

Explaining the growth and decline of fisheries communities

(work in progress)



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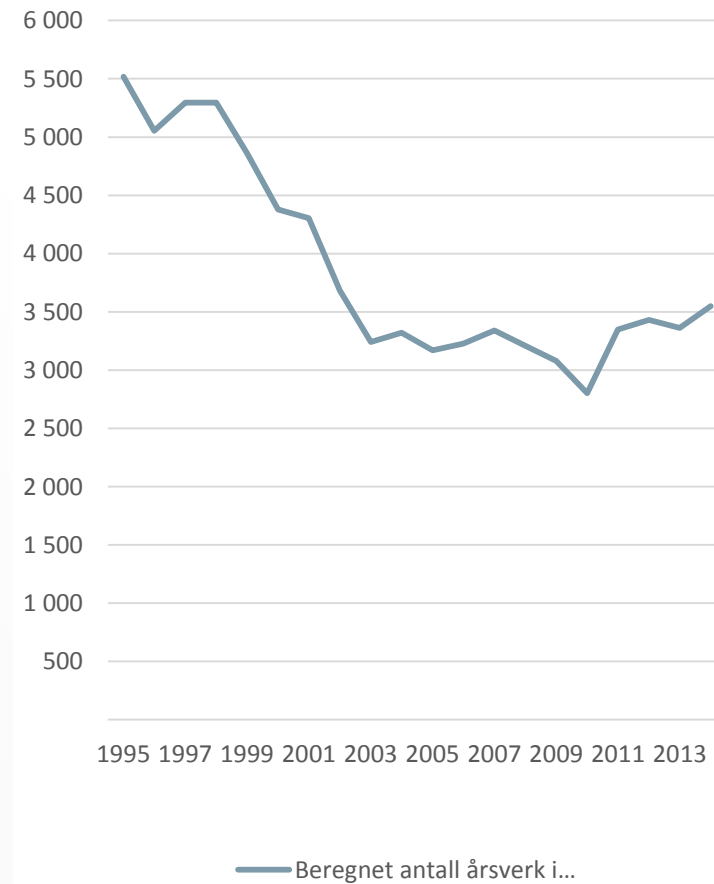
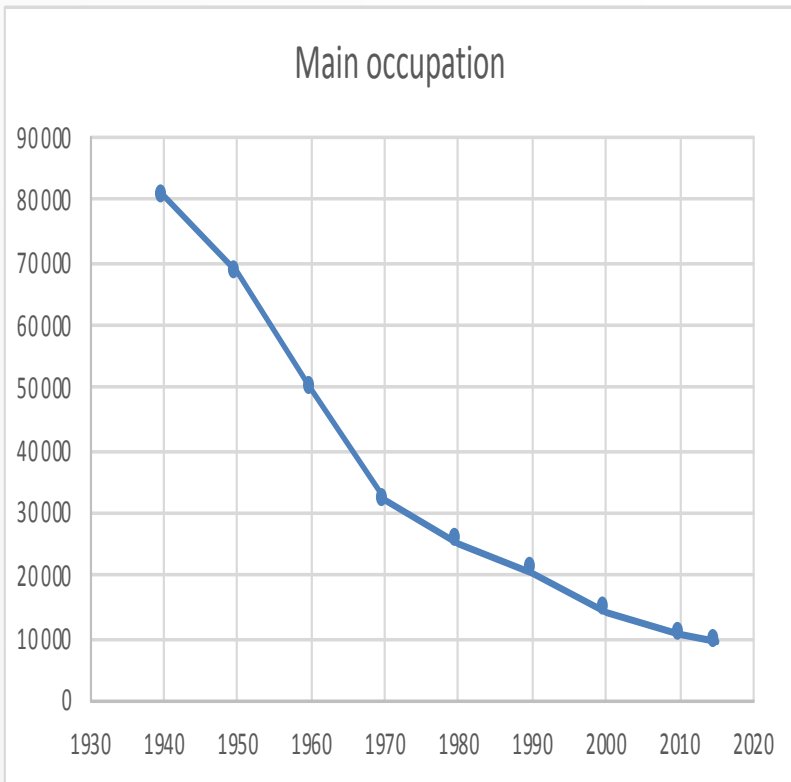
Why study fisheries dependency?

The Norwegian context

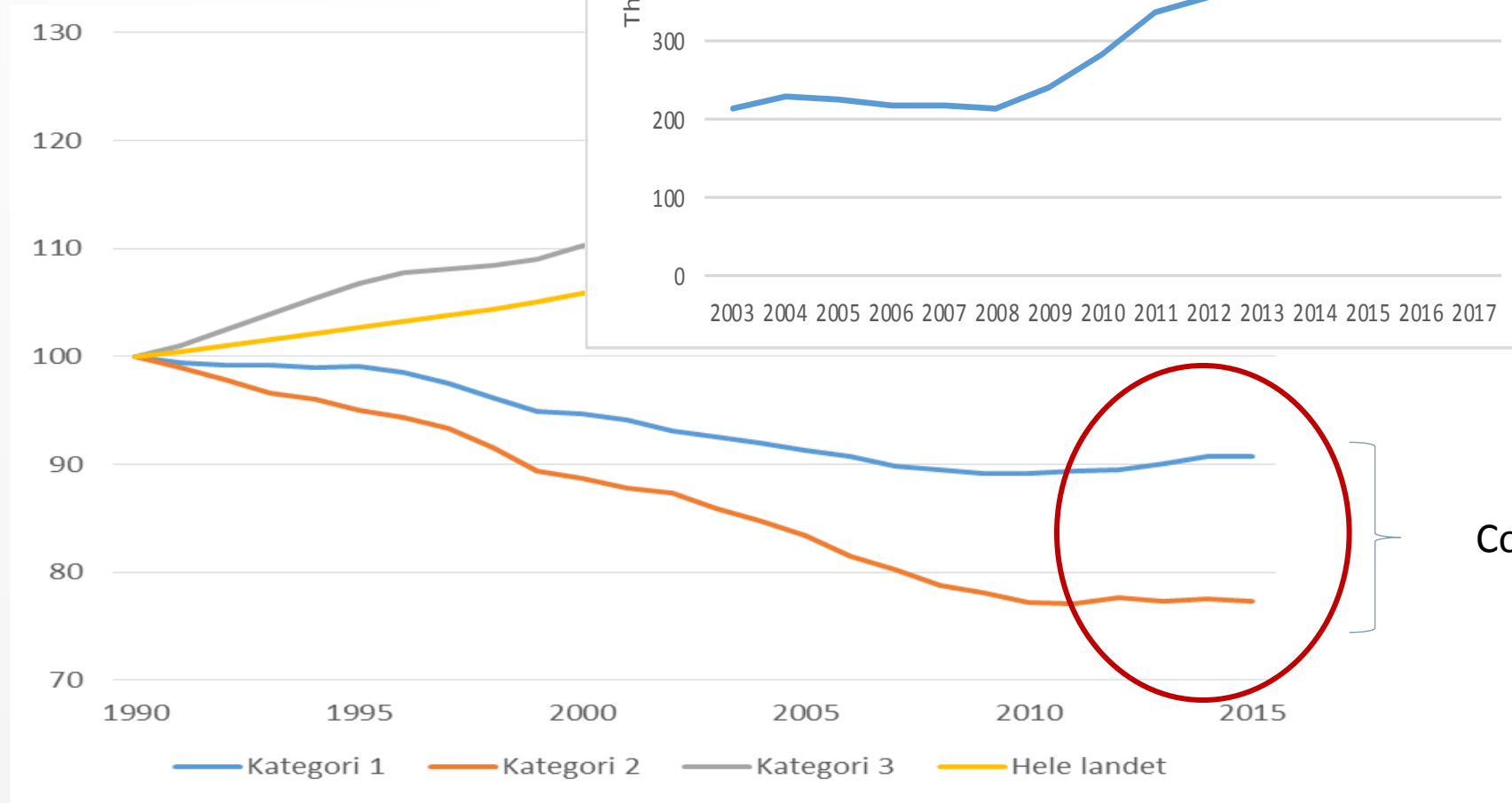
- Fisheries are doing well:
 - stocks are well managed,
 - overcapacity is reduced,
 - profitability is high
 - But landing patterns are changing, affecting societies
- Fisheries policy is still an important issue in Norway
- But rights are not entirely «settled»: huge debate on distribution of rights
- Important policy goals of
 - «resources to be of good to the common»
 - «maintaining the main characteristics of population distribution»
- But no measures directed towards society!
- Any societal goals must be met through fisheries policy



Fewer fishermen, processing firms and workers



Population developme



Coastal societies i North Norway

«Fisken og folket»



In the book we classified societies after the methodology of Lindkvist (2000)

Some societies are very dependent (from 32 % and down)

Category 1: Large/dependent			Category 2: Small/independent			Category 3: Large/independent		
Kommune	Eigenfangst	Sysselsetting	Kommune	Eigenfangst	Sysselsetting	Kommune	Eigenfangst	Sysselsetting
Røst	20 %	32 %	Forsken*	31 %	28 %	Dønna*	36 %	5 %
Værøy	11 %	31 %	Roan	22 %	17 %	Haram*	13 %	5 %
Båtsfjord	29 %	30 %	Hitra	52 %	17 %	Ørland*	0 %	4 %
Træna*	4 %	29 %	Lebesby*	68 %	17 %	Hareid*	0 %	4 %
Moskenes	66 %	26 %	Herøy*	71 %	16 %	Fræna*	8 %	4 %
Gamvik	45 %	26 %	Kvalsund	0 %	9 %	Sandøy*	100 %	4 %
Hasvik	25 %	25 %	Gratangen*	100 %	9 %	Ålesund	5 %	3 %
Flakstad	51 %	24 %	Rødøy	75 %	9 %	Meløy*	92 %	3 %
Måsøy	15 %	23 %	Hjelmsland	18 %	8 %	Eigersund	2 %	3 %
Berlevåg	42 %	22 %	Kvænangen	34 %	8 %	Flora	1 %	3 %
Berg	4 %	21 %	Stranda*	100 %	8 %	Sortland*	0 %	2 %
Frøya	74 %	21 %	Vega	67 %	7 %	Os*	6 %	2 %
Karlsøy	49 %	19 %	Gildeskål	66 %	7 %	Ørsta	98 %	2 %
Øksnes	55 %	19 %	Gulefjell*	48 %	7 %	Karmøy	18 %	2 %
Skjervøy	49 %	18 %	Aukra*	73 %	6 %	Vadsø*	56 %	2 %
Lurøy*	55 %	18 %	Nesseby*	83 %	5 %	Alta*	100 %	1 %
Nordkapp	40 %	15 %	Østerøy*	0 %	5 %	Tromsø	7 %	1 %
Sund*	72 %	14 %				Sør-Varanger*	4 %	1 %
Selje	0 %	13 %				Bodø	38 %	1 %
Vikna	54 %	13 %				Harstad	12 %	1 %
Bø	69 %	13 %				Søgne*	0 %	1 %
Austevoll	33 %	12 %				Fjell	47 %	1 %
Giske	21 %	12 %				Hå*	0 %	1 %
Midsund	31 %	12 %				Kristiansand	40 %	0 %
Solund*	89 %	12 %				Bergen	5 %	0 %
Herøy	24 %	12 %						
Smøla	25 %	11 %						
Loppa	0 %	11 %						
Vestvågøy	63 %	11 %						
Vardø	64 %	10 %						
Hadsel	63 %	10 %						
Ibestad	100 %	9 %						
Averøy	60 %	9 %						
Bømlo	84 %	9 %						
Askvoll	29 %	8 %						
Bremanger	47 %	8 %						
Lødingen*	6 %	8 %						
Vågsøy	6 %	8 %						
Vågan	32 %	8 %						
Sula	0 %	7 %						
Andøy	76 %	7 %						
Lyngen	43 %	7 %						
Osen	100 %	5 %						
Hammerfest	23 %	5 %						
Levik	44 %	5 %						

Some societies are clearly fisheries dependent



Three categories of fisheries-dependent societies

- Number of fisheries dependent communities are reduced (Categories 1 and 2)
- Most of the reduction in the mid/west of Norway
- Still a significant number of communities with high fisheries dependence
 - Many in category 2 are probably more aquaculture dependent
- Growth in category 3: more fisheries activity in urban areas



Kategori	Category 1: Large/dependent		Category 2: Small/dependent		Kategori 3: Large/independent		Totalt	
	1990	2014	1990	2014	1990	2014	1990	2014
Nord-Norge	31	28	14	10	3	9	48	47
Norge sør for Nordland	21	17	13	7	14	16	48	40
Totalt	52	45	27	17	17	25	96	87

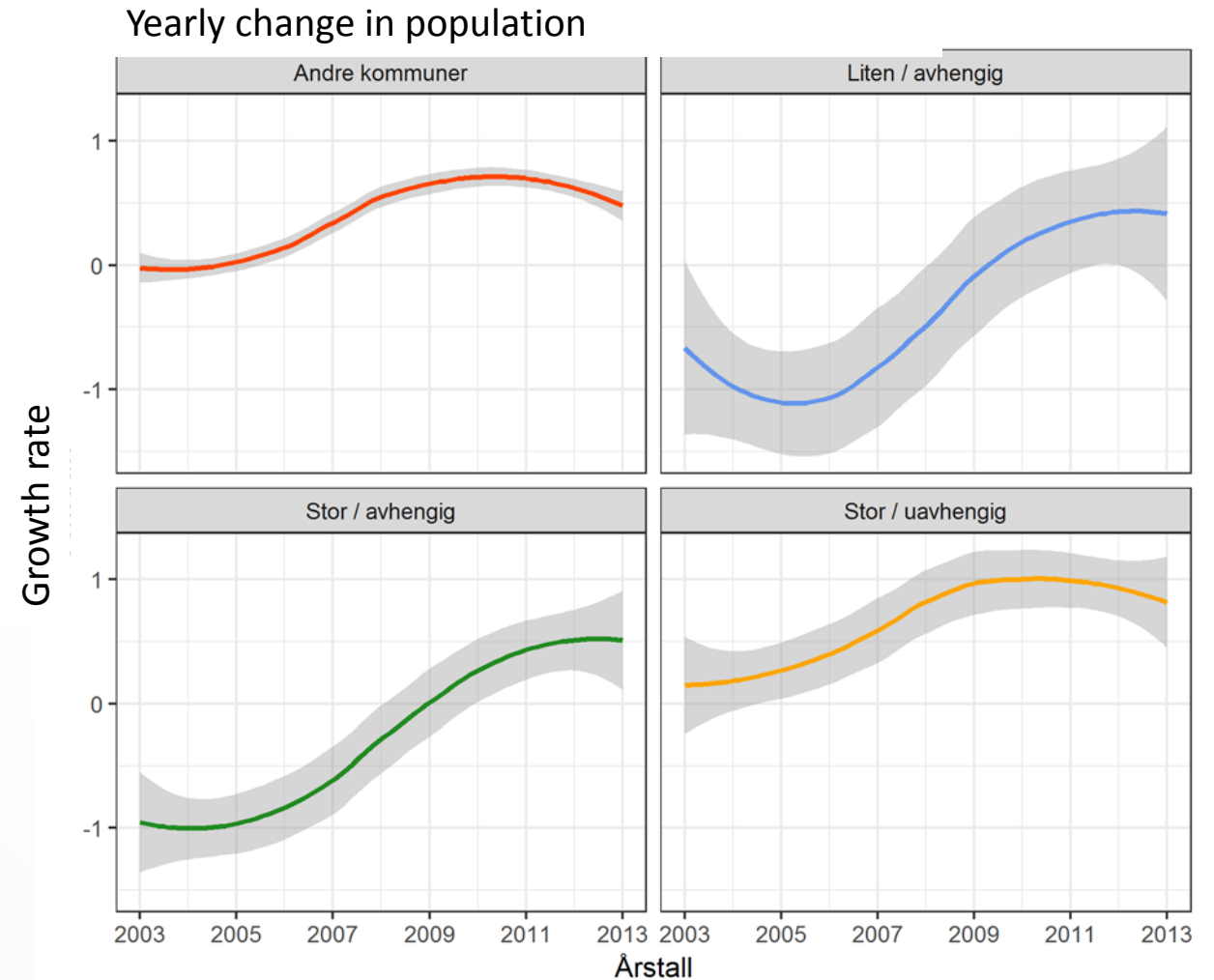
- 7

- 10

+ 8

These categories also have different rates of population change

But can the difference be attributed to fisheries?



Methodology

Opportunities and challenges

Access to unique data sets in Norway

- Data on every catch, every landing
- Data on society – in collaboration with UiT in Tromsø
 - (database with around 1200 variables, more than 300 now openly available)
 - Gator: <http://site.uit.no/rokkangruppen/2016/10/17/presentation-gator-and-the-high-north/>

Hard to identify and distinguish fisheries-related activity

- We have included fishing and fish-processing
- Not (yet) able to record input or services
- Not full overview over fish bought «second hand»

What do we find?



First run of models

Relative population growth as dependent variable

Growth rates explained by:

- Share of employment
- Size of the community
- Trend growth

⇒ Fisheries activity explains none of the growth!

- Are we surprised?
- Yes and no

⇒ There are some societies obviously dependent on fisheries

⇒ But also some strong general driving forces

	LM	FEAR1	RE	REAR1	GC	GCAR1
(Intercept)	-11.31*** (0.38)	-12.84*** (0.50)	-14.47*** (0.53)	-14.82*** (0.56)	-13.30*** (0.56)	-13.86*** (0.58)
landinger	-0.00** (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
rundvekt	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
vekt.snitt	-0.00 (0.00)	-0.00 (0.00)	-0.01 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.01 (0.00)
stat_pros	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
andel_syss	0.22*** (0.01)	0.26*** (0.01)	0.29*** (0.01)	0.30*** (0.01)	0.26*** (0.01)	0.27*** (0.01)
sy_fisk	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
as.factor(komstor)2	0.33*** (0.07)	0.26*** (0.10)	0.14 (0.13)	0.13 (0.13)	0.23* (0.12)	0.20 (0.13)
as.factor(komstor)3	0.73*** (0.07)	0.61*** (0.10)	0.47*** (0.13)	0.44*** (0.14)	0.61*** (0.13)	0.57*** (0.13)
as.factor(komstor)4	1.25*** (0.10)	1.10*** (0.13)	0.87*** (0.17)	0.86*** (0.18)	1.04*** (0.17)	0.99*** (0.17)
trend					0.04*** (0.01)	0.03*** (0.01)
AIC	6655.91	6414.25	6351.21	6303.92	6250.32	6225.33
BIC	6718.09	6482.09	6419.04	6377.41	6335.19	6315.85
Log Likelihood	-3316.96	-3195.13	-3163.60	-3138.96	-3110.16	-3096.66
Num. obs.	2117	2117	2117	2117	2117	2117
Num. groups			209	209	209	209

***p < 0.01, **p < 0.05, *p < 0.1

Table 1: Avhengig variabel: Relativ befolkningsvekst

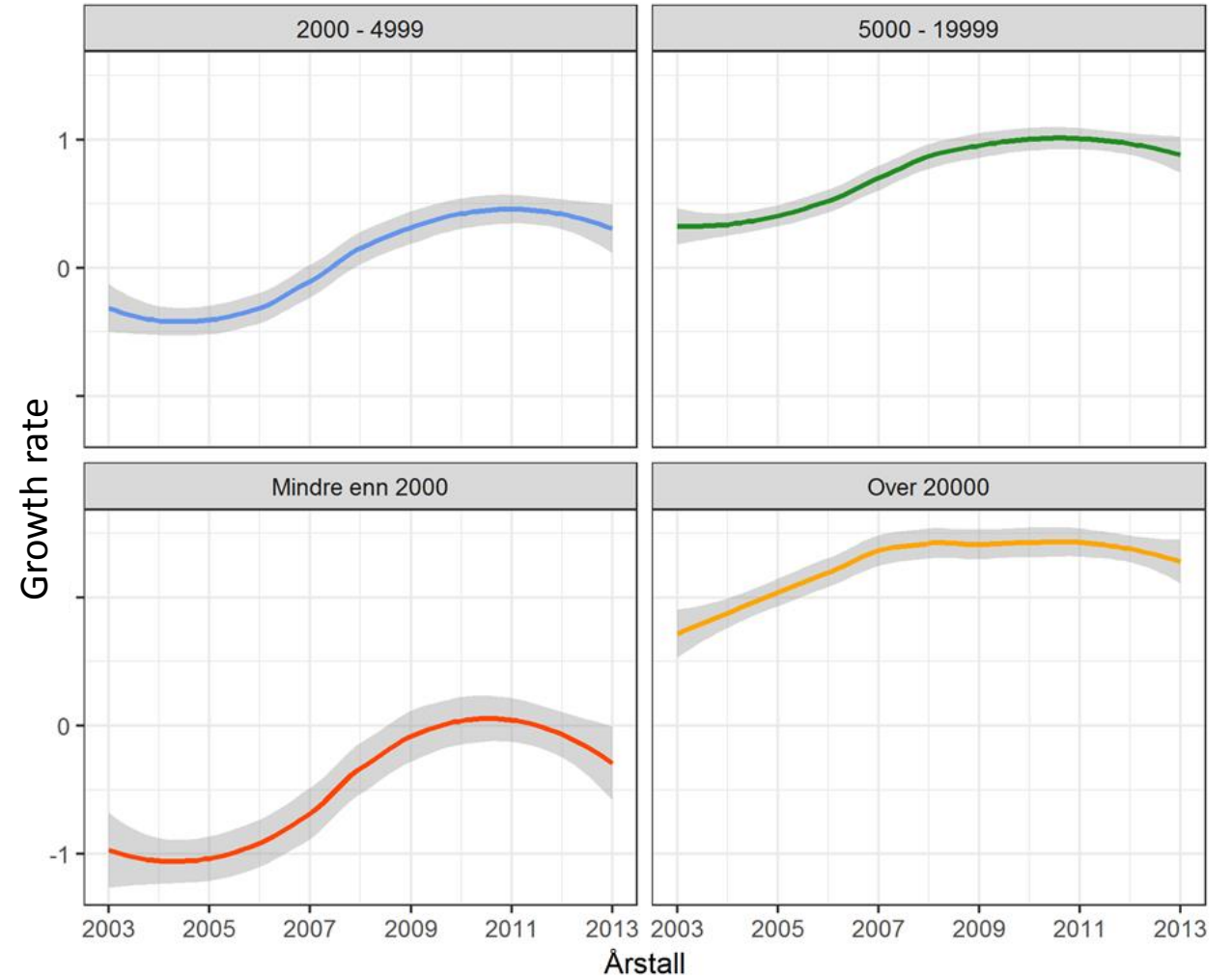
Population growth rates

High population growth in Norway during this period

Large societies grow more

Most fisheries dependent societies are small

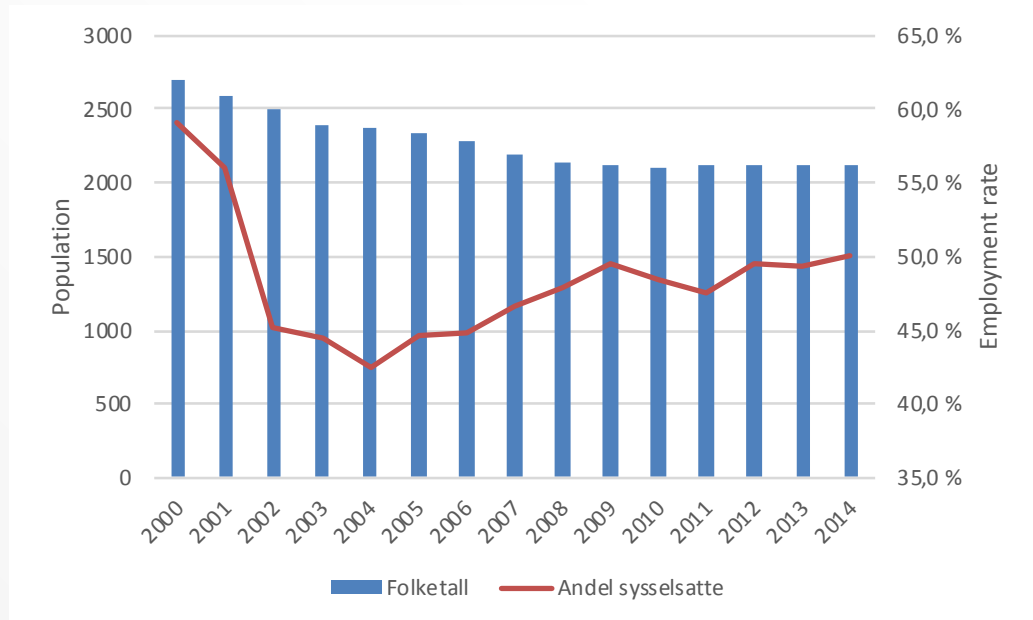
Yearly change in population, Municipality size



Employment rate

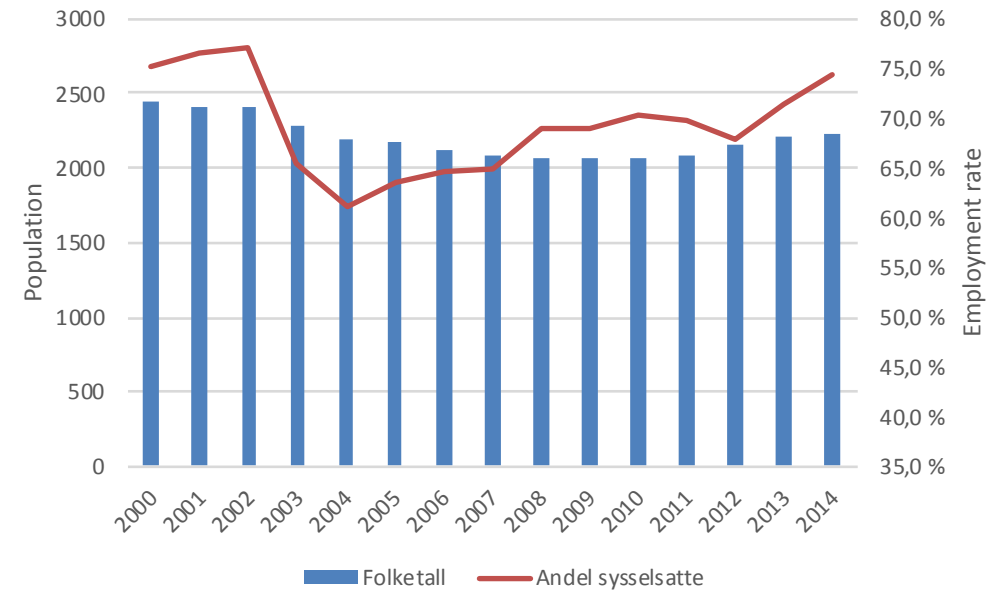
Two neighbouring communities in Finnmark

Vardø



43 – 50 %

Båtsfjord



61 – 75 %

Now what?

The model must be refined!

Separate employment statistics: Fishers, fish processing industry, other industries, public sector (and would love to have trade of goods and services related to fisheries)

What has the strongest effect on settlement: where the fishing vessels has their homeports or were the catches are landed?

How does seasonal patterns impact population?


Compare the development in settlement between municipalities of different sizes and different employment rate in the fishing industry (with an emphasize on the smallest municipalities)


A circular photograph showing a red and white boat on a body of water. In the foreground, a metal hook and chain are visible, suggesting the boat is being hoisted. The background shows a coastline with snow-capped hills under a blue sky.

Thank you for your attention!

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