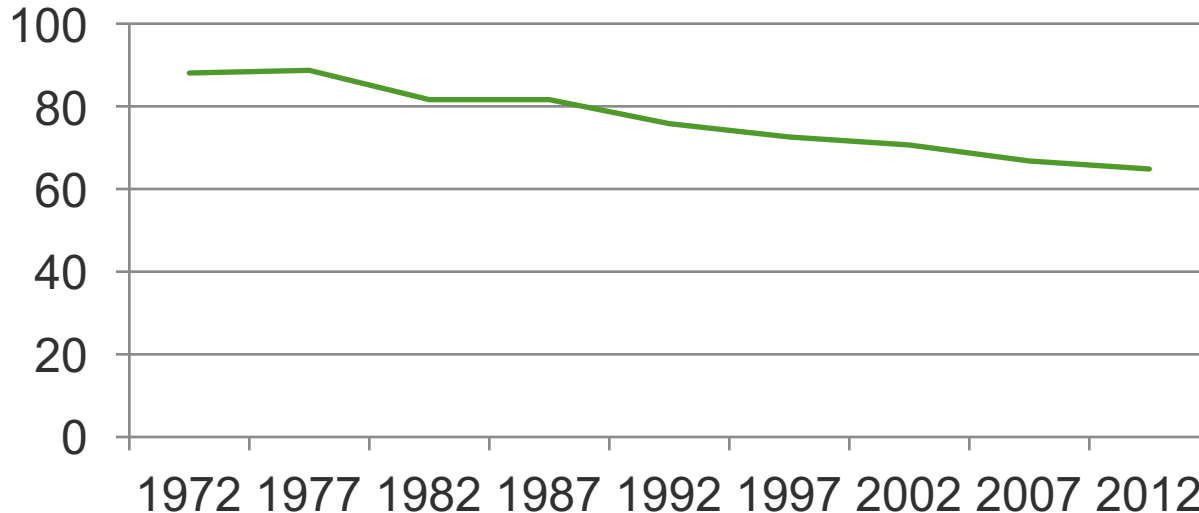




# BACKGROUND

- Participation rates have been declining in all kinds of surveys over the past decades, also in Finland



**Participation rate in FINRISK Study from 1972-2012**

# NON-RESPONSE

- Non-response is (usually) selective
  - Missing Not At Random
- Collected data may not represent the target population
  - May cause biased findings
- Who do not response?

# INFORMATION SOURCES ABOUT NON-RESPONDENTS

- Sampling frame
  - Sex, age and area of residence
- Special efforts during the recruitment
  - Specific non-respondents questionnaires
- Comparison on respondents with entire target population
- Record linkage to the administrative registers

# NON-RESPONSE IN SELECTED EUROPEAN GAMBLING STUDIES

	Finland <sup>1</sup>	Denmark <sup>2</sup>	Norway <sup>3</sup>	Sweden <sup>4</sup>	UK <sup>5</sup>
Year	2011	2016	2015	2015	2007
Gross sample (N)	16 000	10 900	14 000	21 000	10 144 (addresses)
Sampling frame	Population register	Population register	Population register	Population register	Postcode Address File
Sampling	Simple random	Simple random	Simple random	Stratified random	Simple random
Response rate (%)	28.0	59.3	40.8	47.5	51.7
Data source for non-respondents	Sampling frame	Sampling frame + Registers	Sampling frame	Registers	Interviews

# FINNISH GAMBLING 2015

- Coordinated by the National Institute for Health and Welfare (THL) in collaboration with Statistics Finland
- Random sample was selected from the Population Information System in Finland
- Inclusion criteria
  - 15 – 74 year-olds
  - A mother tongue either Finnish or Swedish
  - Residence in mainland Finland

# FINNISH GAMBLING 2015

- Data was collected by Statistics Finland
- Computer-assisted telephone interviews
- Described as "Opinions on gambling and gambling" survey
- Response rate 61.9%
- Study sample was linked with administrative register data from Statistics Finland using the personal identification code, a unique code given to everyone living in Finland

## Action

Selection of  
random sample

Record linkage to  
administrative registers

Statistical  
analysis

## Data

Gross sample  
N = 7400

Study sample  
N = 7297

Analysis dataset  
N = 6946  
(4323 respondents,  
2623 non-respondents)

Results

non-eligible  
excluded

under 18-year-olds  
excluded



# REGISTER VARIABLES

- Sex (men, women)
- Age (18-24, 25-34, 35-44, 45-54, 55-64, 65-74)
- Marital status (not married, married, divorced, widow)
- Highest education degree (primary, secondary, tertiary)
- Socio-economic status (unemployed, entrepreneur, white-collar, blue-collar, student, retired)
- Type of residential area (rural, semi-urban, urban)
- Net income (Q1-Q5)

# REASONS FOR NON-RESPONSE

Reason	N
Telephone number was not found	1 125
Interviewer failed to contact invitee	469
Invitee did not refuse but was unwilling	275
Invitee refused to participate	896
Other reason	17
<b>TOTAL</b>	<b>2 782</b>

# RESPONSE RATES

	Category with highest response rate (%)	Category with lowest response rate (%)
Sex	Men (62.8)	Women (61.7)
Age	65-74 (78.1)	18-24 (48.1)
Marital status	Widow (71.4)	Not married (52.9)
Highest education degree	Tertiary (69.1)	Primary (57.2)
Socio-economic status	Retired (74.0)	Unemployed (52.5)
Type of residential area	Rural (67.4)	Urban (60.5)
Net income	Q5 (67.6)	Q1 (50.8)

# MULTIPLE LOGISTIC REGRESSION

	Reference category	Comparison category	OR (95% CI)	P-value
Sex	Men	Women	0.91 (0.82-1.02)	0.12
Age	18-24	55-64	1.86 (1.47-2.37)	<0.001
		65-74	2.68 (1.94-3.71)	<0.001
Marital status	Not married	Married	1.36 (1.19-1.55)	<0.001
Education	Primary	Secondary	1.45 (1.25-1.67)	<0.001
		Tertiary	2.01 (1.69-2.39)	<0.001
SES	Unemployed	Student	1.60 (1.21-2.12)	0.001
Area	Rural	Urban	0.78 (0.67-0.91)	0.001
Net income	Q1	Q5	1.53 (1.24-1.89)	<0.001

# PRELIMINARY COMPARISON OF RESULTS

	Finland 2015	Finland 2011 <sup>1</sup>	Denmark <sup>2</sup>	Norway <sup>3</sup>	Sweden <sup>4</sup>	UK <sup>5</sup>
<b>Sex</b>	women	men	men*	men	men*	men*
<b>Age</b>	young*	young	young*	young	young	young*
<b>Marital status</b>	not married*	?	?	?	living alone	?
<b>Education</b>	primary*	?	low education*	?	low education	?
<b>SES</b>	unemployed*	?	unemployed*	?	unemployed*	?
<b>Area</b>	urban*	?	?	?	urban*	certain areas*
<b>Net income</b>	low income*	?	low income*	?	low income	?
<b>Ethnicity</b>	NA	?	immigrants*	?	born outside Nordic region	?

\* statistically significant

<sup>1</sup>Turja et. 2012; <sup>2</sup>Ffidberg & Birkelund 2016; <sup>3</sup>Pallesen et al. 2016; <sup>4</sup>Folkhälsomyndigheten 2017; <sup>5</sup>Scholes et al. 2008



# WHAT ARE WE MISSING?

- No association between sex and response rate
- Age, marital status and area were associated with response rate
- Socio-economic position was associated with lower response rate
  - may cause bias while studying gambling behaviour of socio-economically vulnerable individuals

# WHAT'S NEXT?

- Survey data is linked with register data
- Estimation of the non-response bias through statistical methods such as multiple-imputation and Bayesian modeling
  - correction/adjusting of estimates
- Useful information about the impact of non-response to the results related to gambling participation and gambling problems

# REFERENCES

- Ffidberg T and Birkelund JF. Pengespil og spilleproblemer i Danmark 2005–2016. SFI – Det Nationale Forskningscenter for Velfaerd, Köpenhagen, 2016.
- Folkhälsomyndigheten. Metodbeskrivning för Swelogs befolkningsundersökning om spel och hälsa 2015. Folkhälsomyndighetens publicationsservice, 2017.
- Pallesen S, Molde H, Mentzoni RA, et al. Omfang av penge- og dataspillproblemer i Norge 2015. Universitetet i Bergen, Institutt for samfunnspsykologi, 2016
- Salonen AH and Raisamo S. Suomalaisten rahapelaaminen 2015. Rahapelaaminen, rahapeliongelmat ja rahapelaamiseen liittyvät asenteet ja mielipiteet 15–74-vuotiailla. [Finnish gambling 2015. Gambling, gambling problems, and attitudes and opinions on gambling among Finns aged 15–74.]. Report, National Institute for Health and Welfare (THL), Helsinki, Finland, 2015.
- Scholes S, Wardle W, Sproston K, et al. Understanding non- response to the British Gambling Prevalence Survey 2007. Prepared for the Gambling Commision, The National Centre for Social Research (NatCen), 2008.
- Turja T, Halme J, Mervola, et al. Suomalaisten rahapelaaminen 2011 [Finnish Gambling 2011]. Report, National Institute for Health and Welfare (THL), Helsinki, Finland, 2012.



# Thank you!

[jukka.kontto@thl.fi](mailto:jukka.kontto@thl.fi)

In collaboration with  
Anne Salonen and Hanna Tolonen

Funded by  
the Ministry of Social Affairs and Health, Finland  
(section 52 of the Appropriation of the Lotteries Act)

