The Real World, Virtual Epidemic

GameDay2014  ToddBodnar.com  ToddBodnar@gmail.com
Outline

• Epidemics MOOC
• Development
• Gameplay
• 3rd Party Data Visualization
• Analysis
Epidemics MOOC

Epidemics – the Dynamics of Infectious Diseases

This course explores all the major themes in the field of infectious disease dynamics. It covers epidemiology, biology, and public health, from how diseases emerge, how they spread, and how they are controlled.
Epidemics MOOC

• Fall 2013
• 8 weeks
• 35,000 enrollees
Epidemics MOOC

• #1 rated science course (http://www.coursetalk.com/courses/science?sort=-rating&filter_tab=all)
Epidemics MOOC

v 2.0

Fall 2014
Game Development
Game Development

• 7 weeks from initial coding to product
• Closed beta
• Run on Heroku with autoscaling dynos
Game Development

- Big Boss
- Two programmers
- Graphic designer
- GIS expert
- Data Analyst (me)
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Gameplay

1 INFECTED FOUND AND ISOLATED!
ISOLATED SO FAR: 1
The scanner is getting a faint reading on 3 infected cases in the area.

SHARE
CLOSE

INFECTION SPREAD
It will last in the area for 24 hours.

Your strain infected someone 1 minute ago in State College (PA), United States

CLOSE

12 AGENT O CASES FOUND AND TREATED!
The scanner is getting a faint reading on 5 infected cases in the area. A treatment is also deployed in the area for Agent M cases. The deployment will last indefinitely.

CLOSE
Gameplay

1 INFECTED FOUND AND ISOLATED!

ISOLATED SO FAR: 1

The scanner is getting a faint reading on 3 infected cases in the area.

SHARE

CLOSE

WORLDWIDE STATS

SCAN PHASE ▼

ISOLATED:

17

REMAINING:

~ 2 MILLION

TOP SCANNERS:

Khan Noonien Singh

Marcel Salathé

10

7

SCORE

USER INFO ▼

STATUS: HEALTHY

RANKING: 1 / 2146

SCAN PHASE ▼

ISOLATED:

5

REMAINING:

~ 2 MILLION

USER INFO ▼

STATUS: HEALTHY

RANKING: 1 / 2146

I'm in your mooc

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Gameplay
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moocdemic @moocdemic · Oct 17
We have seen an increase of cases in areas that were previously declared cleared. Please keep scanning in everywhere. #fighttheoutbreak

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Gameplay

“What if... we’re infected?”

–Anonymous forum member
Gameplay

moocdemic @moocdemic · Oct 22
In the interest of transparency, we are releasing this internal memo to the public pic.twitter.com/ddVTq5qrP

22 October 2013
To: All Moocdemic Field Workers
From: WMO Headquarters

Internal Memo

Some of our staff in the field have been noticing some odd behavior from the scanning crew. We're unsure at this time whether this is related to their work with the infected cases they've been isolating or some other, unrelated activity. At this point, however, we cannot exclude the possibility that those who have undergone the behavioral change have been exposed to a mutant strain of the infectious agent. At this time there is no need for alarm and we will reassess the situation as new information arises. Thank you all for your tireless work.

WMO Leadership

Appendix

The affected crew members are...

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Gameplay
Gameplay

Current infections is the number of players that carry your strain at this moment, anywhere in the world. This number can go down because your strain can be replaced by others if you don't keep spreading.
Gameplay

moocdemic @moocdemic · Nov 1
We'll be releasing a video about the current outbreak of agent M shortly.
#moocdemic

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Gameplay

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We'll be releasing a video about the current outbreak of agent M shortly.
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moocdemic @moocdemic · Nov 1
Agent M has now been confirmed in Florida.

Gameplay

moocdemic @moocdemic · Nov 1
We'll be releasing a video about the current outbreak of agent M shortly.
#moocdemic

moocdemic @moocdemic · Nov 1
Agent M has now been confirmed in Florida.

moocdemic @moocdemic · Nov 6
We're concerned about preliminary reports of agent M in California. More information soon.
#moocdemic
Gameplay

moocdemic @moocdemic · Nov 1
We'll be releasing a video about the current outbreak of agent M shortly.
#moocdemic

moocdemic @moocdemic · Nov 12
We are getting reports from infected cases of agent M in Toronto. News announcement soon.

moocdemic @moocdemic · Nov 6
We're concerned about preliminary reports of agent M in California. More information soon. #moocdemic

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Gameplay

@moocdemic: We'll be releasing a video about the current outbreak of agent M shortly.

@moocdemic: We are getting reports from infected cases of agent M in Toronto. News announcement soon.

@moocdemic: Agent M infections confirmed in Europe. Official update soon.
Gameplay
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Gameplay
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MOOCDEMIEC IS ENDING
MOOCDEMIEC will be closing on December 31st. See the wrap up in the news section.

CLOSE

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3rd Party Datavis
3rd Party Datavis

• Data sharing policy:
  • All scans
  • First week of scanning, perfect timestamps
  • No user id
  • Locations fuzzied to 0.01 deg (~1 km)
3rd Party Datavis

- Location-based social network visualization
3rd Party Datavis

- Scanning locations over time
3rd Party Datavis

- CartoDB tutorial using our data!
Analysis
Analysis

• Which player should we pick to be “patient zero”?
• Social network analysis
• Weighting by recent activity
Analysis

The Prime candidate:

- Lives somewhere in this map
- Occupation involves traveling around local area
- Commutes to work from neighboring town
Analysis

Other high-ranked candidates chosen by our algorithm show similar characteristics.
Analysis
Analysis
Analysis

Time between actions

Density

In(days)

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Questions?