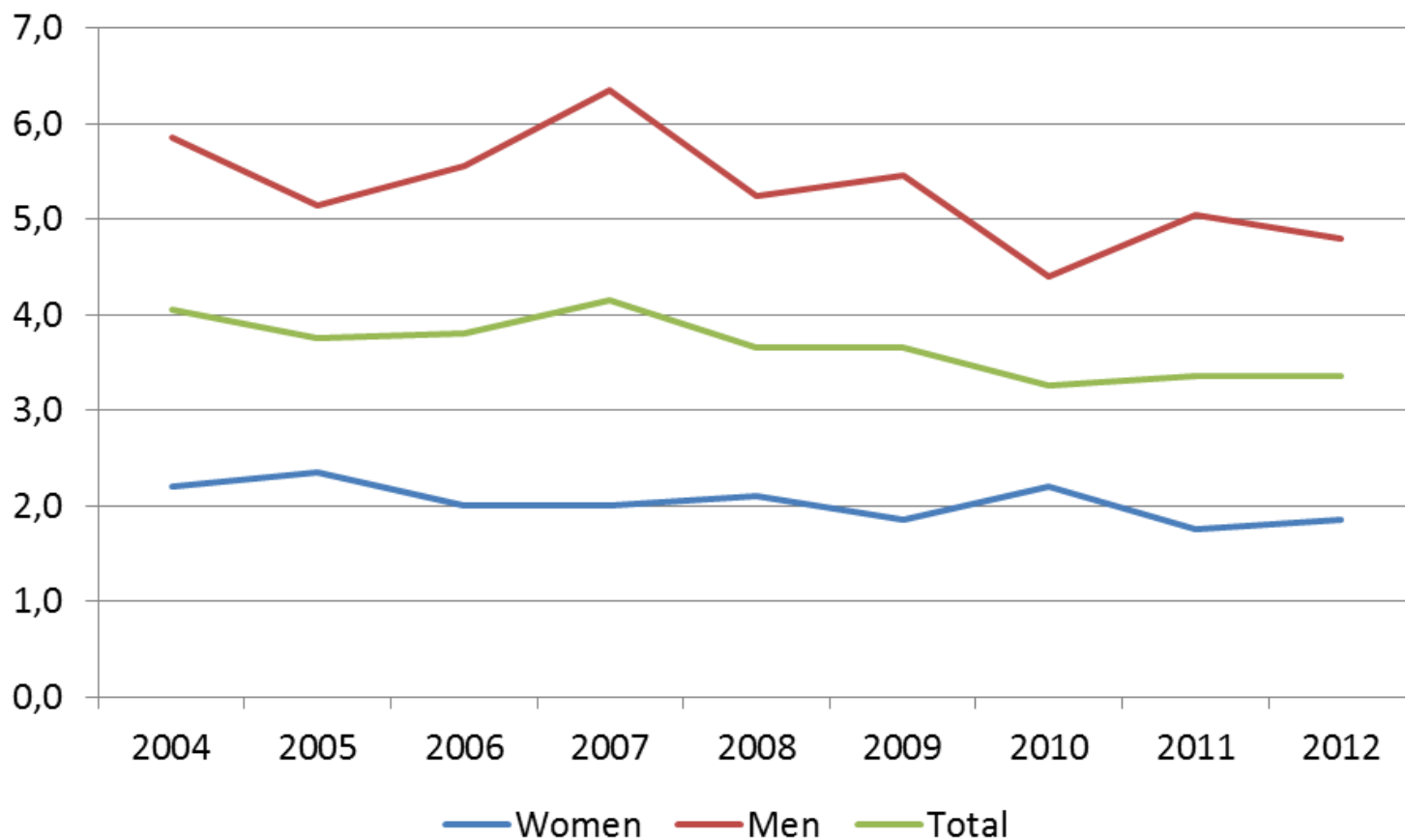
Never = 0; Once or twice = 1;

At least three times = 2

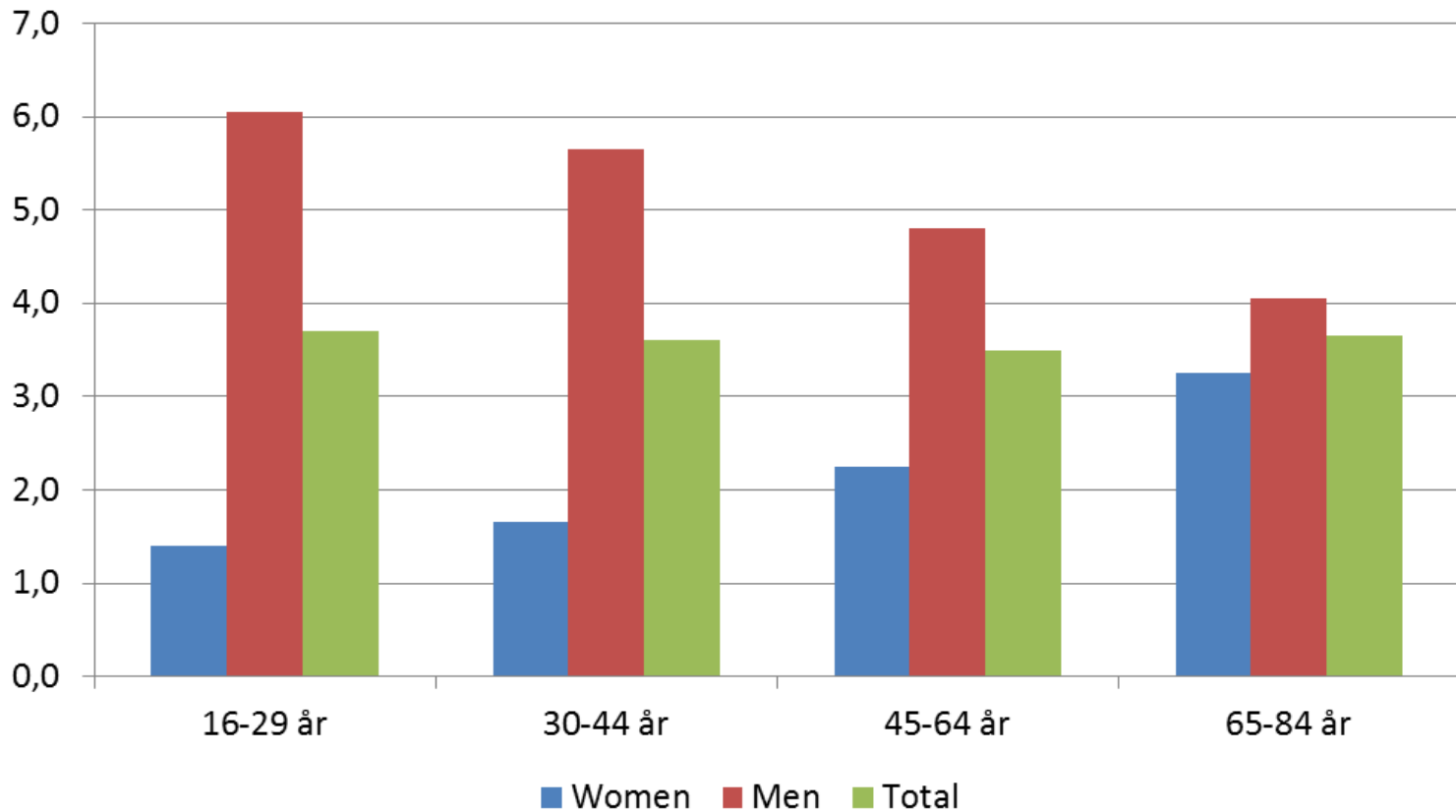
FORS sum > 0 => Risk of gambling problems



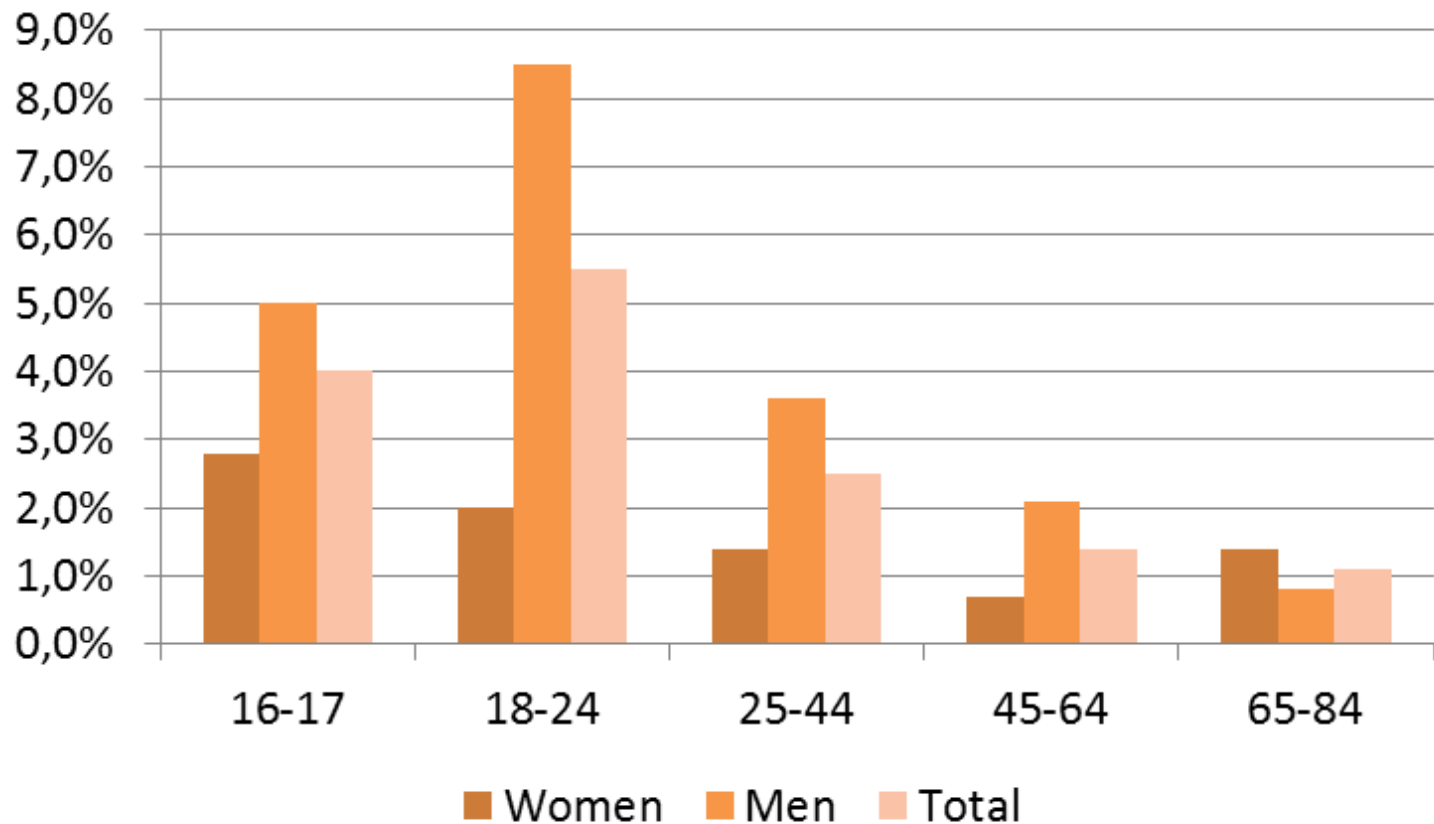
Risk of gambling problems (FORS)



Risk of gambling problems (FORS) 2008



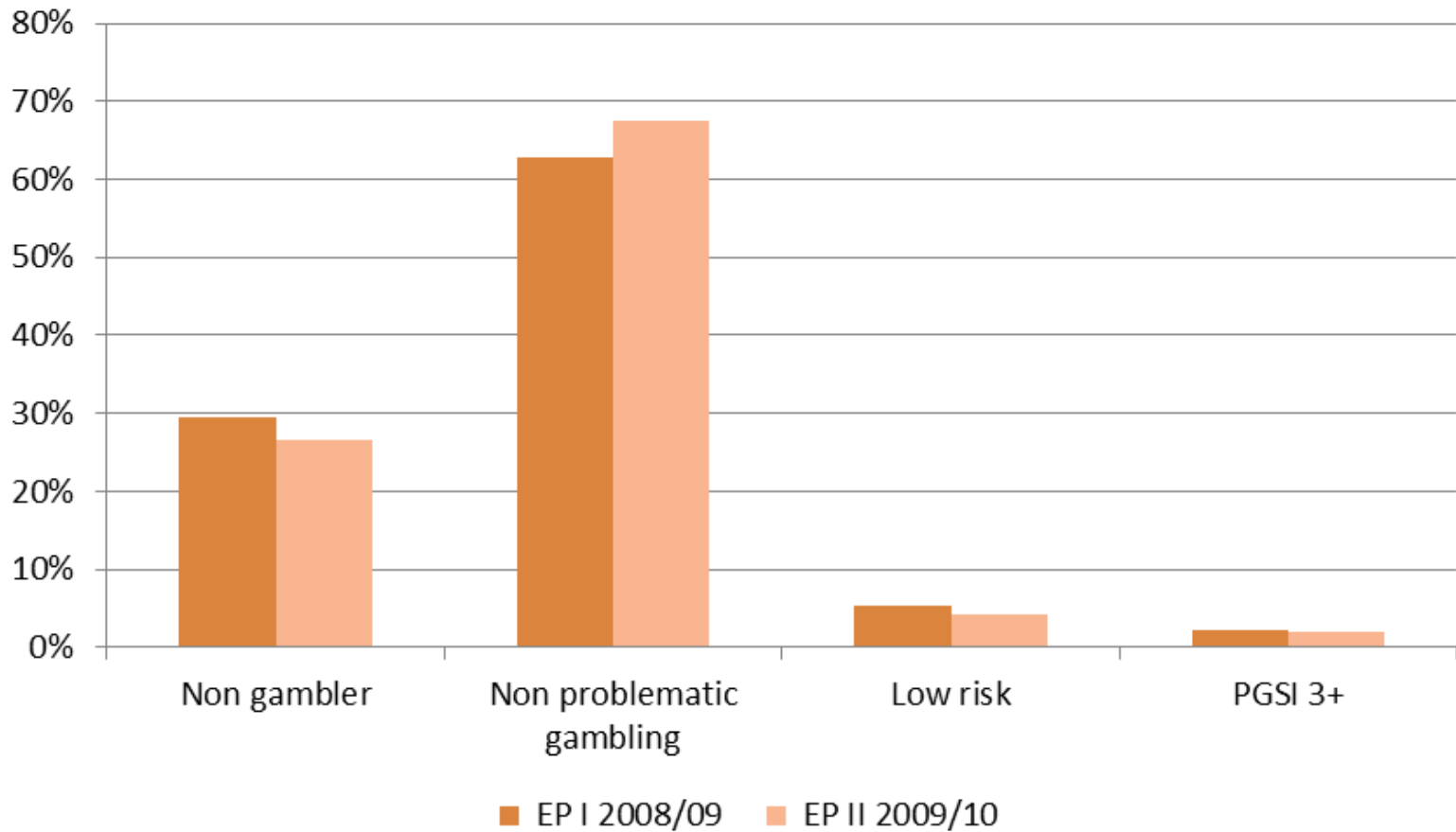
Problem gambling (PGSI 3+), Swelogs EP1 2008/09



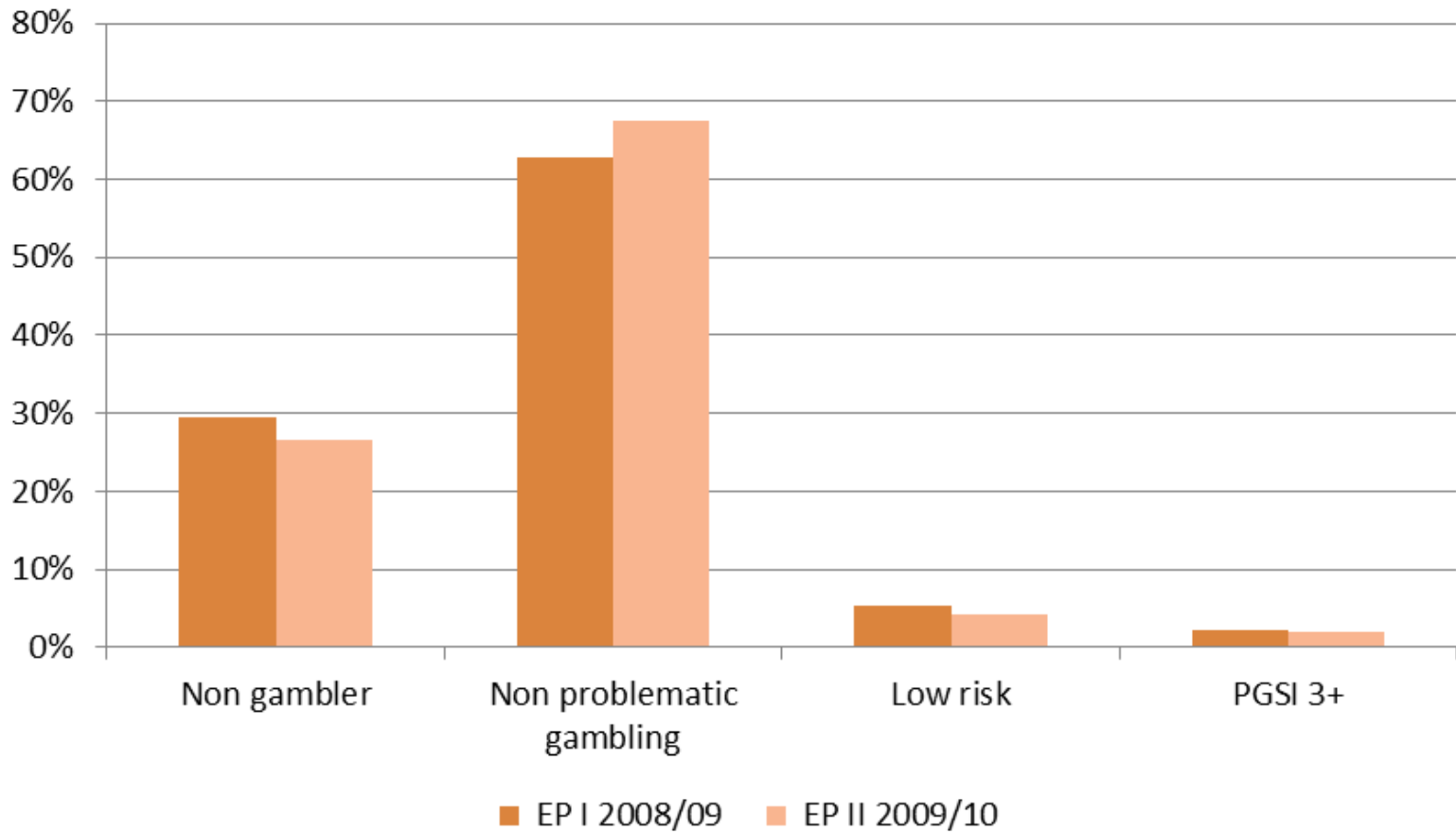
Prevalence, incidence and transitions



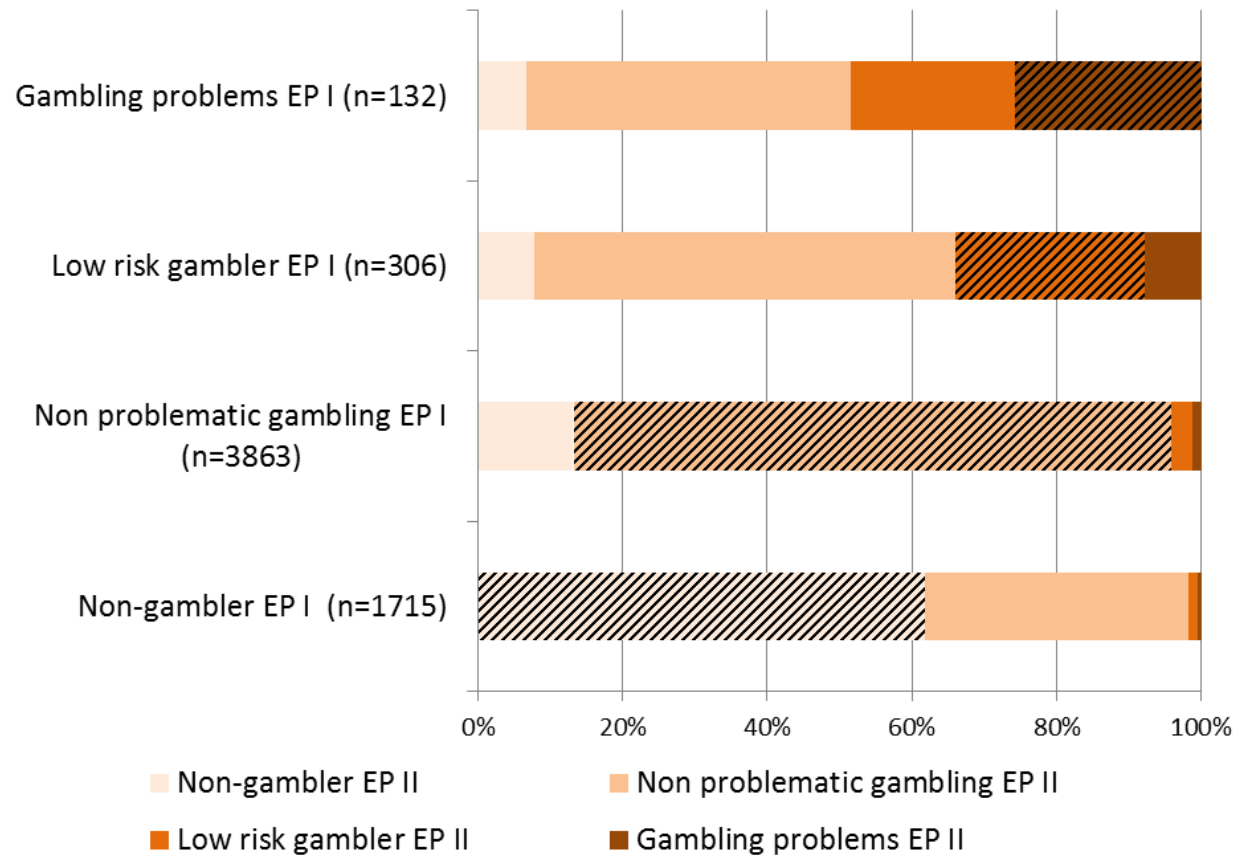
Prevalence EP I and EP II

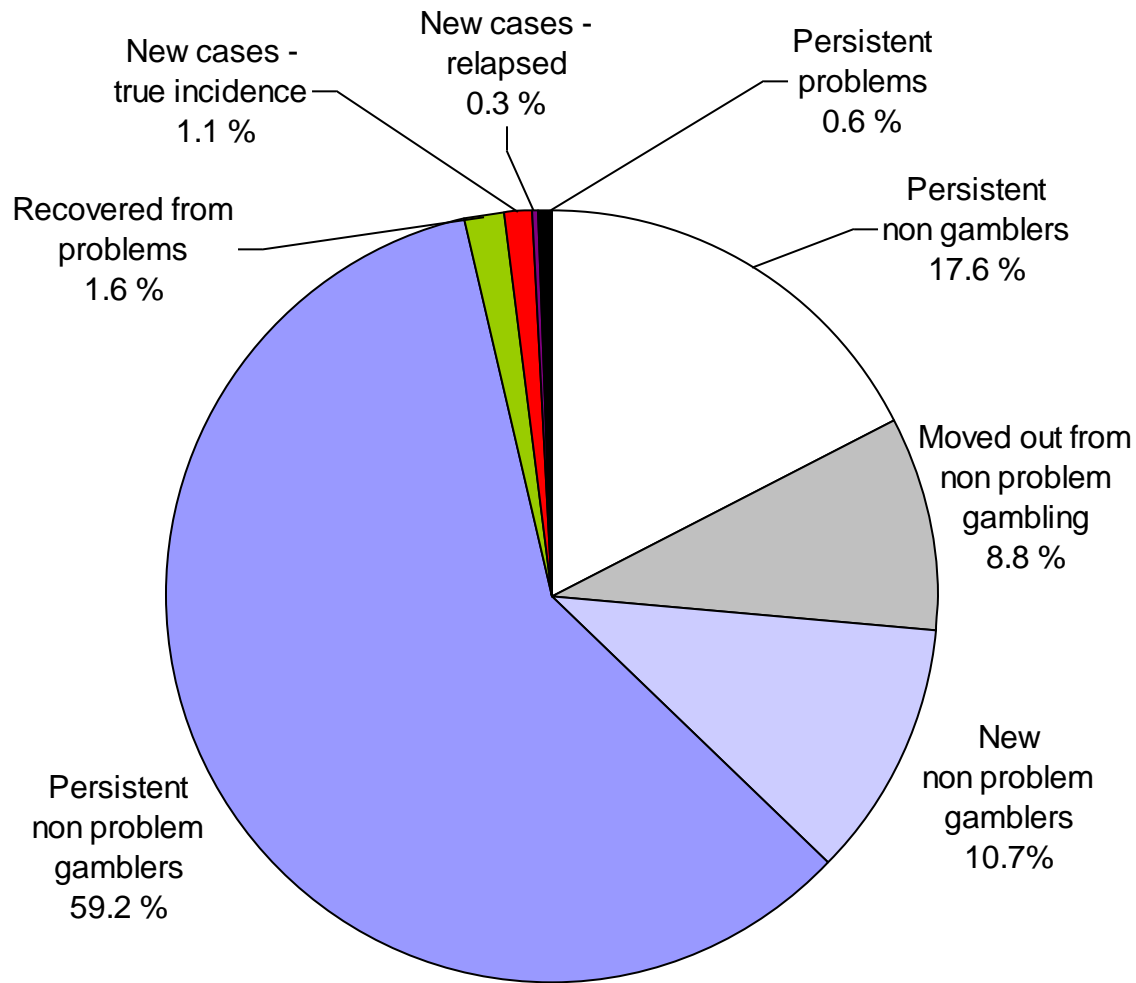


Prevalence EP I and EP II



Transitions in different PGSI categories





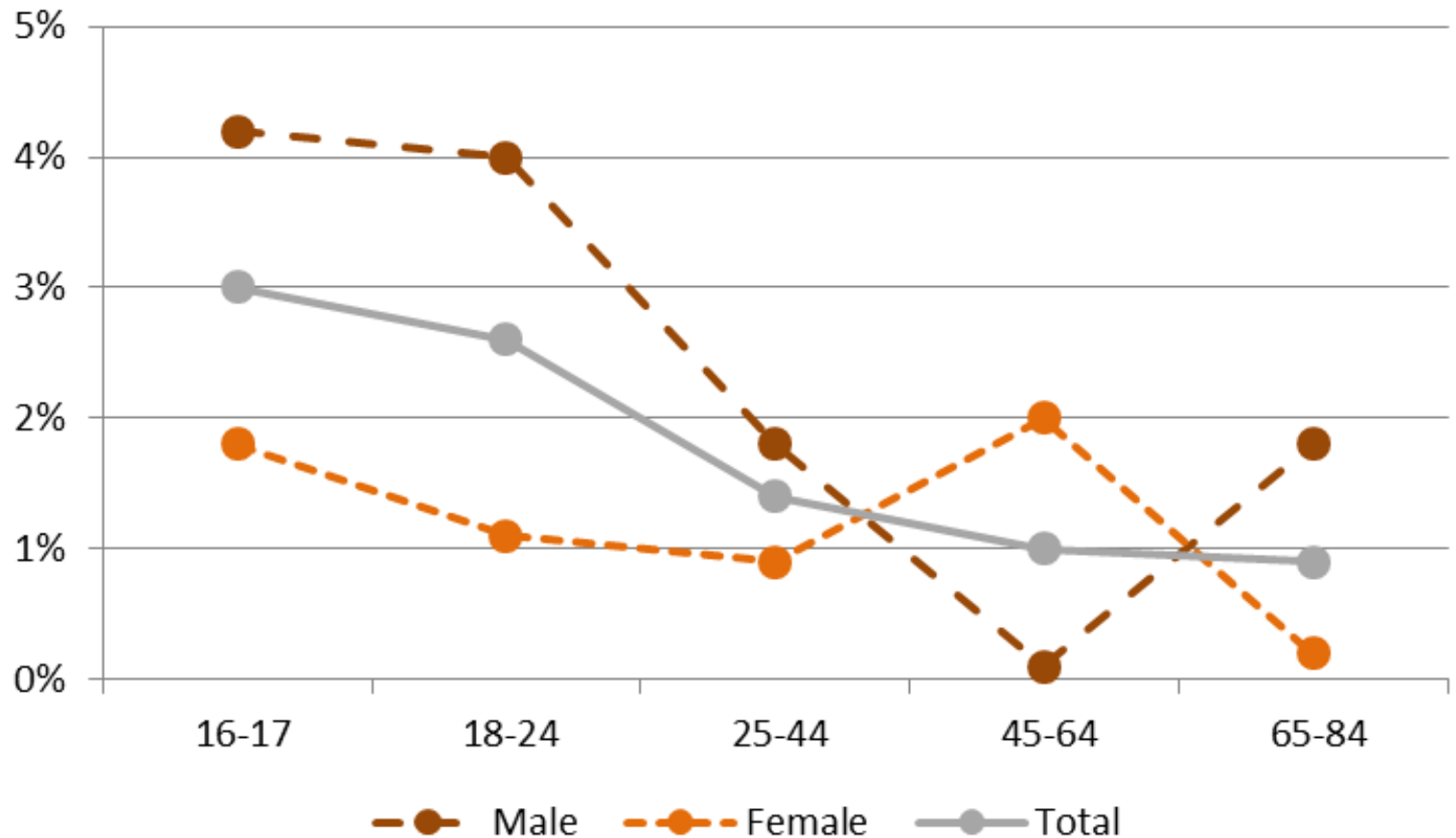
Non problem gamblers: no problems or low risk

Problems: Moderate risk or gambling problems



	Tot	M	F	16–24 yrs 2008		25–44 yrs 2008		45–64 yrs 2008		65–84 yrs 2008	
				M	F	M	F	M	F	M	F
Continued problem gamblers	26 %	32 %	13 %	41 %	11 %	21 %	6 %	32 %	–	50 %	27 %
Est. number	41 700	35 900	5 800	14 900	1 200	10 000	900	7 500	<100	3 500	3 700
with gambling problems	46 %	41 %	60 %	23 %	–	50 %	–	67 %	–	67 %	Most
True incidence											
True incidence	1,0 %	1,0 %	1,1 %	2,9 %	1,0 %	0,5 %	0,9 %	0,1 %	1,9 %	1,6 %	0,2 %
Est. number	78 300	36 900	41 400	16 400	5 300	6 600	11 000	1 700	23 800	12 100	1 200
with gambling problems	5 %	7 %	3 %	8 %	–	–	11 %	–	–	11 %	–
Relaps after EP1 (of people with previous problems)											
Relaps after EP1 (of people with previous problems)	11 %	12 %	2 %	14 %	3 %	15 %	1 %	–	28 %	–	–
Est. number	20 500	20 200	400	6 100	300	14 100	<100	–	<100	–	–
with gambling problems	4 %	4 %	2 %	5 %	–	4 %	–	–	Most	–	–
Total incidens											
Total incidens	1,4 %	1,6 %	1,1 %	4,3 %	1,3 %	1,8 %	0,9 %	0,1 %	1,9 %	1,6 %	0,2 %
Est. number	98 800	57 000	42 000	22 500	5 700	20 700	11 000	1 700	23 800	12 100	1 200
with gambling problems	6 %	8 %	3 %	10 %	–	6 %	11 %	–	–	11 %	–

Incidence (new PGSI 3+)





PGSI over EP1-3

EP1	EP2		EP3			
			Non-gamblers	No problem	Low risk	Problem gamblers
Non-gamblers	Non-gamblers EP2	61%	75,4%	22,9%	1,2%	0,5%
	No problems EP2	35%	42,7%	54,4%	2,5%	0,4%
	Low risk EP2	2%	50,0%	41,2%	8,8%	0
	Problem gamblers EP2	1%	45,5%	54,5%	0	0
No problems	Non-gamblers EP2	16%	51,3%	46,4%	1,7%	0,6%
	No problems EP2	77%	18,0%	78,9%	2,7%	0,5%
	Low risk EP2	5%	23,3%	59,5%	11,2%	6,0%
	Problem gamblers EP2	2%	18,9%	59,5%	10,8%	10,8%
Low risk	Non-gamblers EP2	12%	38,2%	50,0%	2,9%	8,8%
	No problems EP2	55%	16,0%	73,5%	6,8%	3,7%
	Low risk EP2	27%	15,2%	49,4%	29,1%	6,3%
	Problem gamblers EP2	6%	10,5%	42,1%	42,1%	5,3%
Problem gamblers	Non-gamblers EP2	11%	54,5%	9,1%	27,3%	9,1%
	No problems EP2	32%	18,2%	57,6%	21,2%	3,0%
	Low risk EP2	31%	9,4%	53,1%	21,9%	15,6%
	Problem gamblers EP2	26%	11,1%	25,9%	25,9%	37,0%



Time perspective (past year/past month/ past week)



Detail level of
measurements concerning
gambling frequency,
spending and so on



The importance of the first wave



Attrition



Sampling Strategy

p_k – values	Gender	Age-groups 2008				Total
		16-24	25-34	35-64	65-84	
$p_k \leq 0.03$	male	<u>307</u> 2,757	<u>203</u> 89,754	<u>742</u> 985,291	<u>749</u> 432,879	<u>2,001</u> 1,510,681
	female	<u>347</u> 375,622	<u>444</u> 516,388	<u>512</u> 1,789,951	<u>697</u> 756,867	<u>2,000</u> 3,438,828
$0.03 < p_k \leq 0.1$	male	<u>582</u> 342,966	<u>632</u> 400,130	<u>422</u> 801,697	<u>364</u> 214,761	<u>2,000</u> 1,759,554
	female	<u>1477</u> 141,629	<u>243</u> 38,339	<u>242</u> 35,092	<u>38</u> 3625	<u>2,000</u> 218,685
$0.1 < p_k$	male	<u>2184</u> 200,786	<u>938</u> 92,634	<u>285</u> 84,338	<u>93</u> 8,606	<u>3,500</u> 386,364
	female	<u>1,029</u> 1,323	<u>1,230</u> 2638	<u>1,231</u> 2283	<u>9</u> 11	<u>3,499</u> 6,255
Total		<u>5,926</u> 1,065,083	<u>3,690</u> 1,139,883	<u>3,434</u> 3,698,652	<u>1,950</u> 1,416,749	<u>15,000</u> 7,320,367



Respon rates

Wave	n	Respon	Weighted respon
EP1	15,000	54%	63%
EP2	8,000	74%	80%
EP3	7,000	60%	62%



EP3 respondent; % of the initial sample per strata

		16-24	25-34	35-64	65-84	Total
pk<=0.03	male	19%	40%	44%	41%	38%
	female	33%	38%	50%	33%	38%
0.03<pk<0.01	male	31%	36%	34%	33%	34%
	female	34%	24%	20%	11%	31%
0.01<pk	male	28%	15%	13%	17%	23%
	female	17%	17%	14%	11%	16%
	Total	28%	24%	29%	35%	28%

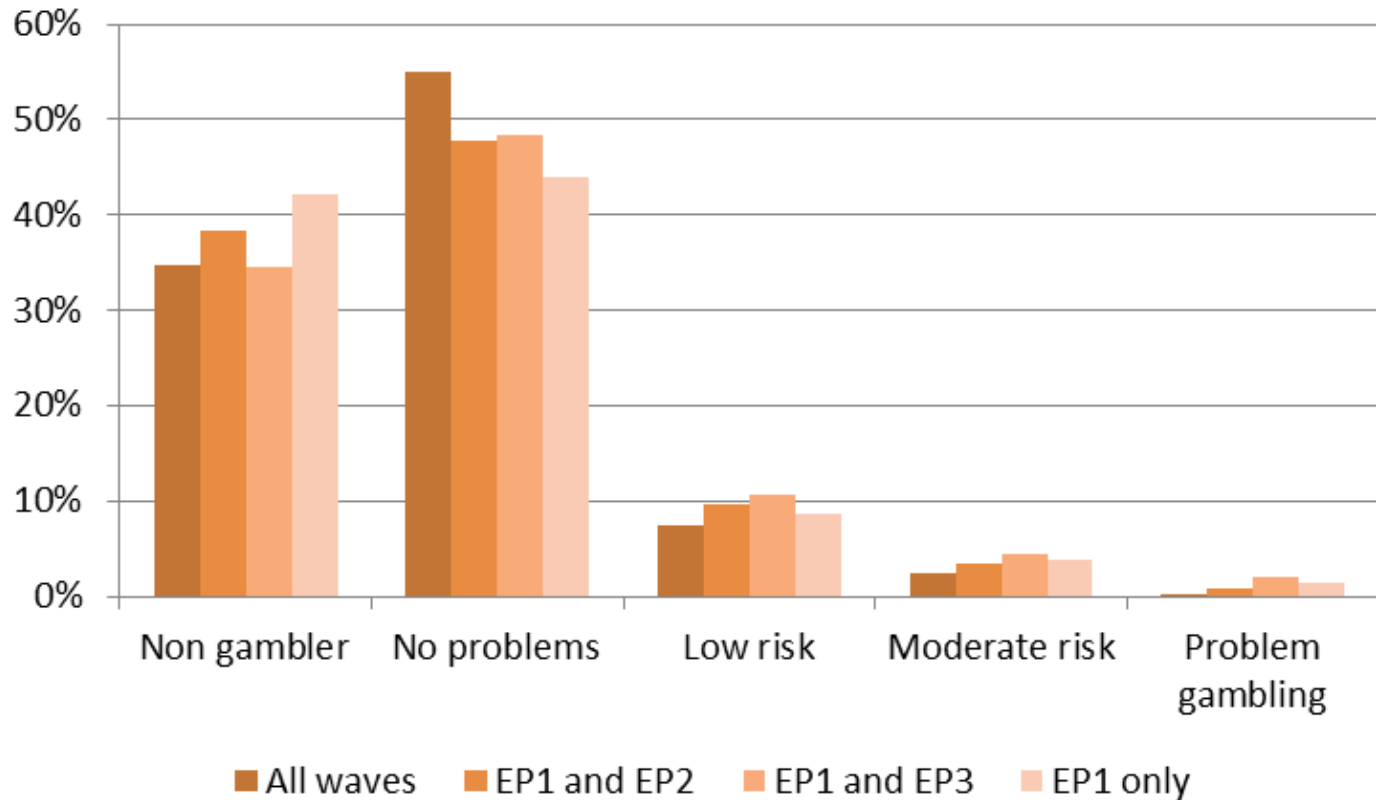


EP3 respondents, % of EP1 respondents

		16-24	25-34	35-64	65-84	Total
pk≤0.03	male	41%	60%	67%	64%	62%
	female	52%	58%	71%	60%	61%
0.03<pk<0.01	male	47%	58%	59%	64%	56%
	female	49%	50%	48%	33%	49%
0.01<pk	male	45%	40%	45%	57%	44%
	female	39%	42%	39%	20%	40%
	Total	46%	50%	57%	62%	51%



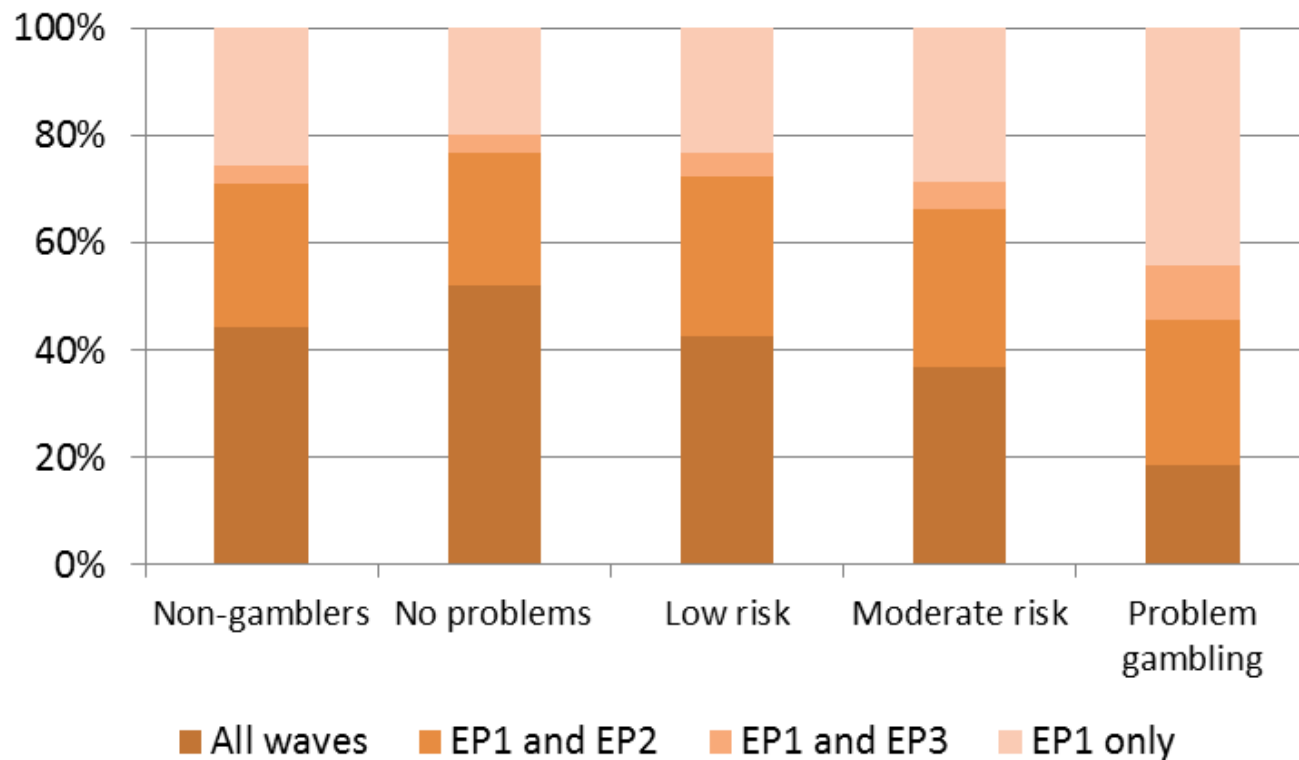
Distribution of PGSI EP1



P<0.001



Or: what happend in the different categories?



Pros and cons
of conducting the study
within the Swedish National
Institute of Public Health



Key learnings and contributions



My vision for a possible Swelogs 2.0

- Refined stratification of the population to ensure a larger number of middle-aged and elderly women
- Original sample size at least 20,000
- Allow for at least 2 pilot waves
- Web-based data collection?
- Solid team throughout the project



Your plan



Reality

