

# How (not) to get a PhD - in actuarial science!

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# Outline

- Ten well-established ways of not getting a PhD (MSc)
- Research in actuarial science
- References:
  - HOW TO GET A PhD - A handbook for students and their supervisors, 4<sup>th</sup> Ed.  
By ESTELLE M. PHILLIPS and DEREK S. PUGH, Open University Press
  - How not to get a PhD.  
<http://www.guardian.co.uk/education/2002/nov/08/highereducation.books>
  - 10 easy ways to fail a PhD  
<http://matt.might.net/articles/ways-to-fail-a-phd/>
  - <http://www.soa.org/files/pdf/research-current-projects.pdf>

# 1. Not wanting a PhD

- Seems very strange
  - Starving on scholarships, TAships
  - Given up a job
  - Time, effort and energy spent on research
- PhD students:
  - Think it is a nice idea to get one
  - Have own views of what they want to do
  - Does that give you one? **NO**

# 1. ~~Not~~ wanting a PhD

- “Wanting” a PhD
  - Single-minded
  - Willingness to discover what it takes - realistically
  - Determination
- “Wanting it” is important in difficult times
  - Pointless tasks
  - When you ask yourself “Why I am doing this?”
  - Interest in research and enjoyment of discussing it is not sufficient

## 2. Not understanding the nature of a PhD - Overestimating

- Doing normal research
  - Original contribution to knowledge
- Major contributions
  - A strategy for getting an honorary degree
- Paradigm shifts
  - After the PhD
- Real/Practical research
  - Really innovative but...
  - Requires strong knowledge and a long time

### 3. Not understanding the nature of a PhD - Underestimating

- A PhD requires a contribution to knowledge
- It means finding good questions as well as interesting answers
- Underestimation:
  - Just a full description of a ‘real’ problem
  - Write-up of your knowledge
  - Career strategies (consulting business, book, ...)
  - Aim for the weakest student in your department
    - This leaves no room for uncertainty; and research is ???
- At risk:
  - Studying part-time
  - Keeping your job
  - Coming back to academic life after some time in the ‘real world’

## 4. Supervisor not knowing what a PhD requires

- Supervisor must not over- or underestimate a PhD
- Penalties: much greater for student than supervisor
  - Student must get the supervision he/she needs and is entitled to
- Overestimation:
  - Challenge the students
  - Shake them up
  - Bring new ideas
  - Treat them as adults (in research terms!)
- Underestimation:
  - Let students work by themselves

## 5. Losing contact with your supervisor

- Student has to work hard to keep in touch with the supervisor
- Must tell your supervisor what you are doing
  - Continual input
  - Discuss problems, new directions,...
  - Sometimes must change supervisor



## 6. Not having a thesis

- A thesis must be:
  - Minimum and maximum # of pages
  - Paper size (letter, A4)
  - Margins, font size and color
  - Binding
- A PhD thesis must
  - Argue a position
  - Have a story line, with relevant arguments
  - Be coherent, organized, ...

## 7. Taking a job before finishing

- Doing a PhD is intellectually demanding
- Writing up demands the most concentrated effort
- Reasons:
  - Emotional: A chore after doing the ‘real’ work
  - Intellectual: a lot of adjustments need to be done
  - Limitations: writing skill, experience
- Taking a job while writing up can
  - Lead to intellectual fatigue
  - Put off completion (possibly years)
  - Result in you not getting a PhD

## 8. Focus on Grades

- Does anyone care about grades in grad school?

$$\text{Optimal GPA} = \text{Minimum Req'd GPA} + \varepsilon$$

- Some PhD students “want to learn”
  - PhD involves a lot of learning but ...
  - Focused learning instead of trying to learn everything
  - “Eternal” students
- Coursework and GPA are important to fix admissions mistakes and award scholarships

## 9. Procrastinate

- Grad schools attract procrastinators
- Perfectionists and 'eternal' students tend to procrastinate
  - Polish research papers
  - Not able to write until they have the paper perfectly mapped out

## 10. Ignore your committee

- Committee has to sign off on your PhD
- Easy to forget comments from a committee member but he/she rarely forgets
- Can disagree, argue, defend but not always a good idea to look for excuses or ignore advice

# Actuarial Research

- Theoretical and Practical
- Examples of current SoA research projects
  - Finance
    - *impact of the subprime mortgage crisis on insurers*
    - *investment strategies in an economic downturn*
    - *impact of baby boomers on financial security systems*
  - *Risk Management*
    - *Climate change volatility index*
    - *Risk models for insurance regulators*
    - *Enterprise risk management*
    - *Emerging risks*

# Actuarial Research

## – Health

- *Factors driving long-term disability*
- *End-of-life issues in health care*
- *Hedging LTC products*

## – Life insurance

- *Living to 100; mortality projections and impact on social, financial, insurance systems*
- *Expense studies*
- *Reinsurance*
- *Extreme events risk*
- *Embedded value*
- *Persistency studies*

# Actuarial Research

- Financial reporting
  - *Discounting process for reporting*
  - *Credit risk modeling*
- *Retirement*
  - *Replacement ratios*
  - *Impact of insufficient retirement savings*
- *Other*
  - *Experience studies: LTC, Cancer survival table, group disability and benefits, Morbidity, underwriting, etc*
  - *VA*
  - *Guaranteed benefits*
  - *Predictive modeling*
  - *Multi-period risk measurement, dynamic risk management, ALM*
  - *Confidence interval for CTE*
  - *Claims reserving*