



FERTILITY
associates

| *a better understanding*
TE RAUHANGA O TE WHARETANGATA



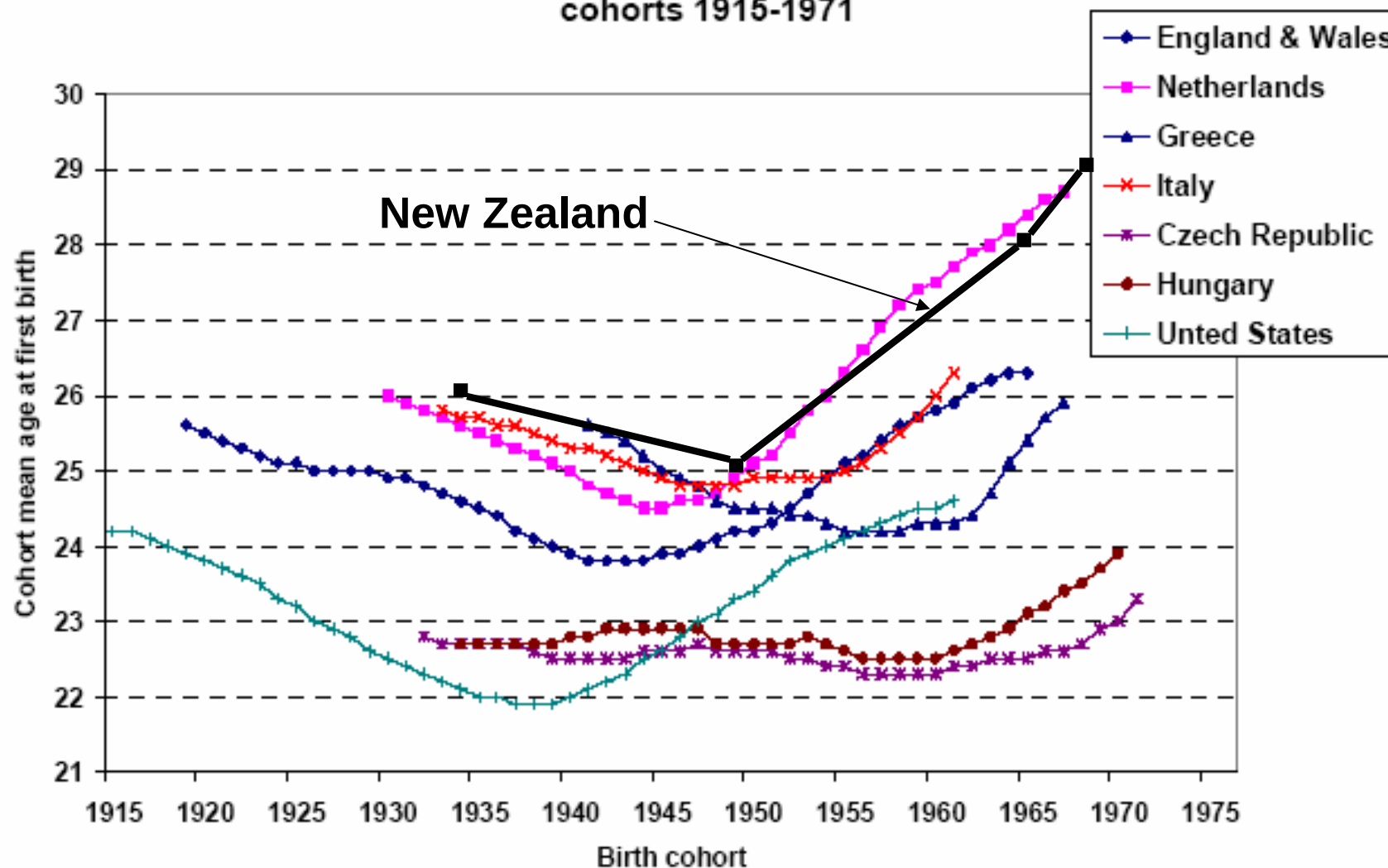
LEADERS IN FERTILITY

Fertility 2010

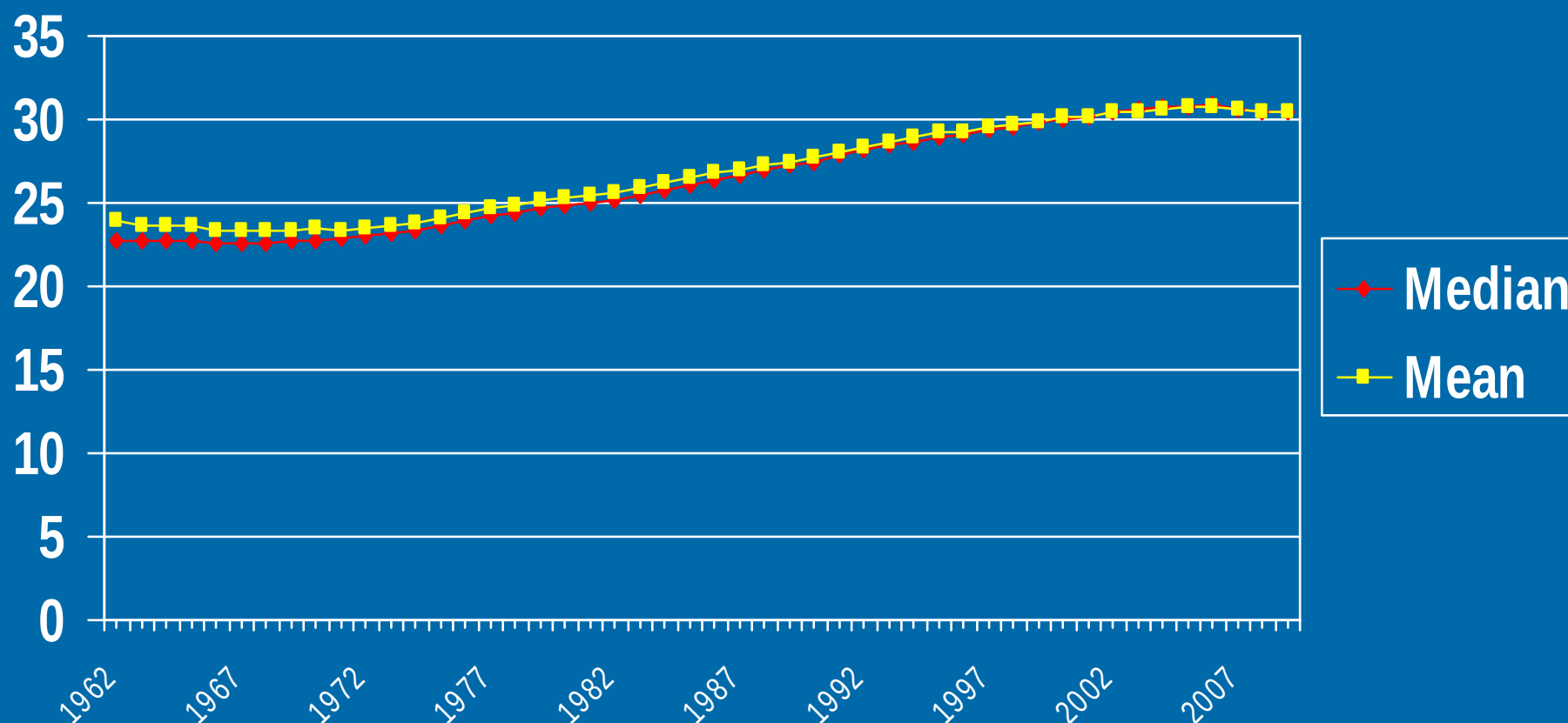
What do GP's need to know?

Richard Fisher
Fertility Associates

Figure 4 - Cohort mean age at first birth, selected countries, birth cohorts 1915-1971

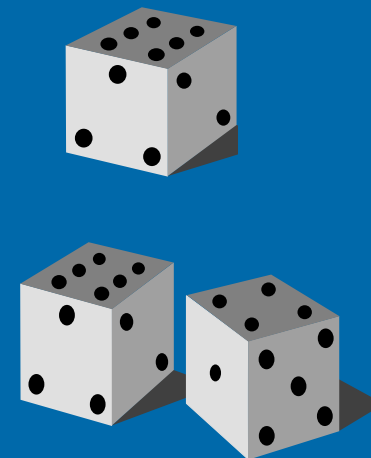


Average age of mother at first birth in New Zealand

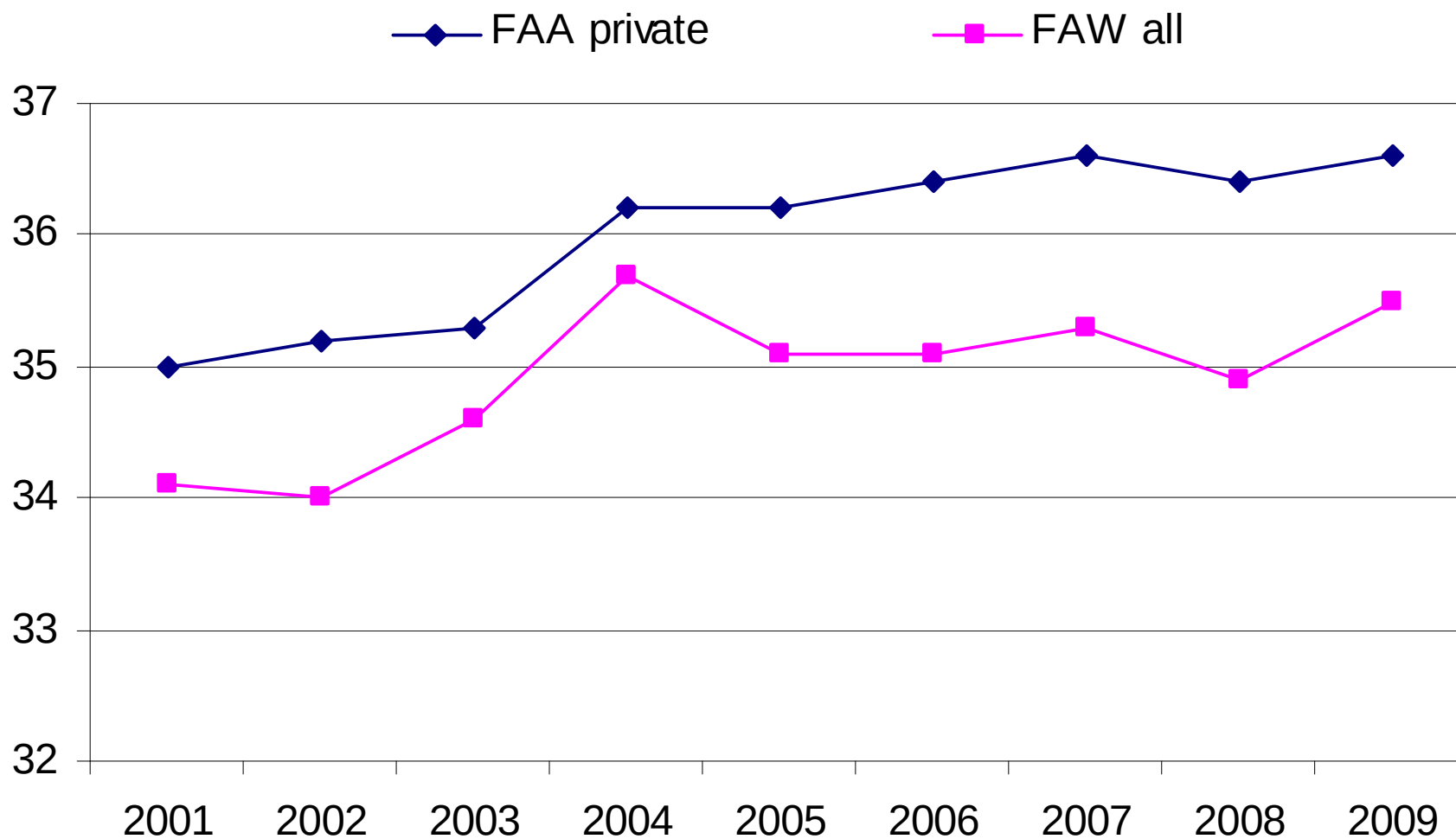


Monthly fecundability by age

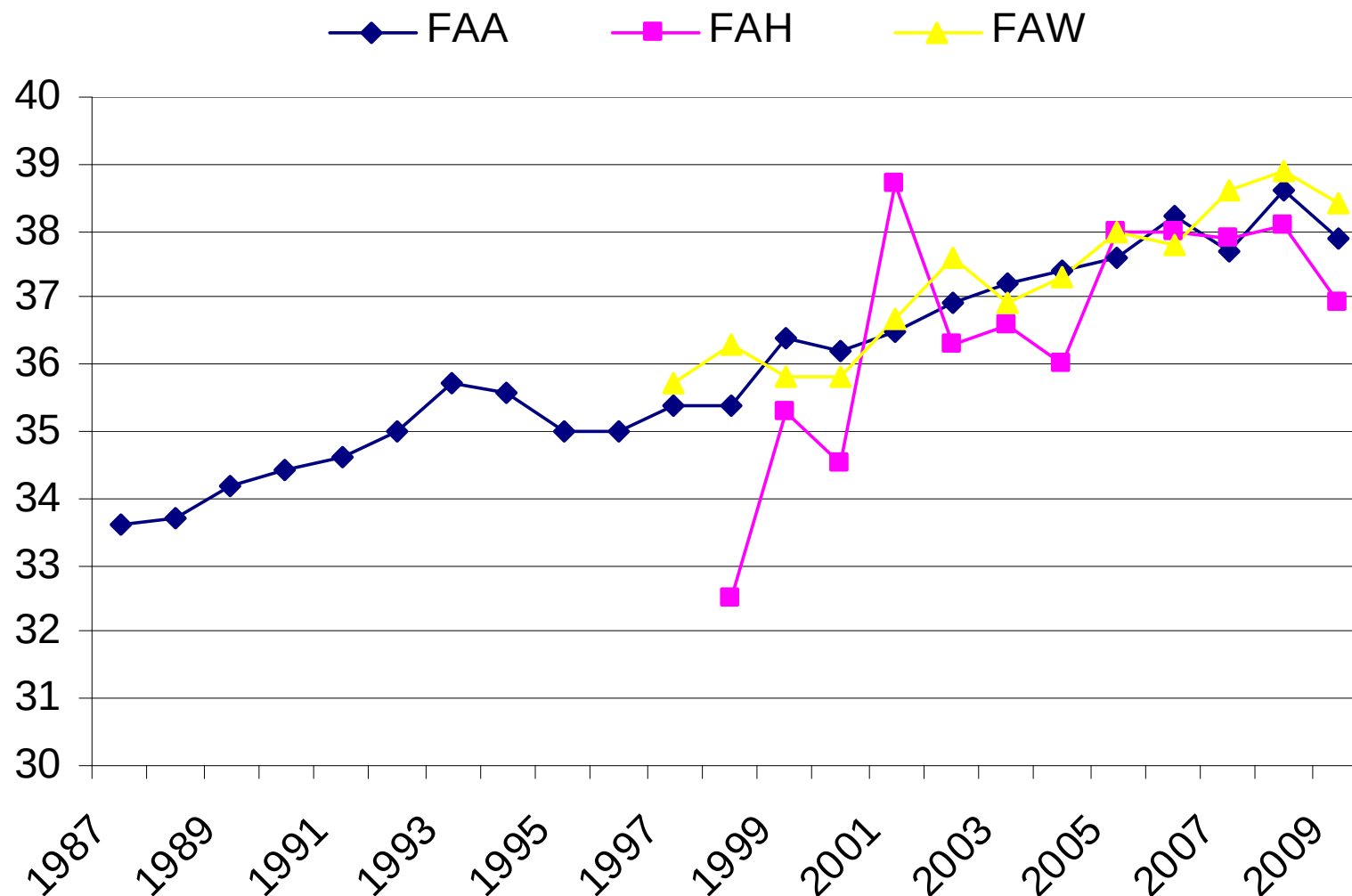
Years	%
25	25
30	20
35	16
37	11
40	6
42	4
44	2



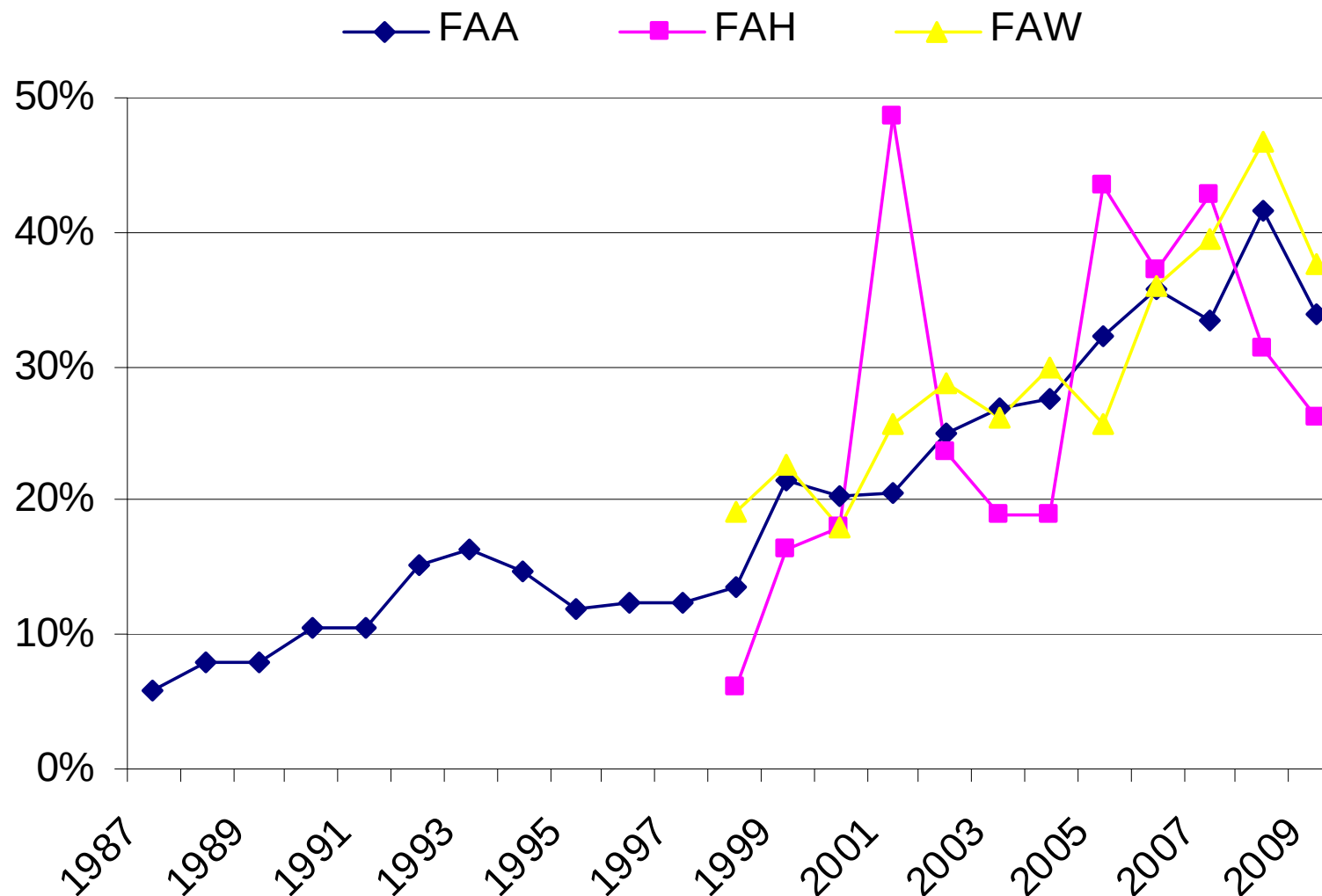
Average age at consultation

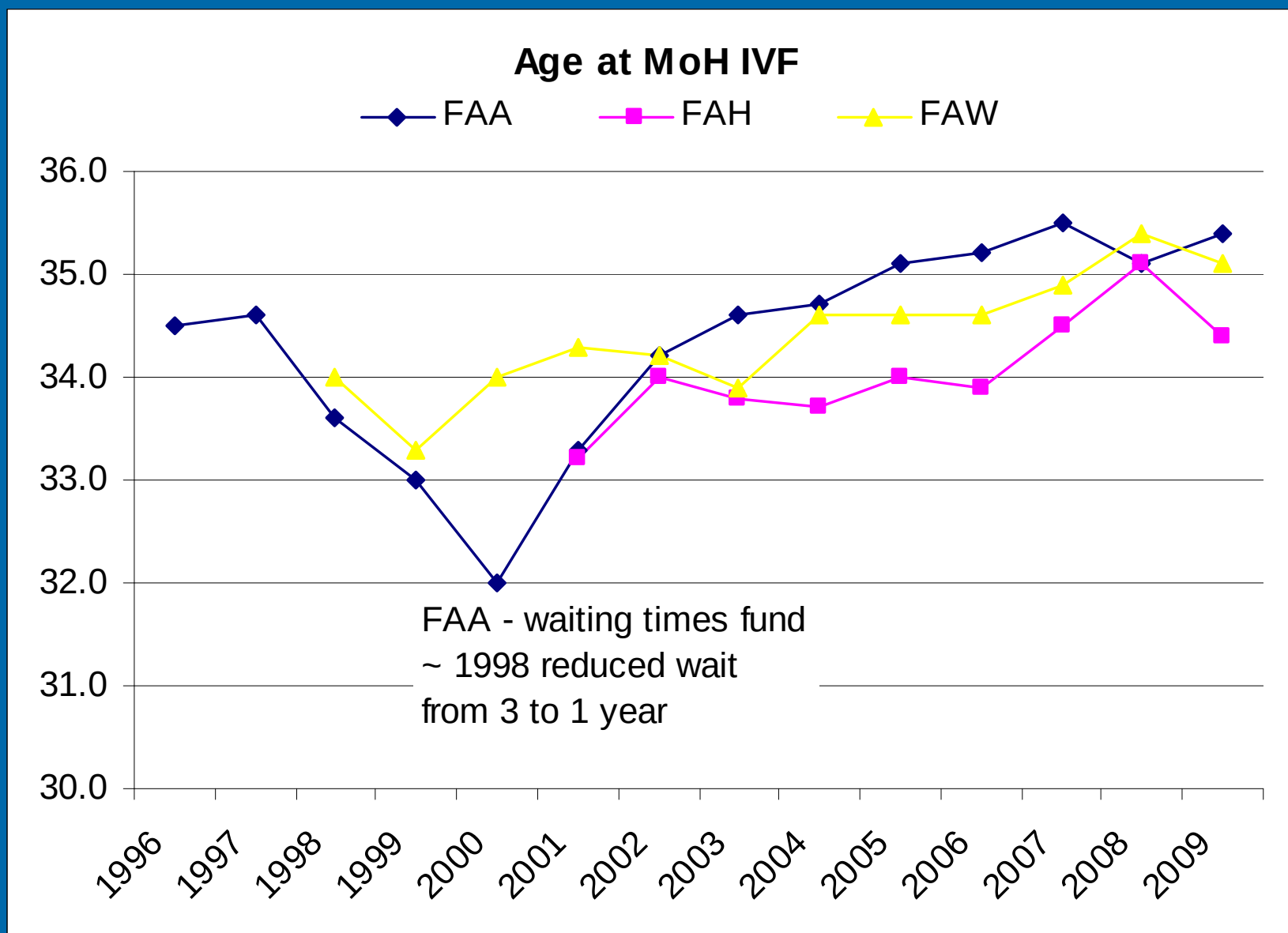


Age at starting private IVF cycle (incl DO)

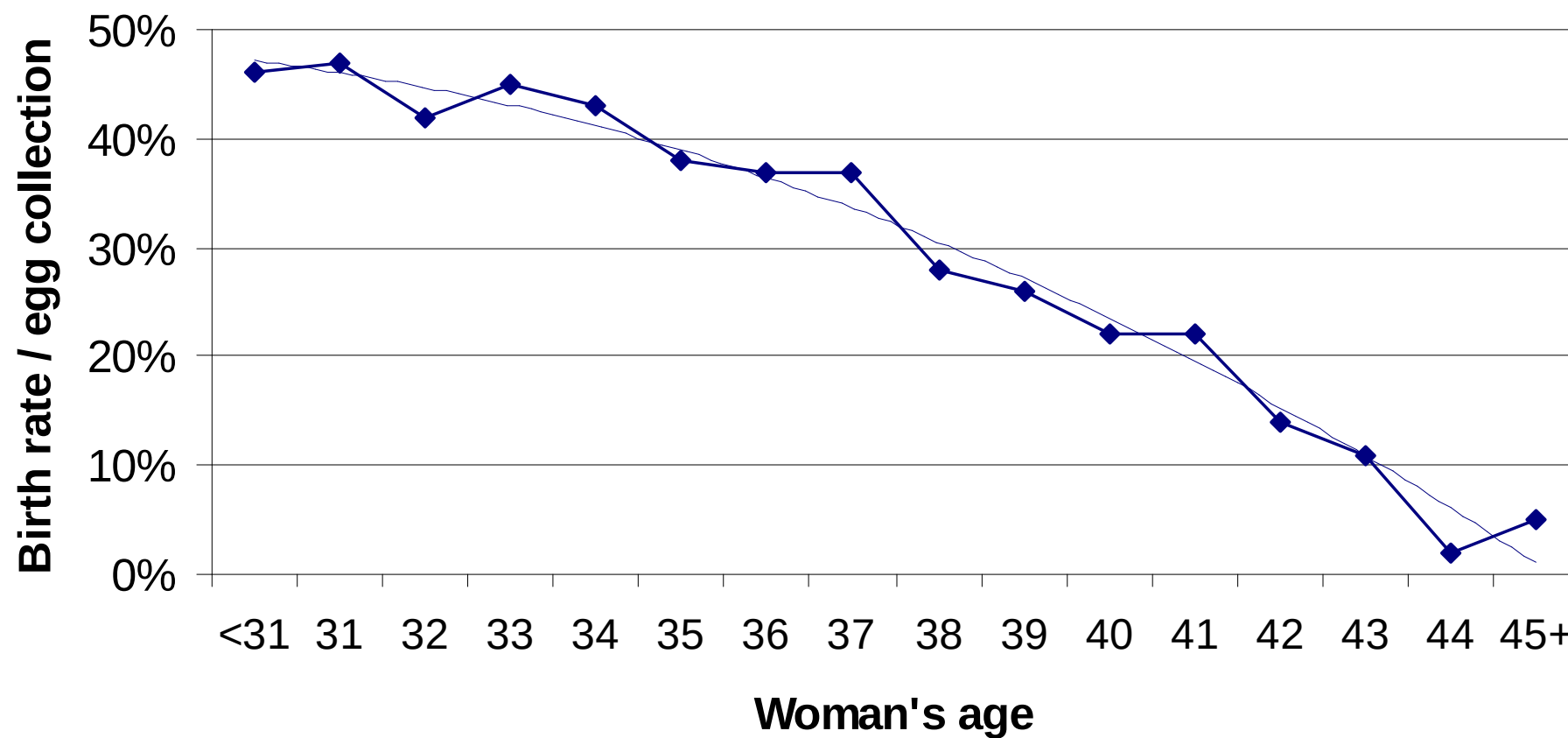


Women ≥ 40 on starting private IVF (incl DO)

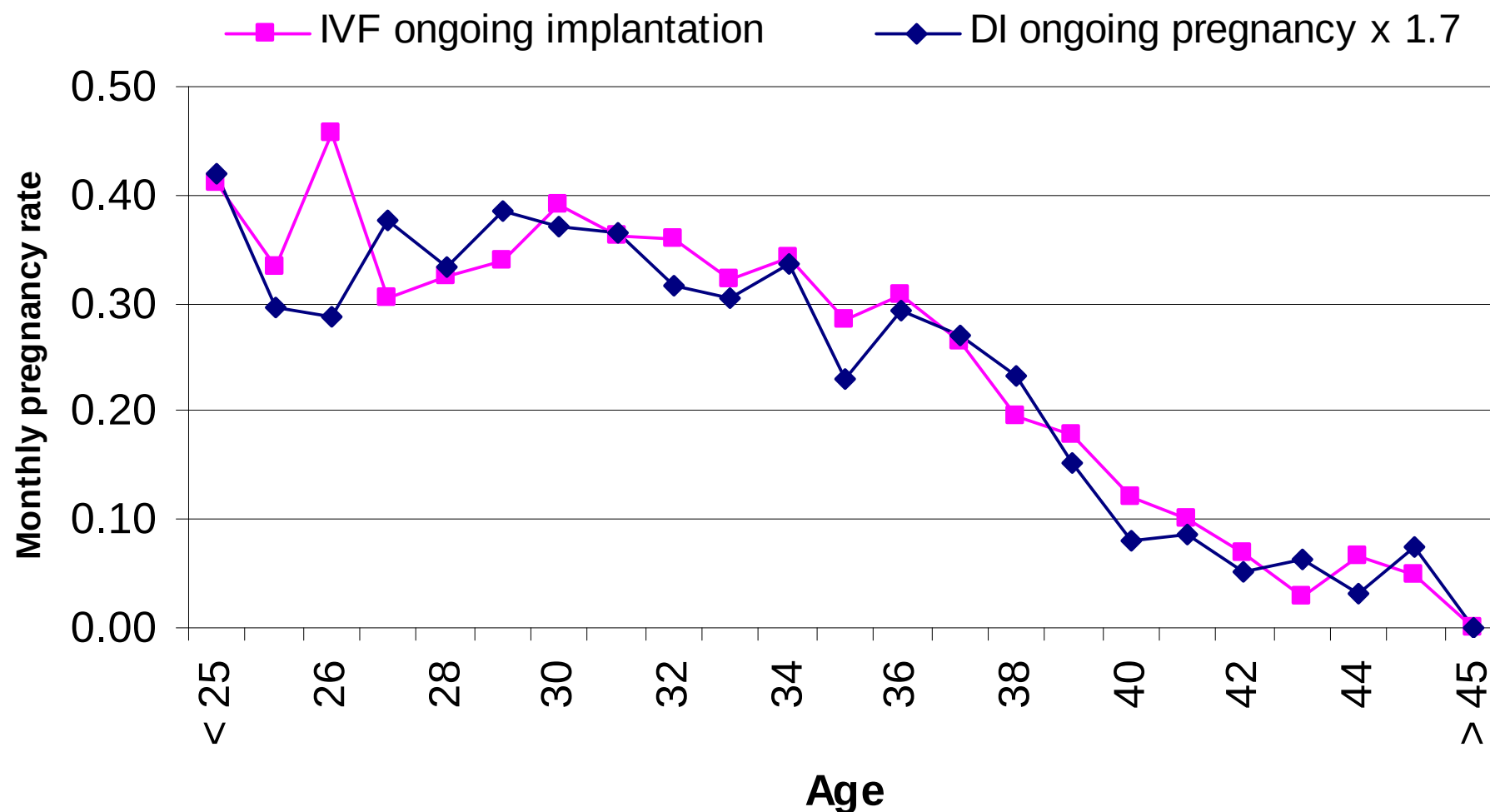




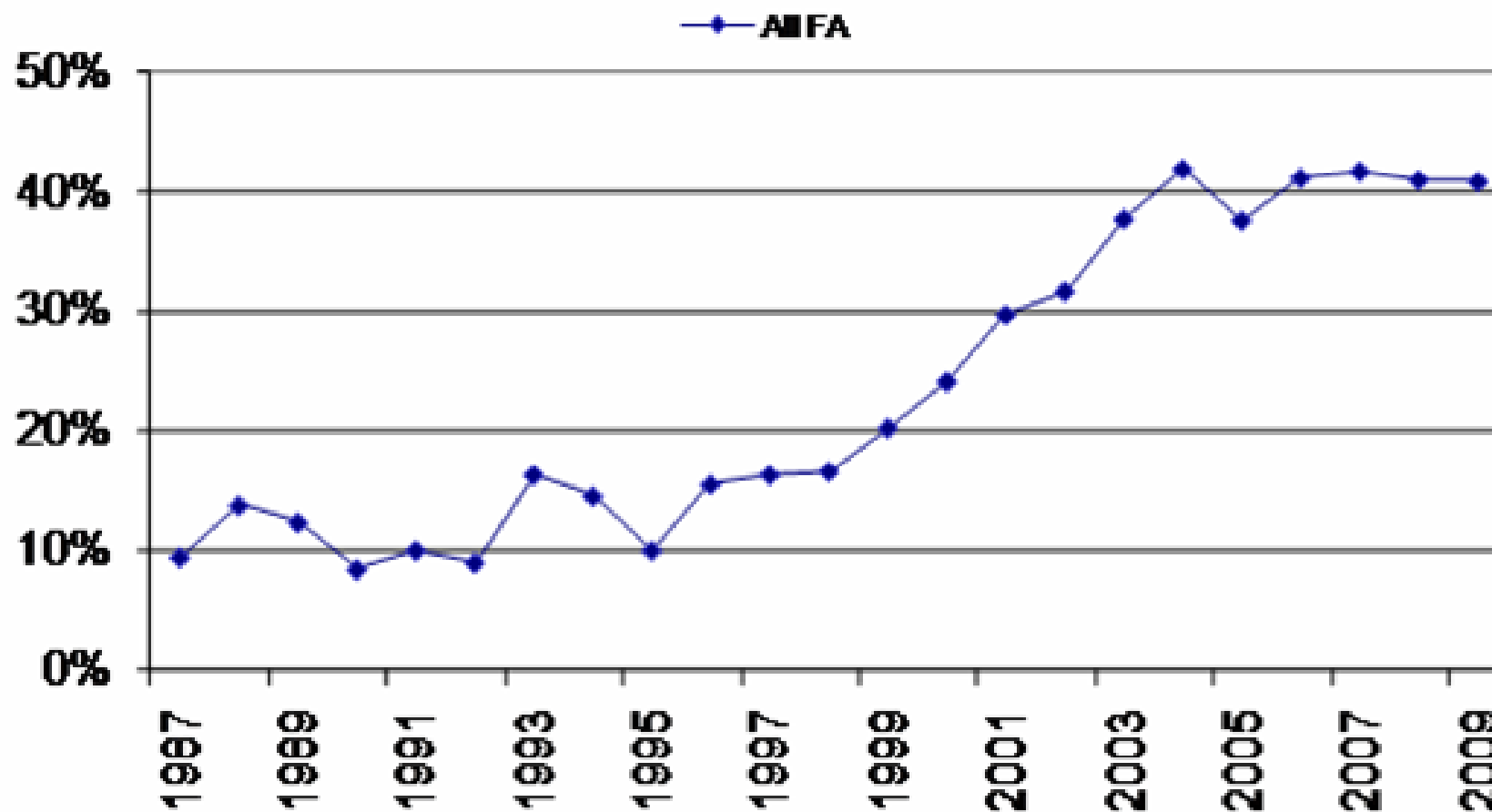
Chance of baby, own eggs



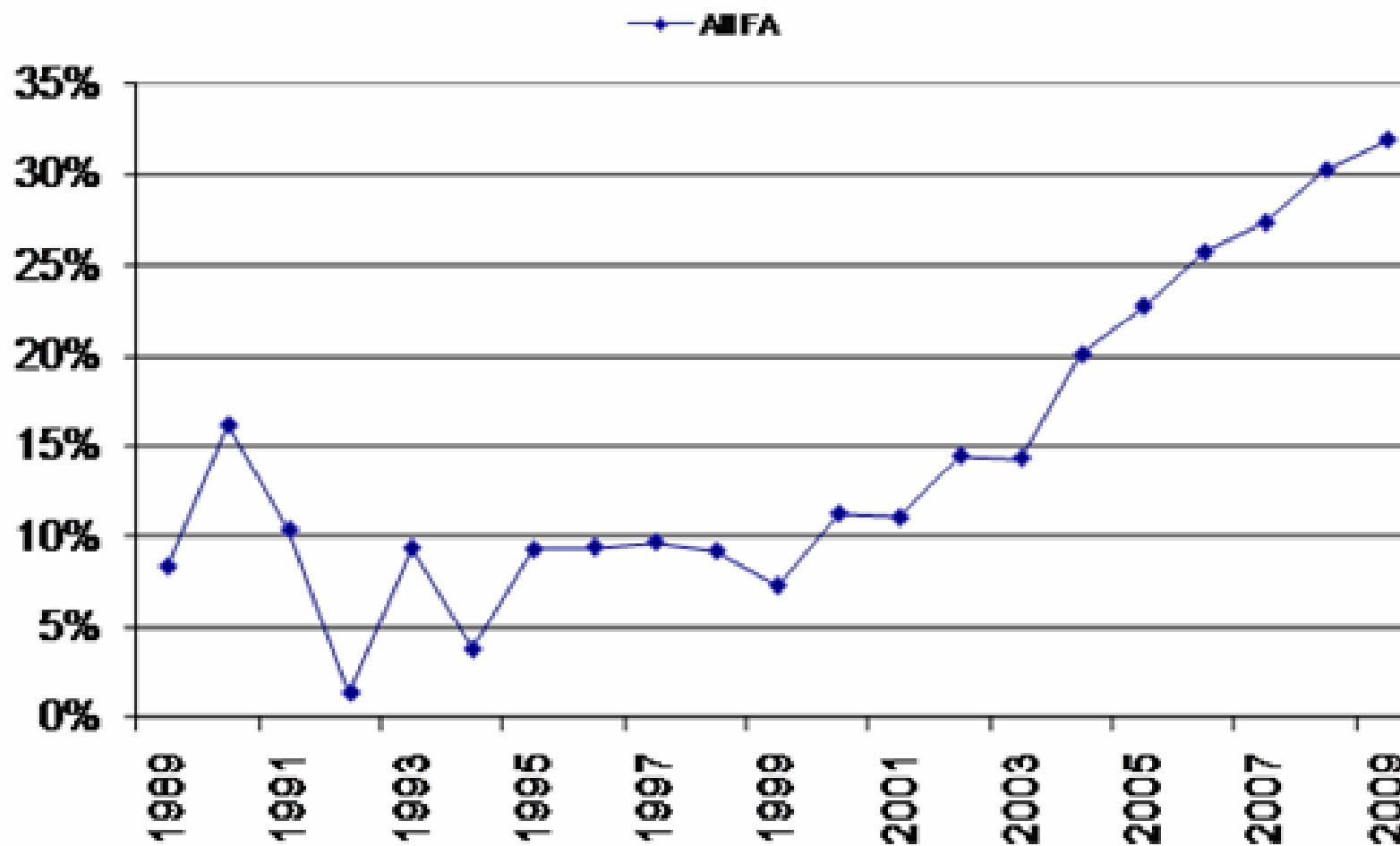
Decline in fertility with age



Implantation rates in women ≤ 37 per ET



Implantation rates in women ≤ 37 per TER



Test for Ovarian Reserve

- FSH
 - do early (day 1 – 2)
 - always with oestrogen (oestradiol)
- Ovarian Volume
- Antral follicle count

AMH

- Anti Mullerian Hormone
- Produced in the gonads alone
- In female rises from zero at birth to modest levels at puberty and see slow and steady decline thereafter
- Can be measured at any time of cycle and while on oral contraceptives

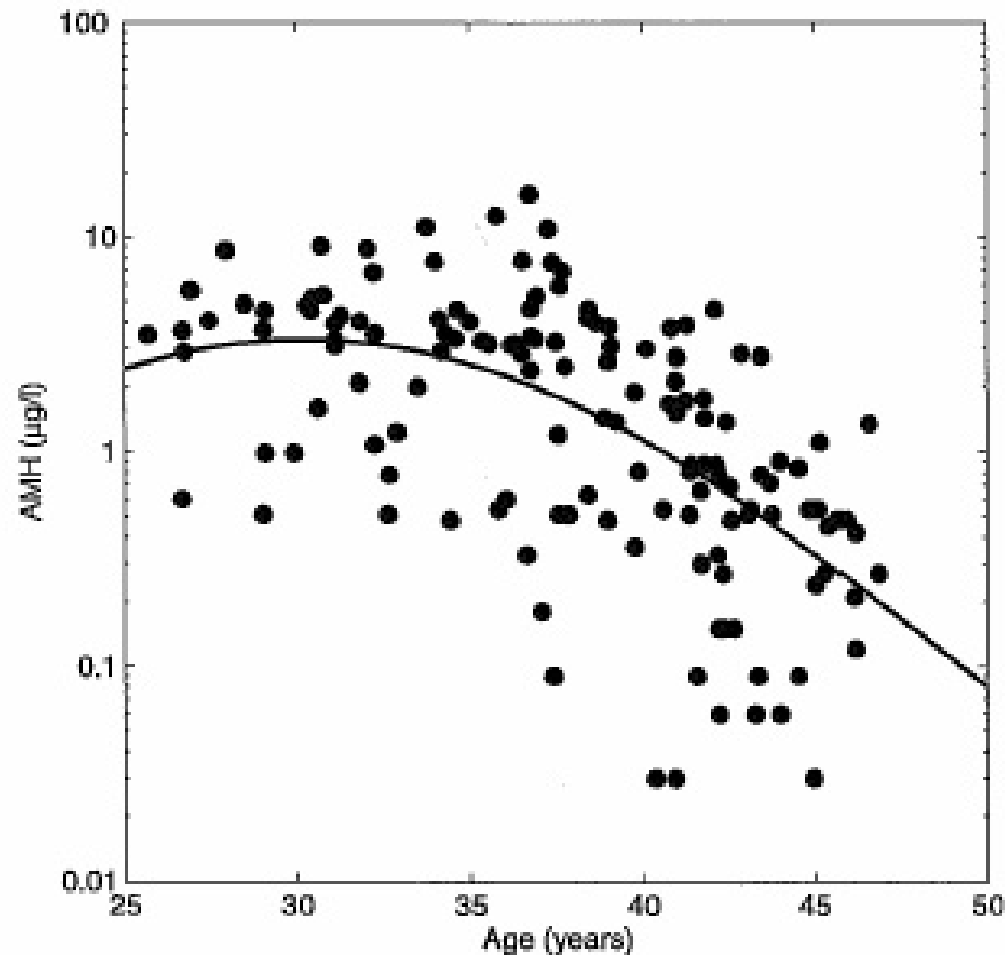
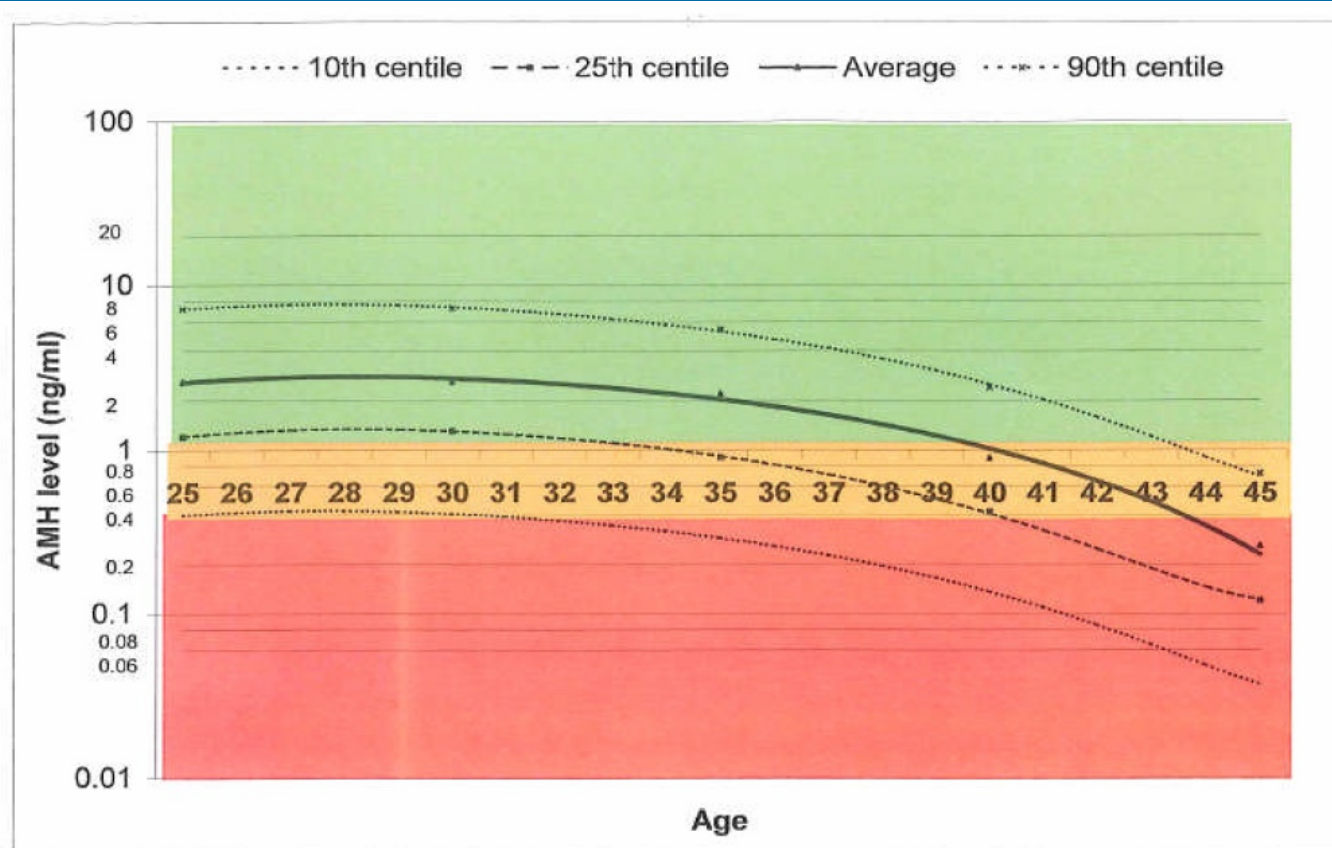


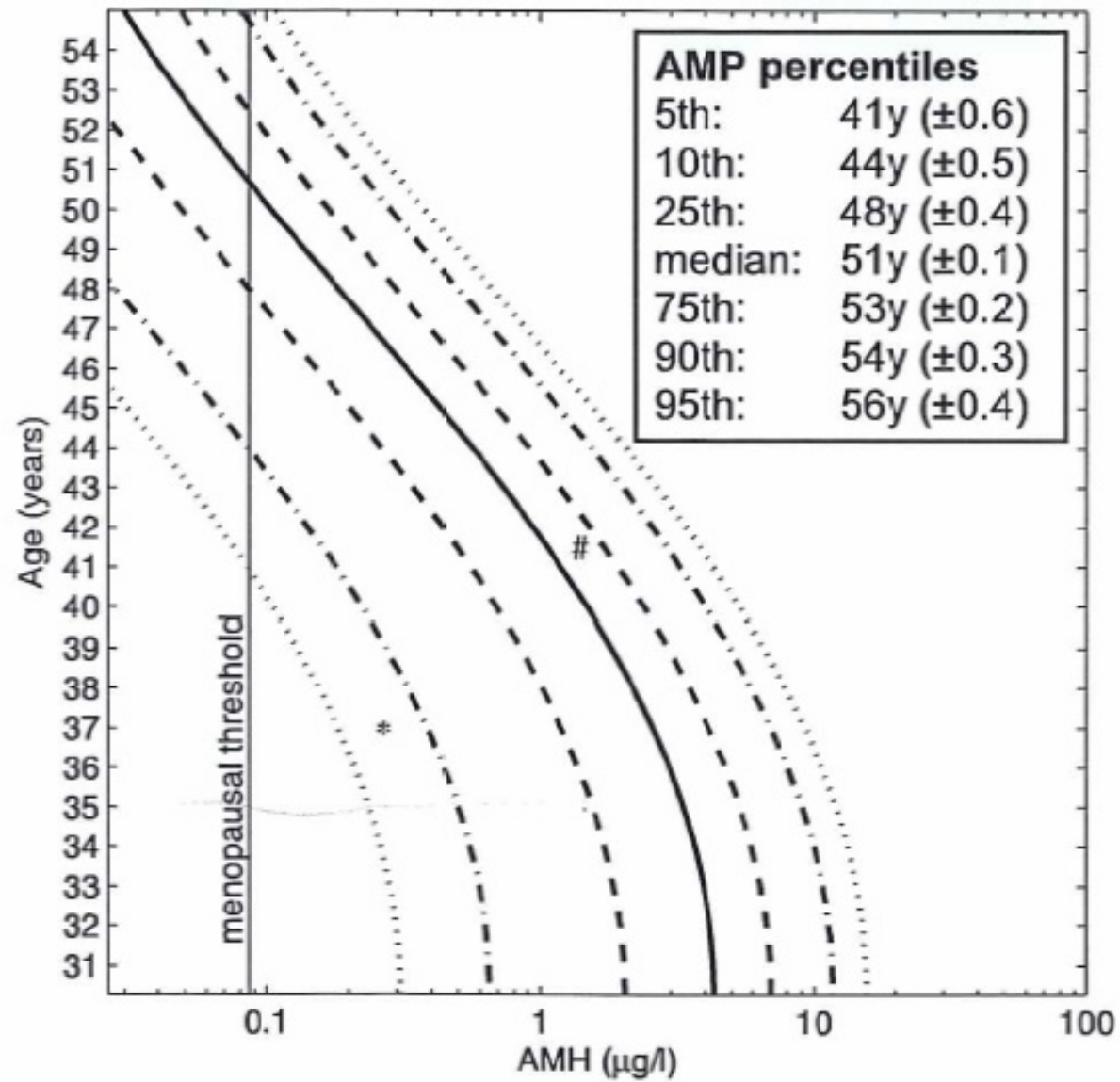
FIG. 1. Age-dependent AMH levels (●) plotted on a logarithmic scale to show more homogeneous variation ($n = 144$). The *solid line* indicates the smoothed estimate of mean AMH level as a function of age.

AMH

- Useful to assist in estimating likely age at menopause and consequently ovarian reserve
- Changes before FSH starts to rise
- Helpful in managing patients likely to hypo or hyperstimulate in response to gonadotrophin
- Current evidence doesn't support its use in determining clinical outcomes in treatment

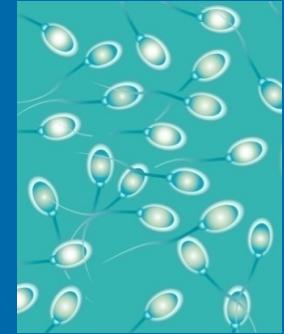


Green zone	Above the 25th centile for younger, fertile women	Very likely normal ovarian reserve - age is the best predictor of your future fertility	80% chance of 6 or more eggs in IVF
Orange	Between the 25th and 10th centiles for younger, fertile women	Some women in this range will have reduced ovarian reserve	50% chance of 6 or more eggs in IVF
Red zone	Below the 10th centile for younger, fertile women	Very likely reduced ovarian reserve	20% chance of 6 or more eggs in IVF



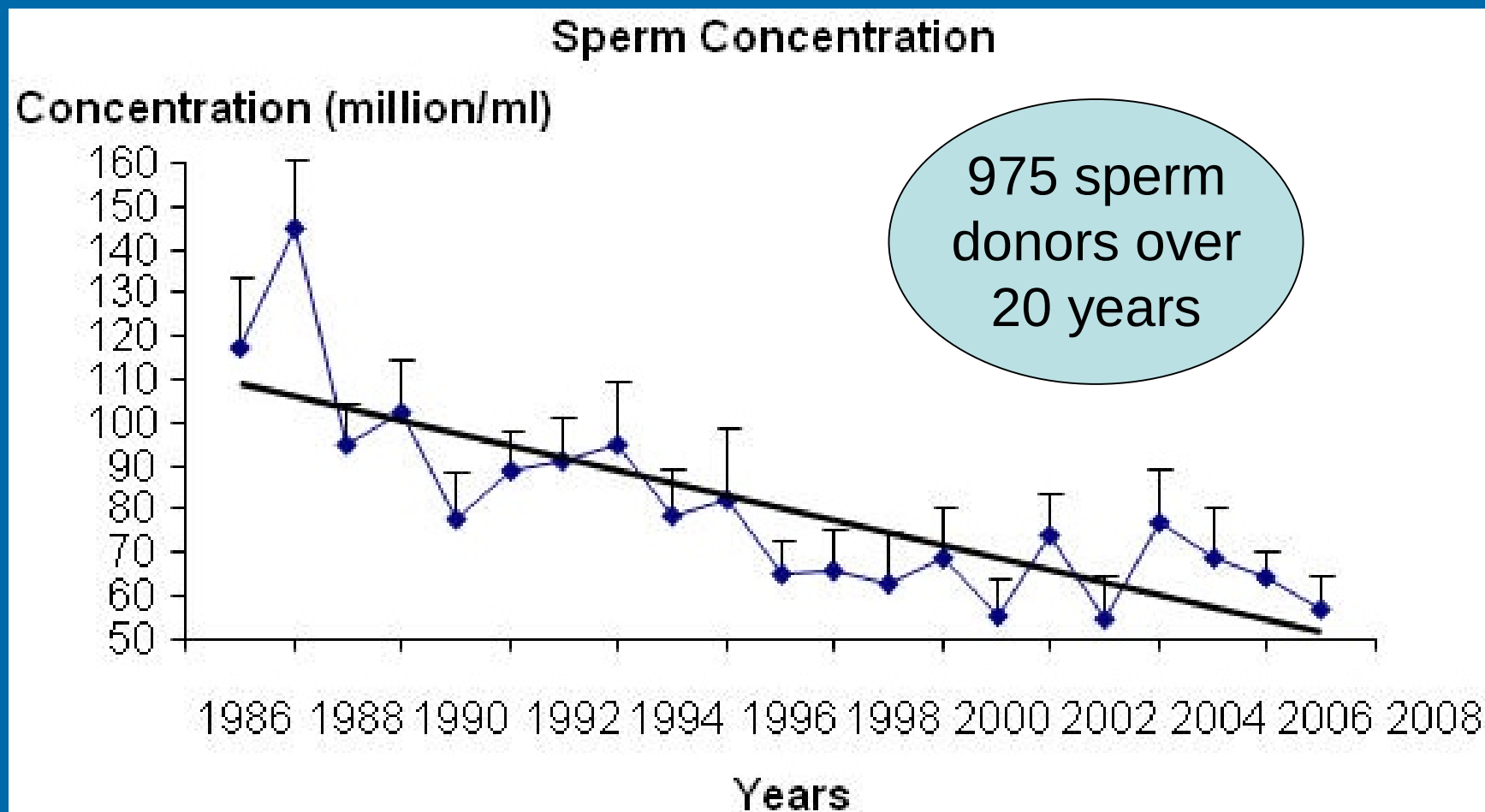
IVF success rates

Some Facts about Ageing, Men and Sperm



- As men age the testes get smaller and softer, sperm morphology and motility tend to decline
- DNA fragmentation increases
- IVF pregnancy rate decreases as DNA fragmentation increases
- Paternal age >50 leads to doubling the chance of fetal death
- Paternal age >40 leads to increased rate of miscarriage independent of maternal age

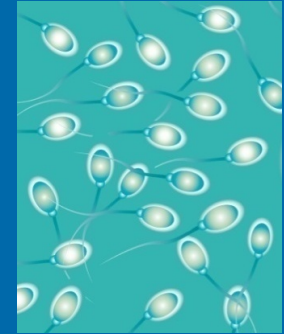
Changes in sperm



Changes in sperm

- DNA fragmentation
 - Age
 - ROS – heat
 - Chemo and radiation
 - Environmental toxins
 - Higher in ejaculate than testicular sperm
- Tests
 - TUNEL
 - SCSA
 - HALO

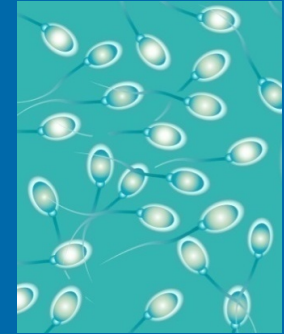
Some Facts about Ageing, Men and Sperm



Conception rate adjusted for female age

Years	Rate
< 25	1.00
30-34	0.62
35-39	0.50
> 40	0.51

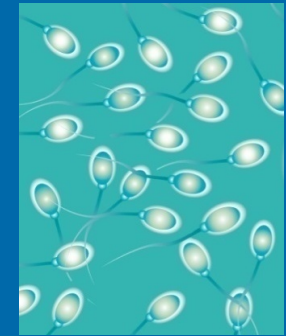
Some Facts about Ageing, Men and Sperm



Paternal age is a robust risk factor for the incidence of:

- Schizophrenia in offspring
 - At 45+ odds ratio 3.0 = 1:46 chance (Malaspina 2001)
 - Specific for schizophrenia
- Increase in autism
 - Compared with 30 years
 - >40 3 x the risk
 - >50 5 x the risk
- Increase in achondroplasia

Some Facts about Ageing, Men and Sperm



Effect of Weight on Infertility (Nguyen 2007)

Independent of sexual frequency, age, smoking

Normal weight	:	1.0
Overweight	:	1.2
Obese	:	1.36

Effect of Temperature on Infertility (U.S.C. study)

- Infertile men spend >30 mins / week in a hot tub
- Total motile sperm increased 490% at 3-6 months after stopping

Sperm retrieval for IVF

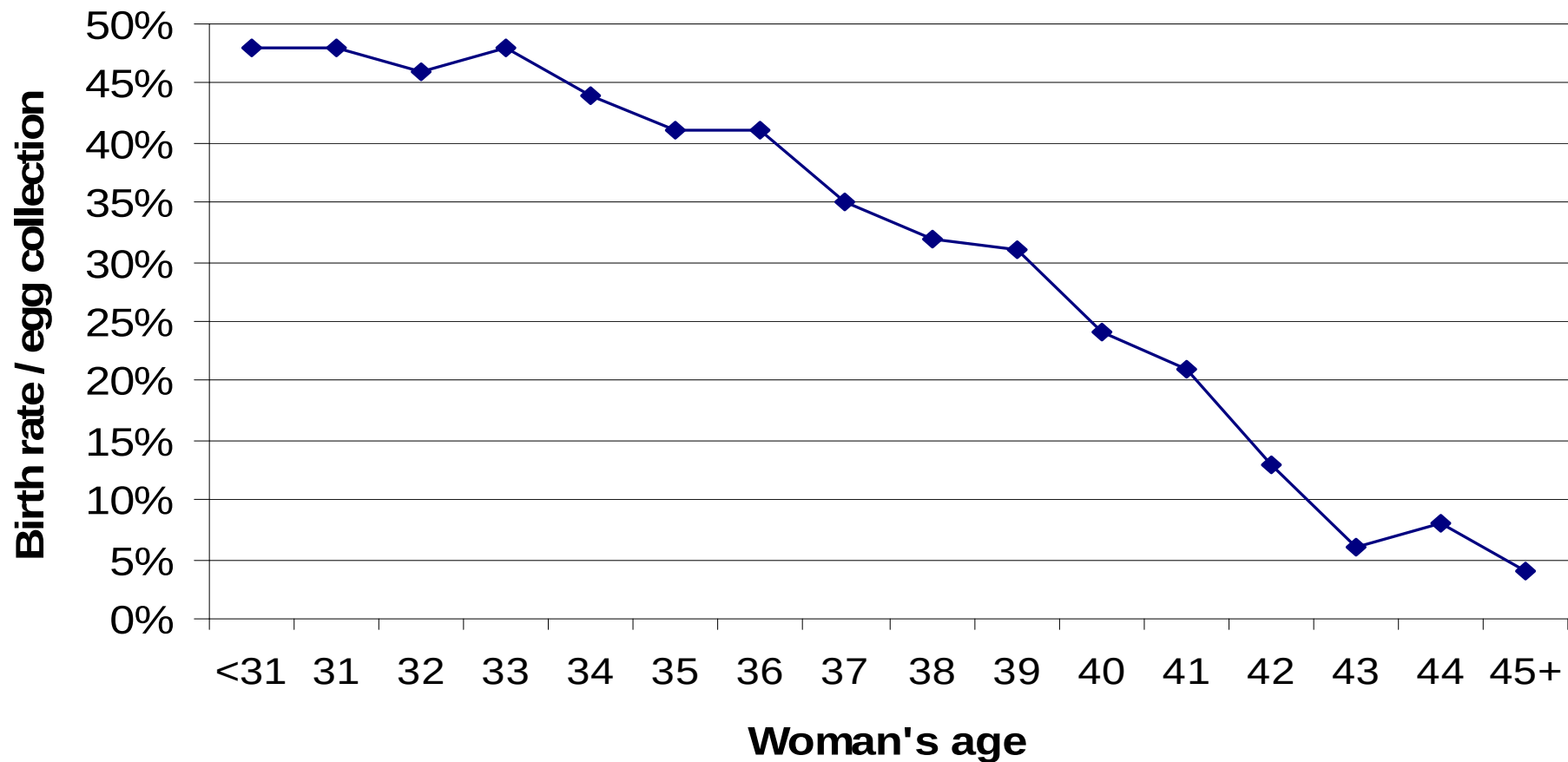
- Very few men in whom sperm are unobtainable
- PESA, TESA, TESE, biopsy, microsurgical biopsy
- Even in Klinefelter's Syndrome

Social consequences of reproductive ageing

- Altered family relationships
- Grandparents
- Have dependents at both end of life scale
- Increased requirements for state social support

The problem is a social one
requiring a social solution

IVF success rates



A new species?

IVF-lings...

- Girls born lighter
- Taller when compared to MPH
- There is a trend towards a lower BMI in the IVF groups
- Lower fasting triglycerides and LDL levels
- Higher HDL levels
- Trend to lower fasting insulin levels
- Trend towards higher IGF I levels



Nutrition in fertility

- Clearly a factor in growth and development
- A factor in incidence of congenital abnormality
- Likely to be important in epigenetic influences
- Perhaps important in 'ideal' development



Blastocyst culture



Day 3
8 cell embryo



Day 5
Blastocyst



Day 6
Hatching

- A method for selection
- 'Best' embryos transferred
- Fewer transfers and same # of babies

Freezing things

- Embryos
- Eggs
- Sperm



Oocyte freezing – who might benefit?

- Prior to chemotherapy (not the only option)
- Prior to surgical management of endometriosis
- Mosaic Turners Syndrome
- Family history of early menopause (with early evidence)
- ‘Social’

Sperm freezing - who might benefit?

- Prior to chemotherapy
- Prior to vasectomy
- In men with family history of declining sperm counts
- 'Social'



The future

- Sex for fun
- Insemination for conception
- IVF using frozen eggs for 'insurance'



Thanks