



DRIVING INNOVATION INSIDE AND OUTSIDE UNHCR

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**IN 2017, AN AVERAGE OF 44,400 PEOPLE BEING
FORCED TO FLEE THEIR HOMES EVERY DAY**

**BRINGING A TOTAL OF 68.5 MILLION FORCIBLY
DISPLACED PEOPLE IN NEED OF INTERNATIONAL
PROTECTION**

**25.4 OF THEM HAVE CROSSED A BORDER,
BECOMING REFUGEES**

UNHCR has been
innovating for years,
However. . . .



...there were no
formal structures to
foster, capture &
reward innovation

**UNHCR Innovation
Service**
provides spaces
& structures for
experimentation
to occur within UNHCR

the challenge.



?

How can we provide **solutions** that cater to the
well-being and dignity of the forcibly displaced?



Innovation ≠ Technology

Innovation = new ways of doing things

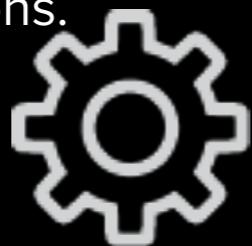
Product
Process
Policy
Paradigm

Our Innovation Process

We collaborate with stakeholders and decide whether or not to scale.



We test and refine those solutions.



We respond to field challenges that are demand-driven, not supply-driven.



We search in-house, and externally for solutions that exist.



We collaborate to identify the best possible solution.

Data Innovation in UNHCR

Why is data innovation important for UNHCR?

Make evidence-based decisions

Better coordination between partners for improving quality
of services

Accountability and transparency

What is data innovation in UNHCR?
Application of data science techniques, including -but not exclusively - the use of artificial intelligence for analysing non-traditional data sets for advocacy, preparedness and operational response.

A photograph showing several individuals in blue uniforms, likely UNHCR staff, working at a table. One person in the foreground is writing in a document. Behind them, a large stack of papers or files is visible. The background features a wall with the UNHCR logo and name repeated multiple times.

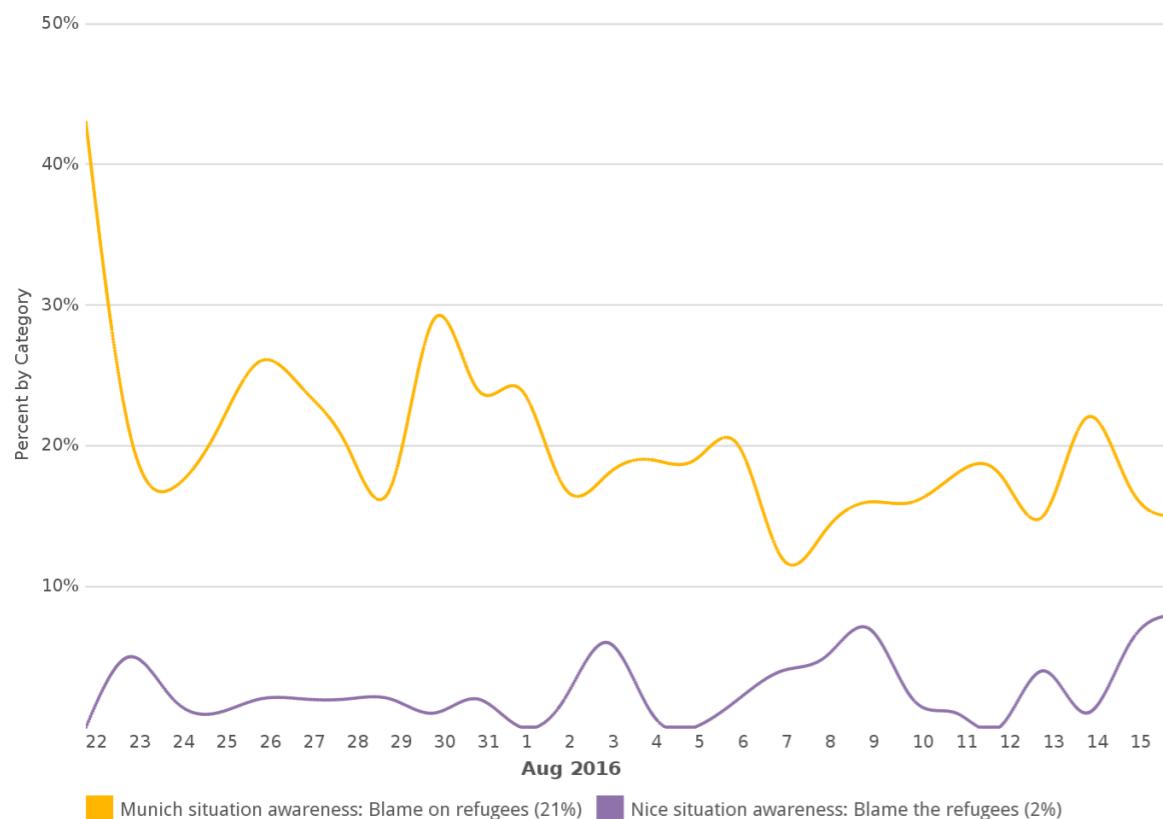
What does that
actually mean?

Topic #1:

Xenophobia and Hate Speech

Detecting xenophobia and hate speech towards refugees, **with UN Global Pulse**

Hypothesis: advocacy-related
“Some people link the 2016-17 terrorist incidents in Europe with refugees”



Number of tweets analysed: 3,433,800 (Nice) + 297,506,445 (Munich) = 300,940,245

Geography: Worldwide

Data Source: Twitter

Berlin truck terrorist yet another Muslim refugee.
Merkel's policy is now a national security threat.
Resign now. youtube.com/watch?v=rGsFGv...
2,001 4:06 AM - Dec 20, 2016

VS.

What is indefensible is the creation,funding and arming of terrorist groups that led to the refugee crisis in the first place

3 2:50 AM - Jan 29, 2017

Challenges

Technical

- **Veracity**
- **Representativeness**

Cultural:

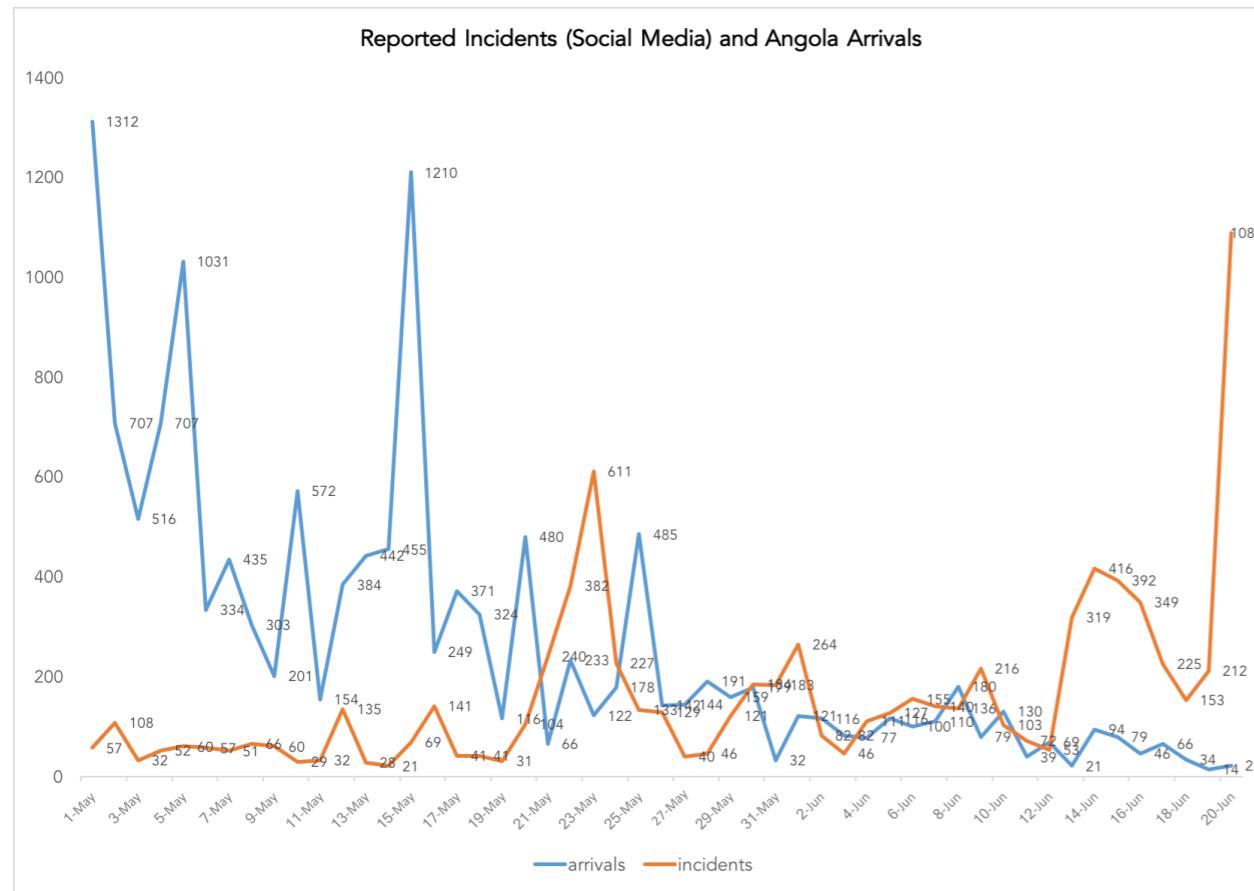
- **machine-trainers: native speakers with human rights background sarcasm/slang**

Topic #2:

Humanitarian Crisis Early Warning

Monitoring Violent Conflict Incidents & Displacement

DRC/Angola



Challenges

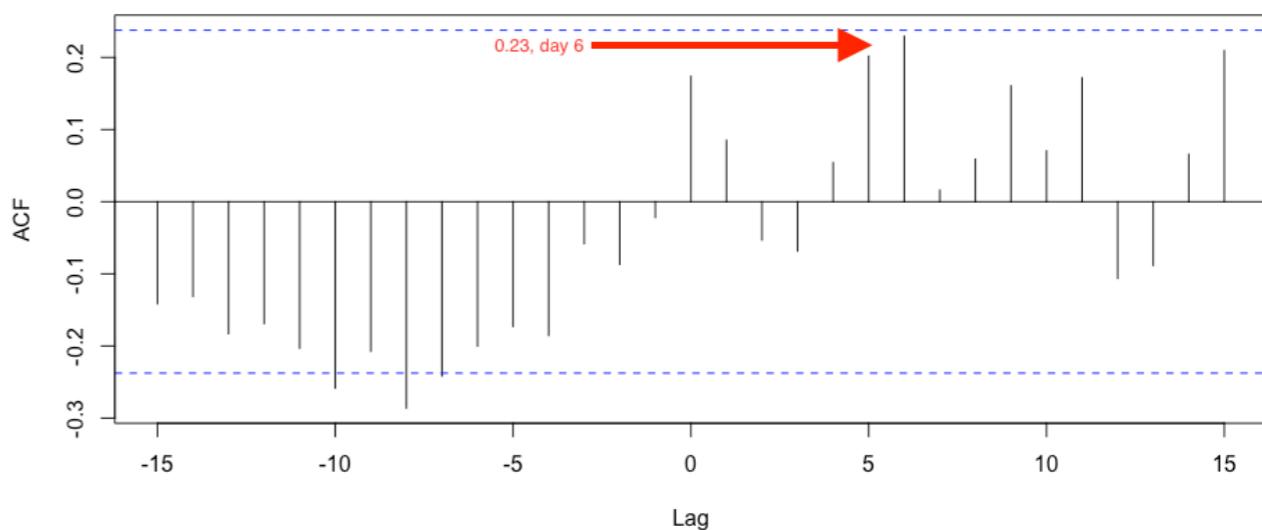
Technical

- Connectivity
- Representativeness
- Literacy rates

Data Source: Twitter

violence & displacement

Social media posts in Kasai Region about violent conflict-related incidents
vs.
Weekly arrivals UNHCR Angola



Topic #3: Forced Displacement Movement (Population Flow)

Monitoring intention of return (back)

Syria

Data Source: Twitter



1:10 PM - 19 Feb 2017



We became exiled in other countries. We took on the name 'refugees'. After we were once the children of pride and jasmine [in reference to the Jasmine-scented streets Syria is known for] Oh Syria, I swear on the life of those who created you. To you we will return

اقربنا ببلاد الهمزة
صار اسمنا لاجئين
بعد ما كنا ولاد العز والياسمين
يا شام .. وحياة اللي خلقك
لحيتك أكيد راجعين ..

Challenges

Technical

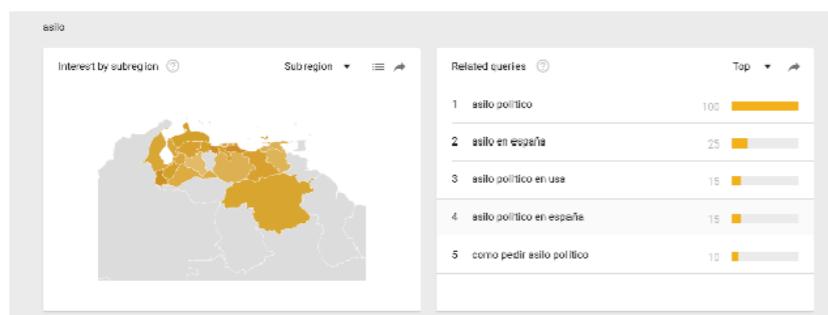
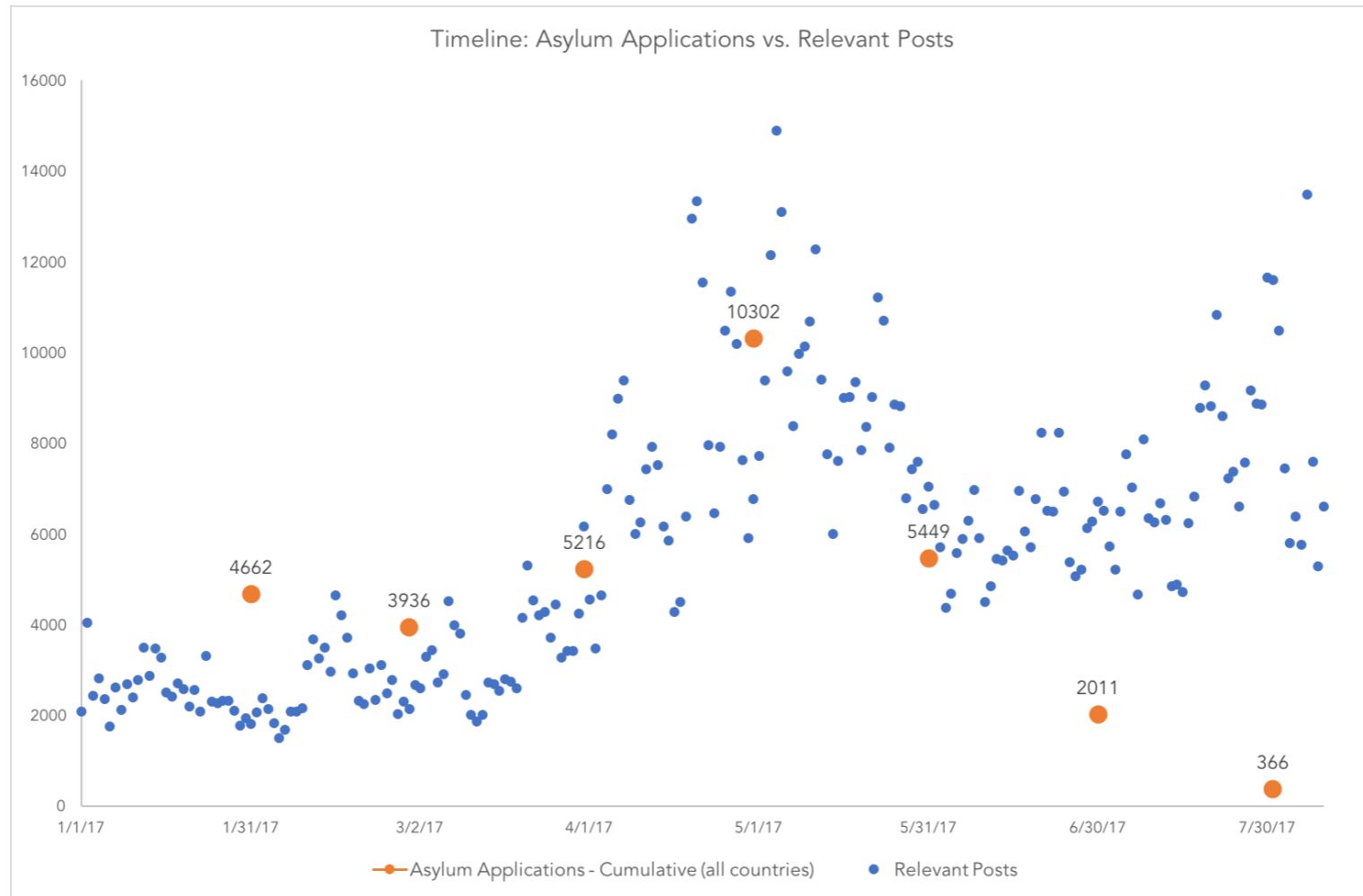
- Connectivity

Technical + Cultural

- Representativeness = not preferred Comms Channel

Monitoring intention of fleeing + asylum applications

Venezuela



Interest by Subregion

| Subregion | Index Score |
|--------------|-------------|
| Vargas | 100 |
| Miranda | 98 |
| Carabobo | 97 |
| Táchira | 91 |
| Nueva España | 86 |

Data Sources:
Google Trends + Twitter

Quiero llorar, tengo muchísimo miedo, no sé como
va a ser mi vida a partir de ahora, yo te amo
Venezuela, pero ahora lo que necesitó es huir
6:38 AM - Jul 30, 2017

por mucho tiempo me llené de excusas para no
salir/huir de Venezuela, estudios, experiencia,
familia.. ahora siento que es imposible
10:57 PM - Jul 27, 2017

1 3 2

Quantifying and validating official mixed-migration data, **with QCRI**

AMÉRICA LATINA Y EL CARIBE Stocks de Población Venezolana en la región

A 18 de septiembre de 2018

PLATAFORMA REGIONAL DE COORDINACIÓN INTERAGENCIAL PARA REFUGIADOS Y MIGRANTES DE VENEZUELA



Source: OCHA (2018) - 935,000

The screenshot shows the official website of the Colombian Ministry of Foreign Affairs (Migración Colombia). The main headline reads: "442.462 VENEZOLANOS IDENTIFICADOS EN REGISTRO RAMV RECIBIRÁN REGULARIZACIÓN TEMPORAL". The navigation bar includes links for Inicio, Entidad, El Director, Prensa, Trámites, Banco de documentos, Atención al ciudadano, CAM, and a search bar.

Source: RAMV Colombia (2018) - 819,034



819,034 venezolanos se encuentran en Colombia, de los cuales 376.572 tienen condición de regulares y 442,462 son irregulares. El Gobierno brindará en las próximas semanas, medidas temporales de regularización migratoria a venezolanos que realizaron el registro.

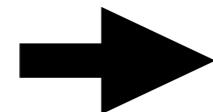
QCRI data on 2018 movement

- **Venezolanos en Colombia: 980,000**
- **Venezuelanos no Brasil: 81,000**

Project Jetson: Predicting Population Flow

Algorithm example (to be read by the machine)

```
Bay_CurrentRegion = #(delay(Awdal_Conflict), delay( Bakool_Conflict), delay( Banadir_Conflict), delay( Bar_Conflict), delay( Bay_Conflict), delay( Galgadud_Conflict), delay( Gedo_Conflict), delay( Hiran_Conflict), delay( Jubbada_Dhexe_Conflict), delay( Jubbada_Hoose_Conflict), delay( Mudug_Conflict), delay( Nugal_Conflict), delay( Sanaag_Conflict), delay( Shabeellaha_Dhexe_Conflict), delay( Shabeellaha_Hoose_Conflict), delay( Sool_Conflict), delay( Togheer_Conflict), delay( Wopooy_Galbeed_Fatalities), delay( Bakool_Fatalities), delay( Banadir_Fatalities), delay( Bar_Fatalities), delay( Bay_Fatalities), delay( Galbeed_Fatalities), delay( Gedo_Fatalities), delay( Hiran_Fatalities), delay( Jubbada_Dhexe_Fatalities), delay( Jubbada_Hoose_Fatalities), delay( Mudug_Fatalities), delay( Nugal_Fatalities), delay( Sanaag_Fatalities), delay( Shabeellaha_Dhexe_Fatalities), delay( Shabeellaha_Hoose_Fatalities), delay( Sool_W_HY_JETSONFatalities), delay( Togheer_Fatalities), delay( Wopooy_Galbeed_Fatalities), delay( Awdal_BeforeRegion), delay( Bakool_BeforeRegion), delay( Bar_BeforeRegion), delay( Bay_BeforeRegion), delay( Galgadud_BeforeRegion), delay( Gedo_BeforeRegion), delay( Hiran_BeforeRegion), delay( Jubbada_BeforeRegion), delay( Jubbada_Hoose_BeforeRegion), delay( Shabeellaha_Dhexe_BeforeRegion), delay( Shabeellaha_Hoose_BeforeRegion), delay( Wopooy_Galbeed_BeforeRegion), delay( Bakool_FutureRegion), delay( Bar_FutureRegion), delay( Bay_FutureRegion), delay( Galgadud_FutureRegion), delay( Gedo_FutureRegion), delay( Hiran_FutureRegion), delay( Jubbada_Dhexe_FutureRegion), delay( Shabeellaha_Hoose_FutureRegion), delay( Shabeellaha_House_FutureRegion), delay( Sool_FutureRegion), delay( Togheer_FutureRegion), delay( Woopy_Galbeed_FutureRegion), delay( Juba_River_Discharge), delay( Shabeille_River_Discharge), delay( Hiran_Belet_WeyneStation_Shabeille_River), delay( Hiran_Bulo_But_StationShabeille_River), delay( Shabeille_Dhexe_JowhaStation_Juba_River), delay( Shabeille_Dhexe_BulletStation_Juba_River), delay( Gedo_BulletStation_Juba_River), delay( Gedo_LuudStation_Juba_River), delay( Awdal_WaterDrumPrice), delay( Bakool_WaterDrumPrice), delay( Bar_WaterDrumPrice), delay( Bay_WaterDrumPrice), delay( Galgadud_WaterDrumPrice), delay( Gedo_WaterDrumPrice), delay( Hiran_WaterDrumPrice), delay( Jubbada_Hoose_WaterDrumPrice), delay( Shabeellaha_Hoose_WaterDrumPrice), delay( Sool_WaterDrumPrice), delay( Wopooy_Galbeed_WaterDrumPrice), delay( Shabeellaha_Hoose_WaterDrumPrice), delay( Sool_WaterDrumPrice), delay( Togheer_WaterDrumPrice), delay( Wopooy_Galbeed_WaterDrumPrice), delay( Awdal_gotprice), delay( Bakool_gotprice), delay( Bar_gotprice), delay( Banadir_gotprice), delay( Gedo_gotprice), delay( Hiran_gotprice), delay( Jubbada_Dhexe_gotprice), delay( Shabeellaha_Hoose_gotprice), delay( Sool_gotprice), delay( Nugal_gotprice), delay( Sanaag_gotprice), delay( Shabeellaha_Dhexe_gotprice), delay( Shabeellaha_Hoose_gotprice), delay( Sool_gotprice), delay( Togheer_gotprice), delay( Wopooy_Galbeed_gotprice), delay( Awdal_min), delay( Bakool_min), delay( Bar_min), delay( Banadir_min), delay( Bay_min), delay( Gedo_min), delay( Hiran_min), delay( Jubbada_Hoose_min), delay( Mudug_min), delay( Nugal_min), delay( Sanaag_min), delay( Shabeellaha_Dhexe_min), delay( Shabeellaha_Hoose_min), delay( Sool_min), delay( Wopooy_Galbeed_min), delay( Awdal_CurrentRegion), delay( Bakool_CurrentRegion), delay( Bar_CurrentRegion), delay( Bay_CurrentRegion), delay( Galgadud_CurrentRegion), delay( Gedo_CurrentRegion), delay( Hiran_CurrentRegion), delay( Jubbada_Dhexe_CurrentRegion), delay( Jubbada_Hoose_CurrentRegion), delay( Mudug_CurrentRegion), delay( Nugal_CurrentRegion), delay( Sanaag_CurrentRegion), delay( Shabeellaha_Dhexe_CurrentRegion), delay( Shabeellaha_Hoose_CurrentRegion), delay( Sool_CurrentRegion), delay( Togheer_CurrentRegion), delay( Wopooy_Galbeed_CurrentRegion))
```



Model produced by machine:

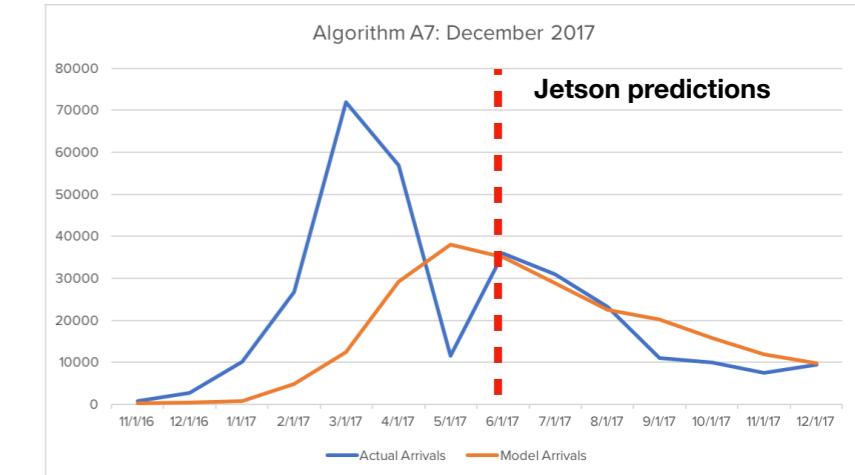
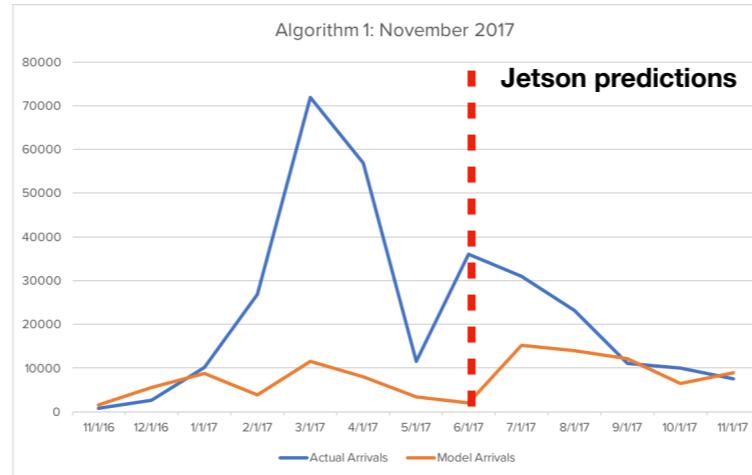
```
Bay_CurrentRegion =
max(max(delay(Awdal_CurrentRegion, 1),
0.00012717740817059*delay(Bakool_WaterDrumPrice, 1)*delay(Awdal_CurrentRegion, 1) +
log(delay(Jubbada_Hoose_rain, 1))*smm(delay(Bari_CurrentRegion, 1), 11) +
2.11983998917739e-6*delay(Mudug_BeforeRegion, 1)*delay(Shabeellaha_Dhexe_BeforeRegion, 1) +
1)*sma(delay(Nugaal_FutureRegion, 1), 10) +
delay(Sool_BeforeRegion, 15)) -
delay(Jubbada_Hoose_FutureRegion, 1),
0.805982905429227*delay(Awdal_Conflict, 1)^2*delay(Sool_Fatalities, 1)*delay(Bari_FutureRegion, 1))
```

Challenges:

Technical

- Computational power vs. data protection
- Open source vs. time-series ML software
- Open Data
- Prediction time - data availability

Bay Region



Predicting October

Time prior: 1 week

Jetson: **9,062**

Actual Arrivals: **10,003**

Predicting November

Time prior: 2 weeks

Jetson: **8,928**

Actual Arrivals: **7,750**

Predicting December

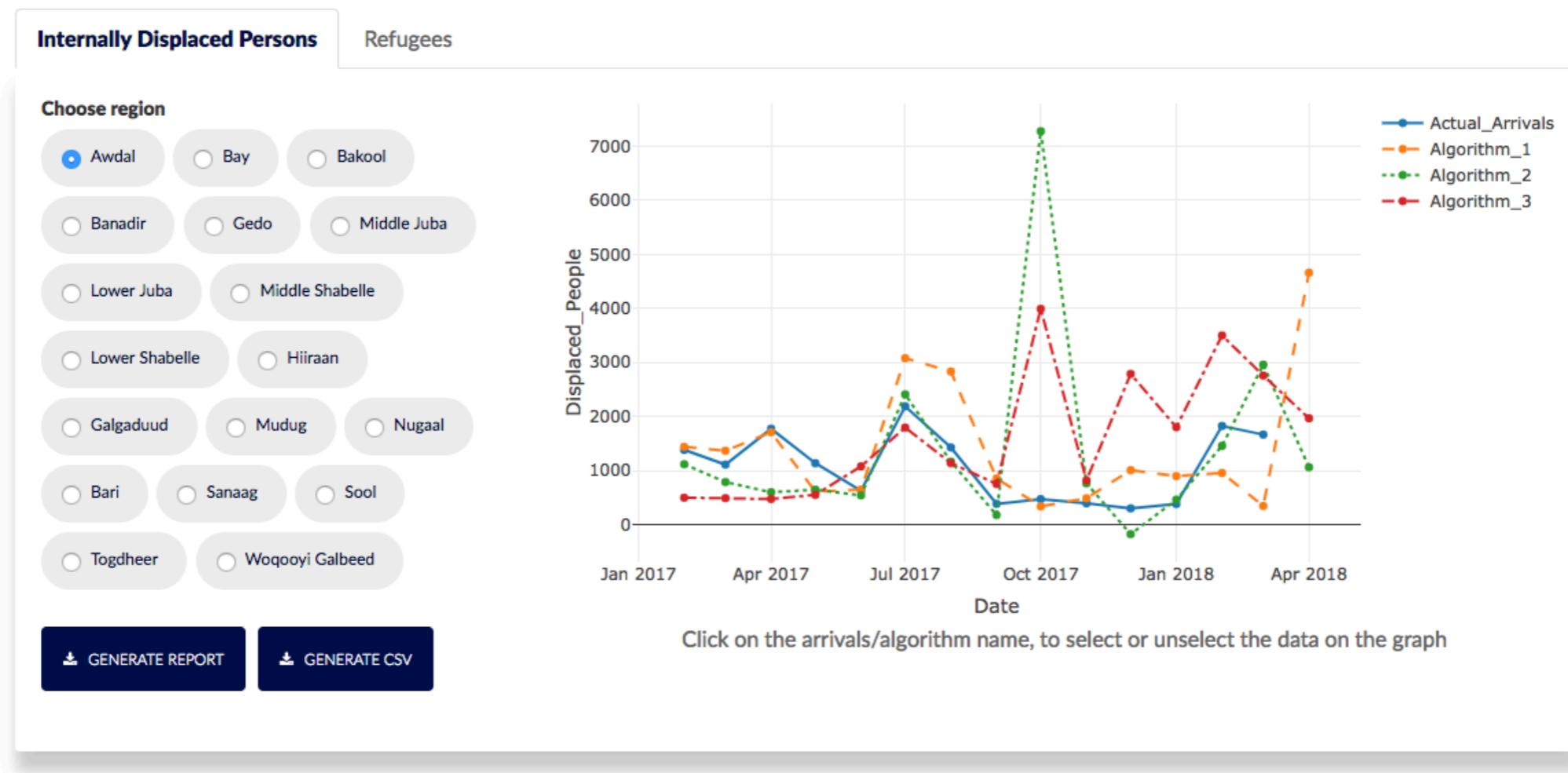
Time prior: 3 weeks

Jetson: **9,468**

Actual Arrivals: **9,881**

April 2018: 18 regions + Dollo Ado, Ethiopia

Prediction time: 3 to 4 weeks prior, 13 predicted
 $R^2 = 0.70$ to 0.95 , depending on region/model



among other projects and ideas that don't require A.I....

Planning a Mobile Phone Distribution?
10 things to consider, okay... there's a few more.

By Katie Drew, Innovation Officer (Communicating with Communities)



Why we're doing a series on women in the humanitarian sector

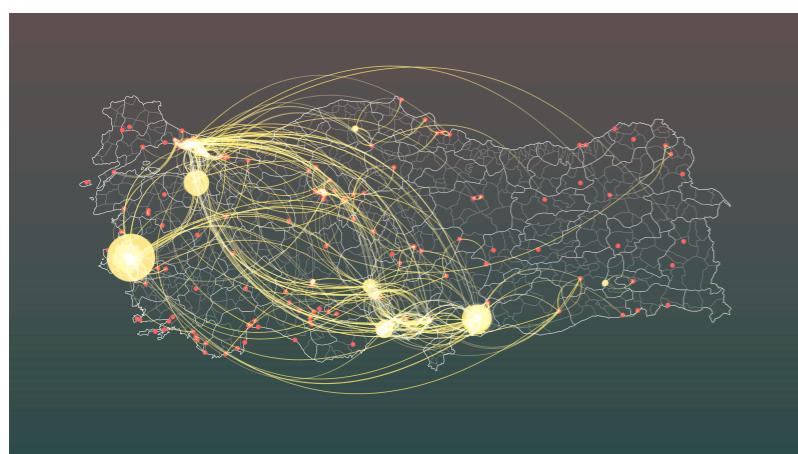
By Lauren Parater and Hans Park, UNHCR Innovation Service



Chatbots in humanitarian settings:
revolutionary, a fad or something in-between?



Turkey: mapping urban refugees movement with call detail records (CDR)



Innovation is about diversity and inclusion. Stop with the gimmicks, catch up.

By Chris Earney, Head, a.i., UNHCR Innovation Service

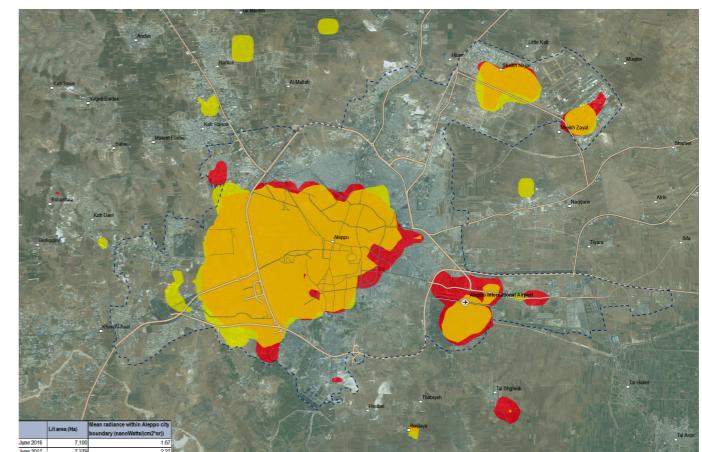


Comment Paris soutient l'intégration des réfugiés à travers l'innovation et la cuisine

By Céline Schmitt, Porte-parole, HCR à Paris March 24, 2017



Syria: Understanding population movement with satellite imagery (VIIRS) in Aleppo



Thank you!



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