



Wittgenstein Centre

FOR DEMOGRAPHY AND
GLOBAL HUMAN CAPITAL



From the Stork to Fertility Apps

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Team



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Background

Digital Revolution is having an **effect on our lives**.

Digital trace data is an **opportunity** for demographers.

Use of **Facebook** data for estimating migration, **Twitter** to expand the definition of migration. Also, studies on fertility looking at **Google Trends**, but also the effect of the mobile **phone** on fertility.

Why study fertility apps?

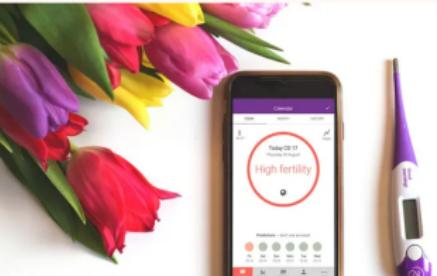
Women are turning to birth control smartphone apps for a reason

Dawn Foster

Tue 24 Jul 2018 06.00 BST

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Contraception technology isn't foolproof, but doctors must realise why we find the idea so appealing

▲ Women need more information about their own fertility, as well as about the side effects of contraceptives.¹
Photograph: Daniela Frök/Natural Cycles

Could an algorithm replace the pill?

Cern scientist Elina Berglund developed an app to monitor her own fertility, with impressive results. Now thousands of women are using Natural Cycles to prevent - and plan - pregnancy

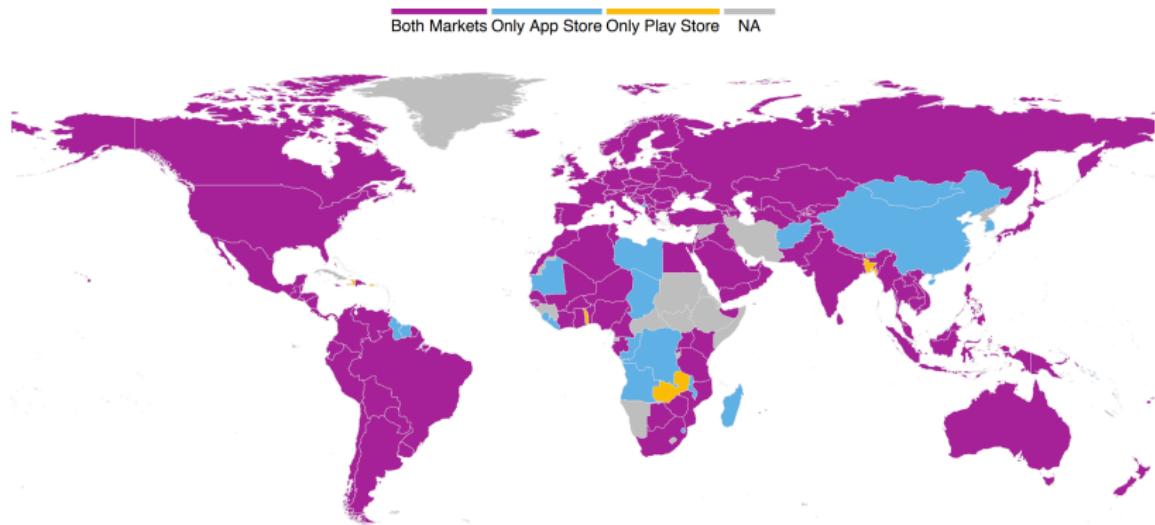


▲ Software solution ... particle physicist Elina Berglund Scherwitzl has turned her attention to fertility.
Photograph: Linda Nylind/The Guardian

IUDs, implants, condoms and the ever-present pill: for years, contraceptive methods have remained run-of-the-mill while the search for a new alternative that could revolutionise the industry has come up short.

**Leverage data from Play
Store and App Store to
study fertility tracker apps.**

Geography



133 countries with 'Both Markets', 40 additionally with 'Only App Store', and 12 additionally with 'Only Play Store'.

Aims

- 1 **Quantify** which are the most used fertility tracking apps.
- 2 Explore the **global distribution** in use of fertility tracking apps.
- 3 Explore some of the **reasons** why individuals choose to download and use fertility tracking apps.

Data on the App Markets

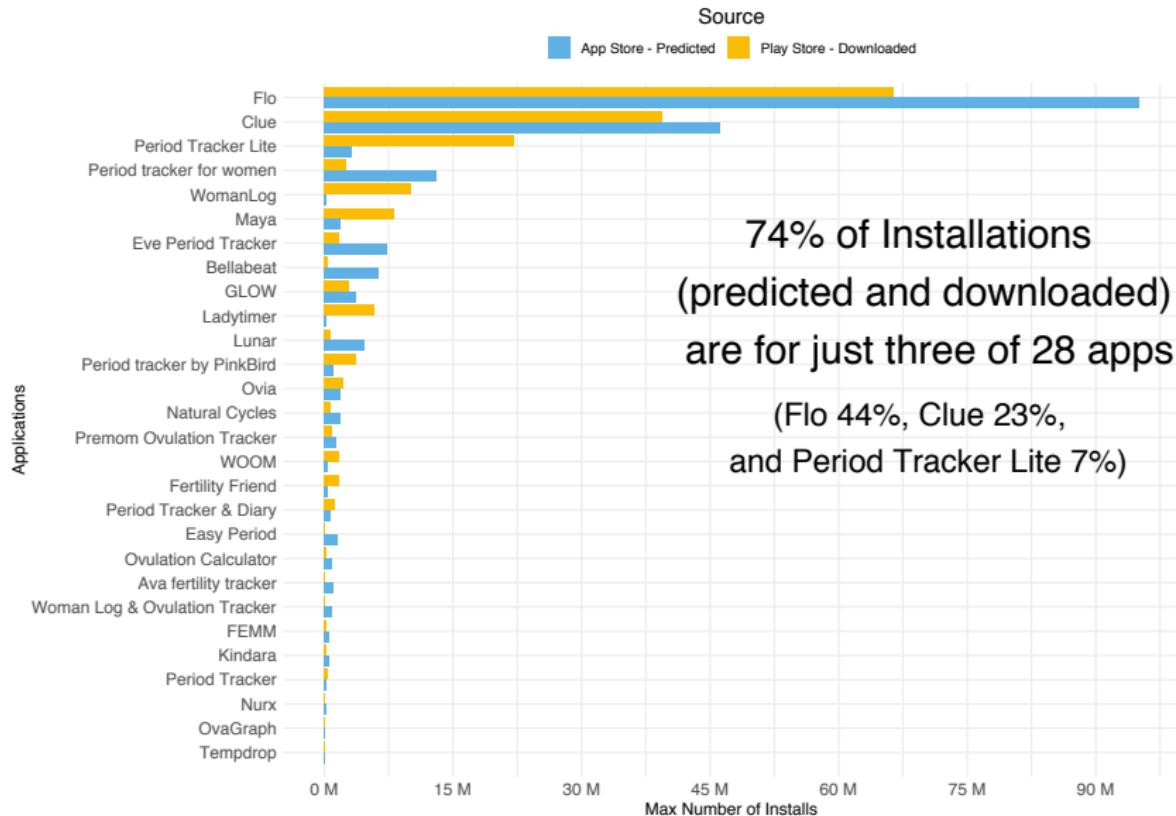
	Play Store	App Store
Description	✓	✓
Installations	✓	✗
Reviews	✓	✓
Ratings	✓	✓
Country	✗	✓
Languages	✓	✗

Two steps:

- **Estimate** the number of App Store **installations** through a **log-log model** using the Play Store data;
- **Distribute** the Play Store data **by country** using the App Store data.

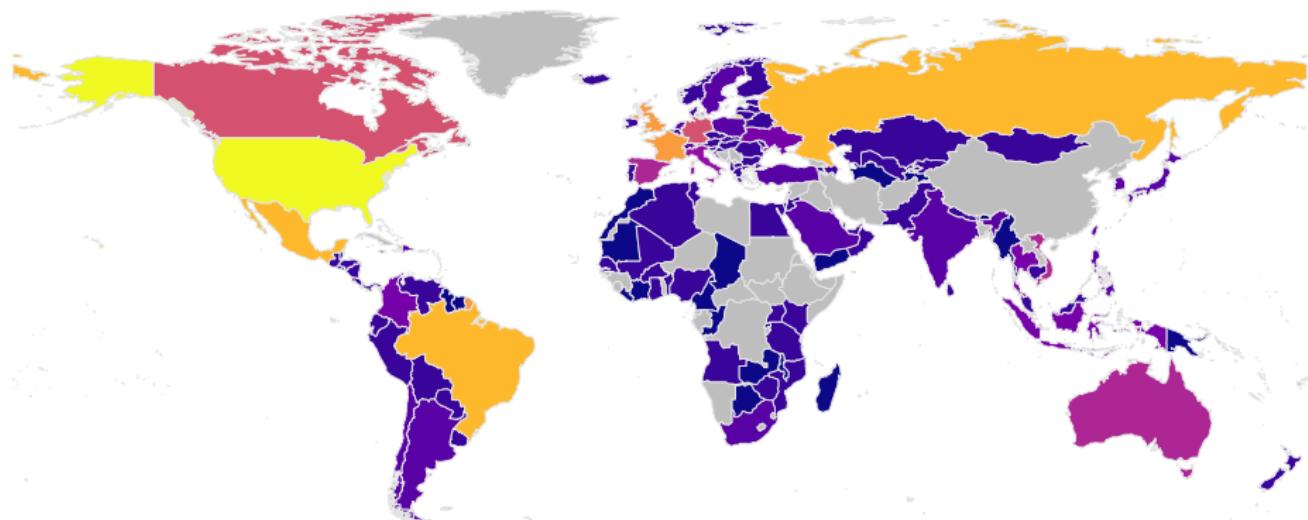
Assumptions: proportionality across reviews and ratings.

Number of Installations (Log-log model)



Geographic Distribution

Installations by Country



Two steps:

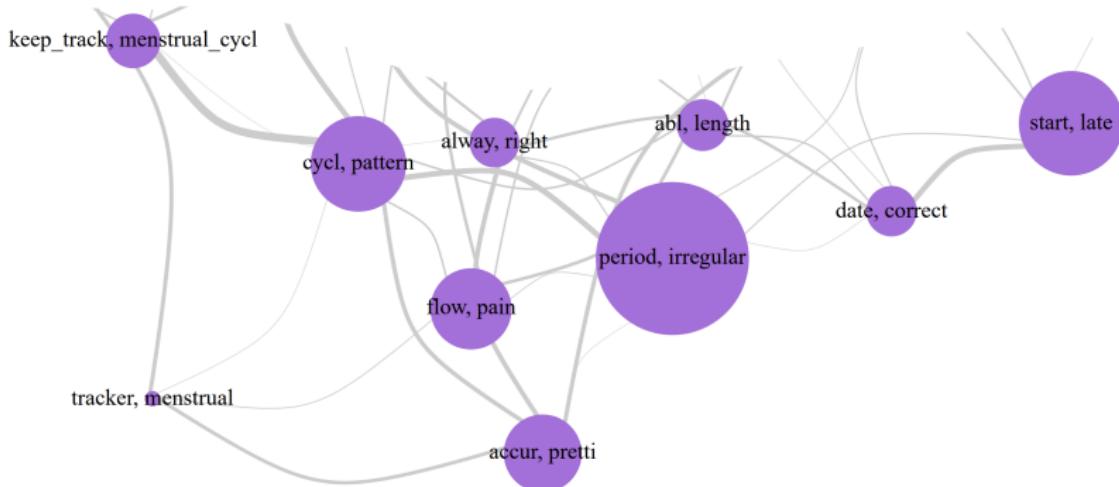
- Clean the scraped data;
- Diagnostics and selecting the **structural topic model** (Roberts et al. 2013).

Assumptions: many unknowns.

Menstruation tracker: 45%

keep_track, menstrual_cycl e.g:

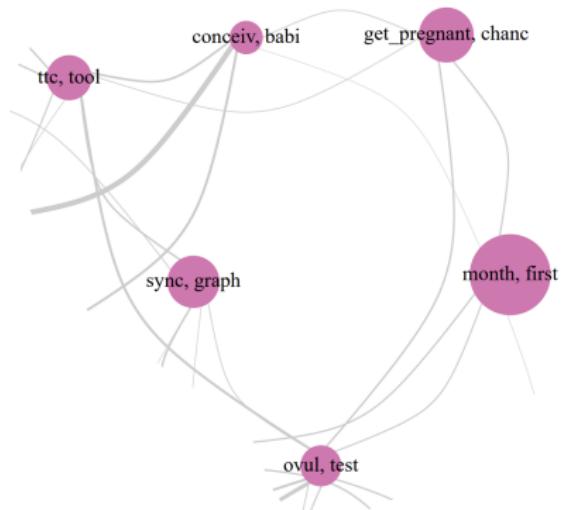
“Awesome cycle tracker. Easy to read and fill out, easy to keep track off... It has helped tremendously.”



Conception: 21%

conceiv, babi e.g:

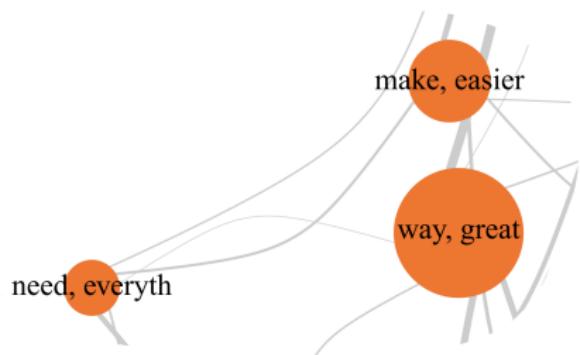
"This app was so accurate that it helped me to conceive in my very first attempt. And I'm happy to say that I am the mother of handsome and healthy baby boy. I have been recommending this app to anyone who has inquired about my journey into motherhood from conception to birth."



Ease of life: 12%

make, easier e.g:

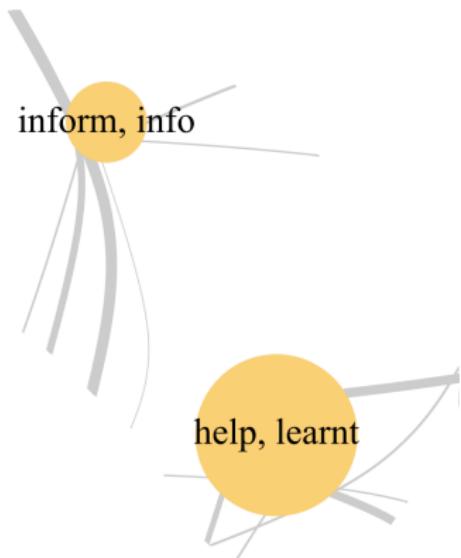
"This app has seriously been a life saver it lets me know when my period is going to be here so I'm never surprised! It's great to keep track of things too. The app is just amazing and makes life easier !"



Education: 9%

inform, info e.g:

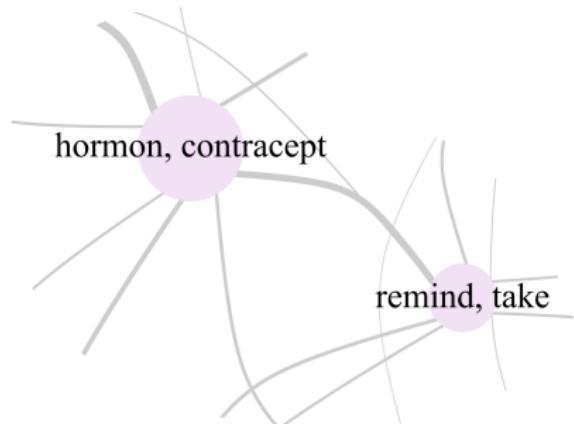
"This is a great app and it provides useful and educational information. The more information you provide about your experience, the more accurate the app gets at predicting and keeping track of everything."



Contraception: 7%

hormon, contracept e.g:

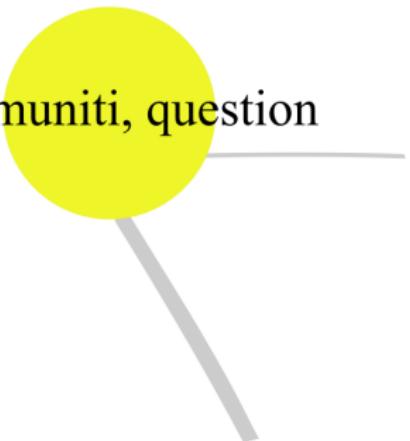
"I love having a method of contraception which isn't hormonal. I have been using this app for 7 months and my confidence in it has only grown with time as the app has learned more about my individual cycle. I feel so empowered to finally be in touch with my body too!"



Community: 6%

communiti, question e.g:

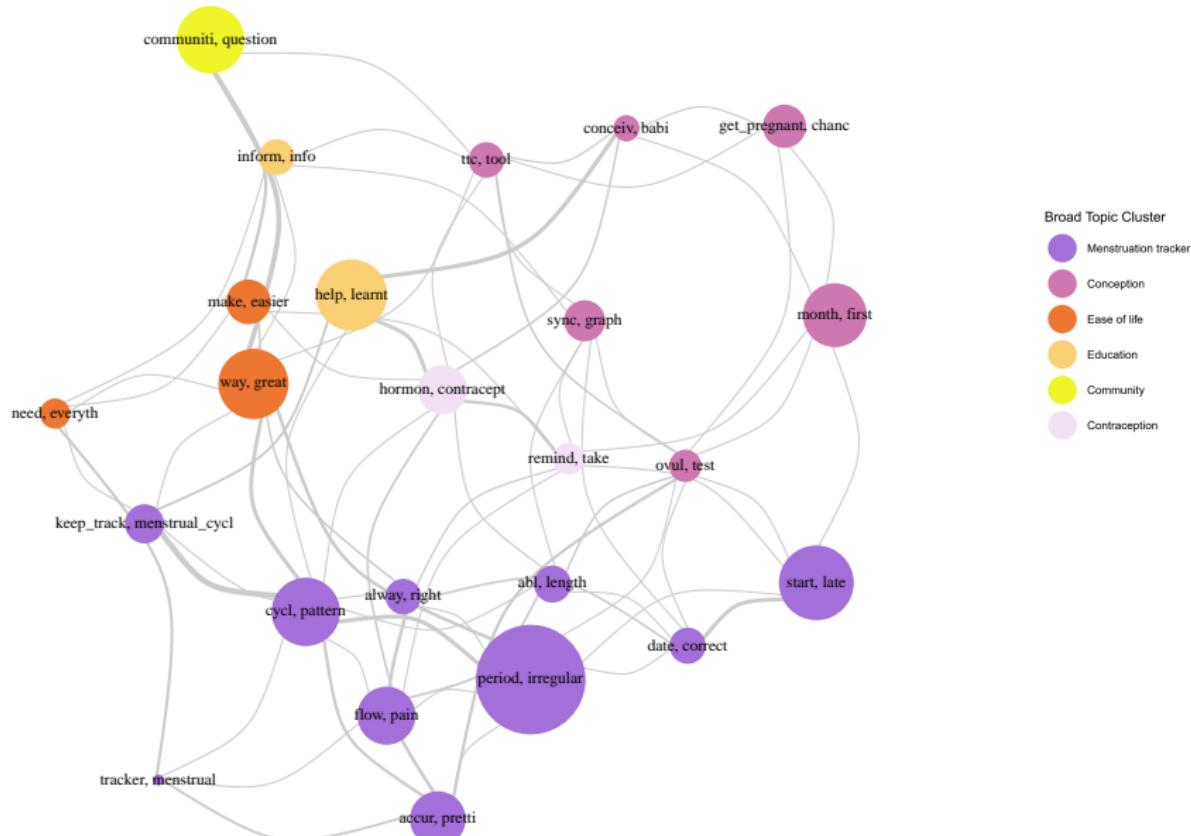
"I love that there's so many groups/people to ask or give advice as well as to share real life experiences and stories. Women elevating Women from all over the world!!absolutely love Glow"



communiti, question

A yellow circle with a grey line pointing from its bottom right towards the text "communiti, question".

Overall topic model



Size refers to proportion of reviews belonging to topic, connections based on similarity between topic contents.
Corpus size: 179,679 reviews.

Conclusions

Installations larger in the **Global North**, though present in the **Global South** too.

Three apps most installed (Flo, Clue, Period Tracker Lite).

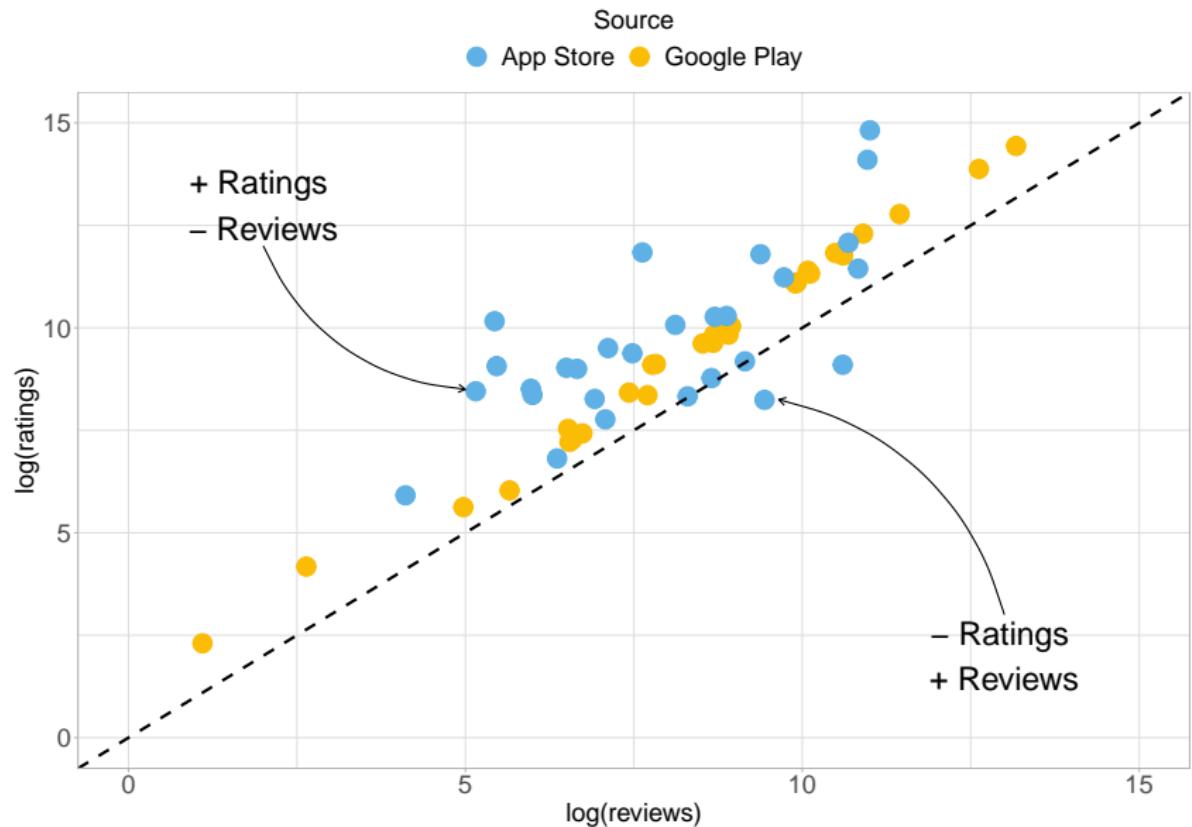
The main **reasons for use**:

- Menstruation tracker.
- Conception.
- Ease of life.

Thanks from Francesco, Alyce, Pietro
and myself

Other figures

Relationship between Reviews and Ratings



Data Pipeline



Apps



Search



Download

Create a list of apps (e.g., ten fertility tracker apps) on Apple Store and Google Play Store

Search for all the similar apps on the two markets

Identify the apps existing on both markets

Download the information available on the two markets

Clean the dataset from similar apps but not of interested

Complete topic model

