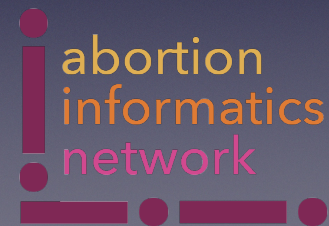


Dissident Pregnancy Detection Models

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Inside Researcher, Abortion Informatics Network



Hello and thank you so much to the hosts of this private gathering of member organizations connected to the Abortion Informatics Network. I'm honored to be here representing the inside research wing of the Abortion Informatics Network and I'm going to be discussing our latest updates to our pregnancy detection models and abortion information dissemination.

Pledge of Silence, Safety and Solidarity

“I solemnly and sincerely swear that I will not speak of the information divulged in this network to anyone outside of the network. The community in this room will help maintain my resolve and will nurture my silence. I know that the lives of pregnant people and abortion providers are at stake, and I accept this great responsibility.”

Abortion Informatics Network, founding documents, 2020



As with all of our sessions at this gathering, I want to remind you of the Pledge of Silence, Safety and Solidarity, to remind us that the lives of pregnant people and abortion providers are what is at stake in this work.

Timeline of AIN's Pregnancy Detection Work

- 2010 – Pregnancy detection modeling begins w/i companies
- 2014 – Inside research begins within companies
- 2020 – AIN founded, merger of several regional networks along with a couple distinct inside research digital operations
- 2022 – *Roe v Wade* overturned by *Ferth v Wilders*
- 2023 – AIN launches our national pregnancy detection information service with the National Network of Abortion Funds (103 orgs)
- 2025 – AIN launches platform-integrated service for algorithmic service provision



So, just to catch you up - here is the timeline of AIN's pregnancy detection work. As far as we can tell, pregnancy detection modeling began in 2010.

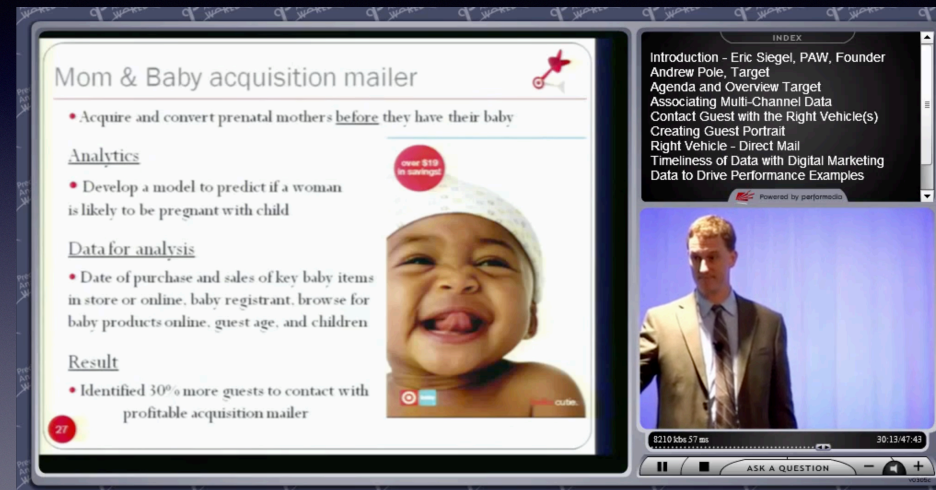
We started planting people as inside researchers inside corporations in 2014. Back then, “we” was not quite yet the Abortion Informatics Network — we were a tightly knit collective of tech workers who were deeply committed to reproductive justice. We performed our day jobs – usually as software developers, systems administrators or data scientists in corporations and then by night we pooled our models, data and algorithms to take action on reproductive justice issues like abortion which was already under threat at the state level at the time.

AIN was founded in 2020 by Lakisha Woods. We could all see the writing on the wall for the overturning of *Roe v Wade* long before it actually happened in 2022 — for example, in 2019, 90% of U.S. counties had no abortion clinic— , so what Lakisha did was coordinate the existing National network of abortion funds with some of the digital activists like ourselves to create a comprehensive national informatics strategy for harm reduction amidst abortion inequality. As Lakisha says, “abortion is a right, not a luxury good.”

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CUT? So as we know, *Roe v Wade* was overturned during the second Trump administration by the case *Ferth vs Wilders*. This made abortion illegal and also forbade any public or private provider from distributing or mentioning any information about abortion. What we also all know is that this has meant that abortion, like breastfeeding, contraception, and other aspects of reproductive health, has become a luxury good. Those with means and connections can still access safe abortions. And those without have no access and no options. This translates to severe racial and socioeconomic inequalities - Indeed our network and many of your organizations were founded precisely to resist those inequalities.

Background - Target 2010



Screenshot from a video of statistician Andrew Pole's presentation at Predictive Analytics World about Target's pregnancy detection model in October 2010 titled "How Target Gets the Most out of Its Guest Data to Improve Marketing ROI"

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Pregnancy detection as an information problem first emerged into the public eye when Andrew Pole, a statistician working for Target presented at Predictive Analytics world in 2010.


Now, Target like many retailers, has for years been collecting data on people's ("guests") purchasing habits through their customer loyalty program. Pole detailed how he built a statistical model to analyze the purchase dates of around twenty-five common products, such as unscented lotion and large bags of cotton balls, in order to detect whether a customer was pregnant and to predict their due date. Why is this useful to Target? well, Evidently, pregnancy is the second major life event, after leaving for college, that determines whether a casual shopper will become a customer for life.

I was not working there at the time, but Target turned around and put Pole's pregnancy detection model into action in an automated system that sent discount coupons to possibly pregnant customers. Seemed like a good idea until a Minneapolis teenager's dad saw the coupons for baby clothes that she was getting in the mail and marched into his local Target to read the manager the riot act. Why was his daughter getting coupons for pregnant women when she was only a teen?!

It turned out that the young woman was indeed pregnant. Pole's model informed Target before the teenager informed her family.

Hence here you can see a slide from Pole's presentation as to why Target wants to acquire prenatal mothers and convert them into lifelong Target customers.


Pregnancy detection scandal/opportunity



Kashmir Hill, Forbes Staff Welcome to The Not-So Private Parts where technology & privacy collide

TECH | 2/16/2012 @ 11:02AM | 1,441,868 views

How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did




Every time you go shopping, you share intimate details about your consumption patterns with retailers. And many of those retailers are studying those details to figure out what you like, what you need, and which coupons are most likely to make you happy. Target, for example, has figured out how to data-mine its way into your womb, to figure out whether you have a baby on the way long before you need to start buying diapers.

Charles Duhigg outlines in the New York Times how Target tries to hook parents-to-be at that crucial moment before they turn into rampant — and loyal — buyers of all things pastel, plastic, and miniature. He talked to Target statistician Andrew Pole — before Target freaked out and cut off all communications — about the clues to a customer's impending bundle of joy. Target assigns every customer a Guest ID number, tied to their credit card, name, or email address that becomes a bucket that stores a history of everything they've bought and any demographic information Target has collected from them or bought from other sources. Using that, Pole

Magazine

How Companies Learn Your Secrets

By CHARLES DUHIGG FEB. 16, 2012



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The scandal happened in 2012 when writer Charles Duhigg described this story in the New York Times. The media saw scandal, policy wonks saw privacy issues and scholars saw gender injustice. But we at the AIN saw opportunity. The seed was planted for us around this idea of leveraging corporate data to counter the asymmetry of reproductive justice information. We saw that if we had access to that information, we could more effectively target those in need of counseling around abortion services. We don't call this data stealing. We call this data sharing. It's just that not all parties know that they are sharing.

Pregnancy Detection Products Today

- I am the product manager of all customer acquisition systems (models, algorithms, data & infrastructure).
- Brand risk mitigation: indirect coupons and algorithmic ads, not direct mailers
- Improved accuracy of Pole's model
- Early (<6 weeks) detection model: incorporate menstrual product purchases, preg tests, 90% accurate for Target superguests.

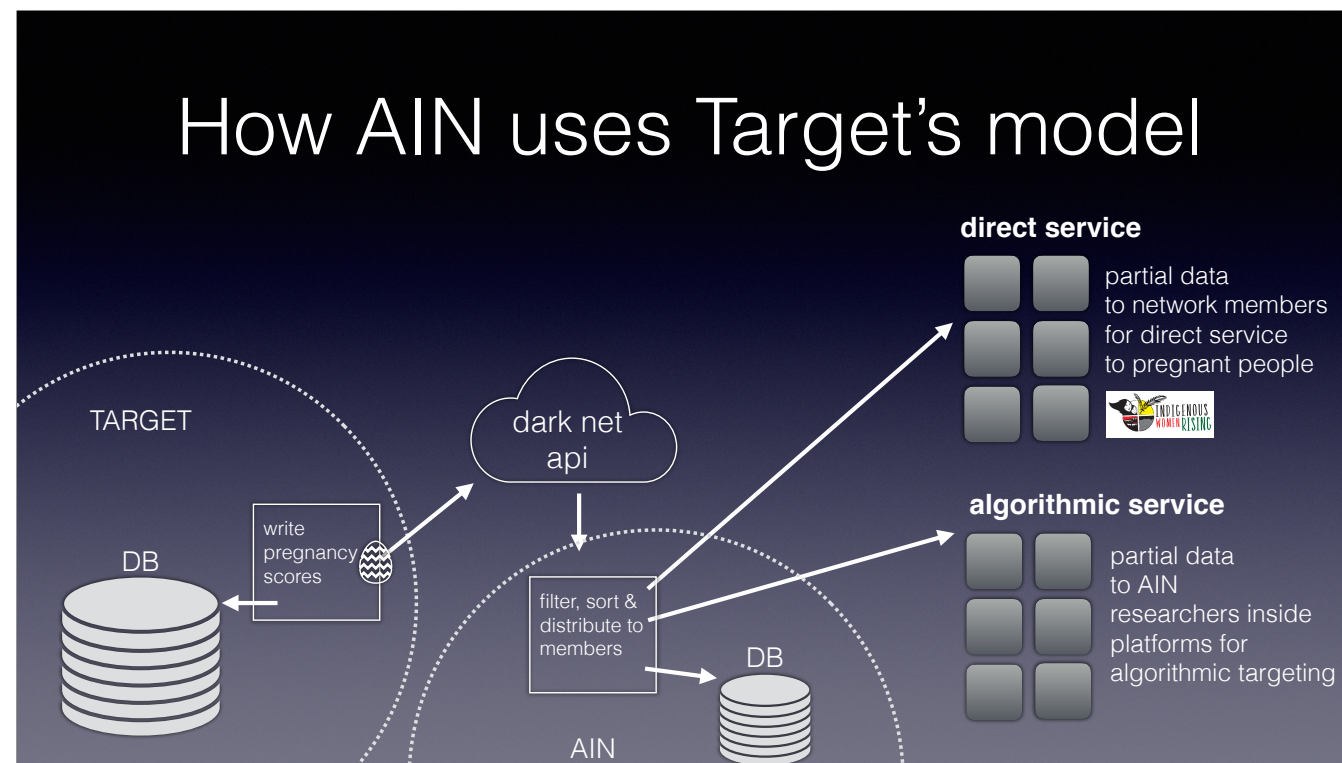


This is when AIN's inside research model was born. In 2014, after several unsuccessful applications, I joined Target as an analyst. At first I worked mainly in SEO, but after several years was able to transition and I'm now the product manager of all of our customer acquisition models.

Basically my role is to manage these products within Target by day to drive purchases and customer loyalty, and by night, to *share* that data into the hands of the Abortion Informatics network. One example of feature development that I've been able to do, that benefits both parties, is develop an early pregnancy detection model. Getting reliable information about abortion is essential early in pregnancy, and options from providers rapidly decrease as gestation time increases. This pointed towards a need to identify pregnant people as soon as possible, ideally even before they know they are pregnant. I'm proud to have stewarded the early pregnancy detection model where we can now detect pregnancies before 6 weeks with 90% accuracy.

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This only works with super-guests - those customers who buy almost all of their groceries and products at Target, but it's an exciting emerging area for both Target and AIN.



The most innovative thing is not the model but rather the way AIN disseminates the information. The way that this works is that Target's pregnancy detection systems runs the algorithm once a day. As it saves pregnancy prediction scores to the Target database, it makes a hidden call to a dark net api and sends that same data - which has names and locations of pregnant people - thru a couple routing points and ultimately to the Abortion Informatics Network servers.

From there our application layer filters and sorts the information and routes personal information to either 1) do direct service — the appropriate local or regional organization in the network OR to 2) do algorithmic service - this personal data ends up going to other AIN inside researchers who work at platforms.

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Work with Inside Systems Administrator - they have all-access permissions to servers. delete logs.

Once the pregnancy detection algorithm runs, sets up queue for adding probable pregnancies to the DB.

—> As we do that, it hits a dark net API and sends that data, including names, personal addresses, previously purchased products, to AIN servers. The code is explicitly hidden from source code editors by the Python EasterEgg library so staff programmers don't ever see it. The SysAdmin has also planted an obscured cron job to delete the server logs related to these calls, so no record of the transaction appears in the logs.

Once the data is stored on the AIN network we have to be very careful about who has access to it. First priority is to find local community who can get abortion information to



Indigenous Women Rising is committed to honoring Native & Indigenous People's inherent right to equitable and culturally safe health options through accessible health education, resources and advocacy.
@iwrising

(used with permission)

direct service provision



IWR founding mothers



direct service provision.

Indigenous Women Rising is one of the longest running and most effective examples of the over 100 direct service groups in the network. They were founded in 2017 and have been providing abortion funds and support to native people in the Southwestern US for more than 10 years.

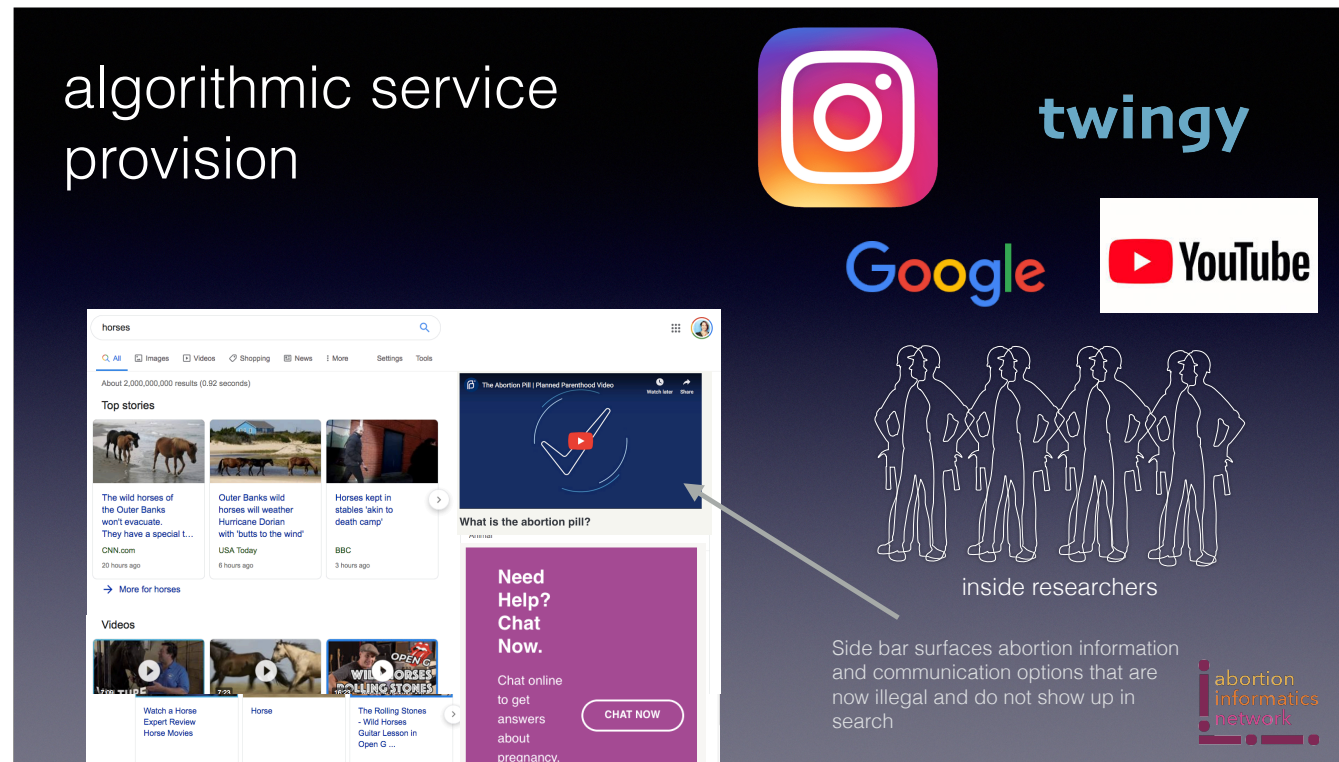
When IWR receives our lists of pregnant people, they are able to mobilize their networks of staff and volunteers to reach out personally to each and every person on the list. They extend an offer to help the pregnant people on the list find prenatal care and/or counsel them on the availability and location of safe, culturally sensitive abortion providers. They provide funds, transportation, abortion doula services, childcare and other things to make the process as smooth and supportive as possible.

FLIP BACK TO LOCATE PPL

AIN central keeps a record of which community organizations are on the ground, with human relationships and abortion information stewardship through personal networks. The first priority of our own algorithm is always to get the information to the people who can speak with others directly and provide them with a range of services that include not only access to safe abortions, but also grief and mental health counseling, contraception, childcare, food and other health information.

COLLAPSE THESE TWO DESCRIPTIONS

IWR falls into this category because of their deep relationships with different pueblos and tribes in the Southwest. So when AIN determines that a pregnancy that has been detected falls within their purview, it send them a secure record of who they are, where they are, etc. IWR knows who the safe abortion providers in their area are.



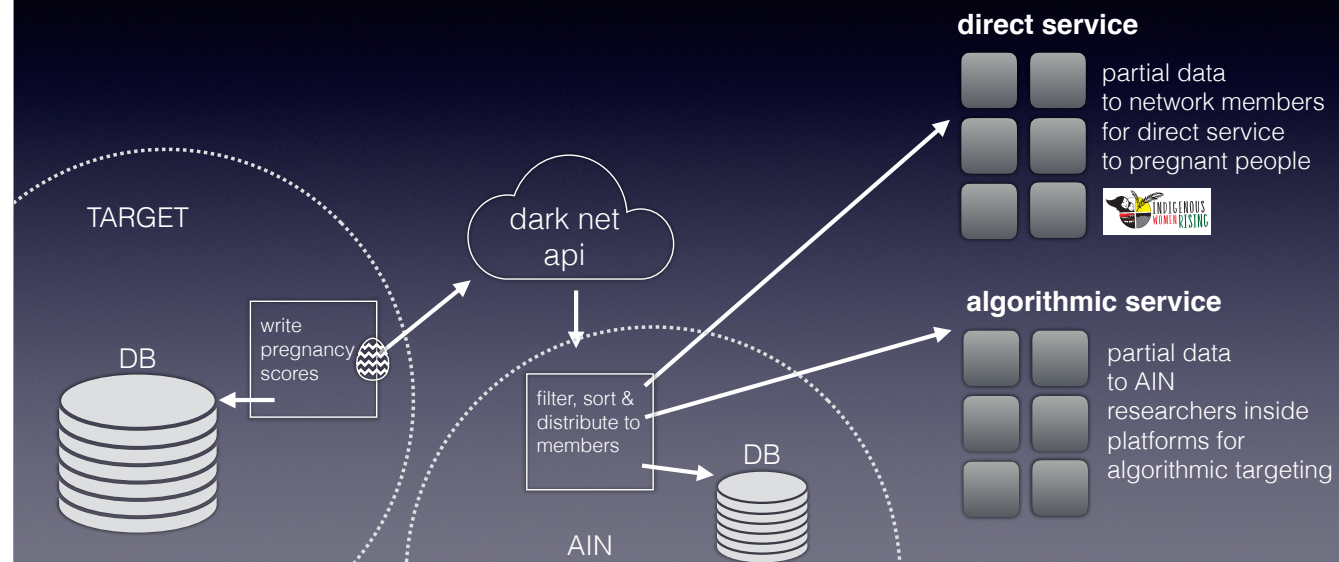
In cases where direct service isn't possible -our network of 103 organizations cannot reach a pregnant person with human-provided information - rural areas, insular communities, unstable housing situations - we fall back to algorithmic service provision.

In this case, we have to proceed with care and speed, because we are not able to connect them to a specific provider and their only option is a self-administered medical abortion.

Algorithmic service provision involves our own AIN network of researchers who work inside corporations. Inside the platform's systems, our inside researchers install and maintain plants/easteregg that intercept pregnant people's search requests to platforms (Google Search, YouTube videos, Instagram, and Twingy) and append coded search criteria. This is tweaked slightly differently depending on the platform but the outcome is that it surfaces information content from our network in recommendation systems. Following these links will help pregnant people 1) learn about the abortion process through trained counselors and 2) order pills in order to give themselves a safe, medical abortion through a digital ordering system run by partner organization Women on Waves.

The important thing to note in this system is that the pregnant person never knows how or why the information on abortion surfaced in their browser.

How AIN uses Target's model

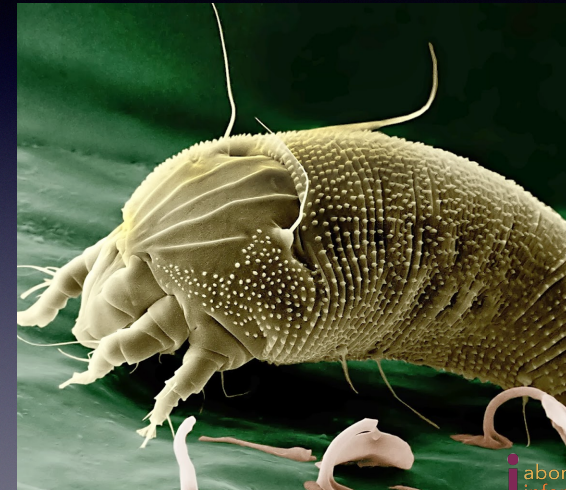


And it's also important to say that AIN does not keep a national list of abortion providers specifically because of the sensitivity of that information and the risk that would be involved if it fell into the wrong hands.

Parasitic Informatics

Parasites - an organism that lives in or on an organism of another species (its host) and benefits by deriving nutrients at the other's expense. Parasites are much smaller than their hosts, do not kill them, and often live in or on their hosts for an extended period.

In parasitic informatics, we keep the data and the models the same. We work to preserve the status quo. Then we steal and ingest the algorithmic outputs, and reengineer the “data setting” (Loukissas 2019) .



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Thanks to Rachael Lorenzo, Indigenous Women Rising, for reviewing a draft of this presentation

So how do we situate this system? We at AIN classify this as a example of parasitic informatics, this is a late-teens concept coined by labor movement scholars.

For many years in the late 20-teens, researchers focused on data ethics and algorithmic fairness that was limited to the dataset. There was a fixation on trying to clean data enough to make the dataset not “biased” and create tests for algorithms.

In parasitic informatics, we keep the data and the models the same. We work to preserve the status quo - it works for us if our host is as rich, as fat and as complacent as possible. Then we steal and ingest the algorithmic outputs, and reengineer the “data setting” (Loukissas 2019).

Thank you for your attention and your participation in the Abortion Informatics Network.

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But models and algorithms that are unjust in one data setting can be used for emancipation in another data setting.

So, the most crucial part of this is how the Abortion Informatics Network