

Demographic Change and Climate in Arctic Alaska

“megatrends in small places”

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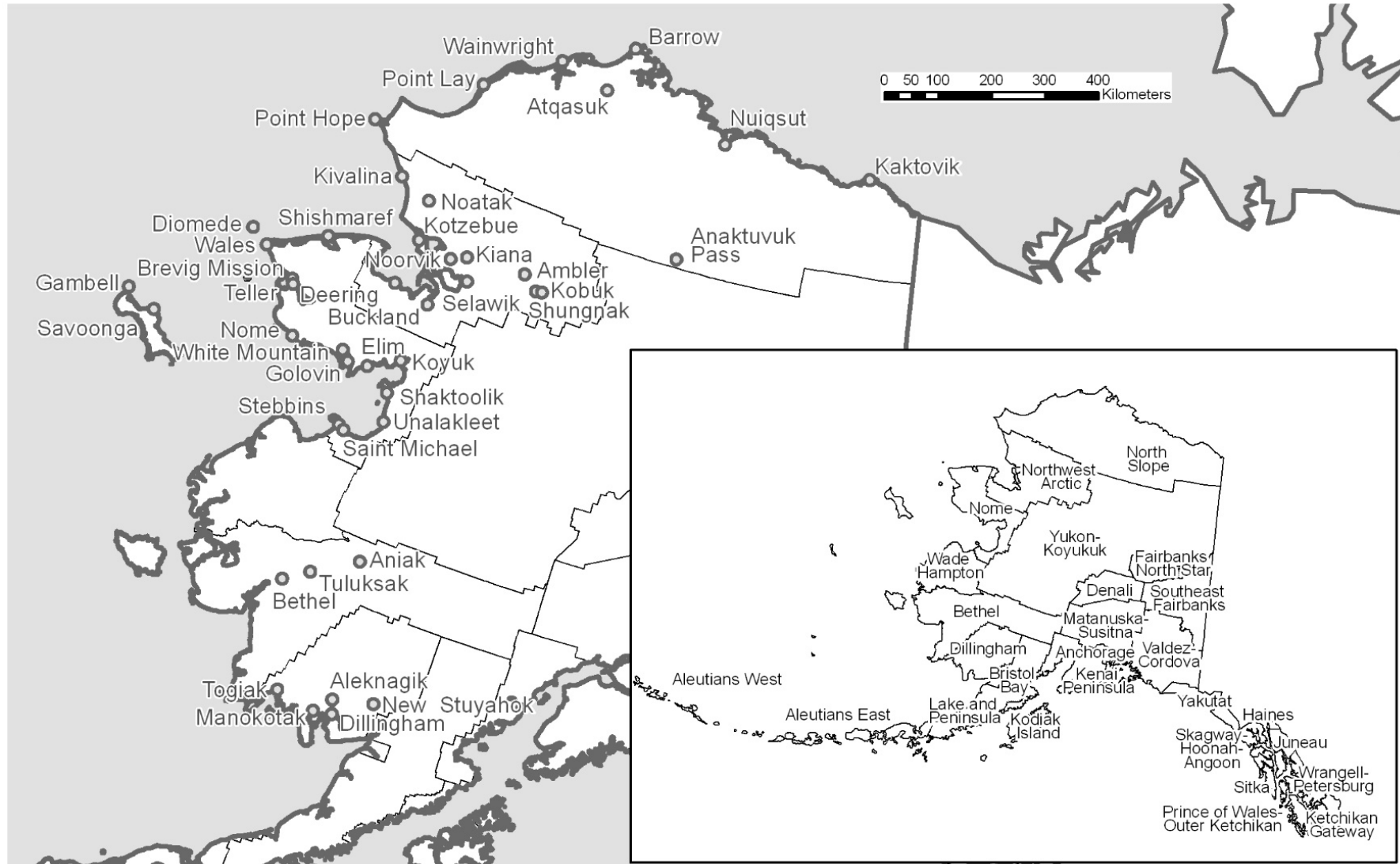


Sustainable Futures North

- **Sustainable Futures North (SFN)** is a three-year NSF Arctic SEES project, focused on developing a better understanding of the interactions among: 1) food; 2) water; 3) energy security and 4) natural resource development in Arctic and Subarctic rural communities.
- <http://www.sustainablefuturesnorth.org/>
- SFN includes demographic analysis building on earlier projects:
 - **Arctic Observing Network – Social Indicators Project (AON–SIP)**
 - **Humans and Hydrology at High Latitudes (H3L)**

43 Arctic Alaska towns and villages

Hamilton & Mitiguy (2009)



Megatrends
2011 report on
global trends
affecting the
Arctic
(Rasmus Ole
Rasmussen,
Nordregio)

**1. Increased
urbanization**

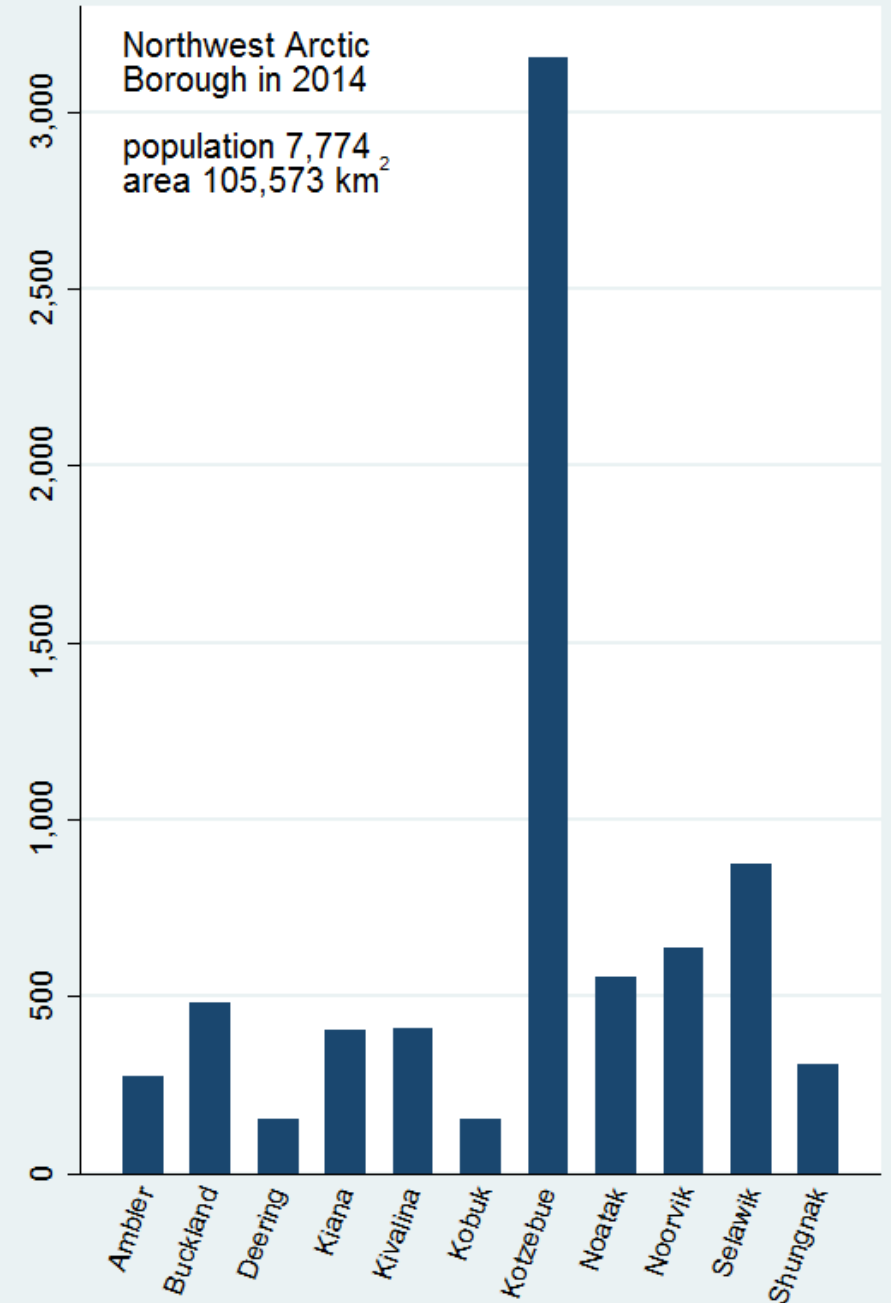
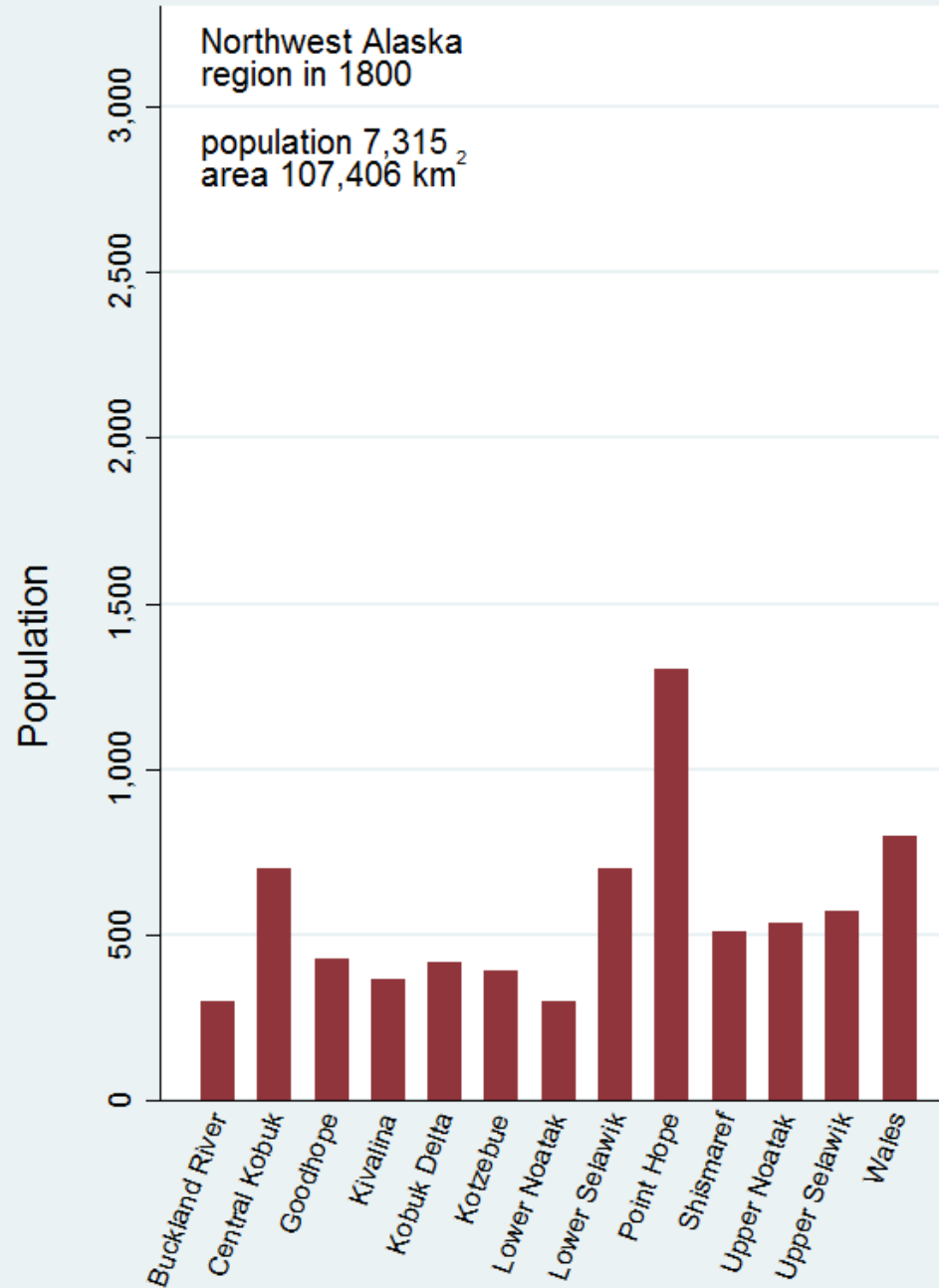


MEGATRENDS



Concentration of regional hubs:

NW Alaska population in Kotzebue, 1800 (Burch 2006) estimates compared with 2014



Megatrends
2011 report on
global trends
affecting the
Arctic
(Rasmus Ole
Rasmussen,
Nordregio)

**2. Demographic
challenges due to
*selective
outmigration***



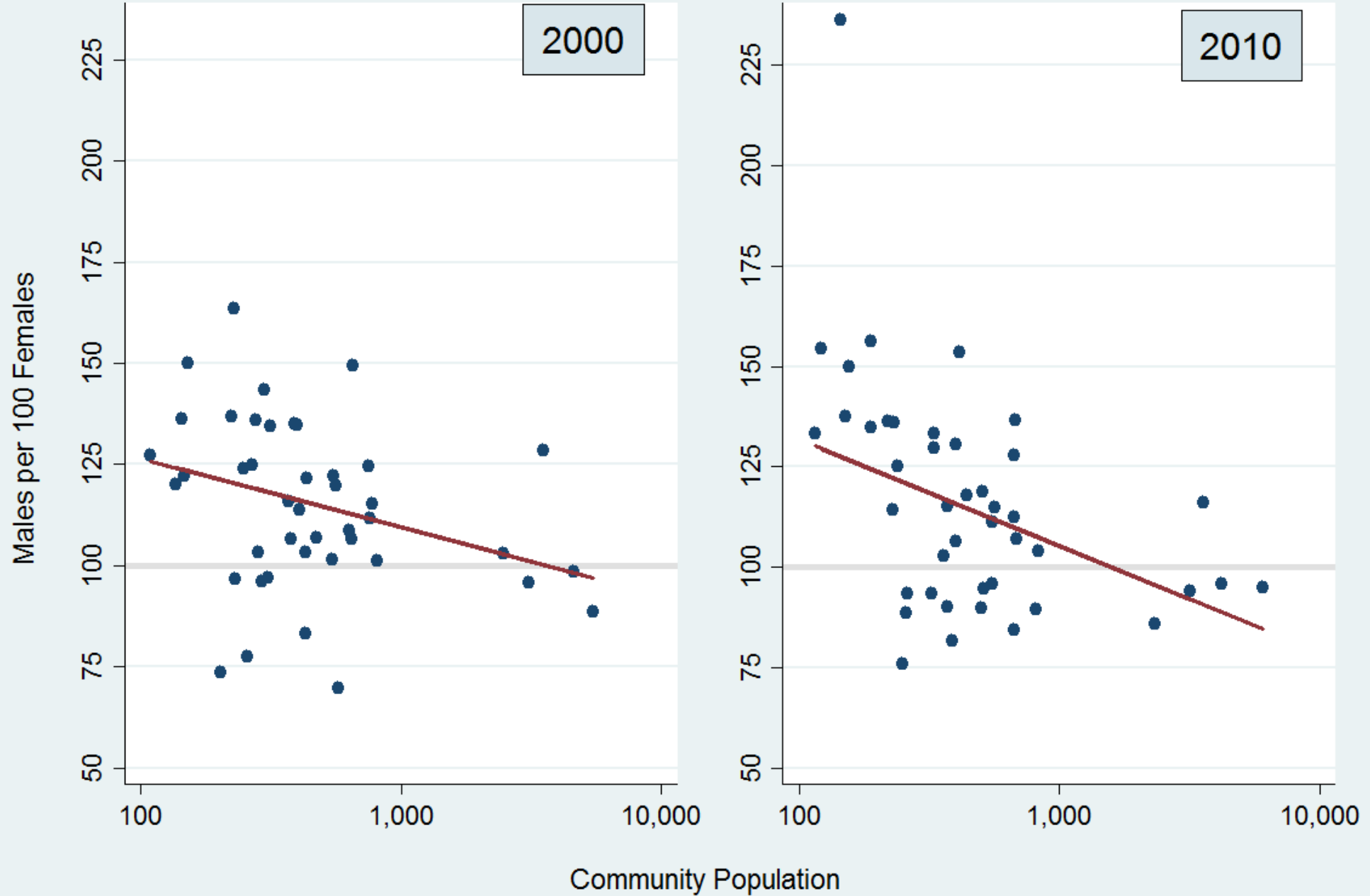
MEGATRENDS



“Female flight”

disproportionate
outmigration
shifts sex ratios
of AK Native
village
populations

Alaska Natives 20 to 39 Years Old



Population Dynamics of Arctic Alaska

A graphical library of demographic change in 43 towns and villages, 1990–2014

Contribution to the *Sustainable Futures North (SFN)* project, supported by the U.S. National Science Foundation

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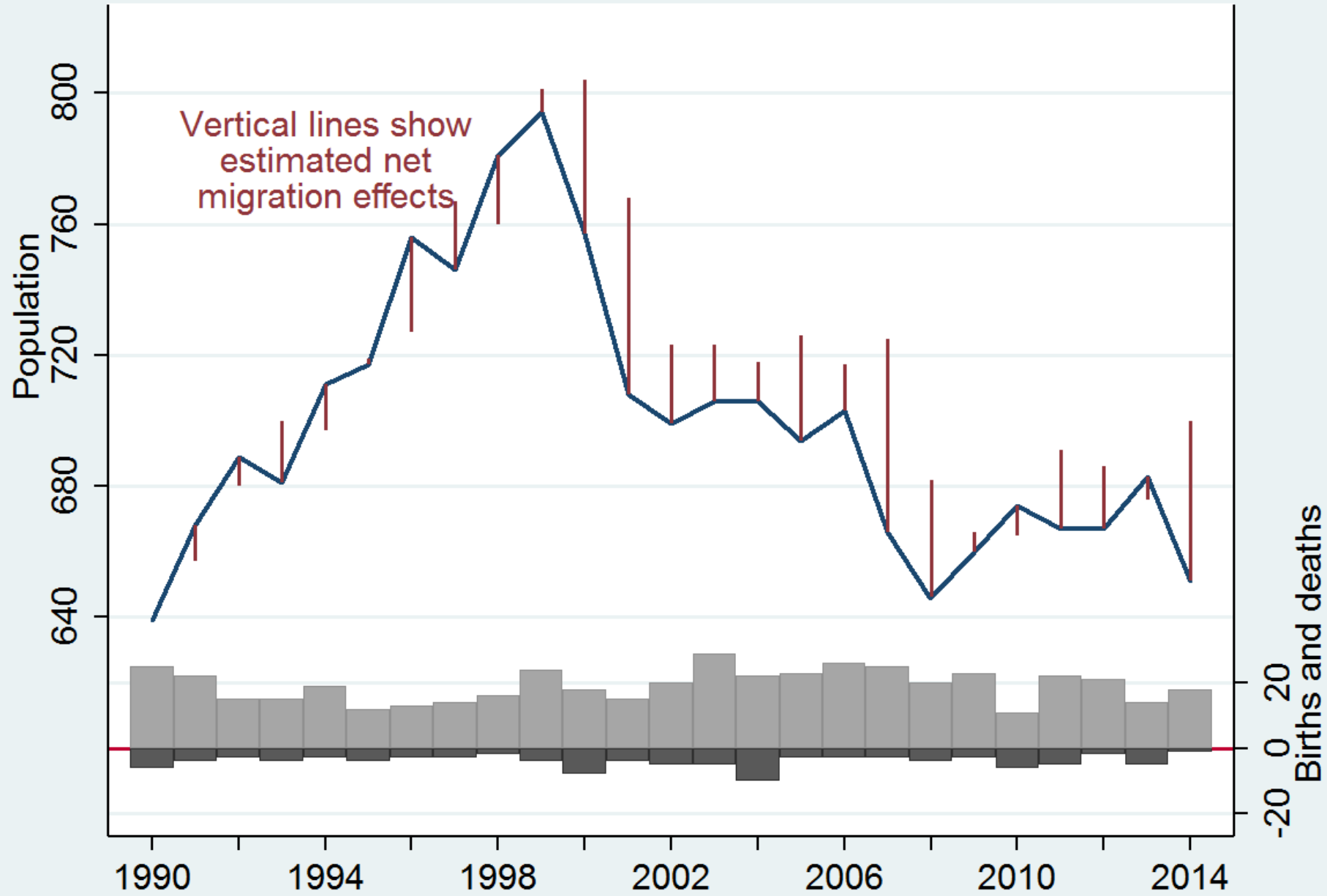
SFN published
online
“graphical
library” of
population in
43 towns &
villages

Download
graphs or
data:

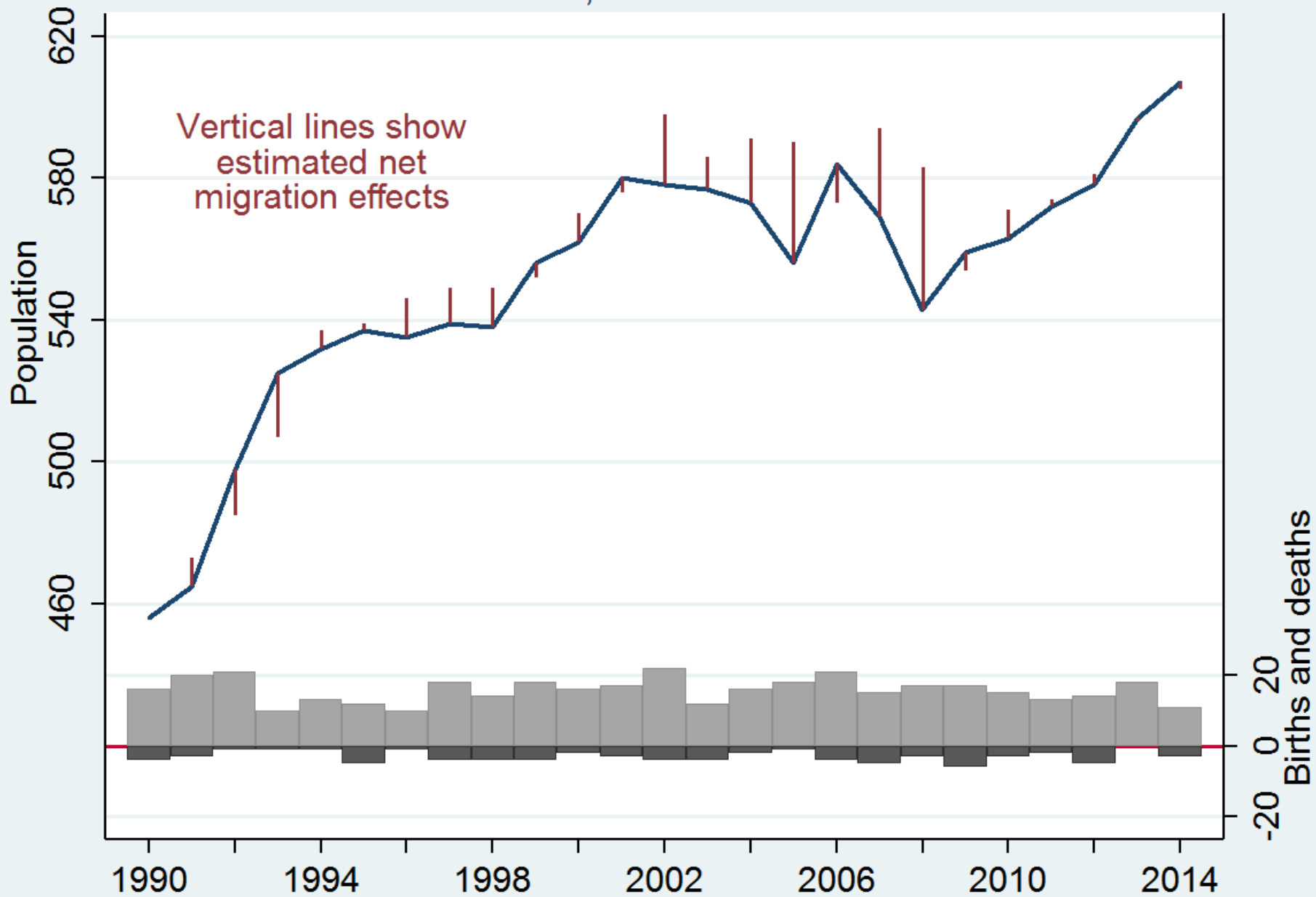
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Point Hope, North Slope Borough

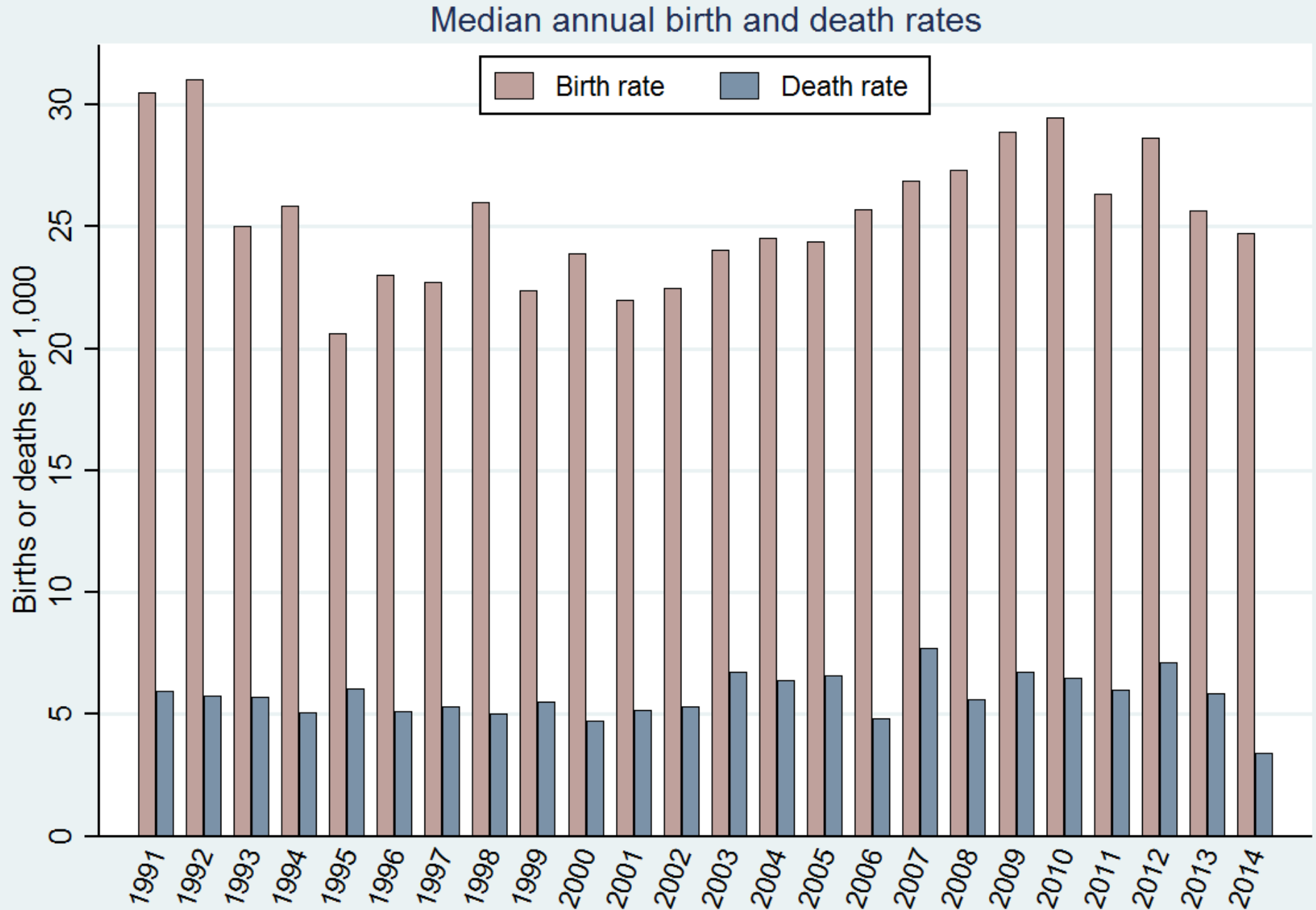


Shishmaref, Nome Census Area



Analysis:

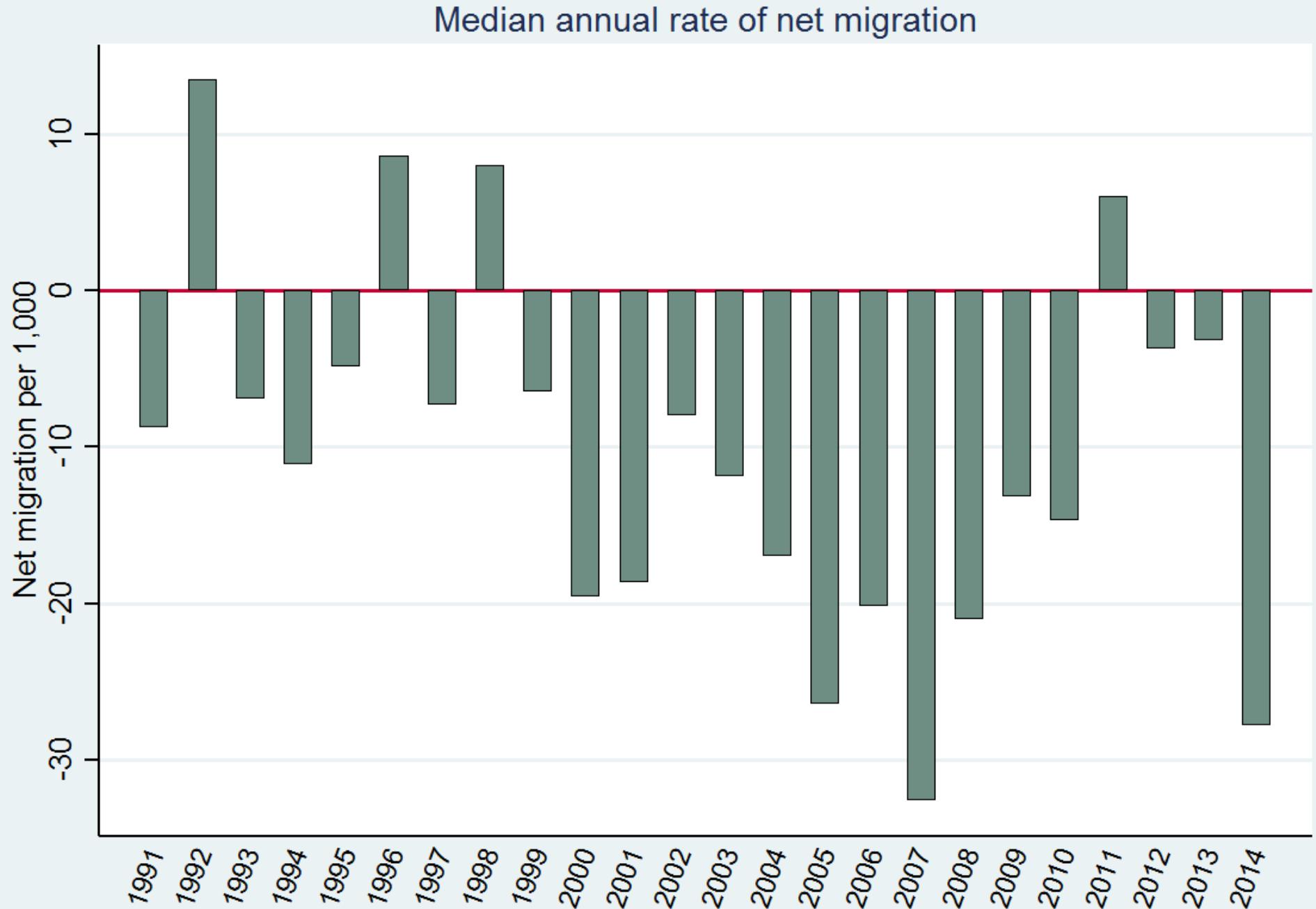
Median annual birth and death rates for 43 towns and villages, 1991–2014



Analysis:

Median annual net migration rates for 43 towns and villages, 1991–2014

Migration uncoupled from economic change



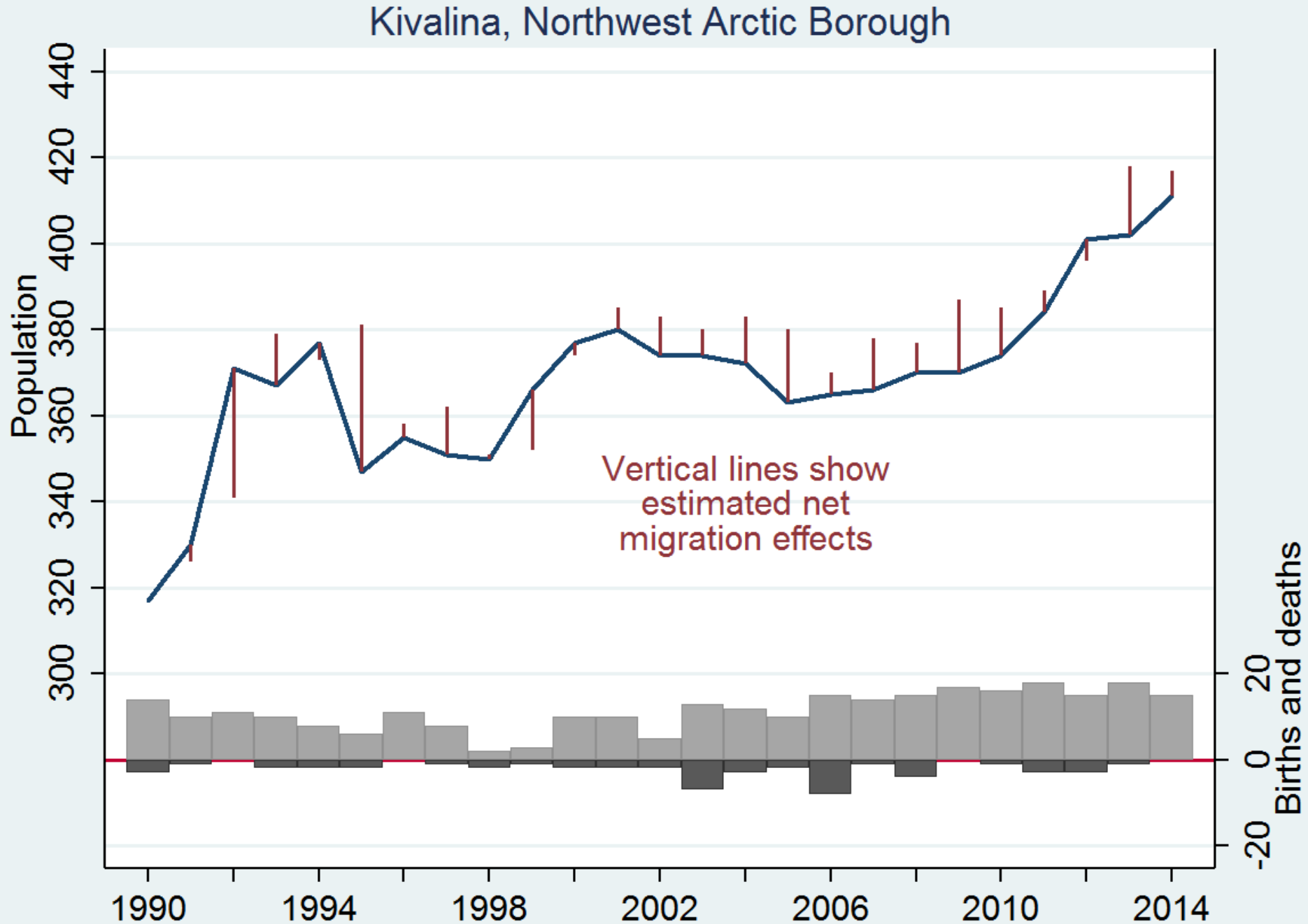
Climate-Related Threats to Communities

Responding to growing statewide concern about climate-change impacts, in 2007 Alaska's governor established a Climate Change Sub-Cabinet. The Immediate Action Workgroup (**IAWG**), part of this cabinet, assessed risks to communities based on four criteria.... **The IAWG analysis identified six “priority at-risk” communities facing the most urgent threats.**

Independently, the United States Army Corps of Engineers (**USACE**) conducted a baseline erosion assessment from 2005 to 2009 (USACE 2009).... **26 places were characterized as “priority action” communities.**

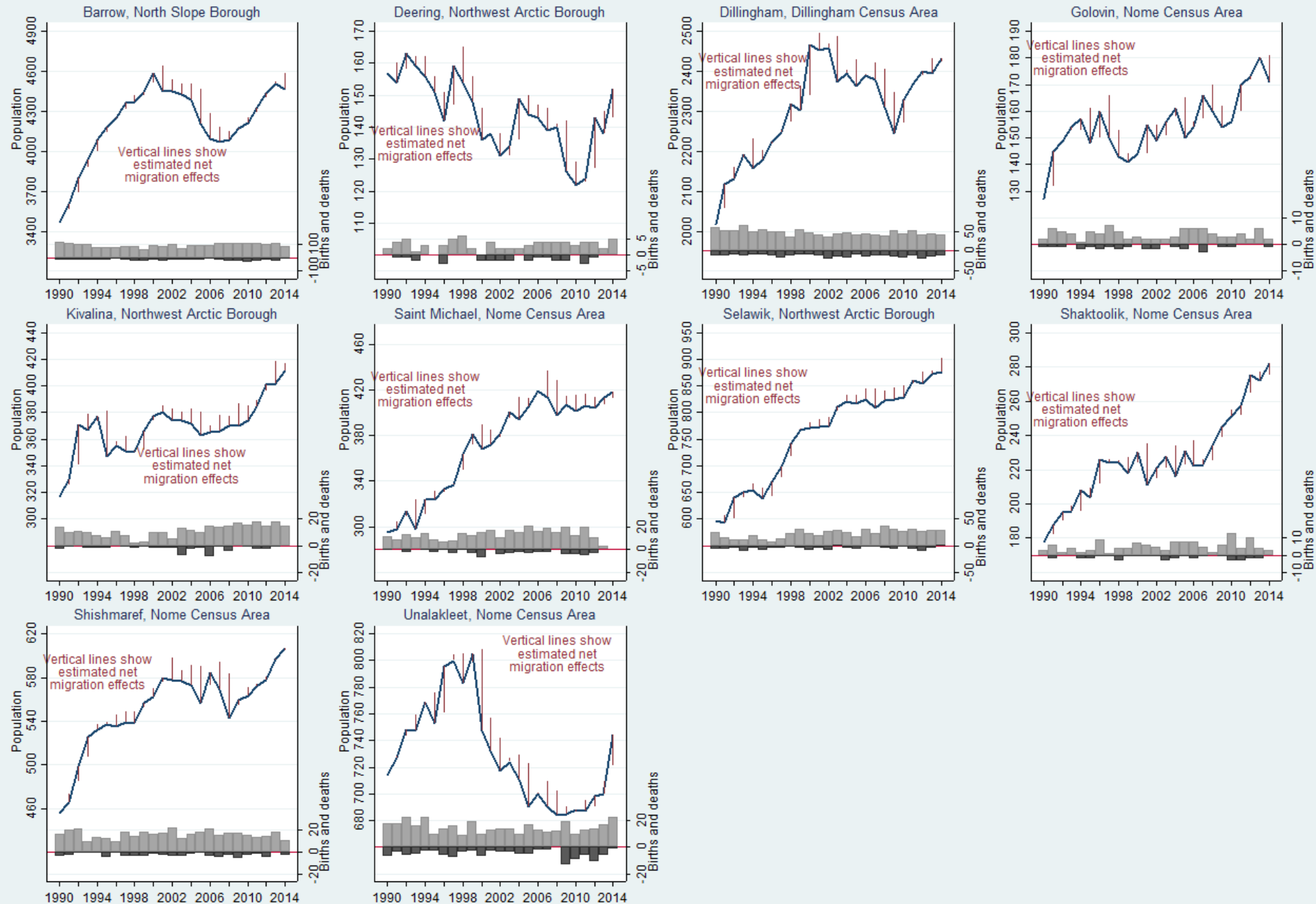
A third **list of communities facing climate-related risks to their water infrastructure or resources** was compiled in a study by **Tetra Tech** (2010), commissioned by the state government

Population dynamics of Kivalina, Alaska, 1990–2014



10 USACE
“priority
action”
communities
threatened
by erosion.

Population trends 1990–2014 in 10 USACE 'priority action' Alaska communities



4 IAWG “priority at-risk” communities facing most urgent threats

Population dynamics of 4 IAWG 'priority at-risk' communities

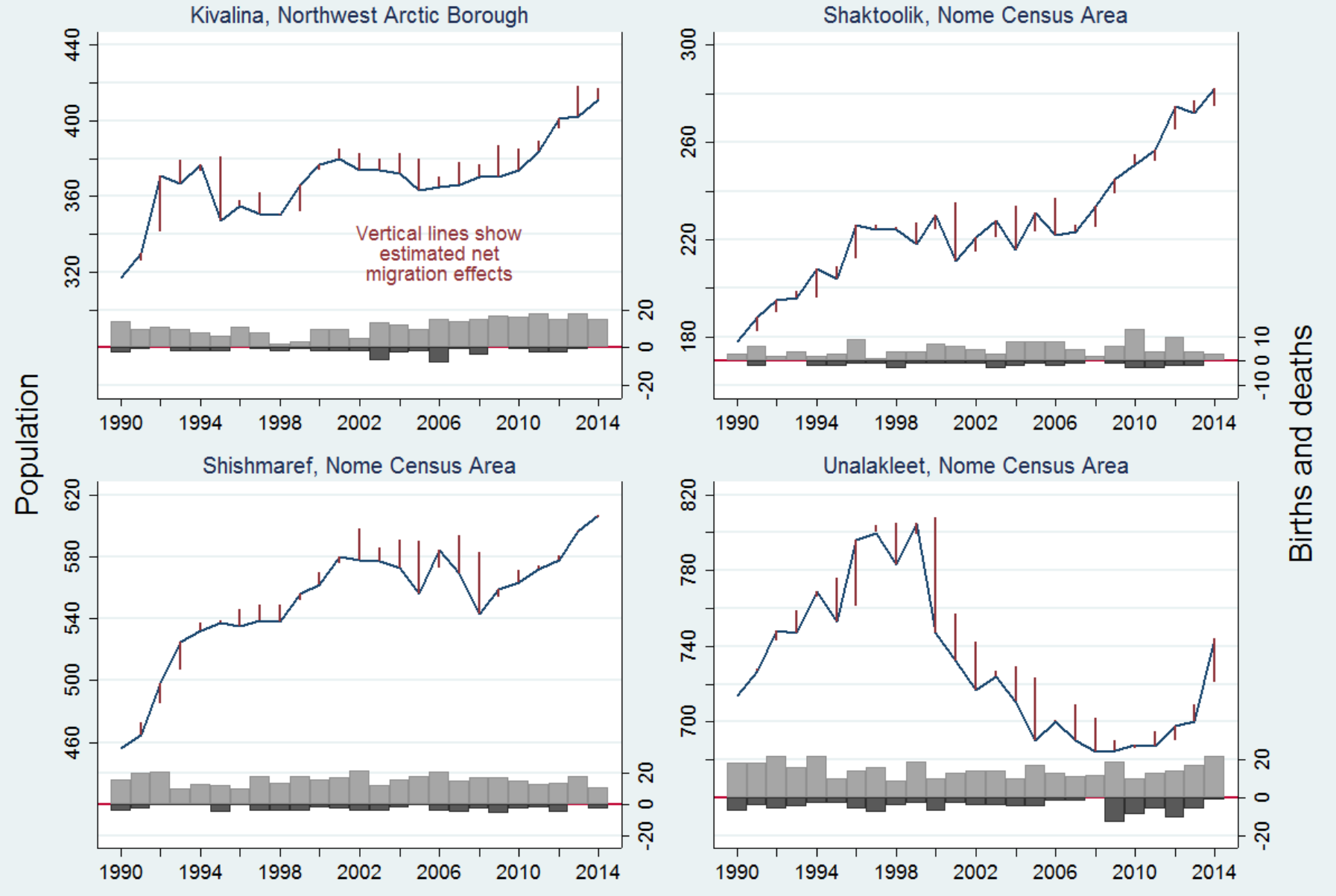
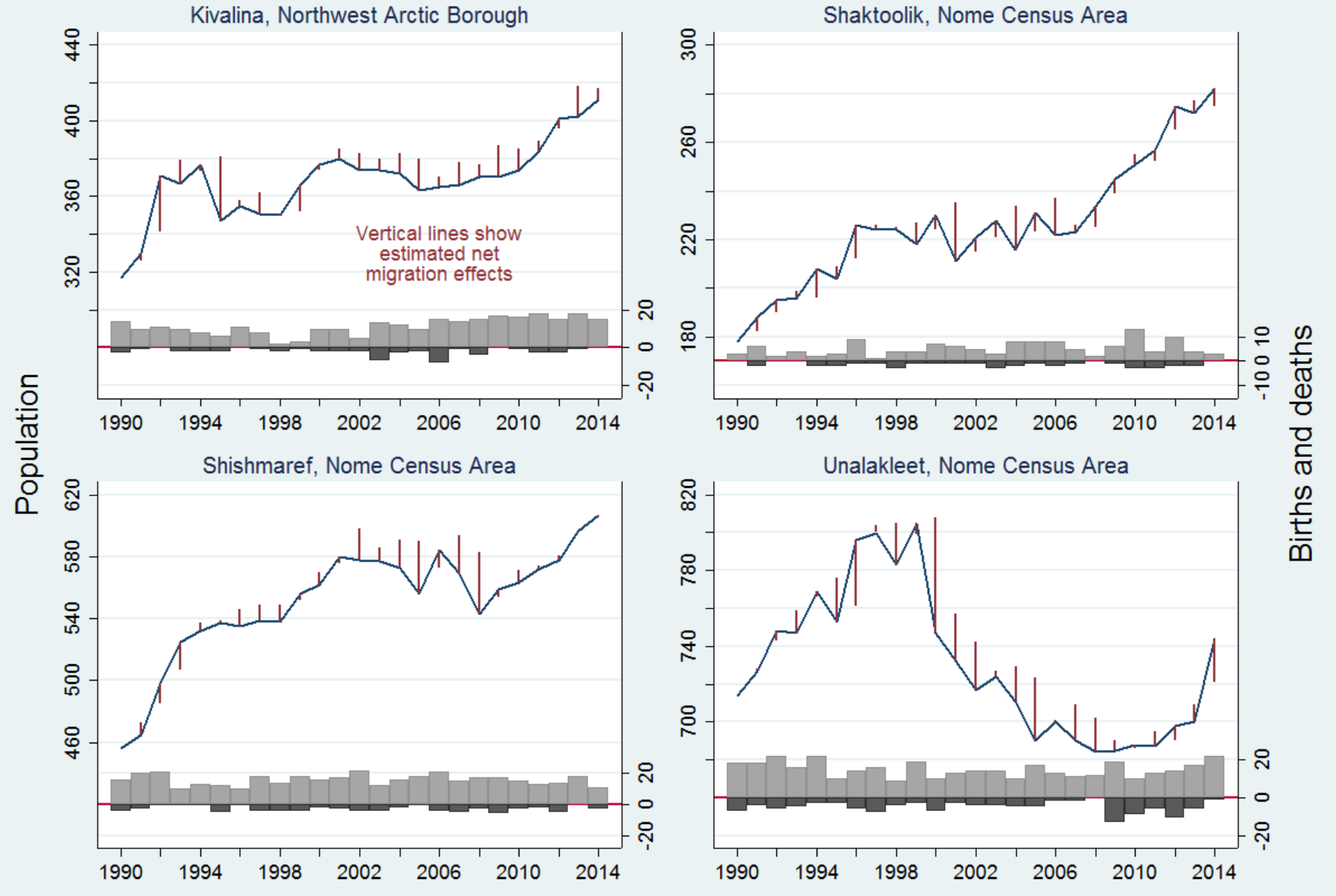


Table 1: Median annual 2000–2014 rates of net migration and population change, comparing erosion-threatened and other Arctic Alaska communities. Medians and 95% confidence intervals; threatened communities are, on average, **growing slightly faster than other Arctic Alaska communities.**

	<i>Median annual net migration %</i>	<i>Median annual pop change %</i>
USACE		
priority action (10)	-1.50 (-2.04, -0.96)	0.65 (0.17, 1.14)
others (33)	-1.60 (-2.04, -1.17)	0.31 (-0.14, 0.77)
IAWG		
priority at-risk (4)	-1.43 (-2.04, -0.82)	0.72 (0.18, 1.25)
others (39)	-1.65 (-2.04, -1.27)	0.38 (-0.00, 0.77)
Tetra Tech		
priority study (11)	-1.76 (-2.67, -0.86)	0.70 (-0.23, 1.61)
concern (7)	-2.37 (-3.69, -1.06)	0.00 (-1.23, 1.23)
others (25)	-1.46 (-1.84, -1.08)	0.44 (0.08, 0.79)
all	-1.57 (-1.93, -1.21)	0.44 (0.09, 0.78)

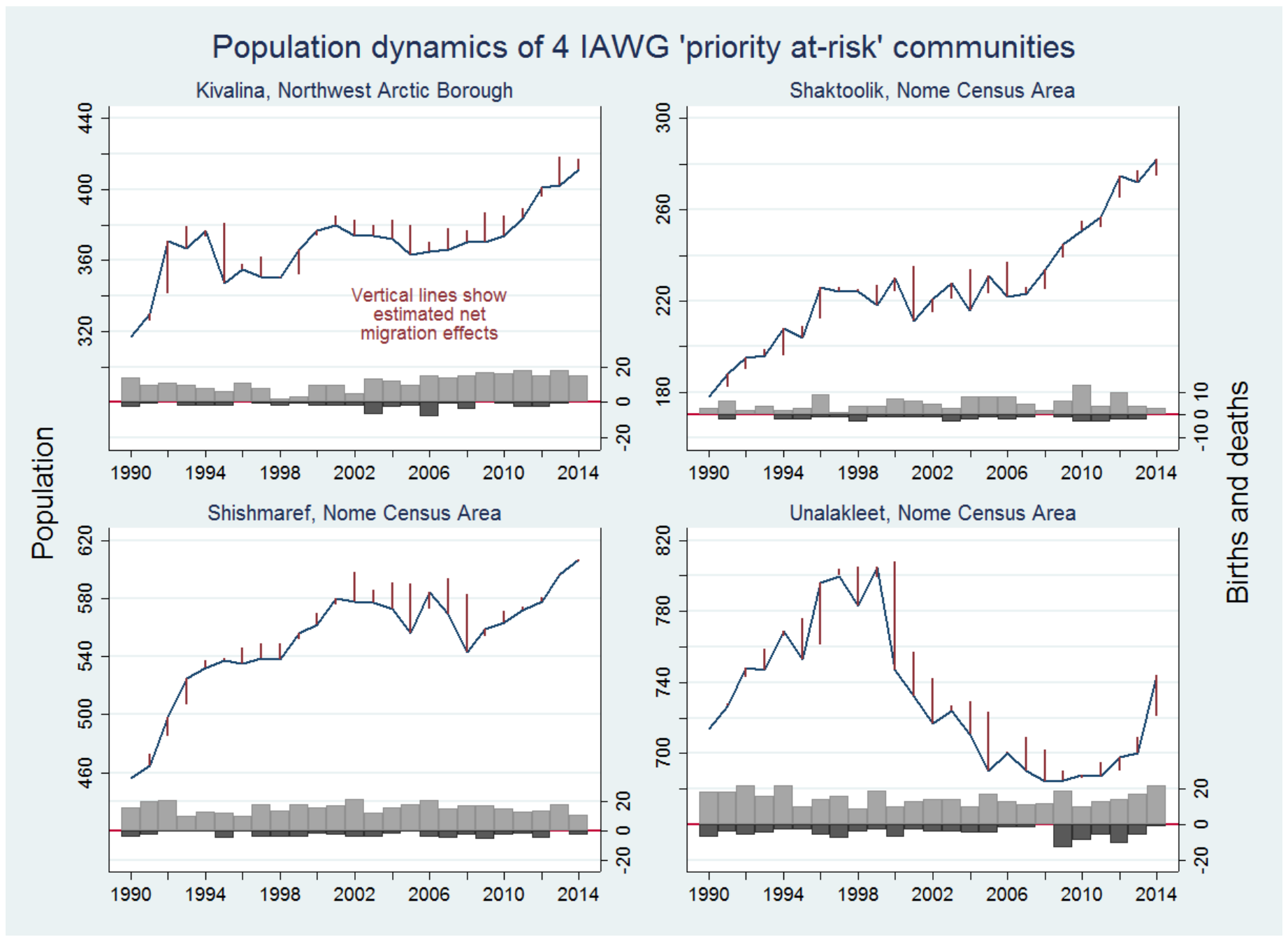
4 IAWG “priority at-risk” communities facing most urgent threats

Population dynamics of 4 IAWG 'priority at-risk' communities



4 IAWG “priority at-risk” communities facing most urgent threats

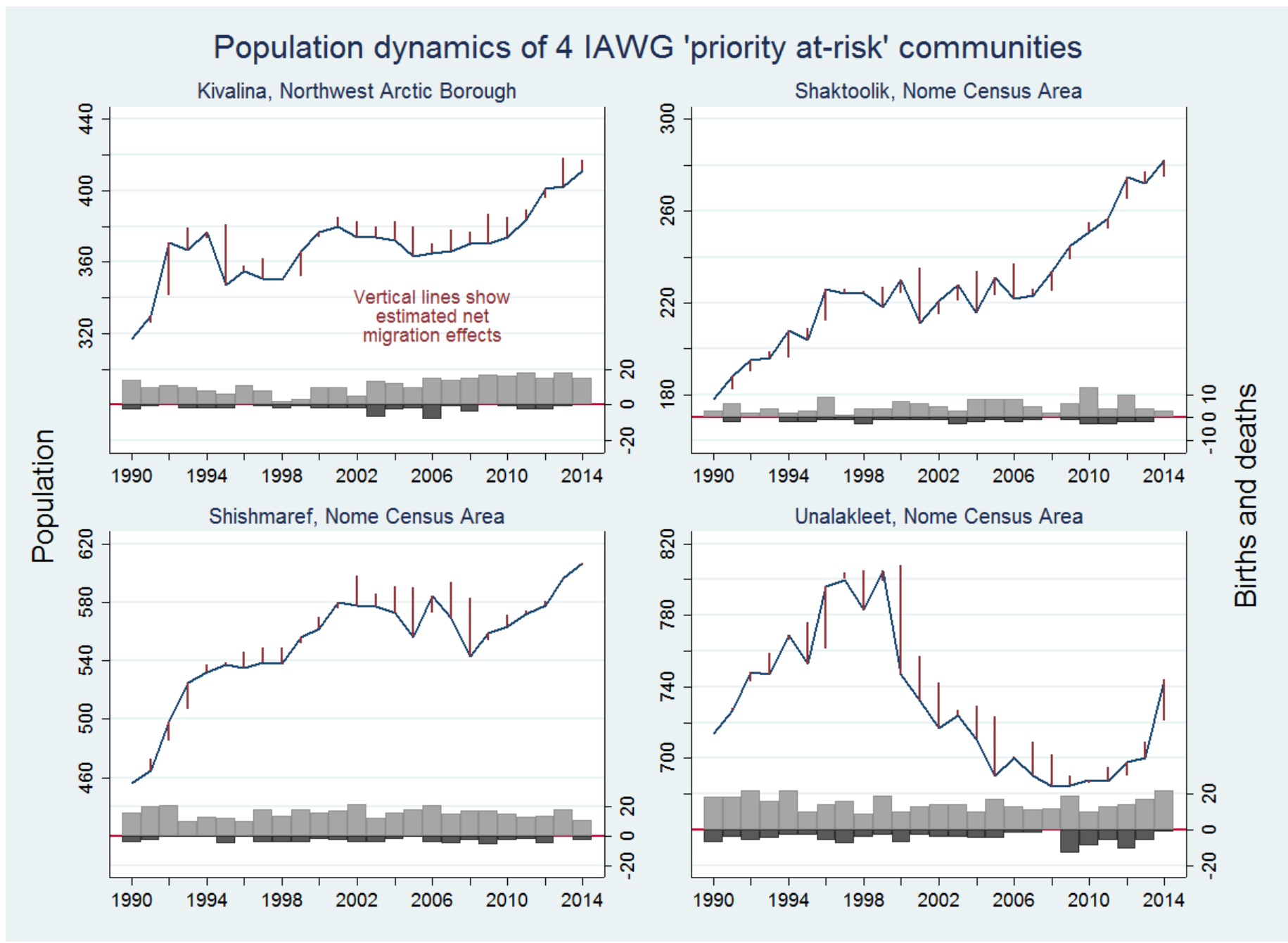
“Climigration” ?
- not happening



4 IAWG “priority at-risk” communities facing most urgent threats

“Climigration” ?
- not happening

2 climate stories:
- physical change
- delayed social response



Related papers

Hamilton, L.C. & C.L. Seyfrit. 1993. "Town–village contrasts in Alaskan youth aspirations." *Arctic* 46(3):255–263.

Hamilton, L.C. & C.L. Seyfrit. 1994. "Coming out of the country: Community size and gender balance among Alaskan Natives." *Arctic Anthropology* 31(1):16–25.

Hamilton, L.C., C.L. Seyfrit & C. Bellinger. 1997. "Environment and sex ratios among Alaska Natives: An historical perspective." *Population and Environment* 18(3):283–299.

Hamilton, L.C. & O. Otterstad. 1998. "Sex ratio and community size: Notes from the northern Atlantic." *Population and Environment* 20(1):11–22.

Seyfrit, C.L., L.C. Hamilton, C.M. Duncan & J. Grimes. 1998. "Ethnic identity and aspirations among rural Alaska youth." *Sociological Perspectives* 41(2):343–365.

Hamilton, L.C. & A.M. Mitiguy. 2009. "Visualizing population dynamics of Alaska's Arctic communities." *Arctic* 62(4):393–398.

Hamilton, L.C. 2010. "Footprints: Demographic effects of outmigration," in L. Huskey & C. Southcott (eds.), *Migration in the Circumpolar North: Issues and Contexts*. Edmonton, Alberta: Canadian Circumpolar Institute.

Hamilton, L.C. & R.B. Lammers. 2011. "Linking pan-Arctic human and physical data." *Polar Geography* 34(1–2):107–123. doi: 10.1080/1088937X.2011.591962

Hamilton, L.C., D.M. White, R.B. Lammers and G. Myerchin. 2012. "Population, climate and electricity use in the Arctic: Integrated analysis of Alaska community data." *Population and Environment* 33(4):269–283. doi: 10.1007/s11111-011-0145-1

