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# Revisiting Genetic Discrimination Issues in 2010: Is Canada on the Right Course?

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# Outline

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- ◆ Problems posed by genetic data
- ◆ Seeking evidence from data
- ◆ Policy options

# Two Basic Economic Questions

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- ◆ If insurers do have genetic information:
  - People at higher risk might pay more
  - Question: how much more?
- ◆ If insurers do not have genetic information:
  - People at higher risk might over-insure (adverse selection)
  - Question: how much would that cost?

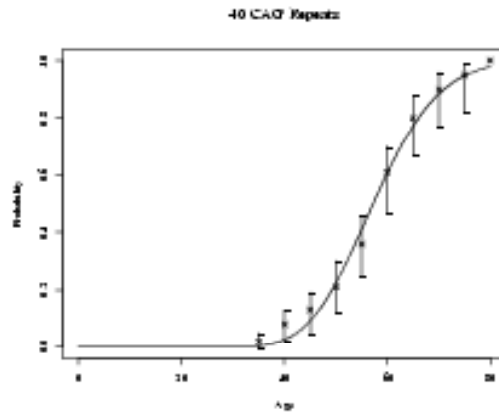
# Evidence-Based Approach

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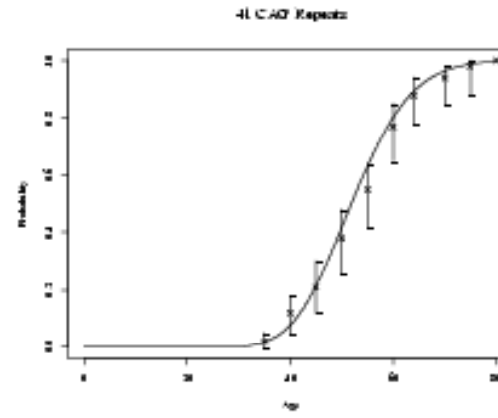
Bring together evidence from:

- ◆ MEDICINE – genetic epidemiology
- ◆ ACTUARIAL SCIENCE – insurance pricing models
- ◆ ECONOMICS – supply and demand

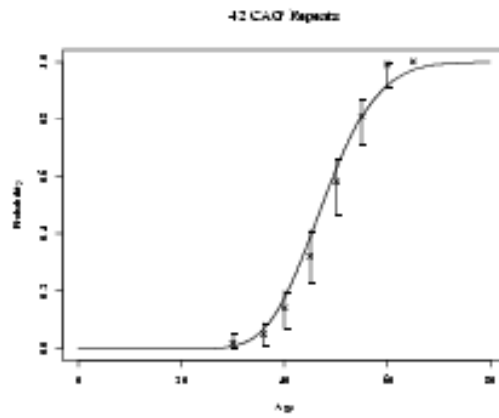
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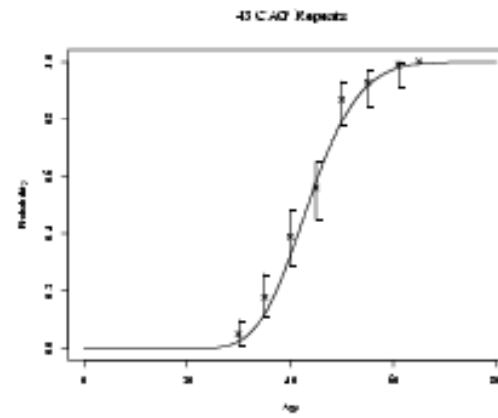
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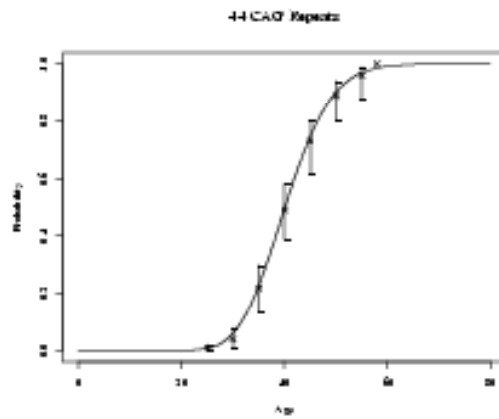
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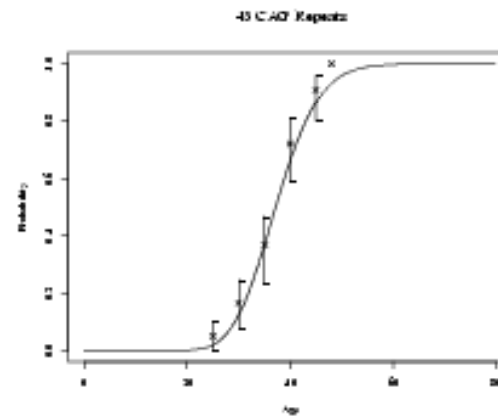
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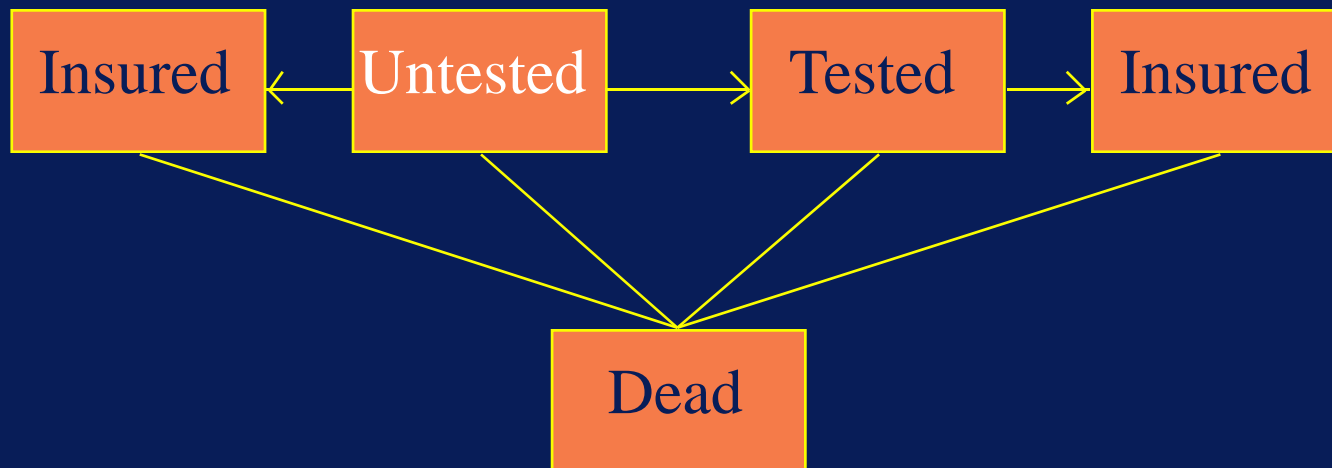


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# A Simple Life Insurance Model

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# Single-Gene Disorders

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Gene → Disease

# Single Gene Disorders

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- ◆ High risk of disease/death
- ◆ Late onset
- ◆ Drastic or non-existent treatment
- ◆ Rare
- ◆ Family history risk already underwritten

# Conclusions from Models

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- ◆ Additional premiums high to unaffordable for mutation carriers, and even sometimes just for family history
- ◆ Rarity plus economic reality means that nondisclosure leads to minimal cost to industry despite the severity of the individual risks

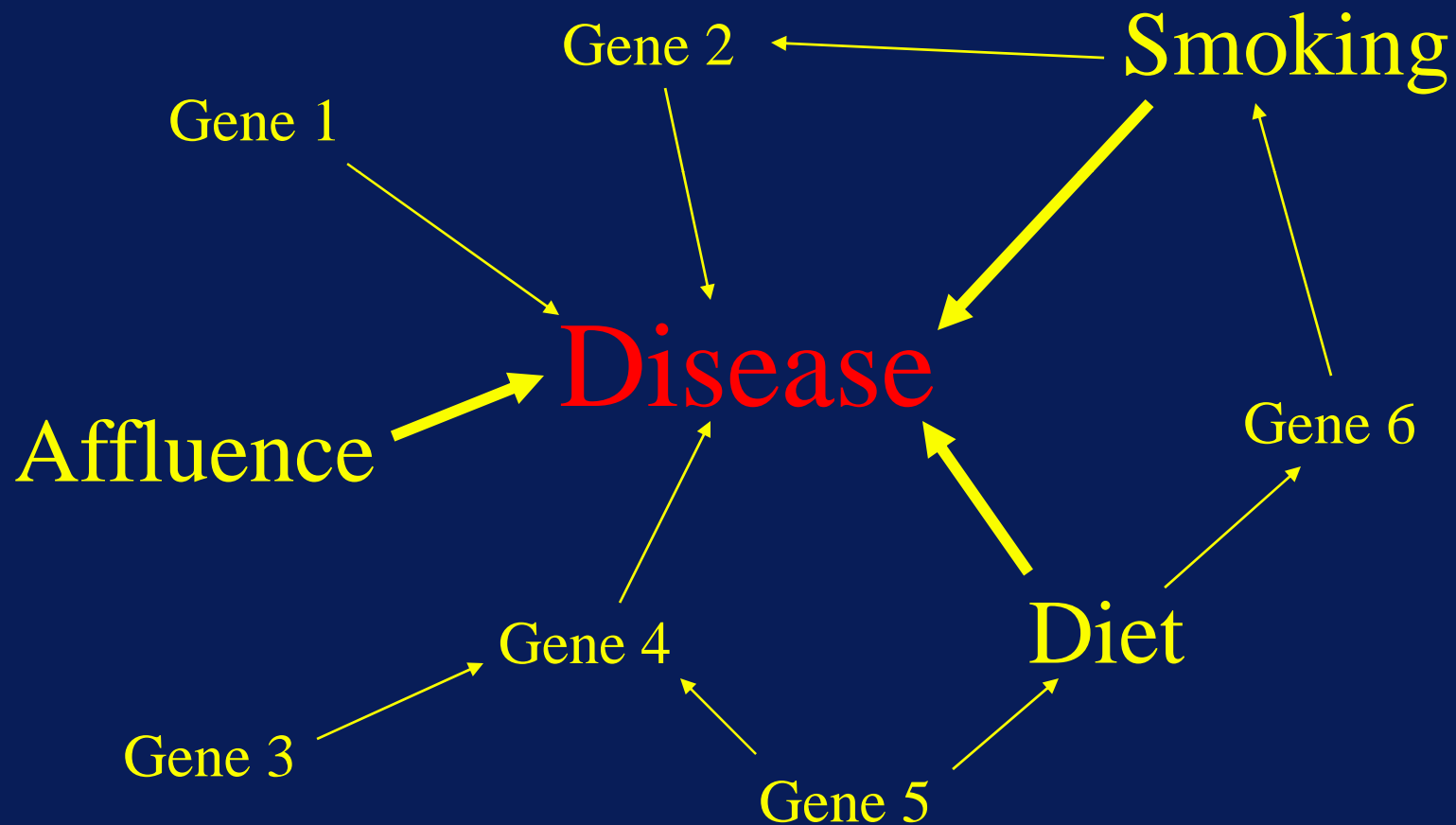
# Policy Consequences (UK)

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- ◆ Industry willing to concede non-disclosure for almost 100% of cases through agreed moratorium
- ◆ “Genetic Test” tightly defined - industry has not conceded the “right to underwrite” more widely
- ◆ Government has avoided statutory route(s)

# Multifactorial Disorders

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# Multifactorial Disorders

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- ◆ Common diseases (cancer, heart disease)
- ◆ Complex interactions
  - Many variants of many genes
  - Environment
- ◆ Altered susceptibility, not very high risk
- ◆ Pattern of inheritance unclear
- ◆ Not much epidemiology (yet)

# Evidence From Models

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- ◆ No evidence that genetic contribution to common disorders will affect insurance any more than commonly used risk factors
- ◆ Some evidence that genetic contribution to processes (e.g. developing hypertension) does not equate to severe effect on endpoints (e.g. premature death)
- ◆ Processes often modifiable or treatable

# Evidence From Epidemiology

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- ◆ Epidemiology is new, complex, often hard to translate into actuarial models
- ◆ Subject getting more complex, not less (e.g. epigenetics)
- ◆ Not often a family history as used by insurers

# Policy Consequences

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- ◆ The most vital target of policy – single gene disorders – is relatively small and well-defined
- ◆ Widely-drawn policy options may catch much else, including future discoveries
- ◆ Try to confine effect of policy to its intended consequences – No.3 or No.4