Mobile COVID-19 Testing in Vienna During Flu Season

A geospatial analysis

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Vienna's COVID-19 cases are skyrocketing







Unemployment rises and global economies are shrinking rapidly



Vienna's government wants to increase testing rates to be able to react to changes



Stationary testing tents or buildings have long reached maximum capacity

The city of Vienna has introduced mobile testing, where symptomatic patients are being tested at home. This remains integral for managing the pandemic.

How can mobile testing be optimized?

The aim of this analysis is to:

(1) Analyze how many tests can be conducted by mobile testing teams using current equipment and fleet (2) Give recommendations on how to improve the current situation and increase performance

But first, data...

(1) Data collection

Data has been collected using official govermental information and information from paramedic organizations such as the Red Cross

(2) Certain limitations in data

Problem 1: no official location data for actual testing locations

Solution: creating random spread, representative test-data

Assumption: Testing is equally spread across Vienna

(3) Methodology







5 Red Cross bases that serve as starting & ending points

Testing hours 07:00 - 17:00

Problem 2: no official data on how long one test at a patient's location takes

Solution: talking to paramedics and getting first-hand information

Assumption: Testing itself takes 15 minutes

Designing a realistic vehicle routing problem in ArcGIS using the given information and therefore computing a realistic number of tests that can be conducted using current infrastructure and equipment

Main Findings

(1) 1,000 tests per day could be achieved easily with even some capacity left (it is possible **using only 27 out of 30 vans**)

(2) Information from paramedics:

"putting on and removing protective equipment takes a lot of **time**"



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*Exemplary Screenshots from the Vehicle Routing Problem. Analysis conducted via ArcGIS: ESRI 2020. ArcGIS Desktop: Release 10.8

Implementation Exploration



(1) Switch to gargle tests whenever possible

Benefits:

- Reduces time paramedics spend on taking on and off protective equipment
- Leads to more tests that can be conducted per day

How?

 Health-hotline operators conduct a first analysis if a gargle test is appropriate



(2) Introducing an app/website for ease of access

Benefits:

- Find testing options & book appointments online based on several criteria
- Web Triage: Currently done by health-hotline operators, could be performed online or in the app by answering specific questions (e.g. Self health assessment)
- Creating an app/mobile version increases acceptance and enhances user experience

How?

Extending the functionalities of the currently used "Stopp Corona" App

Implementation Exploration

(3) Build more Grassroots Support

Benefits:

- For a community project to be successful: bottom-up solutions are needed 0
- Through involvement of the community further spread could be avoided, 0 which is especially important in light of the ongoing flu season, when there is an increase in the number of symptomatic patients



How?

- The previously used message of StayAtHome should be reinforced.
- ✓ Social media campaign (similar to "Breast Cancer Runs") could be initiated, especially targeting younger people (age group 25-34 in which COVID19 rates are rapidly growing)
- slogan like #IStayHomeFor to reinforce responsibility of caring for others who are vulnerable, even if you yourself might not be \checkmark in such a grave danger.



For further details feel free to contact us!