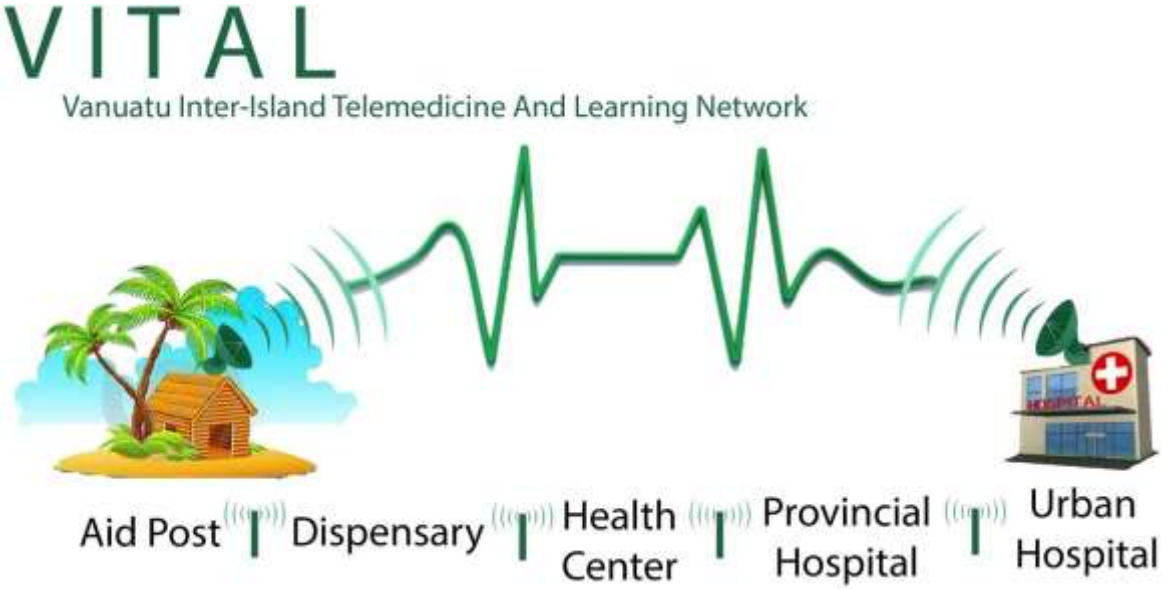
1 World Connected

Data-driven Research to Bring Billions Online



Deploying Telemedicine in Capacity Constrained Contexts: Lessons from the Vanuatu Inter-island Telemedicine and Learning Network Project

Overview

1 World Connected
Data-driven Research to Bring Billions Online

- Relevance
- Context
- The VITAL Solution
- Data and Methodology
- Insights and Discussion

Why should you care?

1 World Connected
Data-driven Research to Bring Billions Online

- Relevance
- Context
- The VITAL Solution
- Methodology and Data
- Insights and Discussion

Relevance

1 World Connected
Data-driven Research to Bring Billions Online

- Telemedicine holds the potential to help people in underserved communities access life-saving care, critical especially today
- Telehealth applications can be expensive: 0.5-1.5 million USD (Ministry of Health, Malawi, 2018)
- Only 7% developing countries report doing evaluations of mHealth programs (WHO, 2015)

Where is this talk based?

1 World Connected
Data-driven Research to Bring Billions Online

- Relevance
- Context
- The VITAL Solution
- Some Insights
- Open Questions

Context

1 World Connected
Data-driven Research to Bring Billions Online

- Vanuatu ranks 125th of 187 countries on the Human Development Index(WHO, 2012)
- Vanuatu has among the lowest physician densities in the world, with only 0.2 physicians per 1000 population
- Only 3% of households in Vanuatu use English or French, preferring to speak local, indigenous language or Bislama
- 80% live in rural areas

Context

1 World Connected
Data-driven Research to Bring Billions Online

Context

1 World Connected
Data-driven Research to Bring Billions Online

Context

1 World Connected
Data-driven Research to Bring Billions Online

- Study based in Maewo, Vanuatu Northern Province
- Nearest Hospital: Northern Provincial Hospital in Santo, 40 minute flight away
- Inter-island travel is prohibitively expensive and at times impossible owing to weather and infrequent transport ($300+ for Maewo-Vila)

Context

1 World Connected
Data-driven Research to Bring Billions Online

- Education levels are low: 95% < 10th Grade; Bakanao Primary School up to 6th Grade
- Two different languages spoken in Naviso
- Off-grid: only source of power is solar
- Village health worker + nurse aid at the dispensary clinic on Naviso
- Nearest health clinic with a nurse – 6 hours away

So what do we do?

1 World Connected
Data-driven Research to Bring Billions Online

- Relevance
- Context
- The VITAL Solution
- Data and Methodology
- Insights and Discussion

VITAL

1 World Connected
Data-driven Research to Bring Billions Online

- Vanuatu Inter-island Telemedicine and Learning Network
- Set up as a community-led telehealth solution and supported by ex-Peace Corps
- Extension of a community network started by the Maewo Telecommunications Committee, in July 2016

VITAL

1 World Connected
Data-driven Research to Bring Billions Online

- Chat platform through a commonly used messaging application
- All the workers and nurses on Maewo are on the group, along with doctors from three different hospitals: Vila, Santo and Lolowai
- Daily check-in messages; communication through photos/video clips for urgent cases

What methods did we use?

1 World Connected
Data-driven Research to Bring Billions Online

- Relevance
- Context
- The VITAL Solution
- **Data and Methodology**
- Insights and Discussion

Data and Methods

1 World Connected
Data-driven Research to Bring Billions Online

- Data from the messaging platform used by the clinicians and specialists for telemedicine ~ 9000 messages on telemedicine platform (Aug-16-July ‘18)
- Data from in-depth interviews with key stakeholders
  - Peace Corps community health volunteers
  - Tribal chiefs
  - Health workers (doctors, nurses, aids and CHWs)
  - Office of the Chief Information Officer
  - Ministry of Health

Data and Methods

1 World Connected
Data-driven Research to Bring Billions Online

- Text analysis of data from the messaging platform (anonymized, stripped of PHI)
- Supplemented by qualitative in-depth interviews to shed light on stakeholder perceptions, mechanisms that enabled the platform's widespread adoption and sustainability
- Analytics from messaging platform triangulated with interview data to derive insights on features of the platform that enabled better healthcare outcomes

What did we learn?

1 World Connected
Data-driven Research to Bring Billions Online

- Relevance
- Context
- The VITAL Solution
- Data and Methodology
- Insights and Discussion

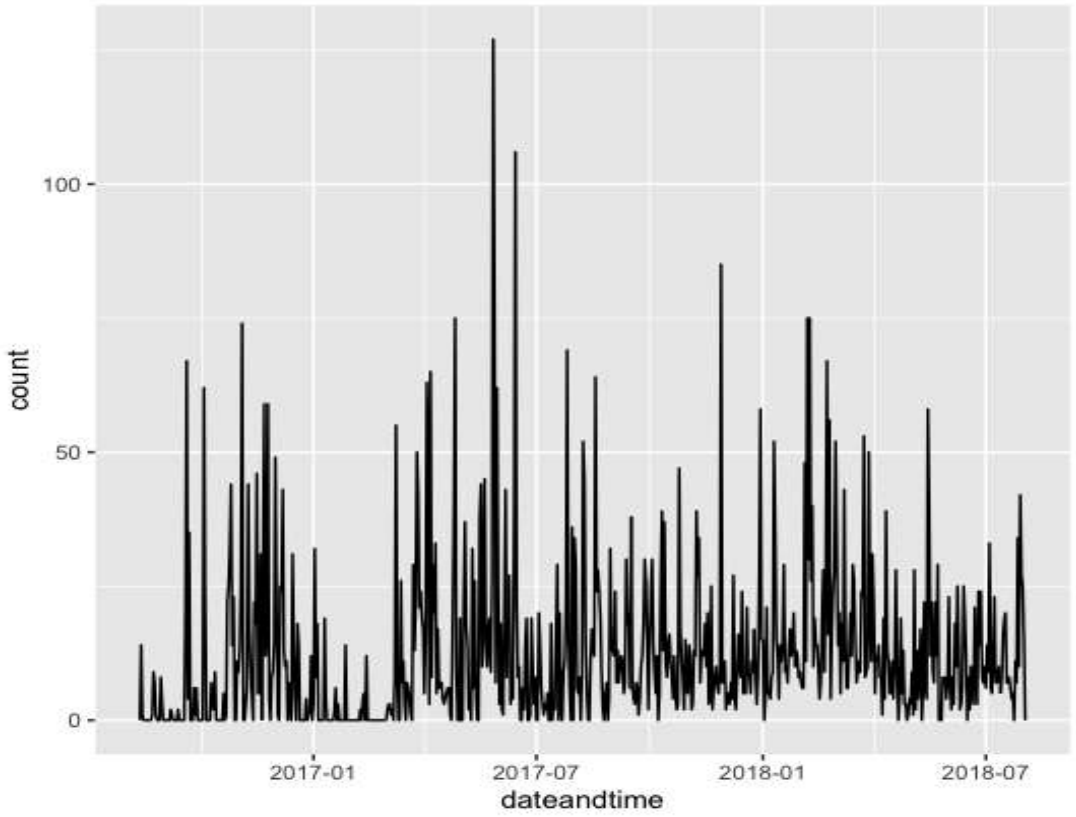
What did we learn?

1 World Connected
Data-driven Research to Bring Billions Online

Stakeholder	Average word count of messages on the telemedicine platform
Former Community Health Volunteer (Peace Corps)	13.1
North Maewo nurse	10.7
NPH Doctor (Primary supervising doctor)	8.12
Kerembei Nurse Supervisor	7.19
Out-of-country Doctor	6.69
Ambae Doctor	5.96
Naviso nurse	4.40
Village health worker	3.45
Nurse aid	1.90

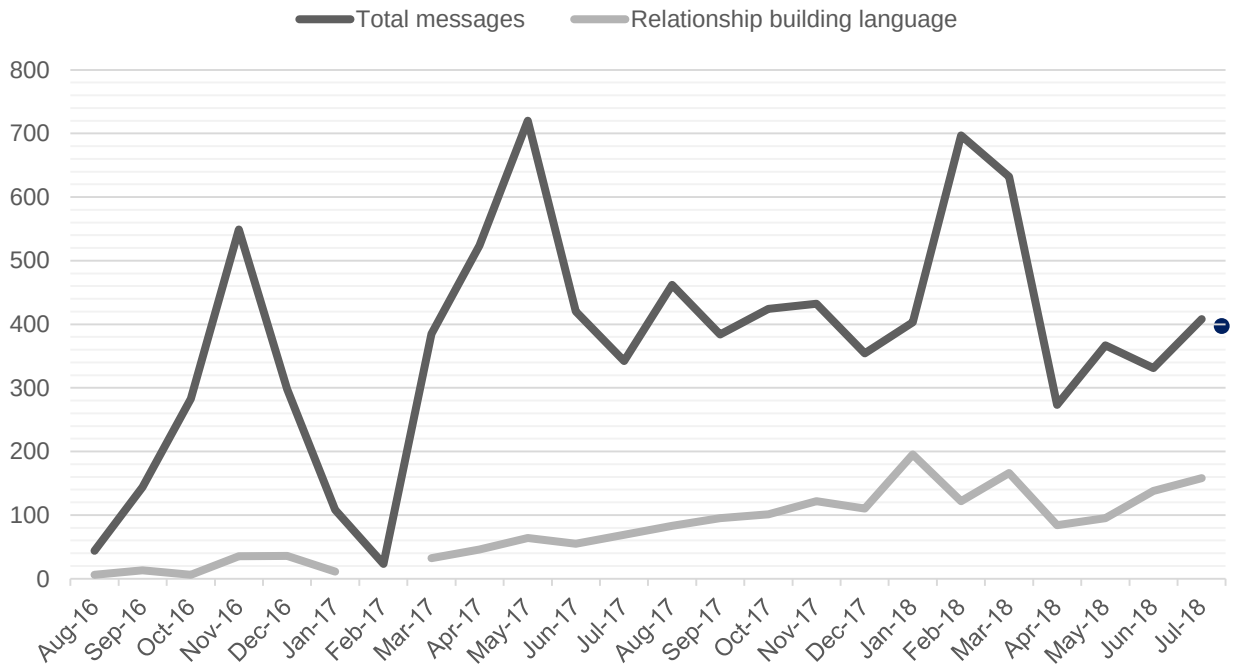
- Short, frequent communications characterized the usage of the platform
- The longest messages also corresponded to durations during which message frequency was at its highest
- An analysis of the top five longest conversations (by string length) showed that all of them related to patient care.
- The average response time across messages on the telemedicine platform was 114.4 minutes, less than 2 hours

What did we learn?



- Take-up of the telemedicine platform amongst participating healthcare workers increased steadily over time.
- Highest number of messages per day was over 150 messages

What did we learn?



- Relationship building language and regular check-ins through communications over the telemedicine platform increased over time and served to **reduce power distance and allow for social accountability**

Analysis of data from the telemedicine platform suggests that relationship building language – such as “good day, team,” “good morning, team”, “good evening, team”, and “good job” comprised **7.28% of all messages in 2016 but went up to 17.28% in 2017 and stood at a record 30.85% in 2018 (until July).**

Insights

1 World Connected
Data-driven Research to Bring Billions Online

- No fancy interface: removes cost intensive training requirement
- Easy to learn: take-up for village health workers
- Minimal staff training: lower costs
- Not-in-real-time advice: easier to transmit case information through photos with labels
- Pools limited human resources: more minds on the same case when in a common group

Insights

1 World Connected
Data-driven Research to Bring Billions Online

- Confidence boosting to local staff: reduces doctor-patient distance in hierarchical Melanesian societies
- Less like a task: conversational modes of talking to each other, as opposed to reporting
- Accountability mechanism: ability for others to check in in case a node goes offline
- Regular check-ins: makes it a cordial environment for local staff to reach out without hesitation

Insights

Health as a means to broader connectivity

- Success in lobbying the TRR to free up the 900 MHz spectrum
- New community-based grants set up by the TRR for other such networks
- Rapid take-up of smartphones in the community to combat lack of cellular network with VoIP communications
- Community ownership and fundraising model for maintenance