

# Integrated Monitoring Requires Integrated Conceptual Models and Questions: Examples to consider for developing the Integrated Monitoring Networks 2017 Work Plan

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# End points for management under the new Bay Agreement and Cross GIT collaboration

- “Improve conditions for fish, wildlife, and humans”
  - We need some definitions, some frames of reference

# End points for management under the new Bay Agreement and Cross GIT collaboration

- “Improve conditions for fish, wildlife, and humans”
  - Functionally speaking, what does this mean to us as analysts and managers?

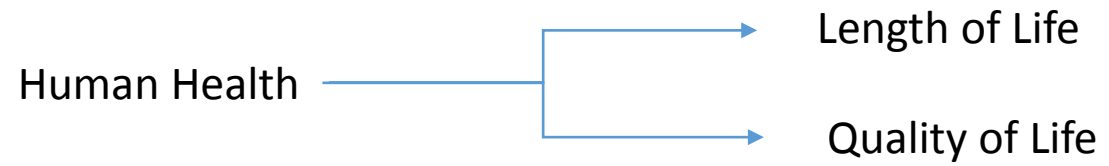
# End points for management under the new Bay Agreement and Cross GIT collaboration

- “Improve conditions for fish, wildlife, and humans”
  - We need some definitions
  - We need some frames of reference

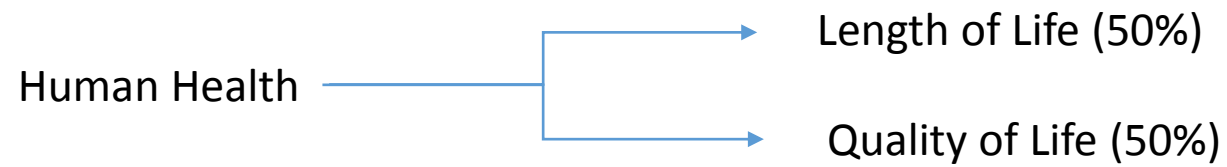
If we are going to manage conditions to improve fish, wildlife and humans, perhaps we need to know what each needs, what constitutes a healthy condition.

Target	Human Well Being	Environmental Quality	Ecological Integrity
Question	What constitutes the human condition	What is the status of our environmental setting	What is the state of species relative to the environmental setting

# Defining Human Health:

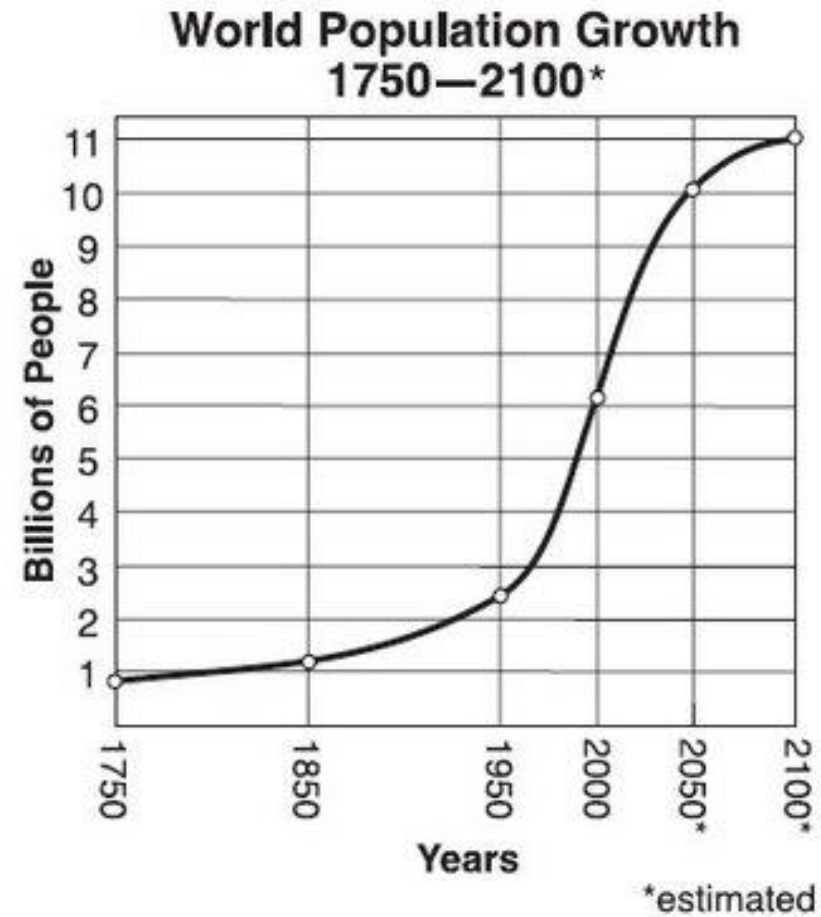


# Defining Human Health:



University of Wisconsin Population Health Institute Model of Human Health (2014)

Let's think about it...

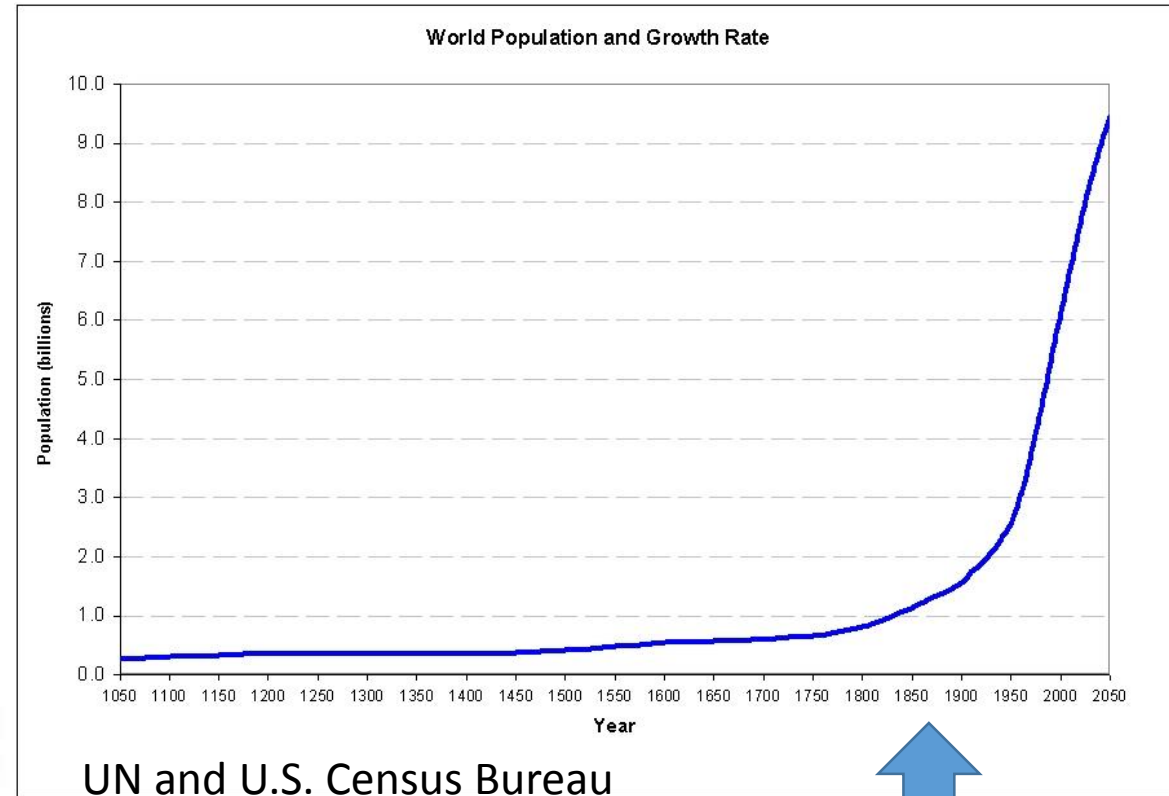
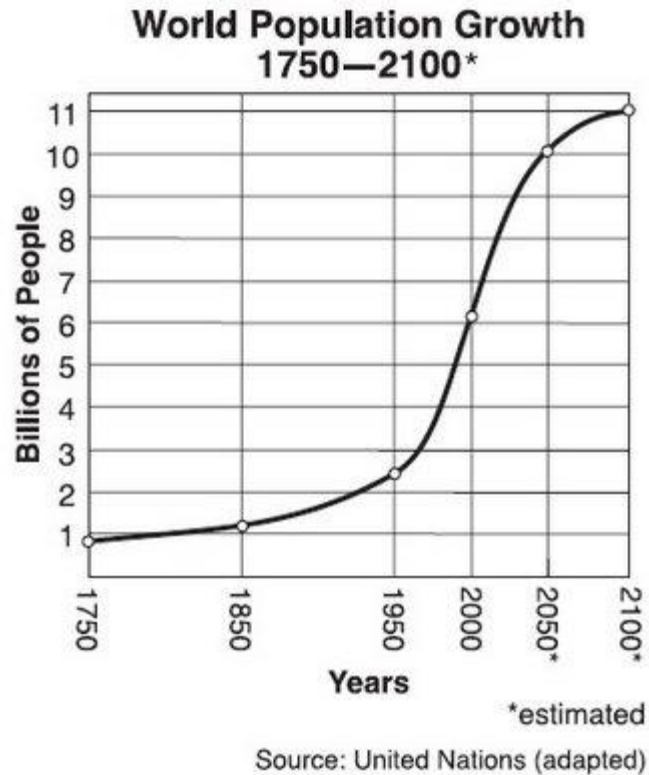


Source: United Nations (adapted)

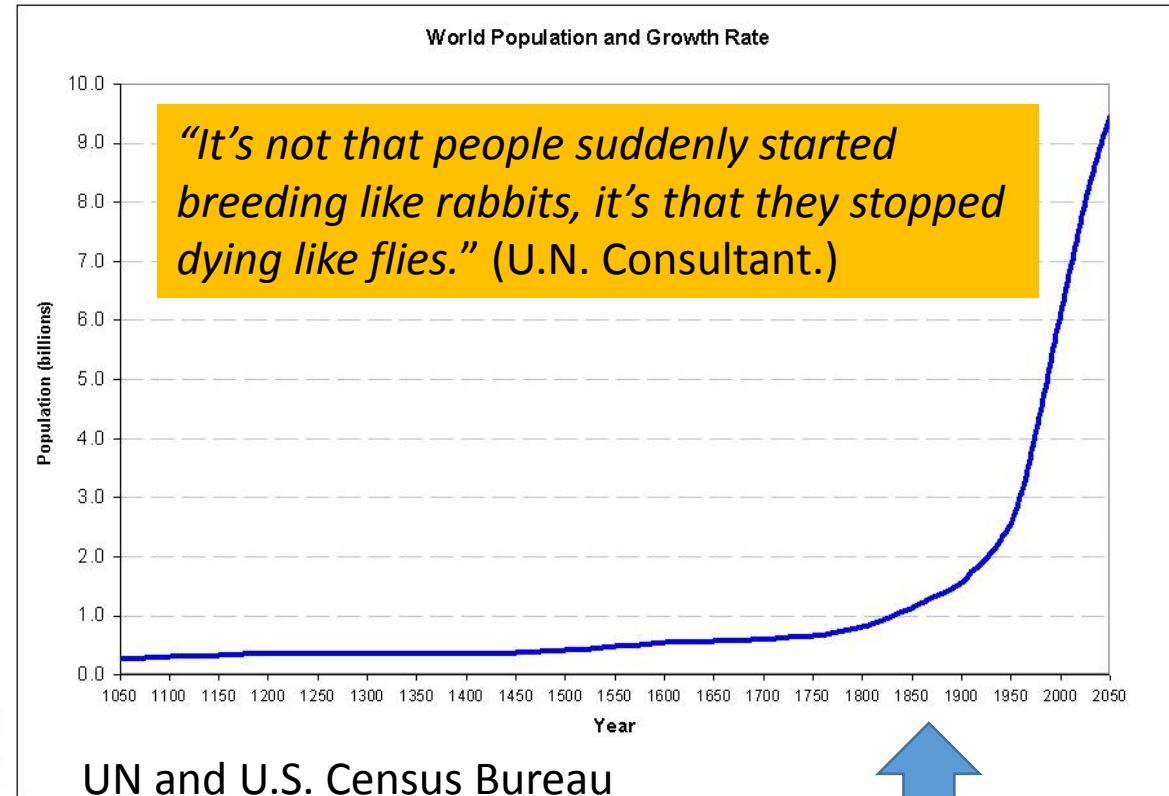
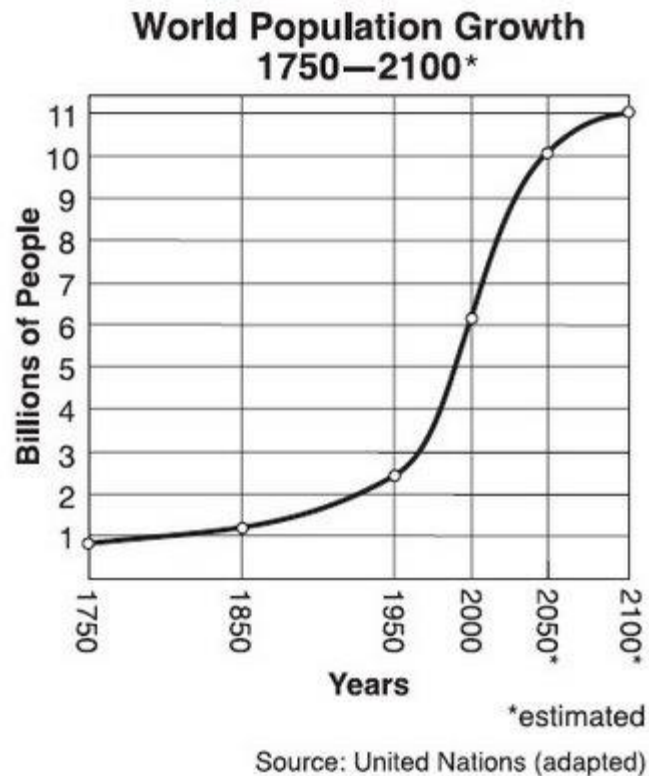
Change over time



# Around 1850, what happened for humans and human health?



# Assess and Communicate Status and Change Effectively

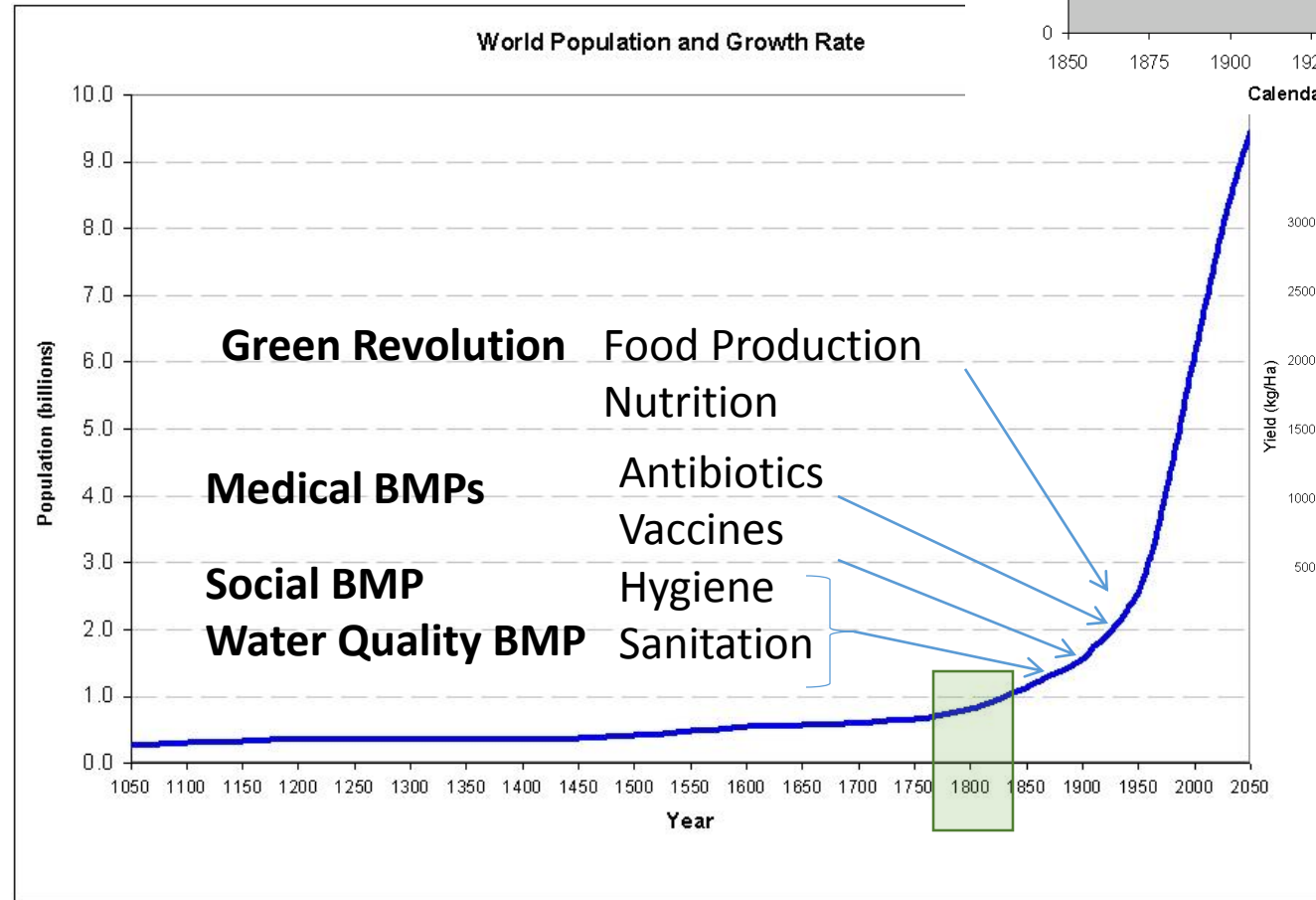


*What happened???*

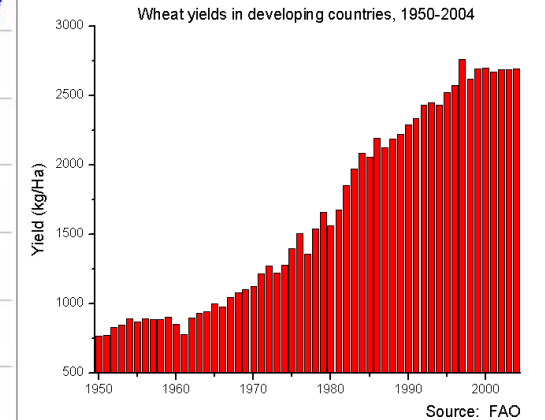
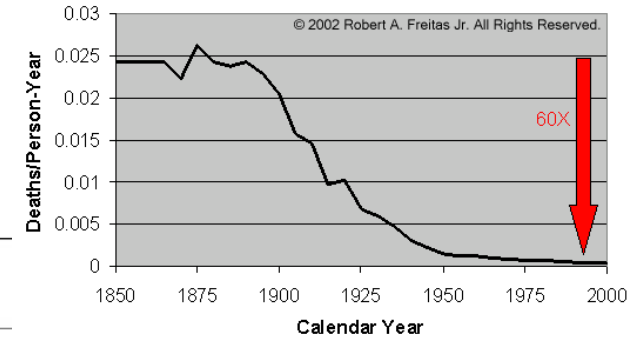
Threshold Response!

# We humans are historians!

## We track everything!



**Death Rate (DR), U.S. Males, Age 1-4**



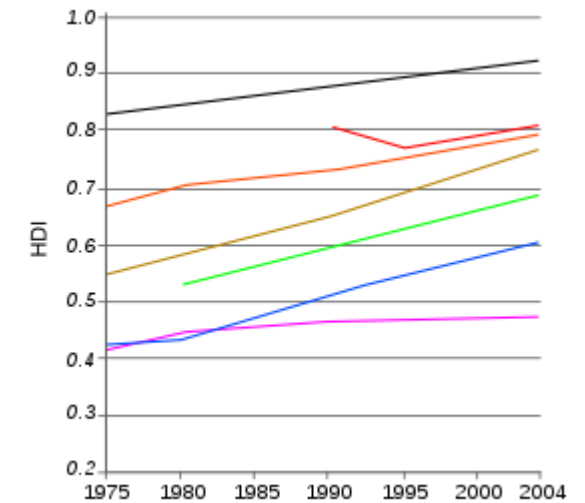
**Industrial Revolution** – major turning point in human history raising living standards for the masses, redistribution of wealth.

# Defining Human Health:



Human Health  Length of Life

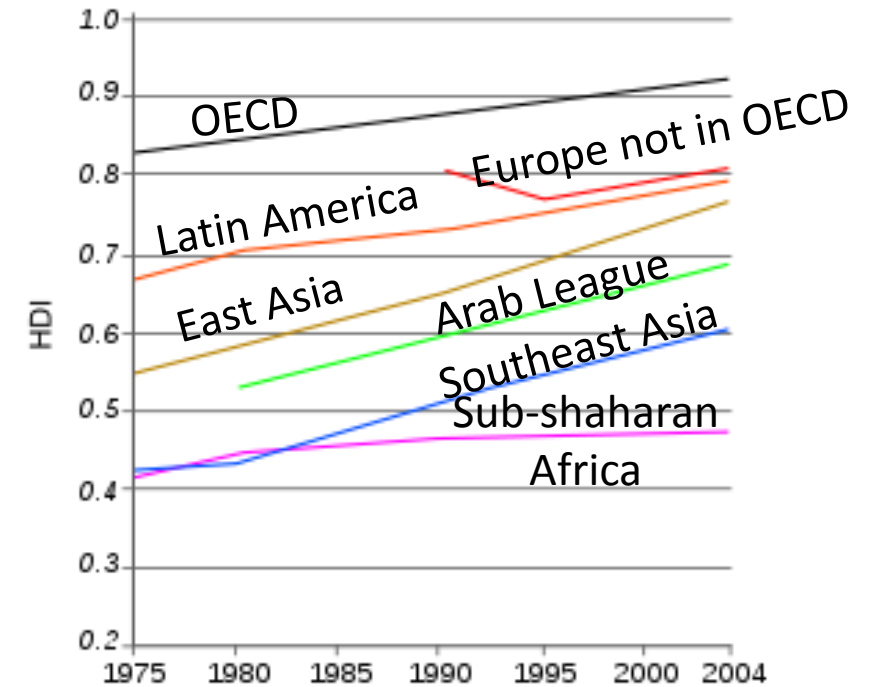
Year	World Average Life Expectancy
1900	31
1950	48
2010	67



# Defining Human Health:

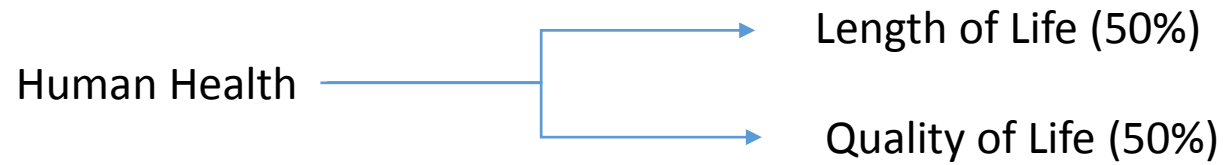


Quality of Life is a combination of standard of living, education, literacy, Well being, longevity. It is tracked by such measures as the Human Development Index (HDI). Decadal trends in the HDI are toward globally and regionally improving conditions.



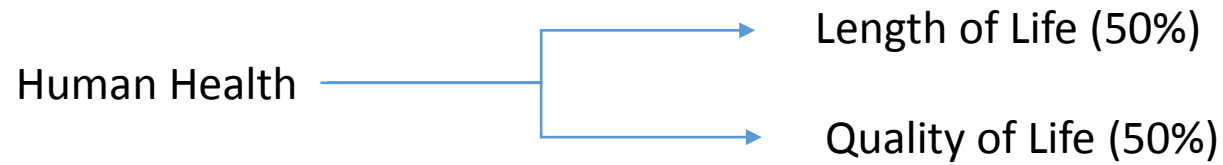
Source graphic:  
Modified from Wikipedia

# Defining Human Health, we come back to the basic model then:



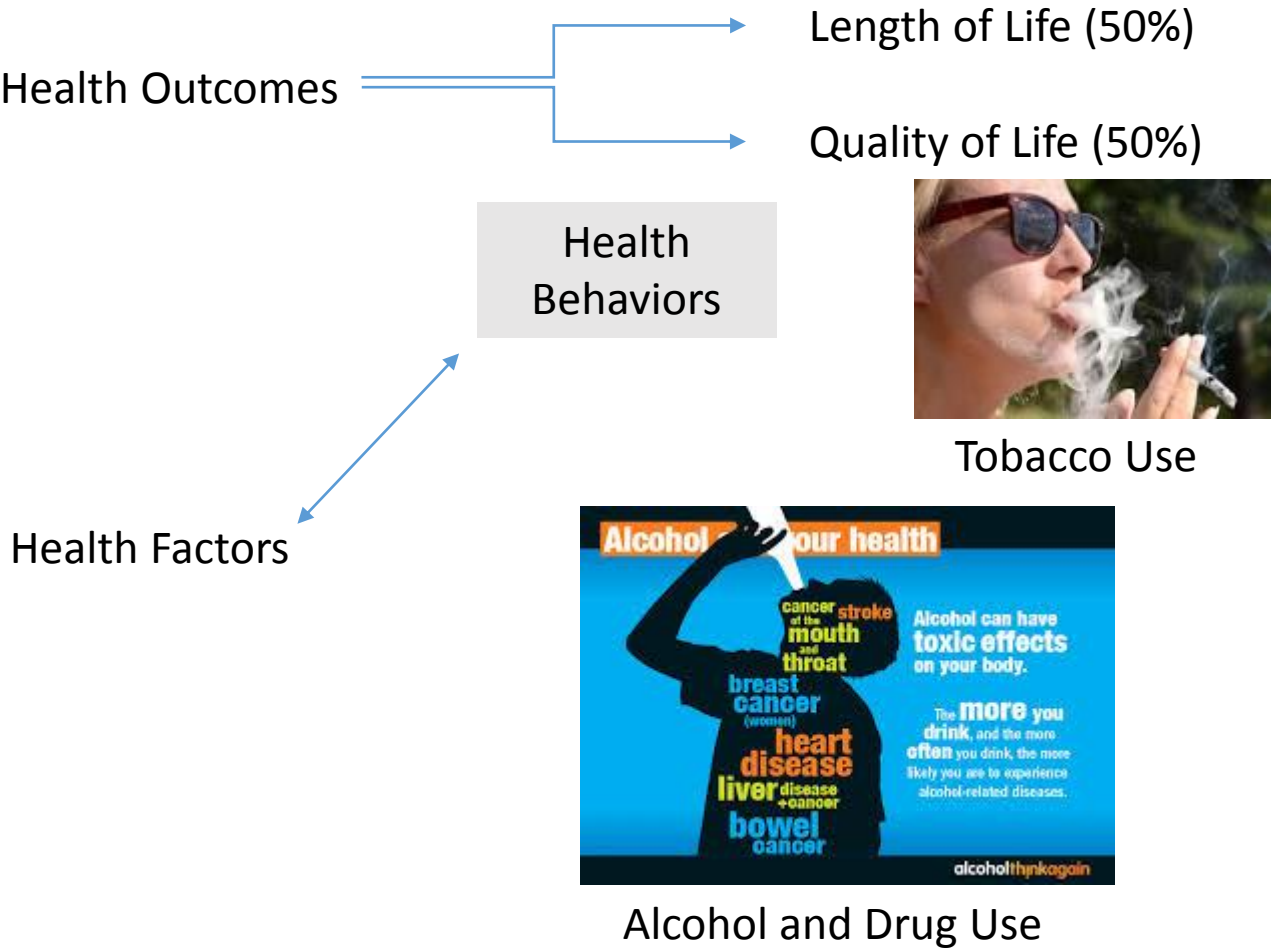
University of Wisconsin Population Health Institute Model of Human Health (2014)

# Defining Human Health, how can we work with this?



Health Factors integrate to give us the human condition

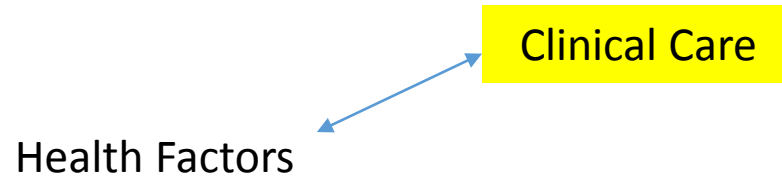
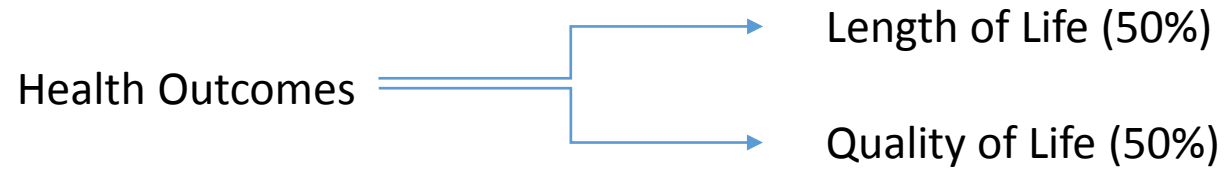
# Human Health Factors



Diet and Fitness

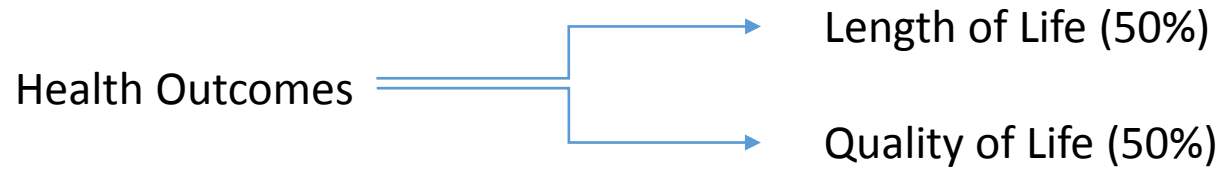


# Human Health Factors



Access to care  
Quality of care

# Human Health Factors



Health Factors

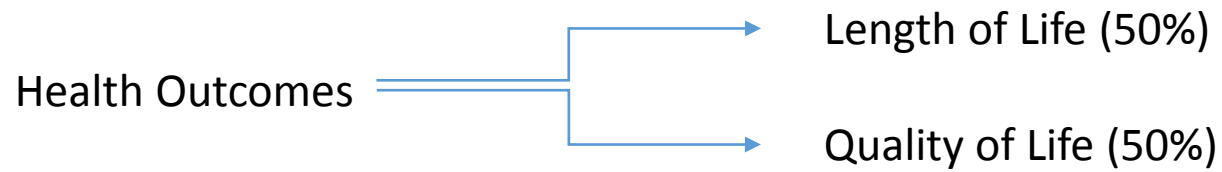


Social and  
Economic  
Factors



Education  
Employment  
Income  
Family and Social Support  
Community Safety

# Human Health Factors



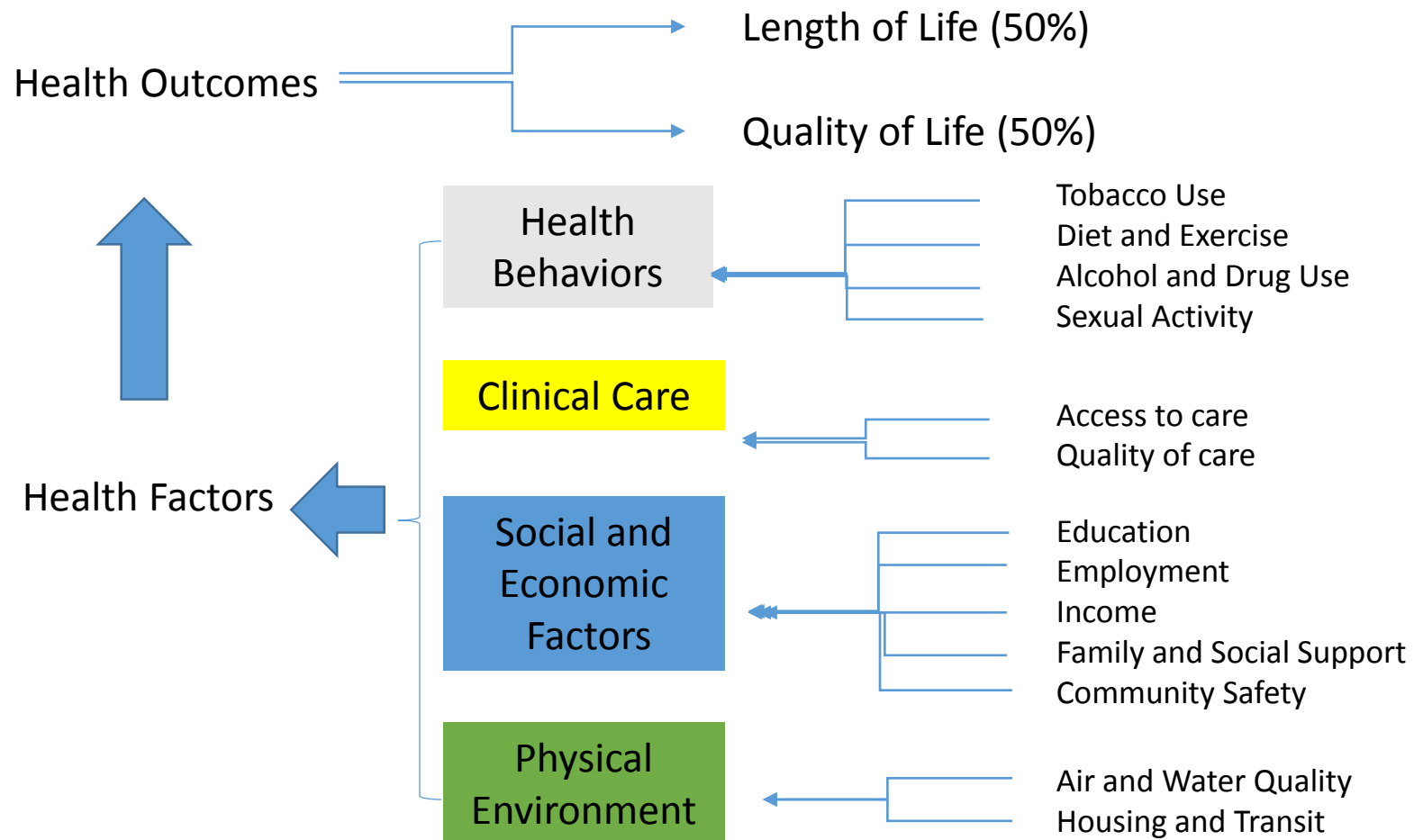
Health Factors

Physical  
Environment

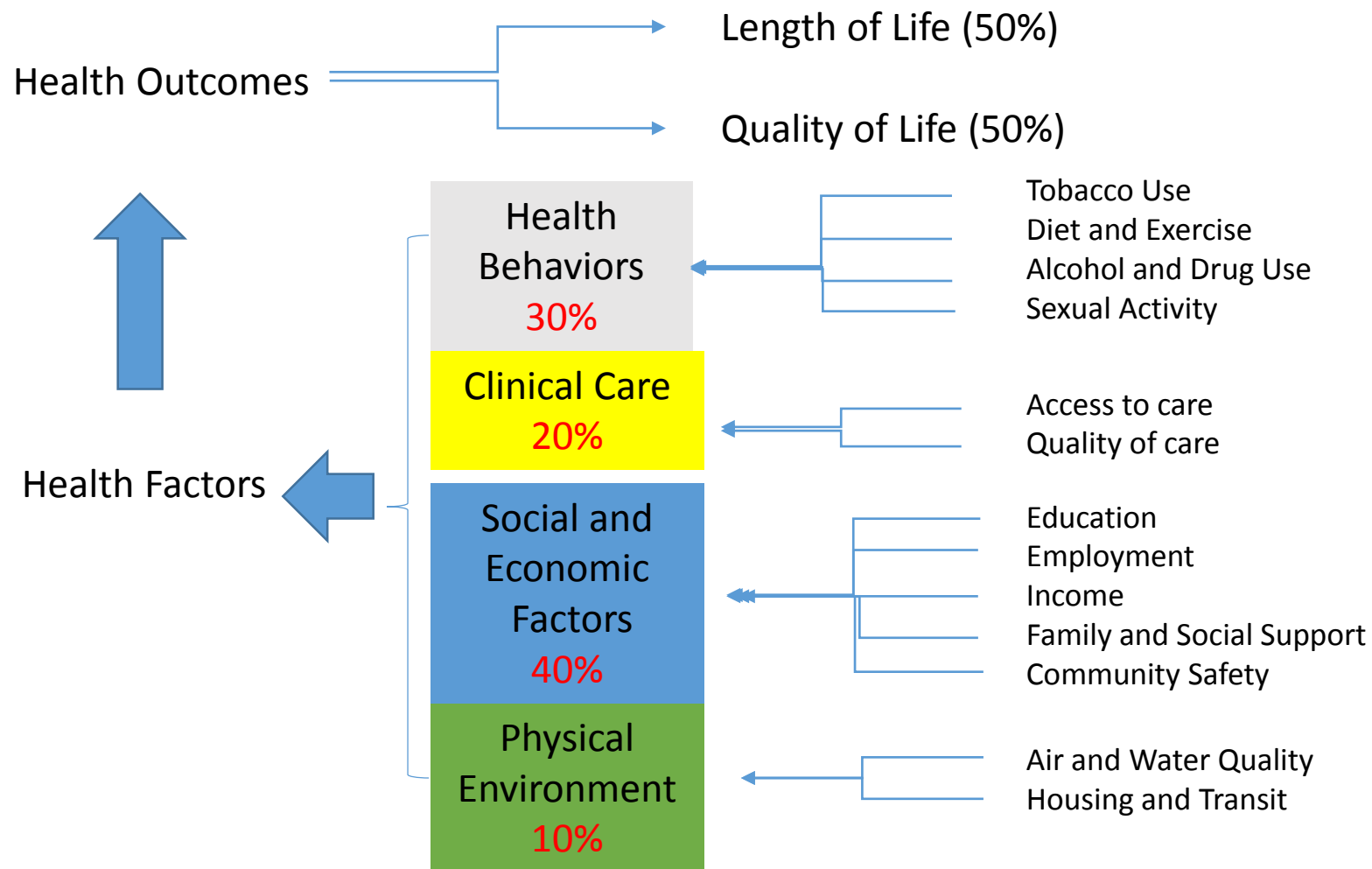


Air and Water Quality  
Housing and Transit

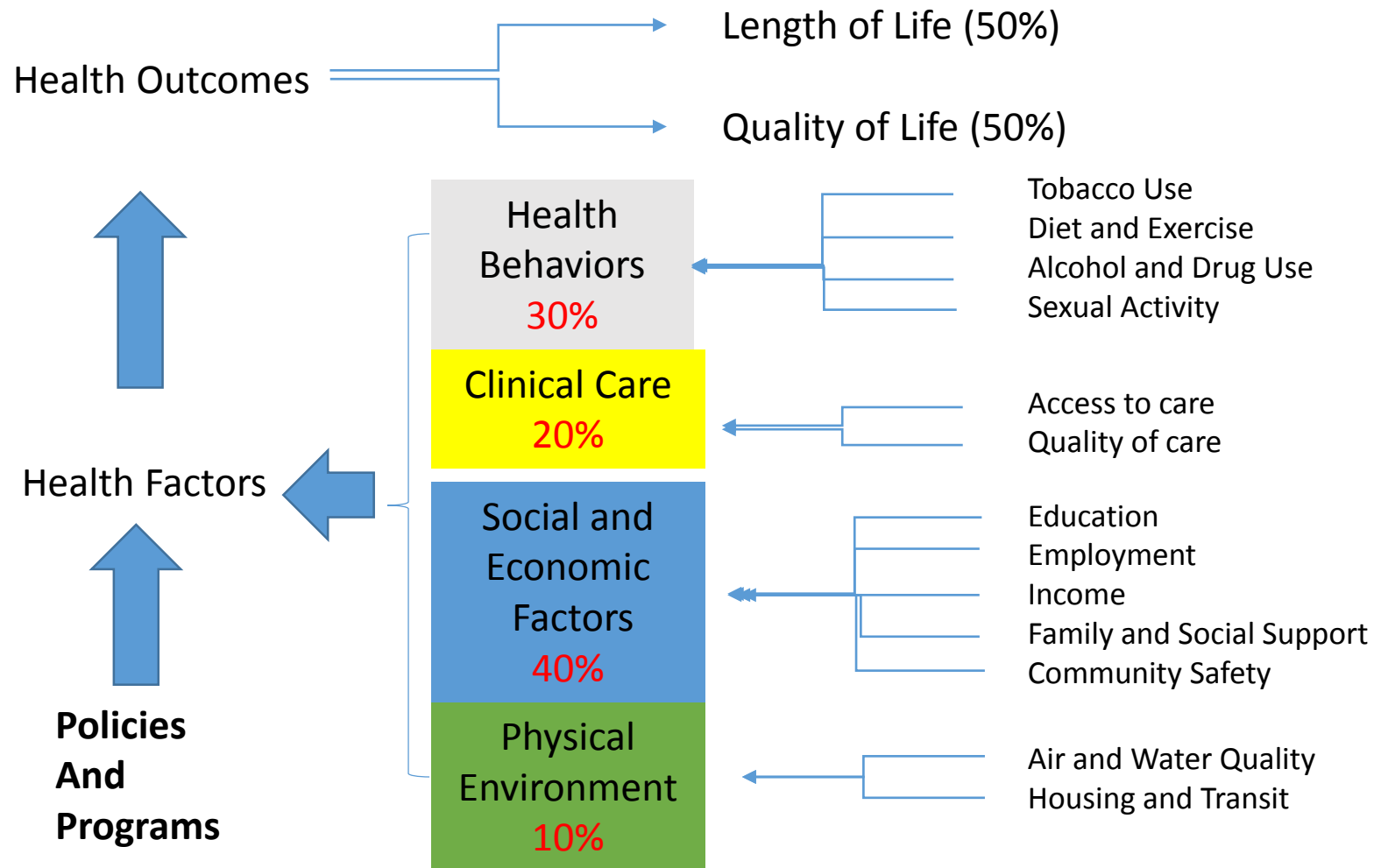
# Defining Human Health:



# Defining Human Health: Note that each factor has a different weight.



Defining Human Health: Note that each factor has a different weight. Now we can see the context of our work in an integrated sense.

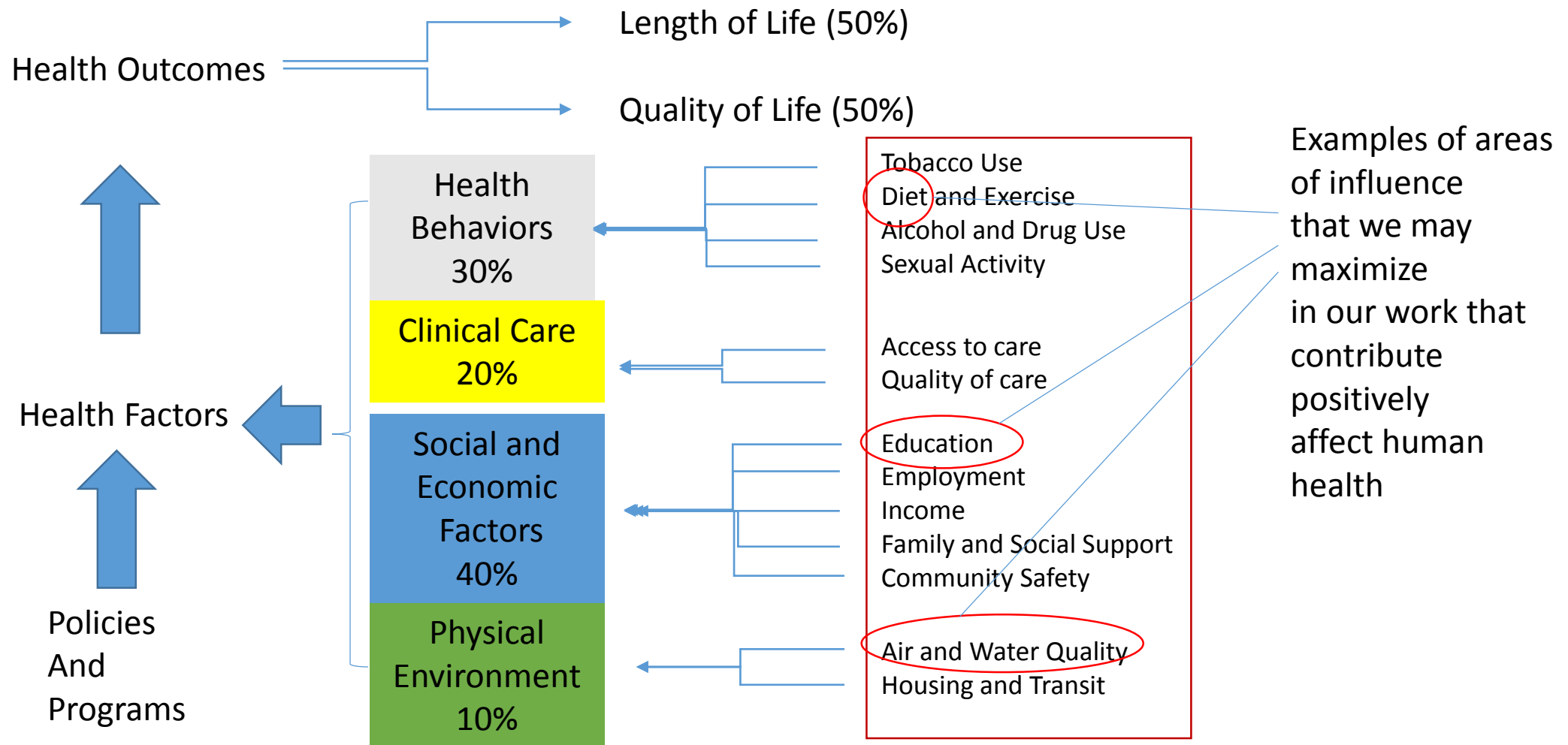


Examples of where CBP work dovetails with the factors influencing human health outcomes

# Defining Human Health: Where does our work fit in?

## University of Wisconsin Population Health Institute

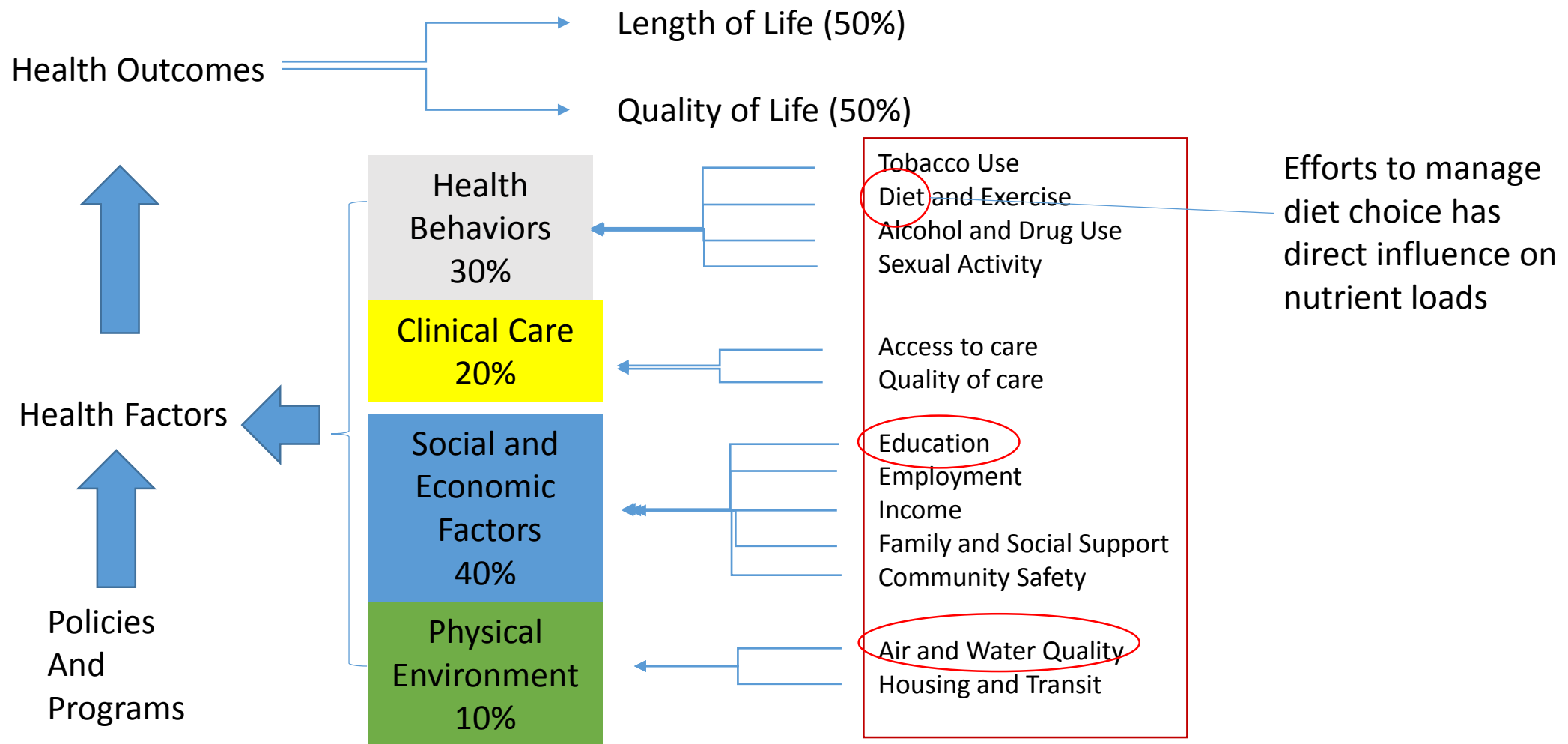
### Model (2014) used to produce nationwide county-based health rankings





# Defining Human Health: Where does our work fit in?

## University of Wisconsin Population Health Institute Model (2014) used to produce nationwide county-based health rankings



# The environmental effect of diet choice.

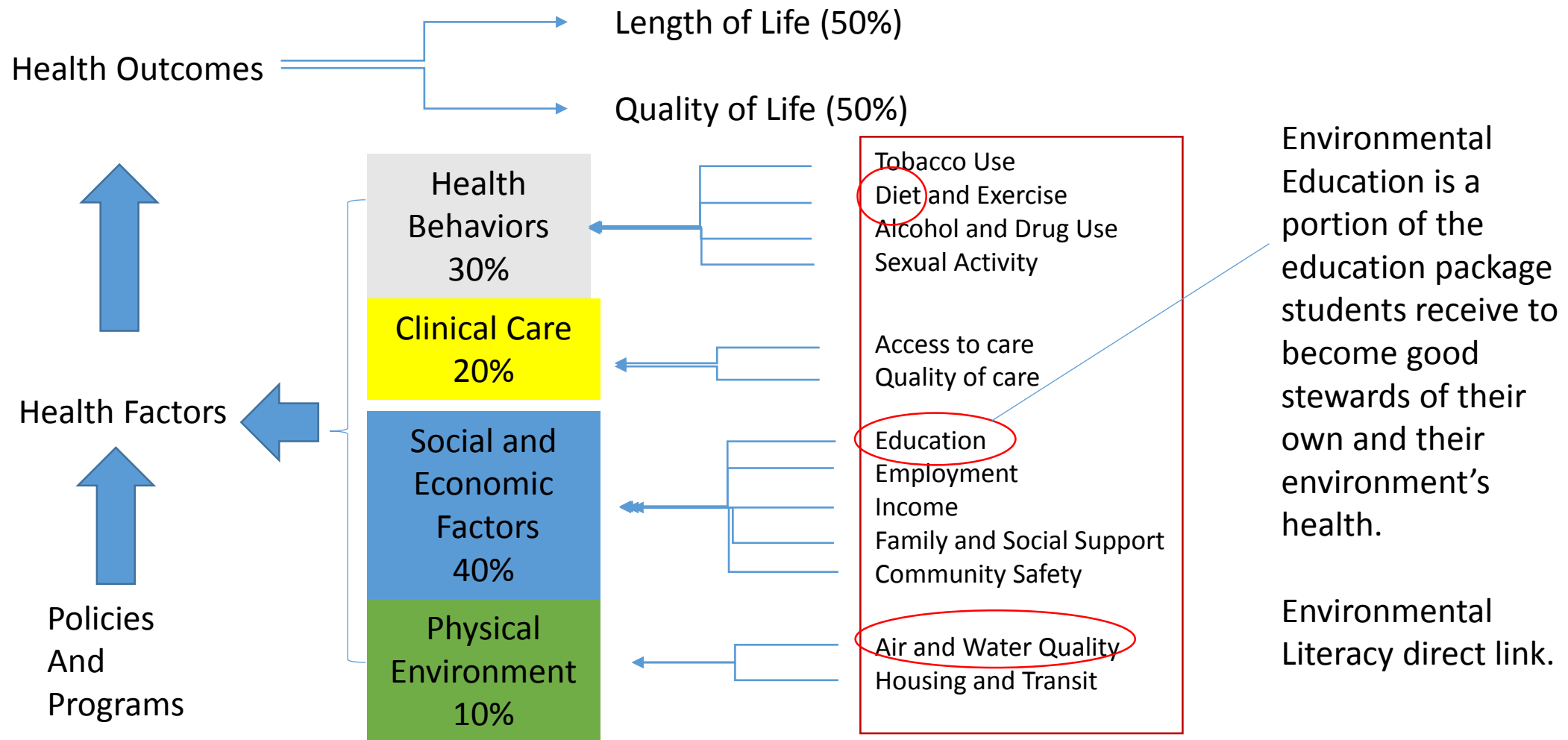
- <http://www.nature.com/ejcn/journal/v61/n2/full/1602522a.html>
- **Evaluating the environmental impact of various dietary patterns combined with different food production systems.**

# Diet choice as a stewardship indicator

- **Food choices and environmental responsibility—protect the Baltic Sea.**
  - **The eutrophication intensity varies among different foodstuffs:** beef has the highest eutrophication intensity of all meats, about three times higher than that of pork, and seven times that of poultry. The eutrophication intensity of milk is relatively low.
  - The modelling shows that in Finland *eutrophication can be reduced by about 7 % by changing the food consumption habits* towards a recommended direction,
  - Currently private food consumption is not far from being in accord with recommendations. (i.e., Here is a tracking indicator, private food consumption, linked to diet choice and eutrophication reduction impact)
  - [http://www.academia.edu/1609316/Food\\_choices\\_and\\_environmental\\_responsibility\\_protect\\_the\\_Baltic\\_Sea](http://www.academia.edu/1609316/Food_choices_and_environmental_responsibility_protect_the_Baltic_Sea)

# Defining Human Health: Where does our work fit in?

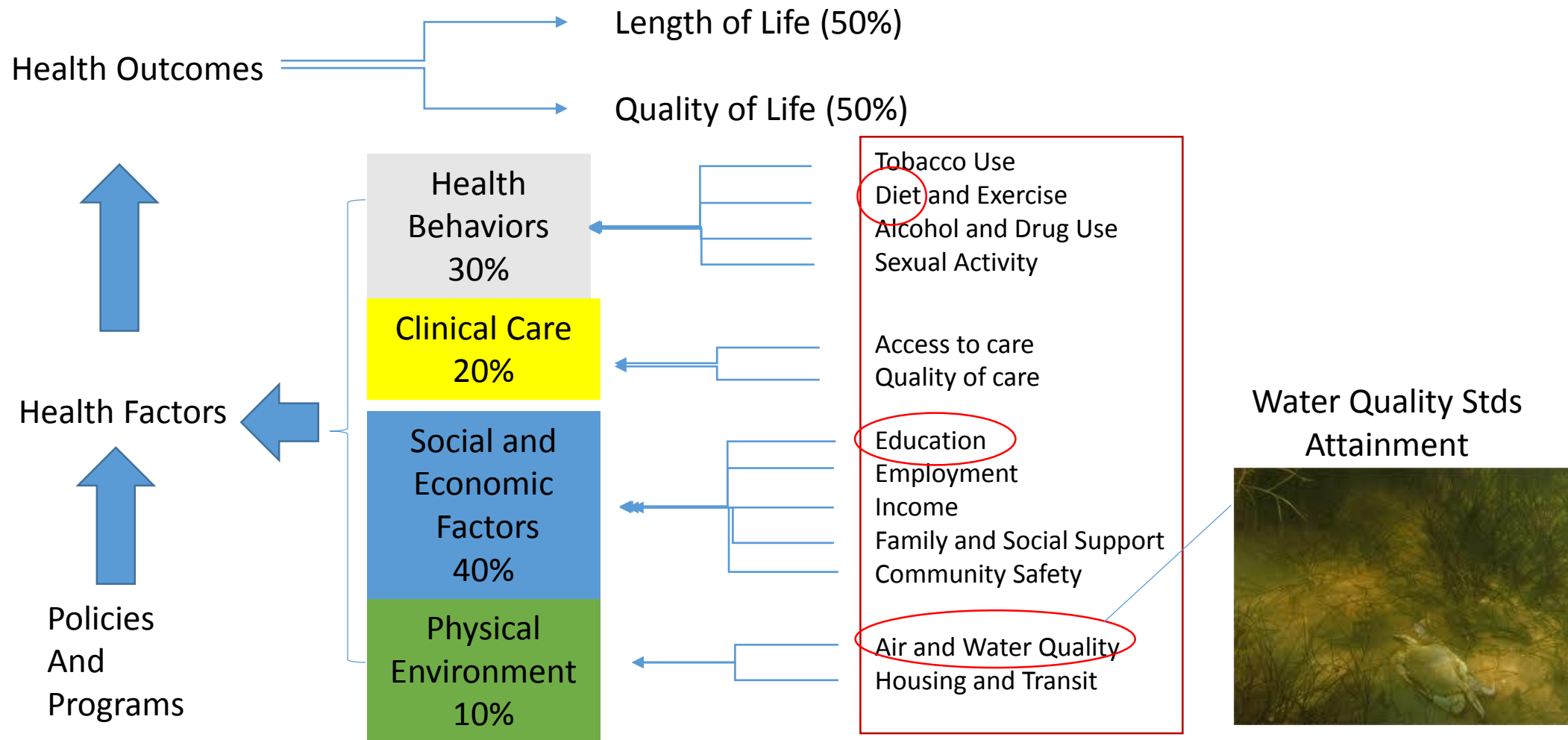
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# Defining Human Health: Where does our work fit in?

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# Other areas to apply conceptual models to guide integration

- Oyster Restoration
  - \$30 million investment in the Harris Creek Project
  - John and Jane Q Public want to know – is it working?
    - Reef survival
    - Water clarity?
    - Enhanced SAV response?
    - Enhanced Fisheries?
    - Enhanced Property Values?
    - Enhanced Fishing opportunities?
  - We do not yet have an integrated monitoring and reporting construct in place to answer such basic public interest questions in response to a multi-million dollar investment.

# In Summary

- Integrated Monitoring and Programming will move forward
- Moving forward benefits from a conceptual model that declares what elements of our collective work are influencing the outcome we want.
- Conceptual models give context to the different factors affecting the outcome.
- Conceptual models can give context to the anticipated effect of a particular dimension of work AND of the collective dimensions of work that CBP is doing compared to the overall network of factors that are needed to move the outcome needle.
- Human health, oyster restoration and more are prime examples of where we can be building these stories.