Health expectancy of the Inuit-inhabited areas of Canada

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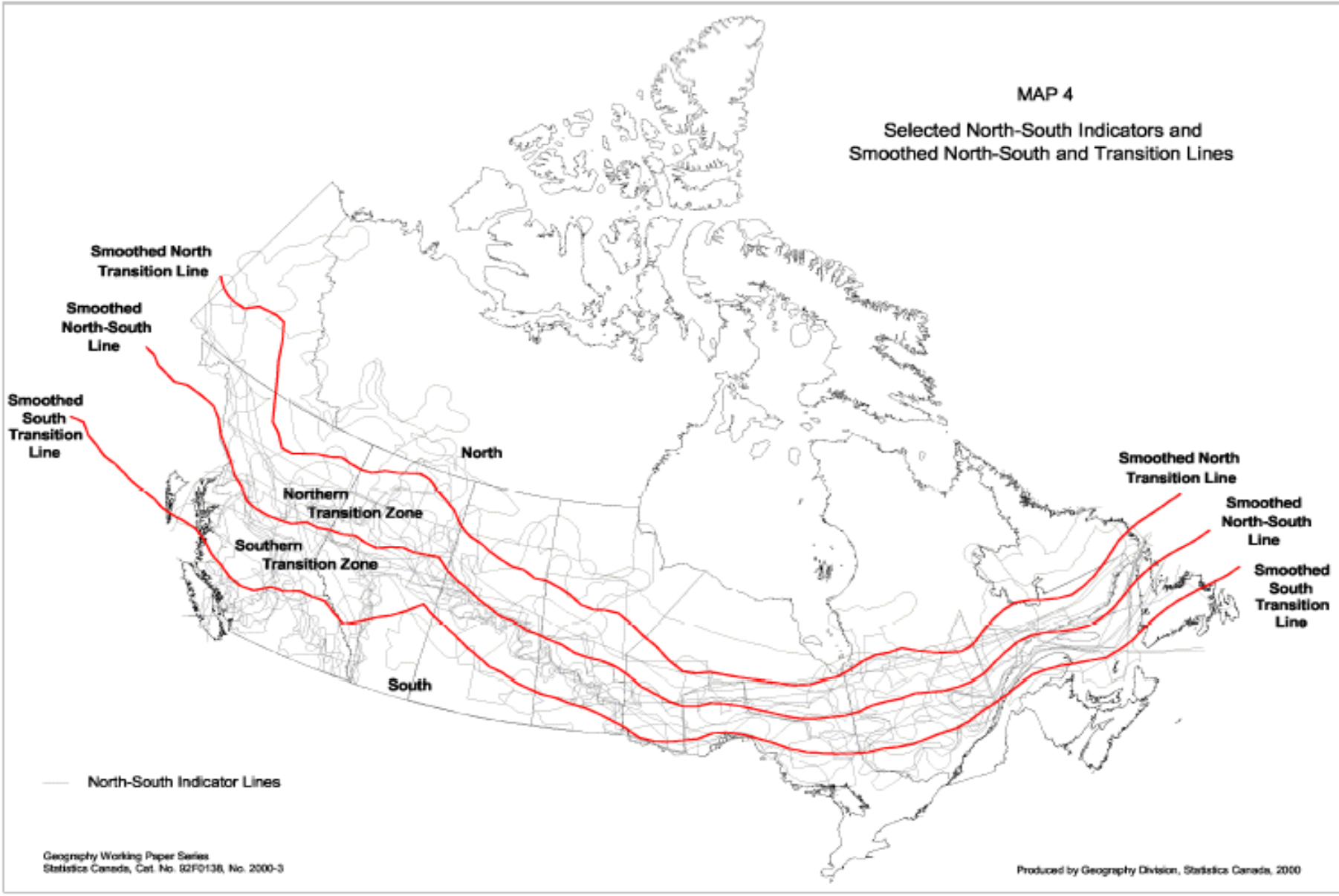
Introduction
Aboriginal peoples of Canada 1996

	N	%
Total Aboriginal*	**780 000**	**(2.7)**
• **North Amer Indian**	**515 000**	**(1.8)**
• **Métis**	**200 000**	**(0.7)**
• **Inuit**	**40 000**	**(0.1)**

* **Includes multiple and other Aboriginal origins, not shown separately. By self-identification (also known by ethnic origins, languages, band affiliation, legal status, and residence on- or off-reserve)**

Circumpolar regions showing Inuit-inhabited areas

North-South Relationship, Canada, 1996



Objective

Determine feasibility of calculating health expectancy from existing data

- Aboriginal status not available on most administrative records in Canada
- Because Inuit settlements are both isolated and largely homogeneous, a geographic-based approach is possible

Inuit-inhabited areas of Canada

Population 1996

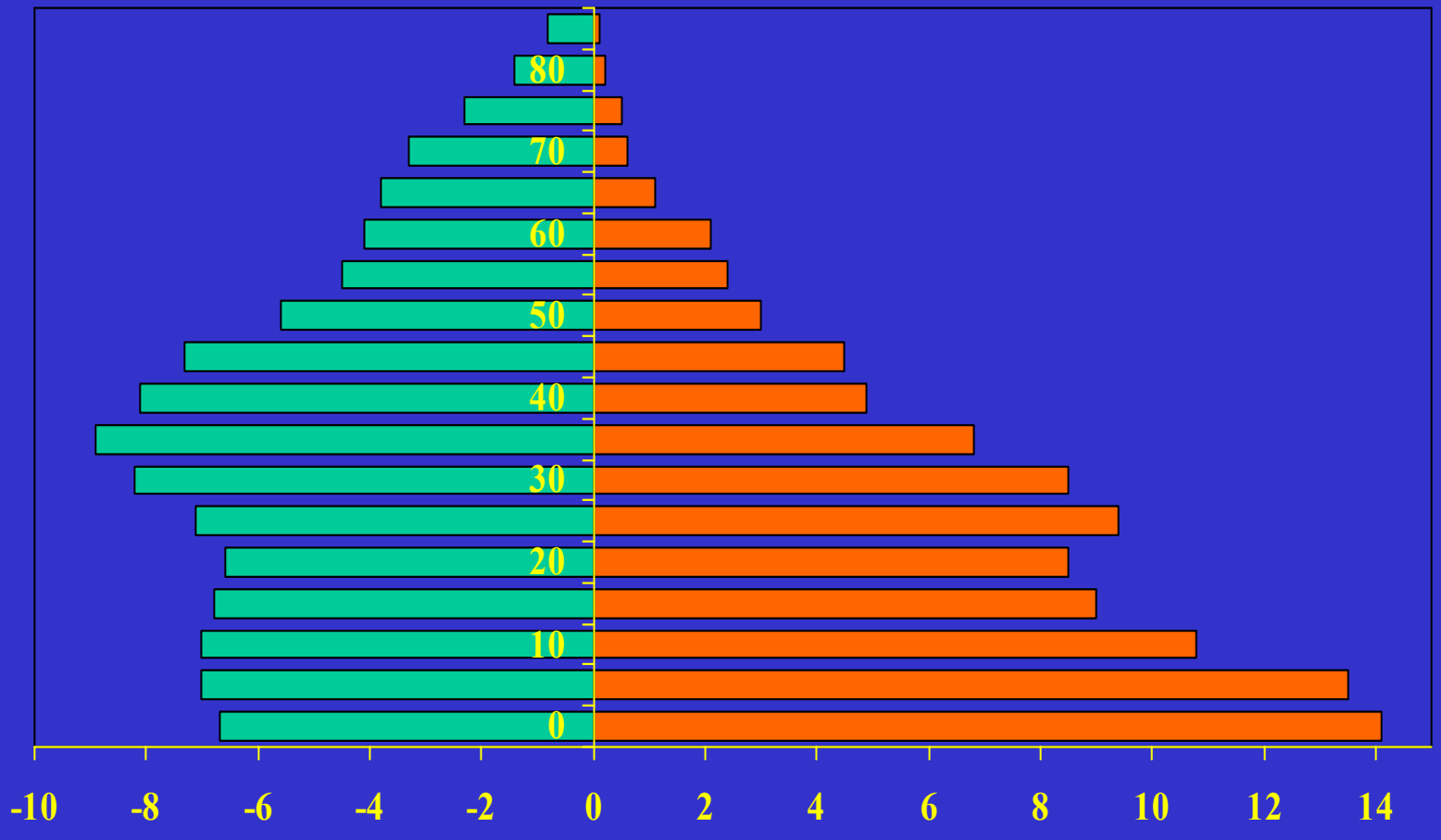
All Inuit areas (>=33%; av=83% Inuit) **39 700**

- **Northwest Territories (Inuvialuit*) 2 500**
  - **6 settlements**
- **Nunavut (entire Territory) 24 600**
  - **28 settlements**
- **Northern Québec (Nunavik*) 9 300**
  - **14 settlements**
- **Labrador (Nunatsiavut*) 3 300**
  - **6 settlements**

* **Closely equivalent re settlements but not necessarily areas.**

Age pyramids

Canada Inuit areas



Population characteristics

	Inuit areas	Canada
• <15 years %	27	15
• >= 65 years %	2.7	12.2
• Inuit mother tongue %	65	0.1
• Immigrants %	1.6	18
• < high school grad %	55	35
• University degree %	6.8	13.2
• Unemployed %	11	7
• Lone parent families %	23	22
• >= 6 pers / household %	23	3
• Av income/person $	11 600	17 900

Source: Compiled from Statistics Canada 1996 census EA profiles.

Methods

- Calculate abridged period life tables and associated standard errors using the method of Chiang (1984)
- Calculate health expectancies using the prevalence-based (Sullivan) method, and associated standard errors (Mathers, 1991)
- Calculate disability-adjusted life expectancy (DALE), using arbitrary weights (Wilkins & Adams, 1983)

Data sources by age, sex, municipality

- Census population counts, 1996
  - 39 692 x 5 = 198 460 person-years at risk
- Death registrations, 1994-1998 (5 years)
  - 1 055 deaths (coded to ICD-9)
- Census disability and institutionalization
  - 2 239 limited in activities + 78 institutional
- Census population characteristics
  - detailed socioeconomics for 20% sample

1996 Census disability screening questions

ACTIVITY LIMITATIONS (20% sample, household pop)

- **Is this person limited in the kind or amount of activity that he/she can do because of a long-term physical condition, mental condition or health problem:**
  - **(a) at home?**
  - **(b) at school or at work?**
  - **(c) in other activities, for example, in transportation to or from work, or in leisure time activities?**
- **Does this person have any *long-term* disabilities or handicaps?** **[THIS QUESTION NOT USED HERE]**

1996 Census institutional residence

INSTITUTIONAL RESIDENCE

(100% data, total population)

- **Collective dwelling type identifies residents of long-term health care facilities**
  - **hospitals—long-term care**
  - **psychiatric hospitals**
  - **nursing homes**
  - **residences for senior citizens (with shared services)**

Advantages and disadvantages of using the census disability questions

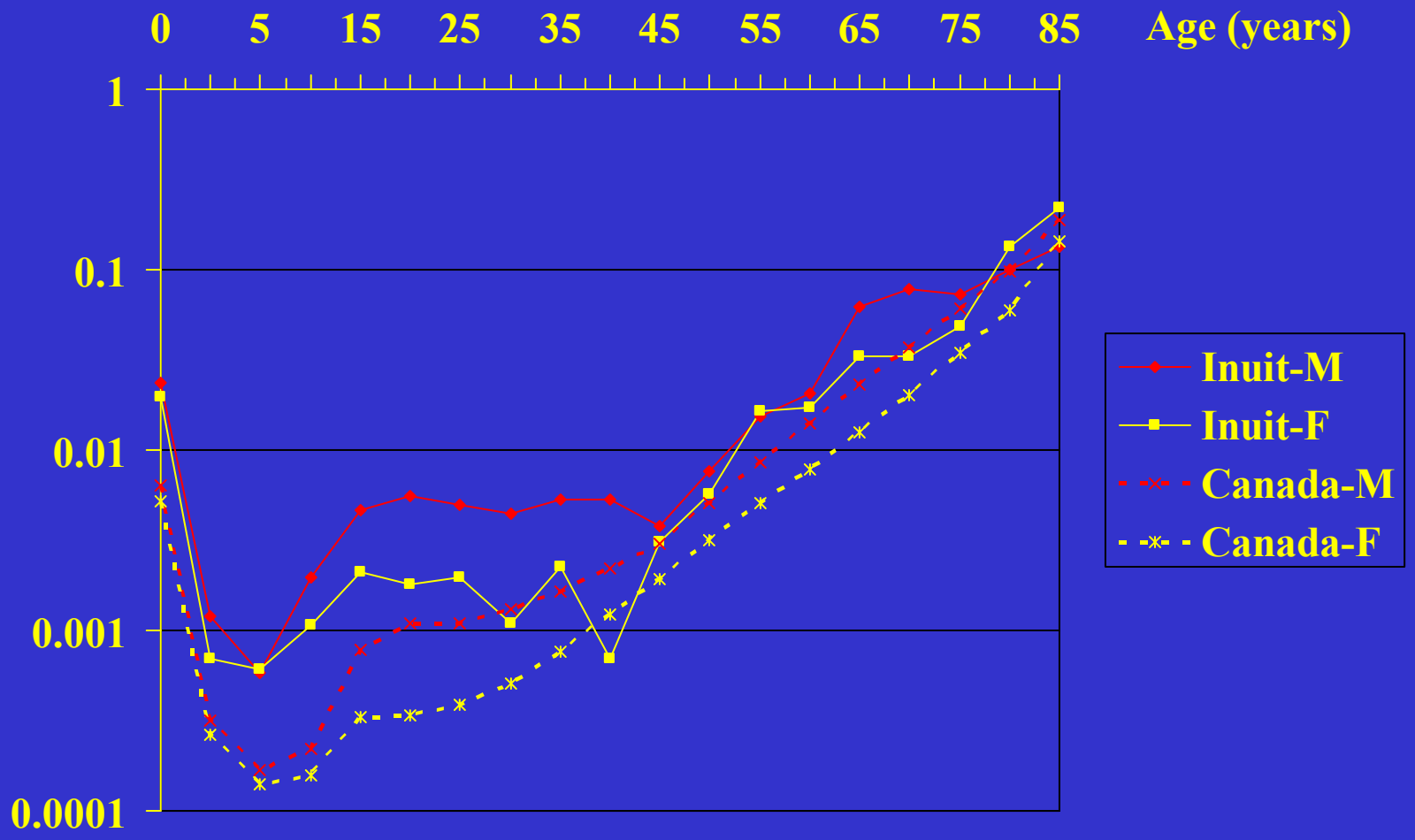
Advantages

- Very detailed breakdown by age, sex and arbitrarily-defined aggregates of small areas
- Same questions and useable amount of data for all ages including children and the oldest old
- Smaller confidence intervals compared to sample surveys

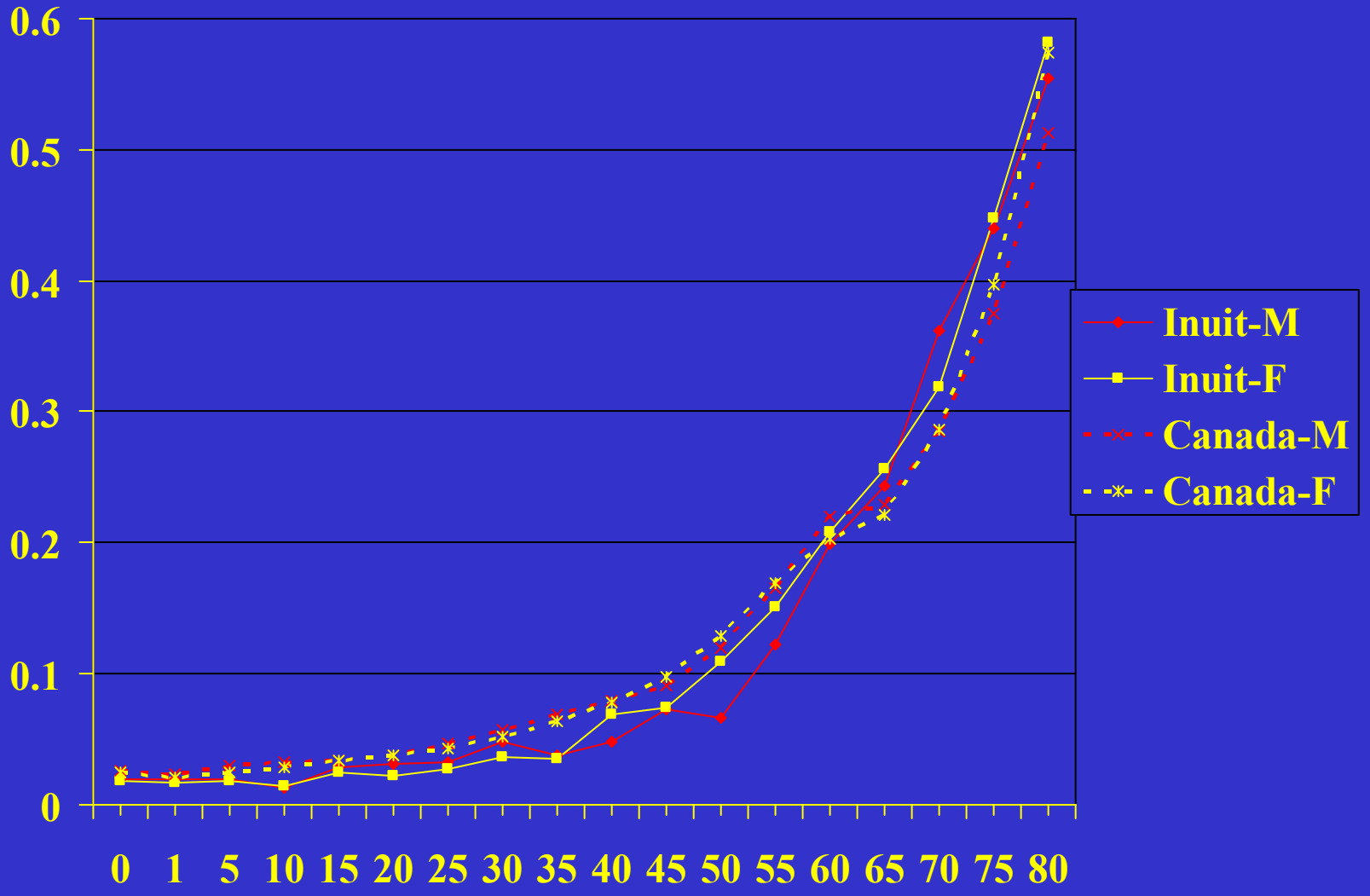
Disadvantages

- Only limited information on severity
- Institutionalized population must be added
- Comparable data from 1986, 1991 & 1996 censuses, but substantial changes to questions on 2001 census

Age-specific death rates, 1994-1998

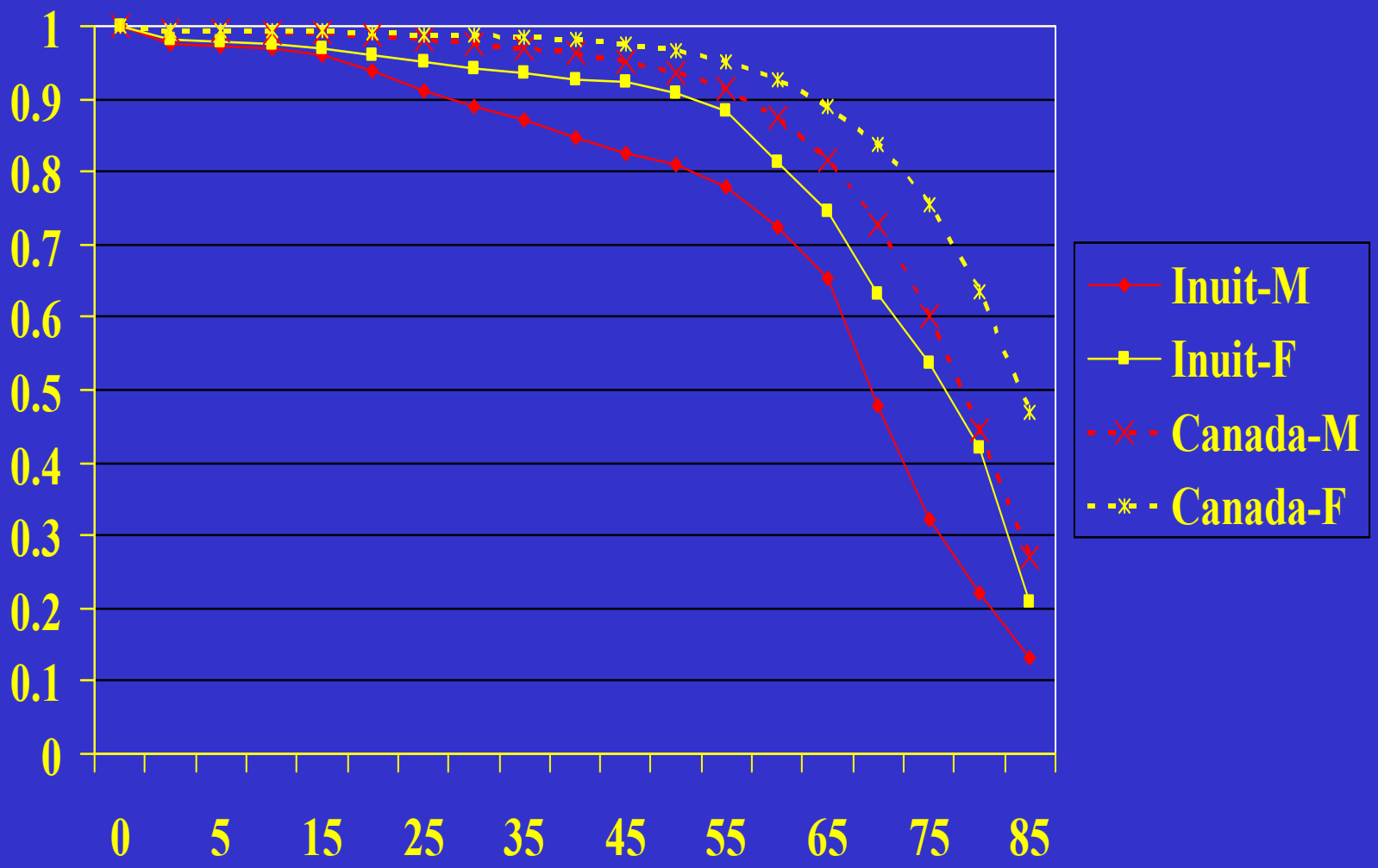


Disability rates, 1996

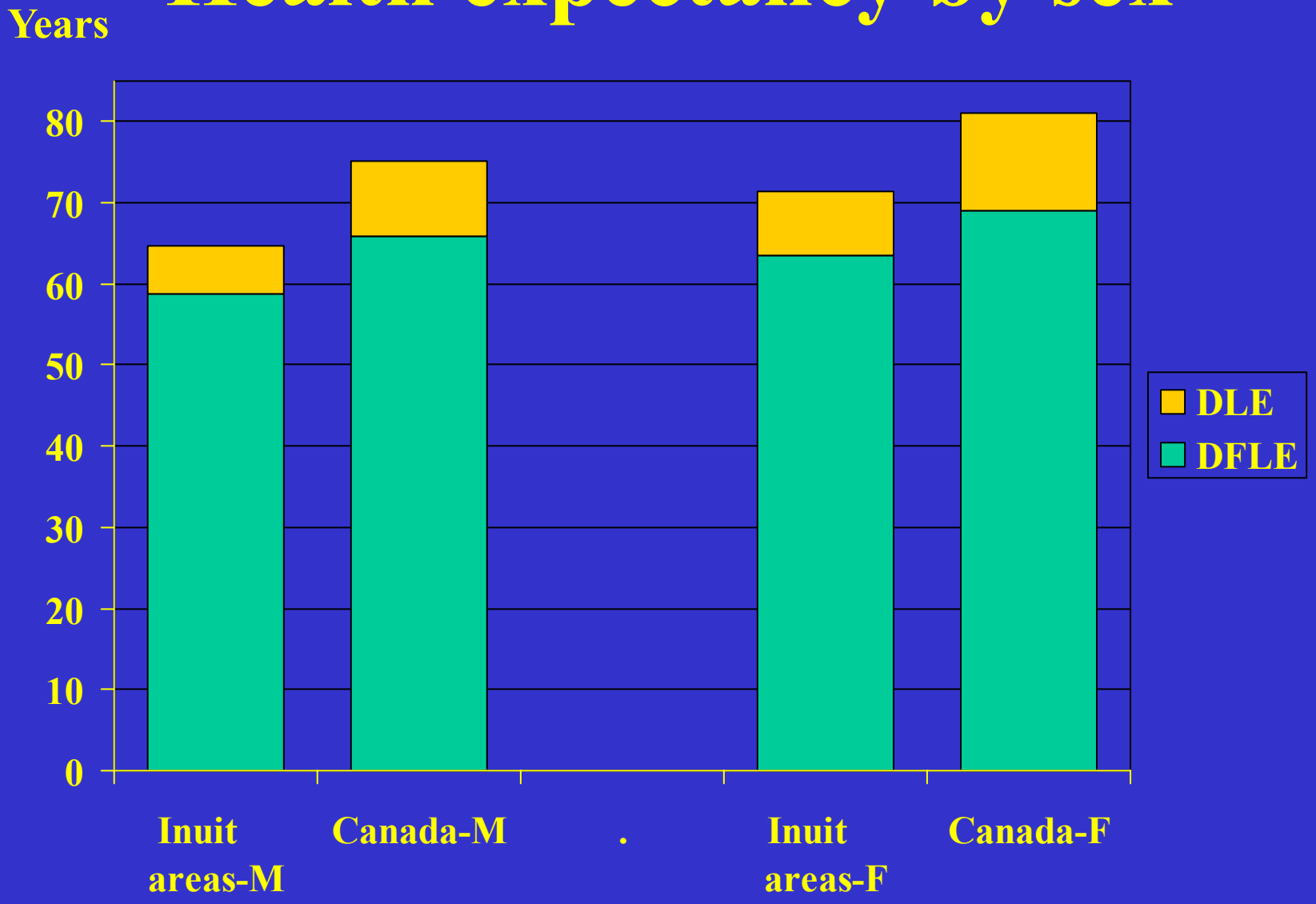


Institutionalization + Major disability (hh) + Other disability (hh)

Probability of survival, 1994-1998



Health expectancy by sex



Based on 1994-1998 deaths and 1996 census disability and institutionalization.

Potential changes in health expectancy (yrs) Inuit-inhabited areas of Canada, 1996

If the Inuit areas had the mortality and disability rates of all Canada

- **Males + 7.2 DFLE + 3.3 DLE = + 10.6 LE**
- **Females + 5.6 DFLE + 4.1 DLE = + 9.7 LE**

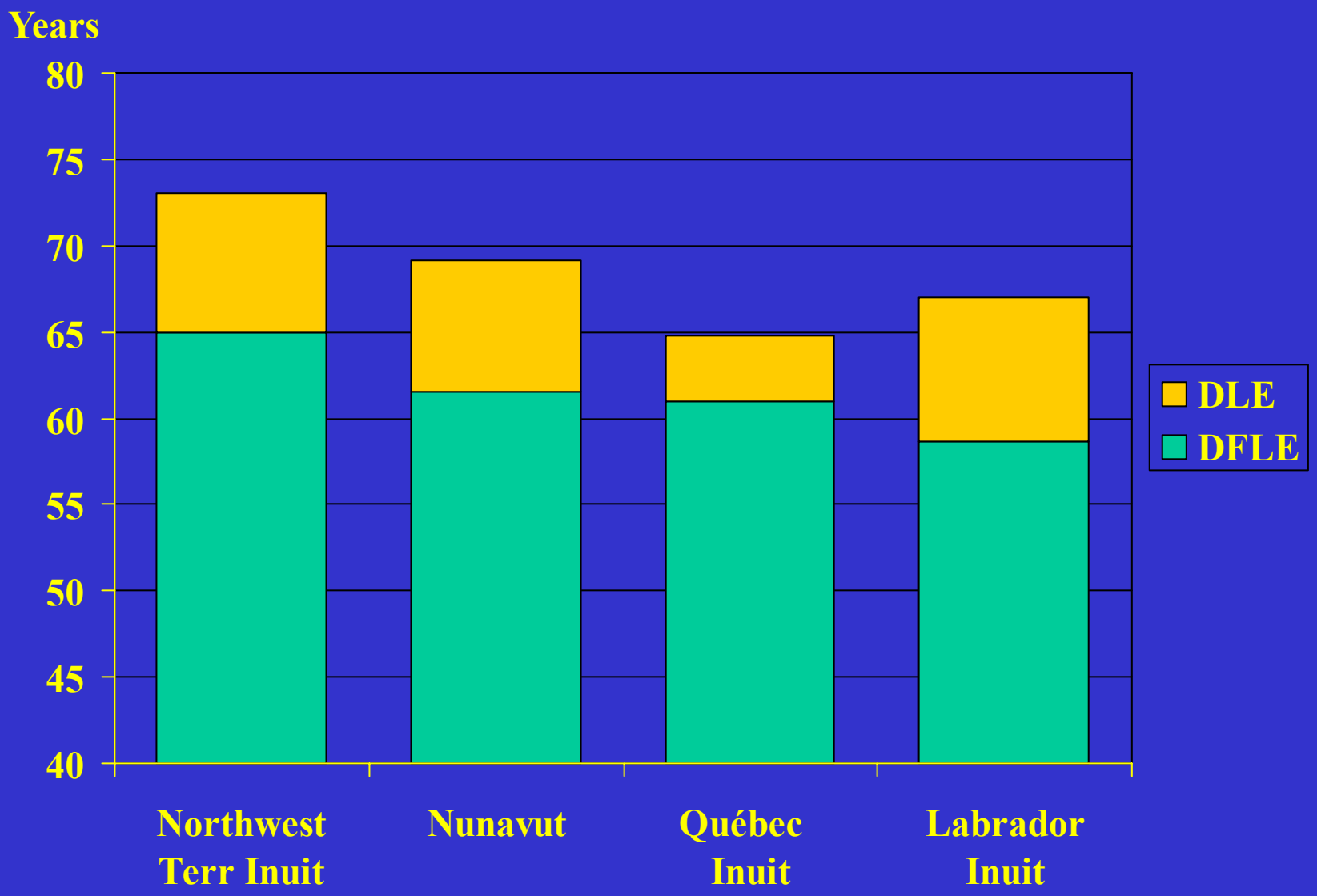
Results—males + females (yrs)

	Inuit areas	Canada	Difference
• LE	68.0	78.2	10.2
• DLE	6.9	10.7	3.8
– LE INST	0.5	1.5	1.0
– LE MAJ	5.9	8.3	2.4
– LE OTH	0.6	0.8	0.2
• DFLE	61.1	67.5	6.4
• DALE	65.6	74.3	8.7

Due to rounding, sub-categories may not sum to totals.

DALE=DFLE*1.0 + LEOTH*0.8 + LEMAJ*0.7 + LEINST*0.5.

Health expectancy by sub-region



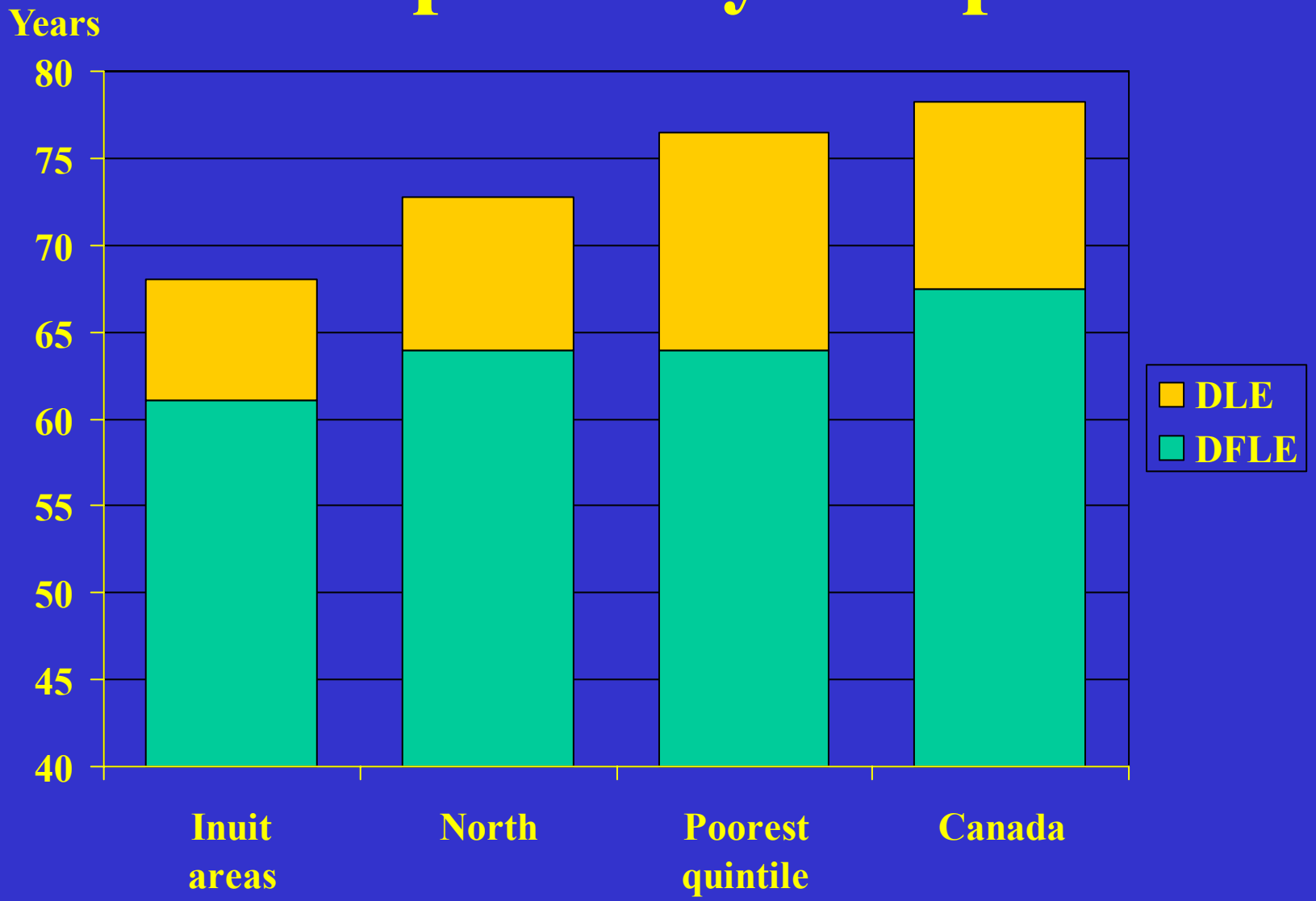
Based on 1994-1998 deaths and 1996 census disability and institutionalization.

Standard errors of life expectancy 1994-1998

	T	M	F
• Canada	0.01	0.02	0.02
• Inuit areas	0.47	0.64	0.67
– Northwest Territories	2.13	2.55	3.30
– Nunavut	0.70	0.95	0.95
– Québec	0.83	1.09	1.32
– Labrador	1.66	2.14	2.50

Standard errors in years; 95% confidence interval = LE ±1.96 x SE

Health expectancy comparisons



Based on 1994-1998 deaths and 1996 census disability and institutionalization; 1996-1997 deaths for quintiles.

Comparisons within Canada

	Years	LE
• Inuit areas Canada	1994-1998	68.0
• Registered Indian	1995	72.7
• Regist'd Indian on reserve	1990	65.8
• Canada total	1945-1947	67.0
• Canada total	1950-1952	68.7
• Canada total	1994-1998	78.2
• Rural Canada	1994-1998	77.2
• Northern Canada	1994-1998	72.9
• Poorest quintile--urban	1971	72.0
• Poorest quintile--all Can	1996-1997	76.5

International comparisons

	Years	LE
• Inuit areas Canada	1994-1998	68.0
• Greenland-born	1996-2000	64.8
• Chukotka, Siberia	1993	64.8
• Alaska Natives	1980	65.7
• Alaska Natives	1998	69.4
• Turkey	1996	68.2
• Canada	1996	78.5
• Japan	1996	80.8

Discussion and conclusions

- Geographic-based health surveillance using existing administrative data is feasible for the Inuit-inhabited areas of Canada
- Life expectancy results for Inuit areas appear reasonable compared to previous research—but need to estimate census undercount
- Disability rates and rate ratios vary widely across surveys—considerable caution is required!
- Mortality analyses should be extended to include causes of death and trends over time
- Health expectancies could be calculated for other years

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Potential changes in health expectancy, by neighbourhood income, Canada, 1996

- If the poorest quintile had the mortality and disability rates of the richest quintile
  - Males + 7.7 DFLE - 3.1 DLE = + 4.6 LE
  - Females + 6.0 DFLE - 4.2 DLE = + 1.8 LE