

## Life history timing

I presented steps along the road to parenthood, and then parenting itself, and how each might present unique challenges to women in science. I then discussed the evidence about whether motherhood is a significant contributor to the leaky pipeline problem. We then discussed some possible solutions to the barriers faced by people through pregnancy and parenting.

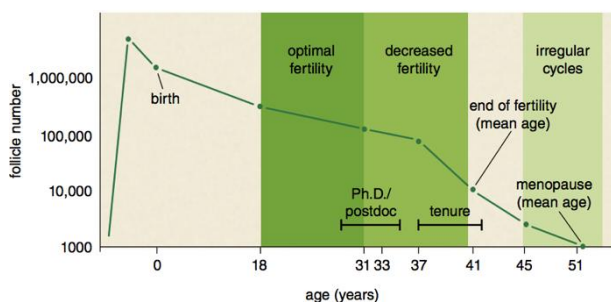
(Note that the focus is on having children, but that is not to imply that there are no other, equally important, family responsibilities for academics. The talk mostly focused on the challenges facing academics who can get pregnant, but all parents will bring their own perspective and face their own challenges based on their identities and life circumstances.)

### Fertility

In women, fertility begins to decline at 27. The risk of pregnancy complications increases with age, including the risk of [miscarriage](#). Potential parents may want to have children earlier because of emotional and energy considerations. About 16% of individuals and couples will face [infertility](#) treatments and this rate gets higher for older women.



- 91% of women can get pregnant at age 30
- 77% by age 35
- 53% by age 40



### Fertility and academia

The average age professors get tenure is now [close to 40](#). It is not an option, or at least not a reliable one, for women to wait to have tenure to have a child, if they want to have their own biological children.

*Williams & Ceci 2012*

Infertility treatments are [expensive](#), and they are also incredibly time consuming, and inflexible. Undergoing treatment could be a financially, emotionally and physically draining process. Many academics move to different cities or even countries for work. They may find themselves far away from their support structures, and familiar doctors.

### Pregnancy

Pregnancy is not just 40 weeks of getting gradually bigger. Even the healthiest pregnancies are going to involve appointments and everyone will experience symptoms such as fatigue, nausea and mood swings, among many [others](#). Complications can include: anemia, post partum depression, high blood pressure, preeclampsia and gestational diabetes.

## Pregnancy and academia



Some pregnancy symptoms and complications are worse than others, but none of them are going to make it easier to do field work, [lecture to a class](#) or go to a conference. Traveling towards the end of pregnancy becomes difficult, and doing the sometimes physically strenuous activities associated with field work might be impossible.

There is also some lab work that may be too risky to do during pregnancy (i.e. working with [ethyidium bromide](#)), and travelling to conferences or field sites can be complicated by pregnancy (for example, the Ecology conference was held in Florida in 2016, after [Zika](#) had been found in that state).

## Miscarriage

One in five known pregnancies ends in [miscarriage](#). Physical recovery usually takes a few weeks to a month depending on how far along the pregnancy was. There is a risk of complications like infection or hemorrhage.

## Miscarriage and academia

There is never a great time for this to happen, but the timing of miscarriage is likely to be when a scientist is trying to establish her career. Jessica Winegar recently wrote an [article](#) highlighting the emotional, financial and physical consequences of miscarriage for a young faculty. She points out that there is already a propensity for academics to suffer from mental health issues, and reproductive trauma increases the risk of experiencing anxiety or depression. She also discusses the time and dollar costs to such experiences, which, depending on your career stage and status could be very detrimental.

## Other routes to parenthood

Depending on the sexual orientation, gender and health status of an individual (and their partner if they have one), there may be additional or unique steps to parenthood. For individuals or couples with at least one uterus in the mix, artificial insemination methods such as IUI and IVF can be options. This may also help straight couples facing infertility issues. The [costs](#) of IUI and IVF will depend on geography and health insurance, but can run well into the thousands of dollars. In Ontario one round of IVF may be [covered](#) by government insurance (patients still pay drug costs). Since we tend to hear about successes, people may [overestimate](#) the success rate of technologies like IUI and IVF.

Not everyone who wants kids, can or wants to, get pregnant. A surrogate is a “gestational carrier”, this can be with her own egg, or with someone else’s depending on the wishes, circumstances of the couple and the rules of the clinic and jurisdiction. In Canada, surrogates are not paid but are compensated for medical costs, and the cost averages [\\$60000](#).

Domestic and international adoption is another route to parenthood. In Canada, there are an estimated ~30000 children eligible for adoption. Adoption [costs](#) range from \$0 to \$30000, depending on if the adoption is through the foster care system and domestic versus international.



For academics, the biggest hurdles to going any of these routes are going to be the costs, and the fact that many academics are moving around in their 20s and 30s. It can take many years to go through the adoption process, so academics may wait until they are settled into one place for the long-term before starting the process.

## Parenthood

### Breastfeeding

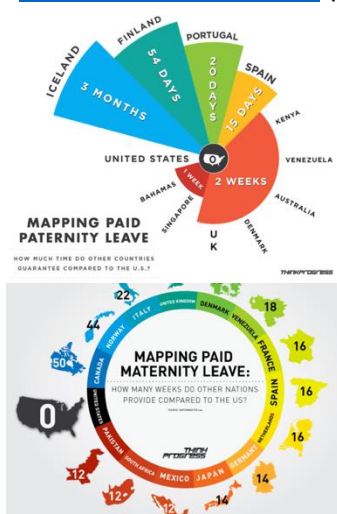
Anyone can be an awesome and equal parent, however, only some people can breastfeed. The APA recommends breastfeeding for at least 12 months, and WHO recommends 2 years +. A newborn will spend an hour nursing every 3 hours. Breastfeeding is a huge time investment, and mothers may face a lot of internal and external pressure to continue breast-feeding as long as possible.

Academic positions can be especially challenging for [breastfeeding](#). There is often a lot of travel, especially for field work, and breastfeeding for the full year is made much more challenging by crummy parental leaves.

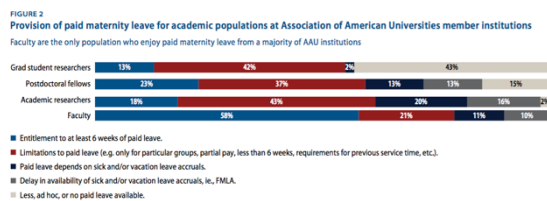
### Parental leaves

The amount of paid and unpaid parental leave that academics are entitled to will vary wildly based on their position and where they are living.

In Canada, if you are working full time you can take up to a year off and be supported by [Employment Insurance](#) (EI), and may be supplemented by work benefits. Since graduate students do not pay into EI, they do not qualify for these benefits, and so are subject to the rules of their own departments and supervisors.



In the USA the only guarantee is of 12 weeks unpaid leave. And there are restrictions on that depending on where you work. There is no guaranteed leave for fathers. The benefits at universities vary but are minimal compared to leaves at Canadian and European institutions.



Center for American Progress

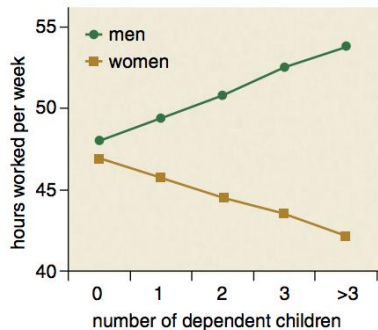
## Daycare

The way that many women can return to work (by paying for daycare or having family members take over childcare) may be more challenging for academics, depending on their career stage and location. For example, the cost of daycare in Toronto would be more than a graduate student at University of Toronto would make in a year. Many academics have moved far from their family of origins, and so getting consistent help from relatives may not be an option.



[www.whitehouse.gov](http://www.whitehouse.gov)

## Work-life balance



Women tend to do more unpaid work than men, regardless of whether they have children. “The majority of child care, housework and household management is done by women, and women scientists are no exception in assuming this greater burden.” - Williams and Ceci.

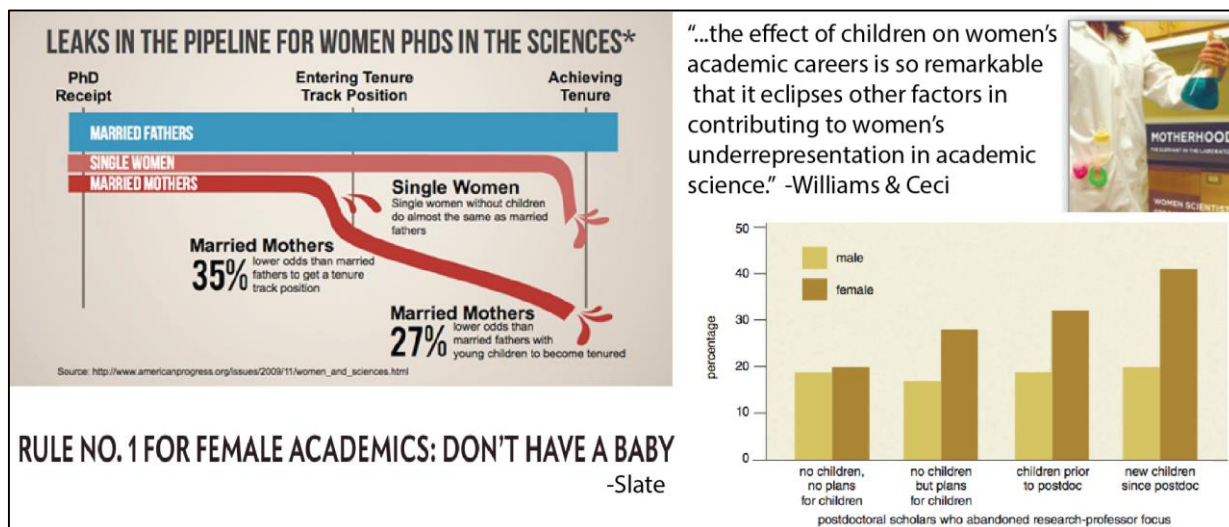
A unique factor for academics, as compared to many other jobs, is that it is very focused on the individual. Individuals hold grants, individuals run projects. A banker, teacher or nurse can go on leave, knowing equally qualified people are carrying out the work they did. In academia, that work might just have stopped. Or maybe a parent on leave will feel a lot of pressure to at least keep up with the aspects of their work that other people depend on. For principal investigators, the thought that the people they supervise have not stopped working, and may be missing their advice, could be a source of guilt and anxiety.

## What can be done to help...

- add family leave benefits for all genders
- supplements to maintain labs during leaves
- pay postdocs more
- modified duty/allow flex & part time
- stop tenure clock
- work from home esp. with young/ill children
- childcare at conferences
- strategies to not penalize older/non-traditional applicants
- ignore family-related gaps in CVs
- remove time cap barriers to entry
- foster reentry
- alternative academic roles
- adjust length of time on grants
- no-cost grant extensions
- reduced teaching loads
- grants for retooling
- hire couples
- on-campus childcare
- emergency childcare
- referral services
- lactation rooms
- family housing
- caregiver groups
- resources lists
- tuition remission
- healthcare (for dependents too)

Are pregnancy and motherhood responsible for the leaky pipeline of women in academia?  
*Depends who you ask...*

YES...



No...

Myth of the missing mothers  
 Meg Urry<sup>1</sup>

Why I’m So Glad I’m A Scientist And A Mom  
 UtahWomenandEducation.org

“It is harder to raise a family as a supermarket employee than as a professor of physics.”

And yet, women are making up for that lost productivity...  
 “While you have small children, it has an impact on you. But after that, it seems that the impact is the other way.”

**LONG GAME**  
**The ultimate efficiency hack: Have kids**

“Being a scientist was actually very conducive to raising kids.”

My thoughts:

The timing of competition, the length of training, the poor pay for long periods and winner take all setup mean that academia exacerbates social inequalities and expectations that make it harder for women to balance careers and parenthood. The collective result of all of our best choices given the biological, social and academia-related restrictions may be a pattern where women are underrepresented the faculty level.

## **Links:**

### Fertility

<http://voxeu.org/article/highly-educated-women-no-longer-have-fewer-kids>

<http://time.com/4181151/first-time-moms-average-age/>

<http://healthycanadians.gc.ca/healthy-living-vie-saine/pregnancy-grossesse/fertility-fertilite/fert-eng.php>

### Pregnancy

<http://money.cnn.com/2015/12/01/technology/pregnant-entrepreneur-european-conference/index.html>

<https://dynamicecology.wordpress.com/2015/11/30/reproduction-is-energetically-costly/>

<http://www.thepregnantscholar.org/>

<http://www.chronicle.com/article/The-Miscarriage-Penalty/238526/>

### Parenthood

<https://royalsociety.org/topics-policy/diversity-in-science/parent-carer-scientist/>

<https://tenureshewrote.wordpress.com/2016/08/30/guest-post-on-being-productive-and-reproductive-at-the-same-time/>

### Breastfeeding

<http://www.sciencemag.org/careers/2016/02/breastfeeding-while-building-career>

### Parental leaves

<http://www.theatlantic.com/business/archive/2015/11/both-moms-and-dads-need-paid-leave/417708/>

<http://www.npr.org/2016/02/08/465726445/how-to-get-dads-to-take-parental-leave-seeing-other-dads-do-it>

<https://sasconfidential.com/2016/02/19/parental-leave/>

<http://www.universityaffairs.ca/opinion/the-black-hole/reflections-male-scientist-parental-leave/>

### Motherhood and the leaky pipeline

<http://www.americanscientist.org/libraries/documents/201202081502514cbcu1j1n/2012281516518949-2012-03Williams.pdf>

<http://www.tandfonline.com.myaccess.library.utoronto.ca/doi/pdf/10.1080/13600800802383034?needAccess=true>

<http://www.sciencemag.org/careers/2004/01/best-place-mothers>

<https://tenureshewrote.wordpress.com/2016/01/25/putting-the-care-in-career/>

[http://www.slate.com/articles/double\\_x/doublex/2013/06/female\\_academics\\_pay\\_a\\_heavy\\_ba](http://www.slate.com/articles/double_x/doublex/2013/06/female_academics_pay_a_heavy_ba)

[by\\_penalty.html](#)

<http://www.usnews.com/opinion/knowledge-bank/articles/2016-02-11/academia-must-correct-systemic-discrimination-and-bias-against-mothers>

<https://www.theguardian.com/commentisfree/2016/may/31/women-science-industry-structure-sexist-courses-careers>

<http://incubator.rockefeller.edu/want-to-keep-women-in-science-pay-postdocs-more/>

[http://www.nytimes.com/2016/06/26/business/tenure-extension-policies-that-put-women-at-a-disadvantage.html?\\_r=0](http://www.nytimes.com/2016/06/26/business/tenure-extension-policies-that-put-women-at-a-disadvantage.html?_r=0)

<http://qz.com/802254/the-ultimate-efficiency-hack-have-kids/>

<http://www.cornellpress.cornell.edu/book/?GCOI=80140100459270>

<https://www.sciencemag.org/careers/features/2008/02/nurturing-women-scientists>

<http://www.jstor.org.myaccess.library.utoronto.ca/stable/pdf/10.1086/511799.pdf>