



PRESENTATION TO THE YUKON SELECT COMMITTEE ON HYDRAULIC FRACTURING

May 28th 2014

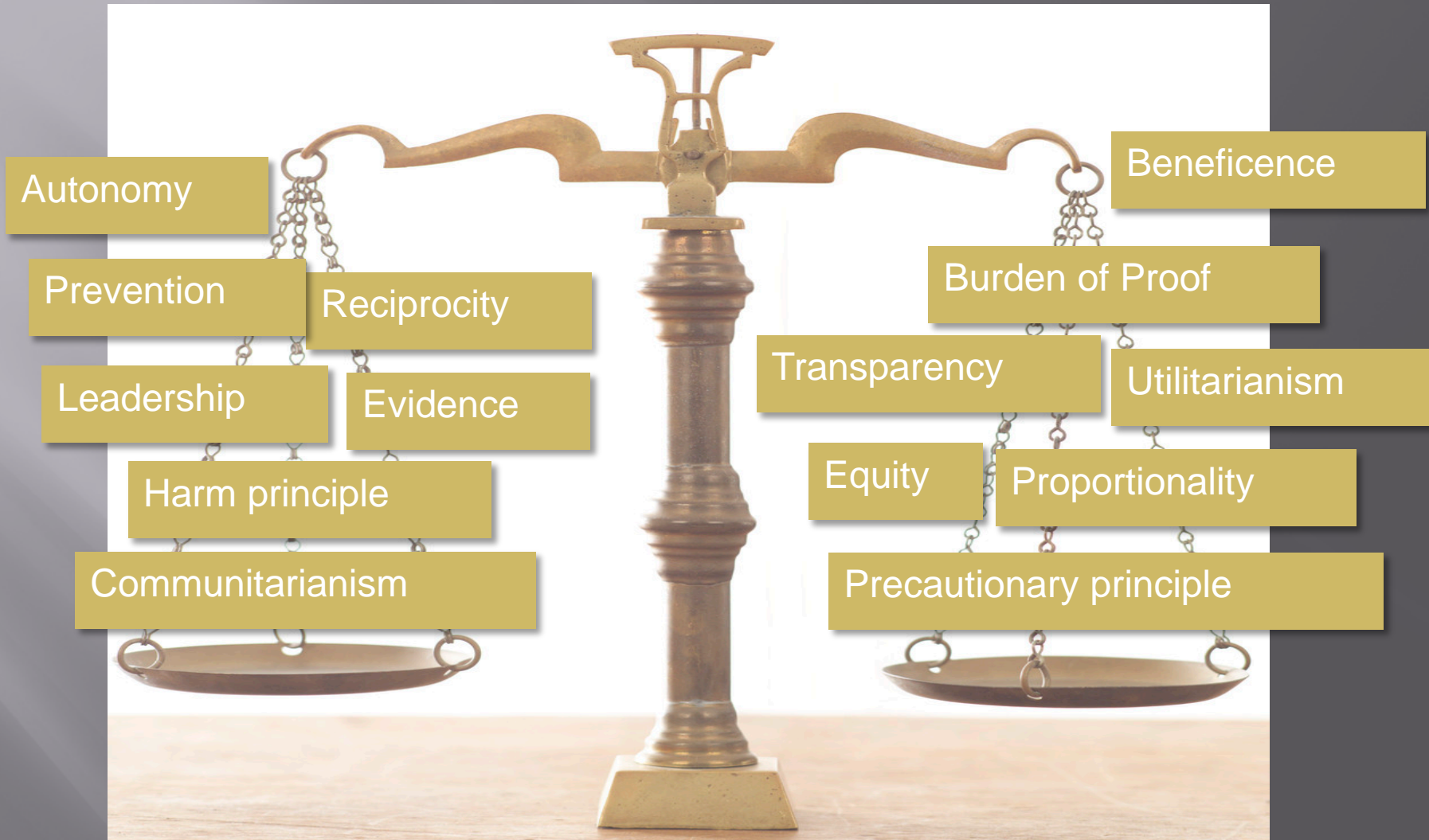
Dr Eilish Cleary
Chief Medical Officer of Health
New Brunswick

Key Questions

- ▣ *Given that any development will have risks and benefits :will the shale gas industry bring net benefit to public health, or net harm?*
- ▣ *Given that interventions WILL be needed to maximize benefits and minimize risks : If the industry goes ahead how can we influence the balance in favour of the health of people and of the environment?*

Public health values and objectives

It's a balancing act



What We Found out....

- 1 There are significant data gaps that limit the ability to thoroughly assess risks to public health
 - No standard approach to planning for social impacts of development
 - Lack of population health status studies to date
 - Lack of Health Impact Assessments to date
 - Chemical toxicity information on products used by the industry
 - Chemical toxicity information on wastes
 - Lack of exposure data
 - Difficulty in forecasting the extent, locations and rate of development
 - Little information on cumulative or full life-cycle effects



.....and

2 There are some common themes regarding types of potential hazards to public health

- Physical (accidents), environmental (air and water quality), socioeconomic (community cohesion, Boomtown Effect), mental health, others

3 The public discussion on shale gas has been dominated to date by chemical toxicity concerns

- many other factors of potential concern to public health need more attention as a result

4 Public Health officials and experts have often been late to the table or absent from discussions about shale gas regulation in most jurisdictions



.....and also

- 5 There have been economic benefits associated with expansion of the industry, but this may come with socioeconomic risks that can adversely impact individual and community wellbeing
- 6 There can be inequitable distribution of risk and reward to the local populace
- 7 People who ask questions can be seen as obstructionist and be marginalised
- 8 Media is not always objective!



Themes for Protection of Public Health

- ▣ **Protection of Health and Community Wellbeing Related to Changes in the Social Environment**
- ▣ **Protection of Health Related to Changes in Both the Social and Physical Environments**
- ▣ **Protection of Health Related to Changes in the Physical Environment**
- ▣ **Protection of Future Generations**
- ▣ **Implementation and Oversight**

What has fracking got to do with
Health?

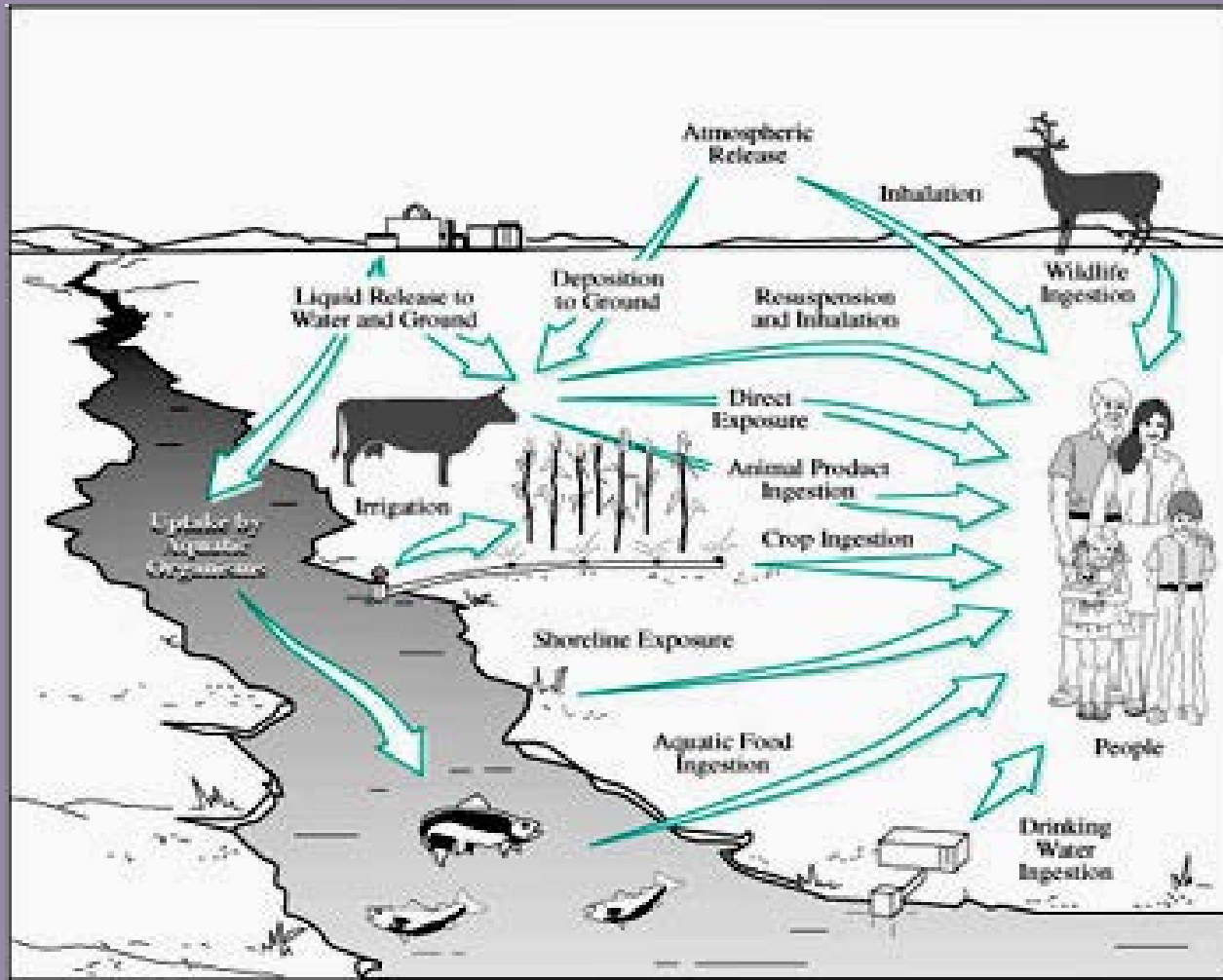


The Ottawa Charter for Health Promotion 21 November 1986

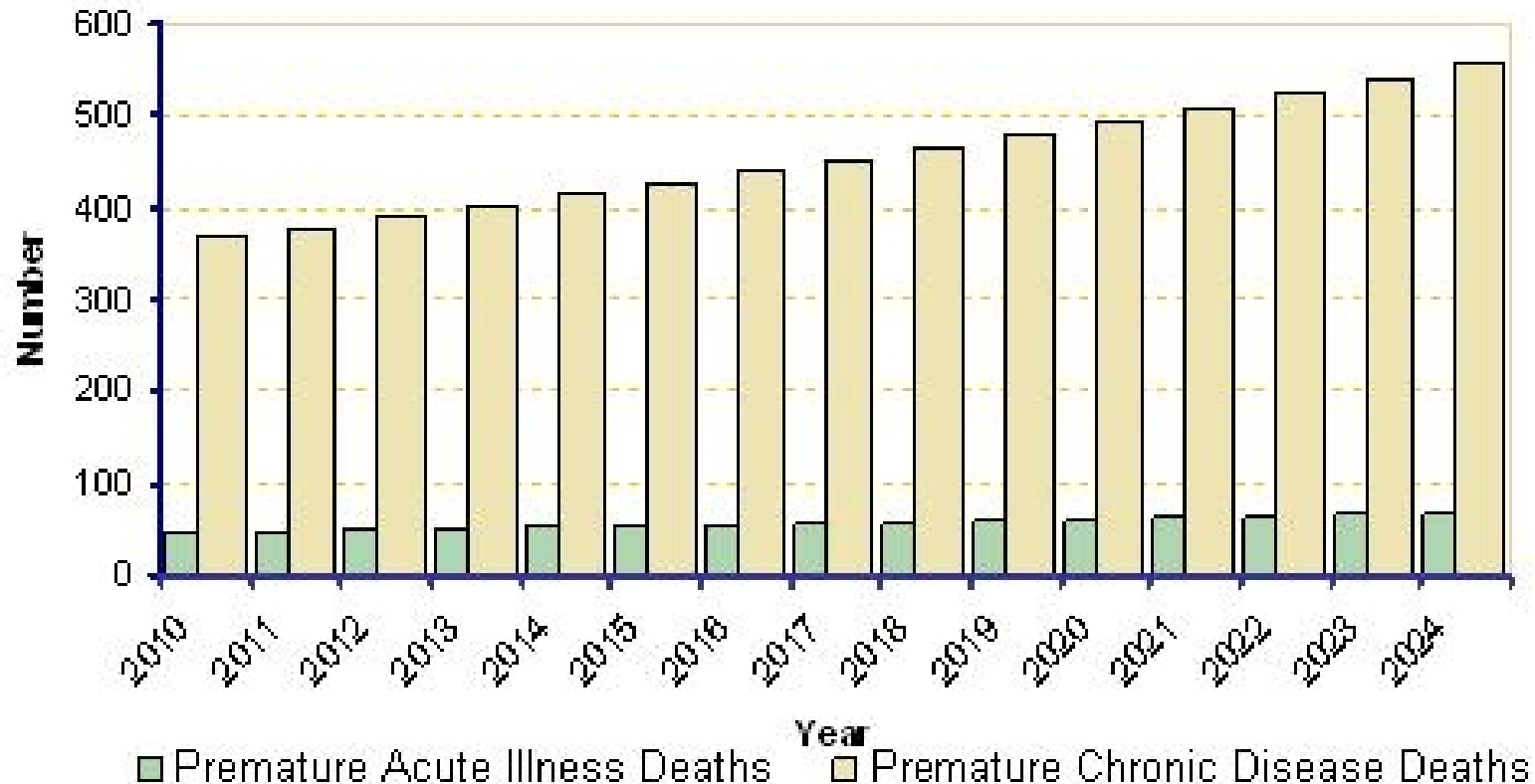
Prerequisites for Health

- ▣ peace,
- ▣ shelter,
- ▣ education,
- ▣ food,
- ▣ income,
- ▣ a stable eco-system,
- ▣ sustainable resources,
- ▣ social justice, and equity.

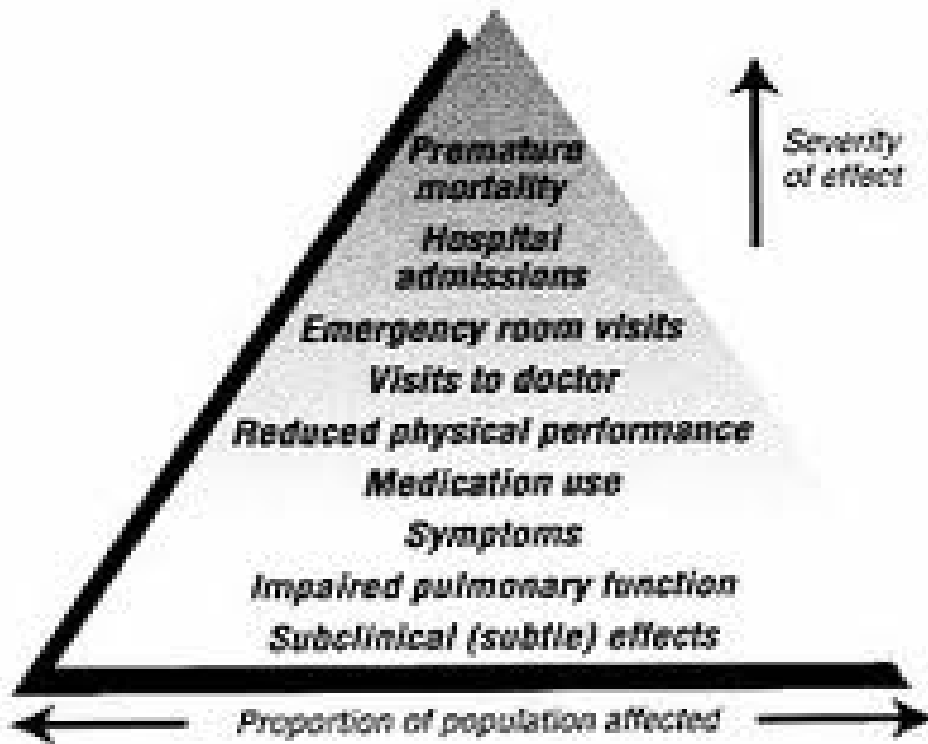
- Political, economic, social, cultural, environmental, behavioural and biological factors can all favour health or be harmful to it. Health promotion action aims at making these conditions favourable through advocacy for health
- Professional and social groups and health personnel have a major responsibility to mediate between differing interests in society for the pursuit of health.



Estimated Annual Number of Premature Deaths Attributable to Air Pollution (O₃, PM_{2.5}) Simcoe Muskoka, 2010-2024



Data Source: ICAP, Version 3, 2008, Canadian Medical Association



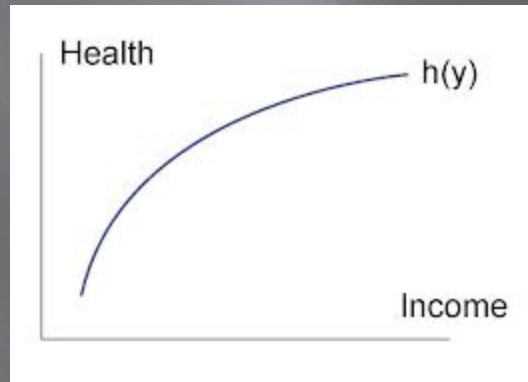
Air Pollution Health Effects Pyramid

If we want to measure health impacts we need to remember that serious health outcomes are only the tip of the iceberg

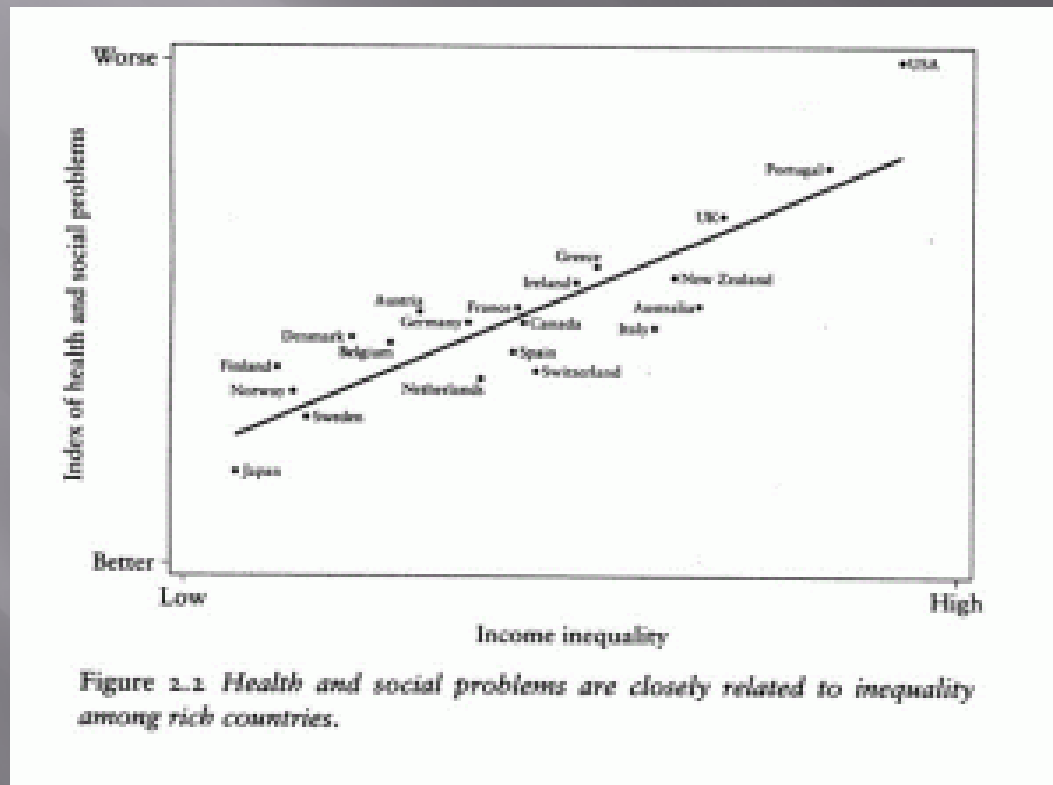
Does more money equal health???

Higher income and social status are linked to better healthbut its not as simple as you might think

.....effect levels off



The greater the gap between the richest and poorest people, the greater the differences in health.



The Spirit Level: Why More Equal Societies Almost Always Do Better.
London, Allen Lane, 5 March 2009.

The Health Gradient



Source: *Making Partners: Intersectoral Action for Health 1988* Proceedings and outcome of a WHO Joint Working Group on Intersectoral Action for Health, The Netherlands.

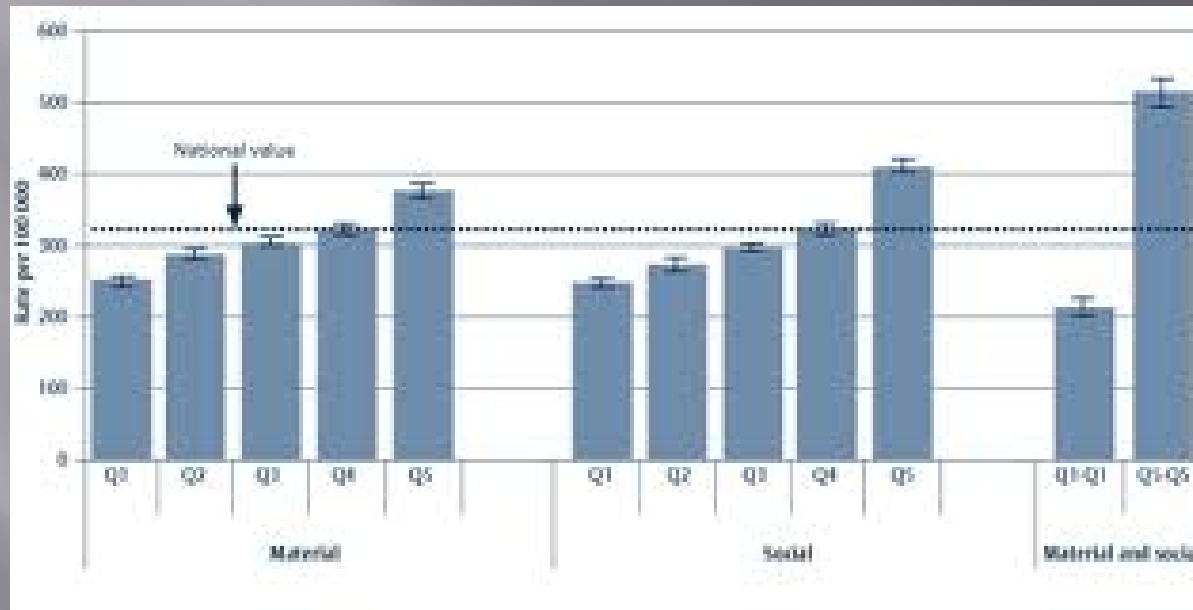
Need to make sure that people don't end up with a a steeper hill to climb.....

Conclusion.....

We must plan to have equitable distribution of financial rewards in order to have a positive impact on health

Wealth is not only about
money.....

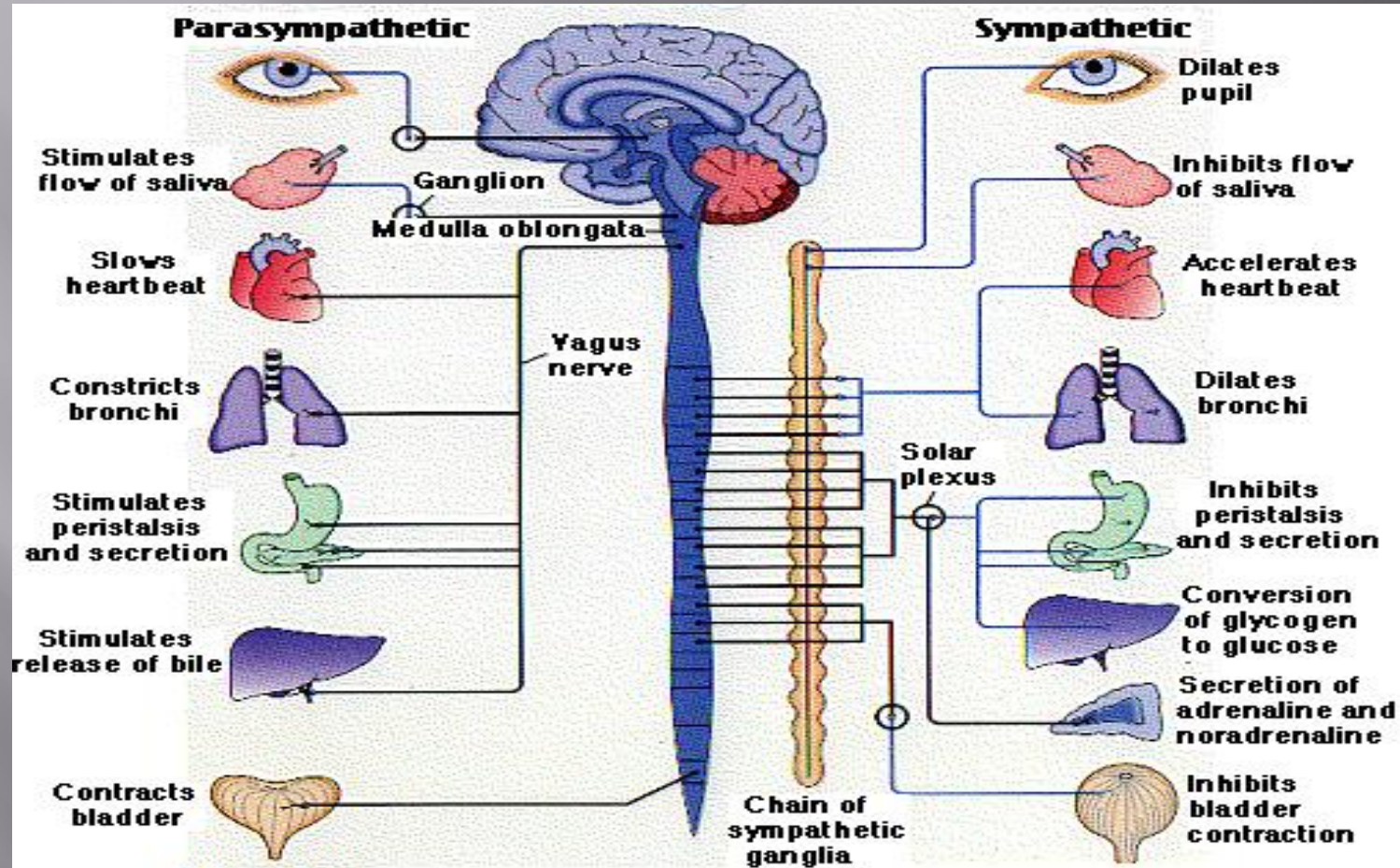
Premature mortality rate by quintile of material and social deprivation

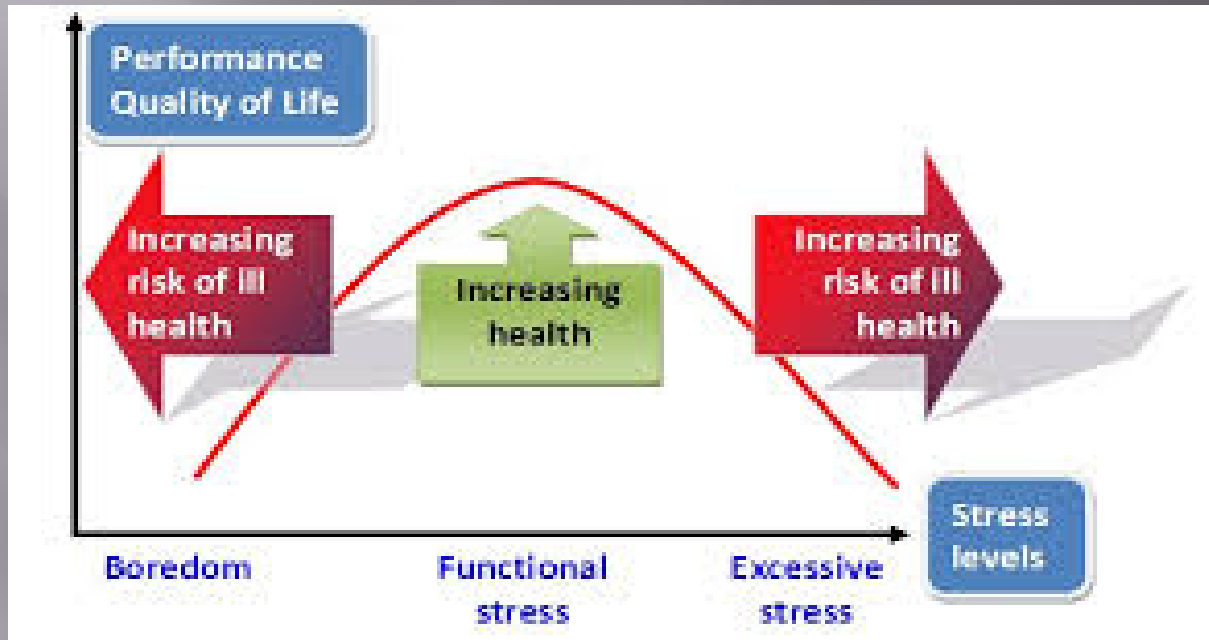


A deprivation index for health planning in Canada. Pampalon R, Hamel D, Gamache P, Raymond G.
Chronic Dis Can. 2009; 29(4):178-91

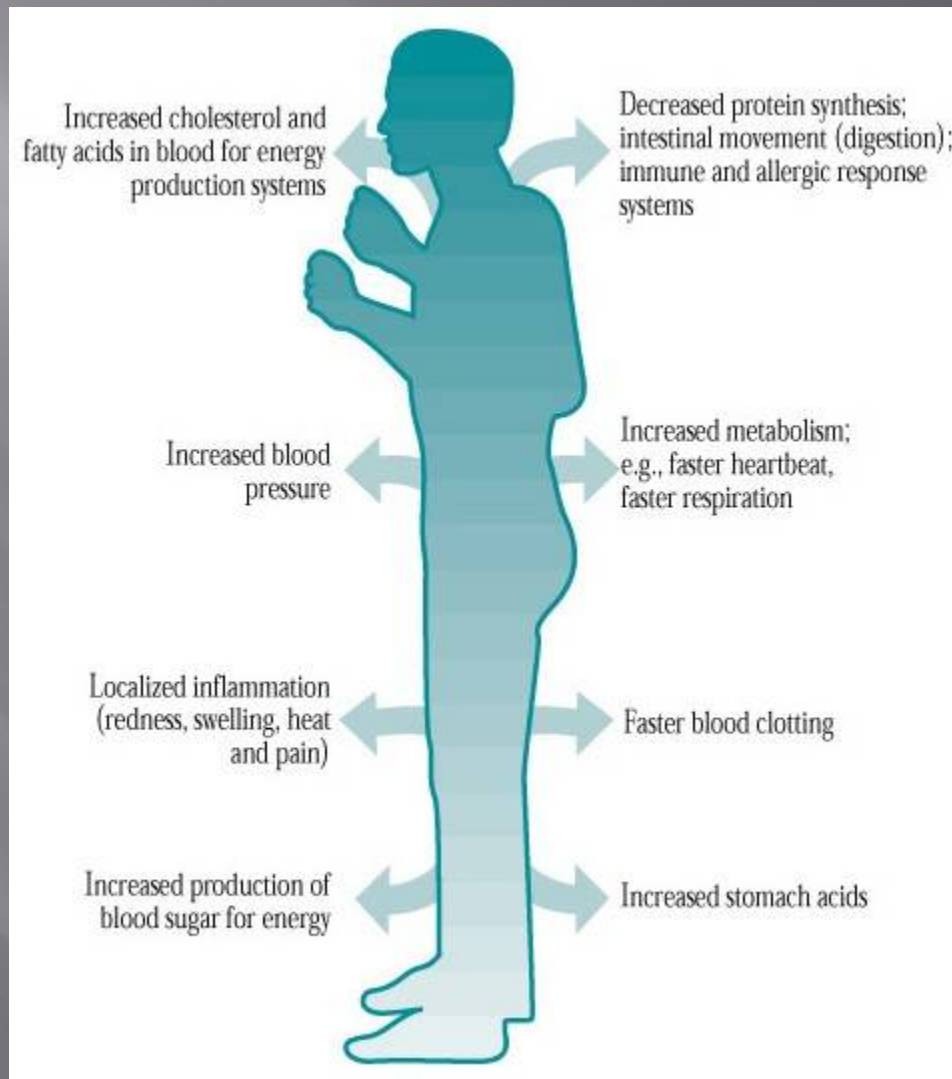
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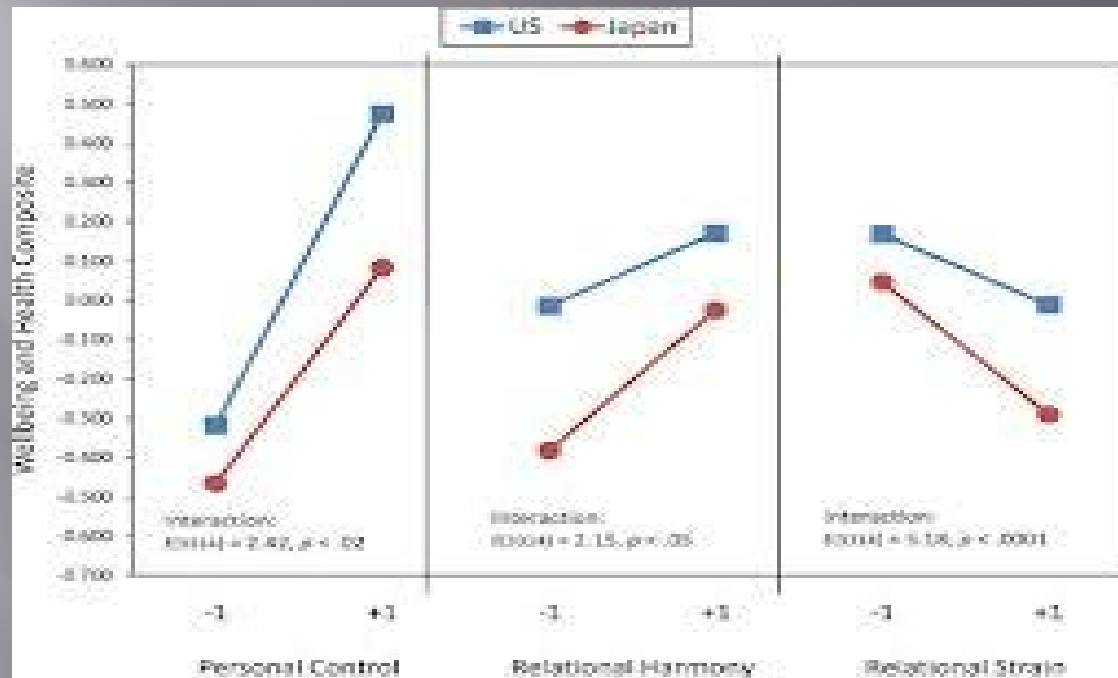
Health is not just a physical
thing.....





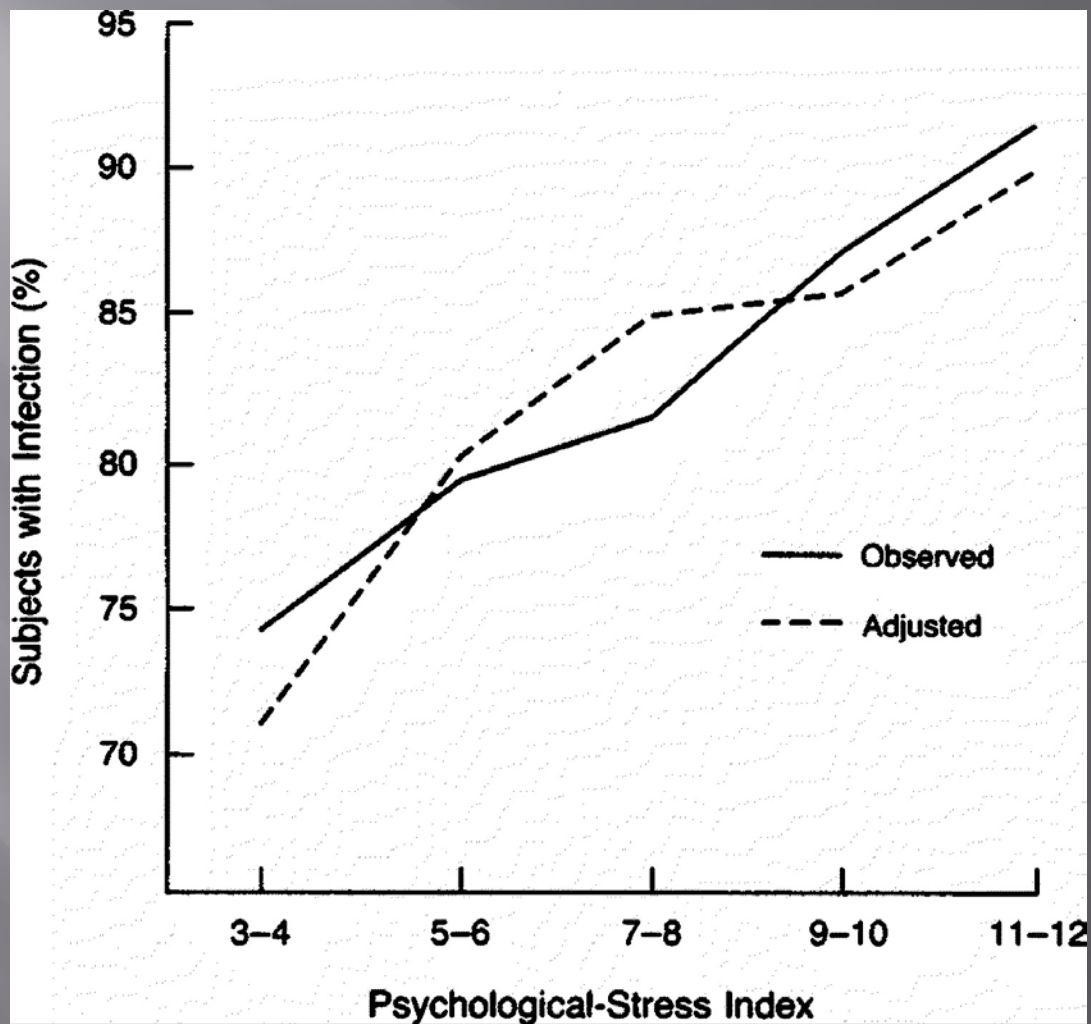
<http://www.deakin.edu.au/hr/ohs/work-stress/index.php>





Independence and interdependence predict health and wellbeing:
 divergent patterns in the United States and Japan
[Shinobu Kitayama](#)^{1*}, [Mayumi Karasawa](#)², [Katherine B. Curhan](#)³, [Carol D. Ryff](#)⁴ and [Hazel Rose Markus](#)³

Observed Association between the Psychological-Stress Index and the Rate of Infection and the Association Adjusted for Standard Control Variables.

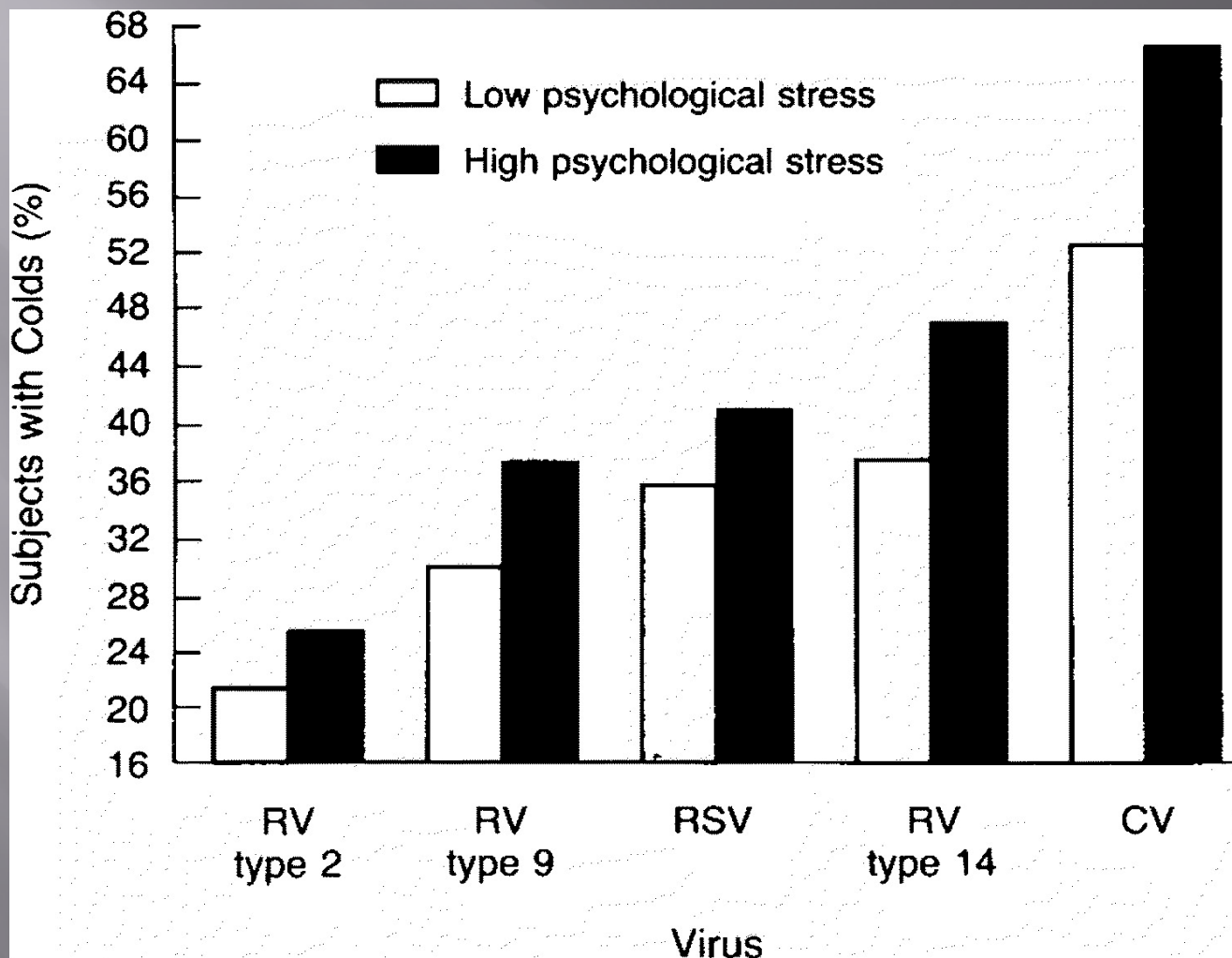


Cohen S et al. N Engl J Med 1991;325:606-612.



The NEW ENGLAND
JOURNAL of MEDICINE

Subjects with Low Degrees of Psychological Stress (Index Values below the Median) and High Degrees of Stress (Values above the Median) Who Had Colds, According to Challenge-Virus Group.



Cohen S et al. N Engl J Med 1991;325:606-612.



“Participants attributed 59 unique health impacts and 13 stressors to Marcellus Shale development. Stress was the most frequently-reported symptom”

[Assessment and longitudinal analysis of health impacts and stressors perceived to result from unconventional shale gas development in the Marcellus Shale region.](#)

Int J Occup Environ Health 2013 Apr-Jun;19(2):104-12

[Kyle J Ferrar](#) et al

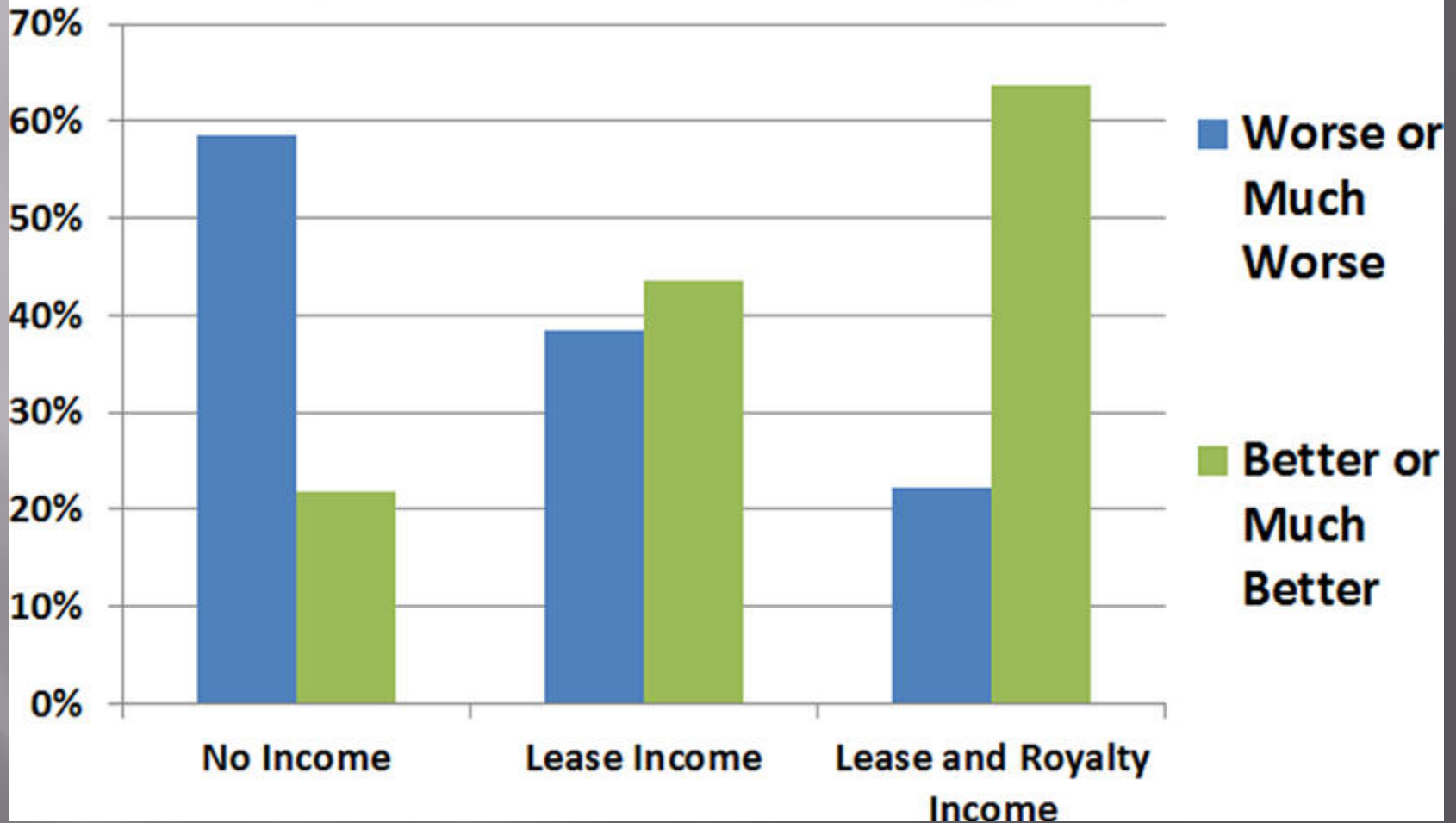
People more likely to oppose fracking

- **women**
- **Those holding egalitarian worldviews**
- **those who read newspapers more than once a week**
- **those more familiar with hydraulic fracturing**
- **those who associate the process with environmental impacts**

People more likely to support fracking

- **tend to be older,**
- **hold a bachelor's degree or higher,**
- **politically conservative,**
- **watch TV news more than once a week,**
- **associate the process with positive economic or energy supply outcomes**

Perception of Local Shale Energy Impact



‘There are Gaps in knowledge _ which communities gain and which don’t, which most susceptible to stress and adverse outcomes and which ones are not’

[Environ Sci Technol](#). 2014 Mar 13. [
Review of Risks to Communities from Shale Energy Development.
[Jacquet JB](#)

Conclusion.....

Seeing that Health is not just about physical things and Wealth is not just about money

HOW you go about things is as important as what you do

We still need to learn more about the HOW

In the meantime

- need be trustworthy
- talk to people
- not only hear what is being said but actually listen
- Be open to suggestions for improvement
- Accept we don't know it all

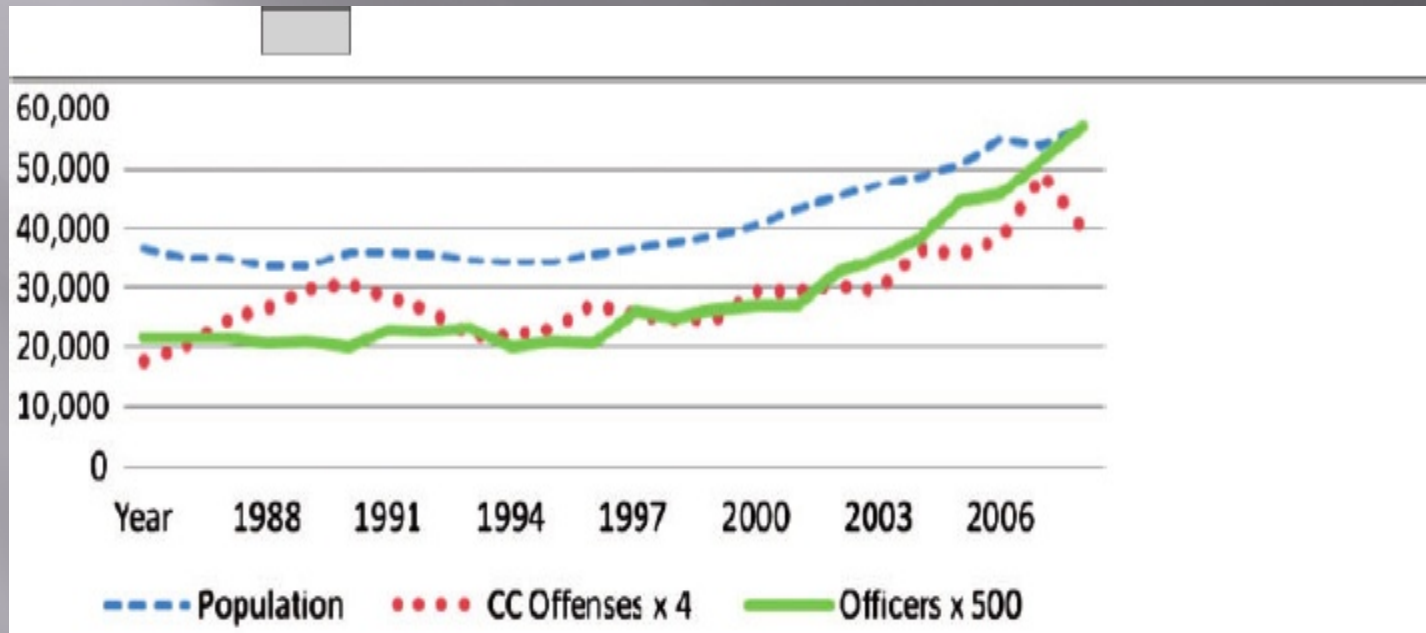
Select new Brunswick morbidity and mortality statistics*

Category	number	Year
Number of fatal MVAs	74	2012
Number of new cases of cancer (estimate)	4,800	2013
Number of new cases of diabetes	5,118	2007-08
Number of new cases of heart disease- IHD (estimate)	2,670	2009-10
Number of new cases of heart disease- HF (estimate)	1,740	2009-10
Number of smokers	152,124	2012
Number exposed to second hand smoke at home	28,429	2012
Prevalence of depression/mood disorders	8.0%	2012
Number of suicides	113	2012

*Various NB data sources

Planning is important so we don't make current problems worse or cause new ones





Paulicien (2011) 5 (4): 328-342.doi: Policing: Responding to the Dark Side of Resource Development Rick Ruddell

**Health impact assessments can
help.....!**

HIA focus on transport

- **Accidents between motor vehicles, bicycles and pedestrians (particularly children and young people).**
- **Pollution from burning fossil fuels such as particulates and ozone.**
- **Noise from transportation.**
- **Psychosocial effects such as severance of communities by large roads and the restriction of children's movement.**
- **Climate change due to CO2 emission**
- **Loss of land**
- **Improved physical activity from cycling or walking**
- **Increased access to employment, shops and support services**
- **Recreational uses of road spaces**
- **Contributes to economic development**
- **Vector borne diseases**

HIA focus on waste

- the transmission of agents of infectious disease from human and animal excreta (sanitation, hygiene and water-related);
- exposure to toxic chemicals in human and animal excreta; and in industrial wastes discharged into the environment;
- environmental degradation, direct and indirect impacts on health;
- exposure to radioactive wastes;
- exposure to health-care wastes;
- exposure to solid wastes and involvement in informal waste recycling; and
- breeding of disease vectors



'Stall' shale gas industry, top public health officer says

CBC News May 06, 2014

<http://www.cbc.ca/informationmorningfredericton/2014/05/06/fracking-1/>