Overlooked Voices under Strict Lockdown: Mapping Humanitarian Needs in 2022 Shanghai COVID-19 Outbreak

Presenter:

Bing Zhou, Ph.D Student.

Department of Geography, Texas A&M University
Geospatial Exploration & Resolution (GEAR) Lab
Email: spgbarrett@tamu.edu
Address: 3147 TAMU, College Station, Texas 77843
For more visit: https://www.geoearlab.com/
Background
City Level Lockdown was in Effect

- March 28th, Pudong District started to execute strict lockdown.
- April 1st, the whole Shanghai City was under lockdown.
Before

After
Lockdowns around the world

April 23th.
https://ig.ft.com/coronavirus-lockdowns/
Is lockdown the optimum solution for China?
Background
Objectives

**Whether?**
Do people need help under strict lockdown policy?

**01**

**When & Where?**
What are the spatial and temporal patterns of those help request?

**02**

**What?**
What exactly are their urgent needs when requesting help?

**03**
Background

Objectives
Background

Objectives

Methodology
Data Harvesting Pipeline

1. Raw Data
2. Web Scraper
3. Mutual-help Website
5. Success (Yes)
6. Processed Data
7. No
8. Google & Baidu Geocoding
Help Request Data

Total Number: 4395
Background

Objectives

Methodology
Covid-19 Help Messages in Shanghai

- Posting Messages: 3713
- Solved Messages: 2066
- Following Messages: 1604
- Remaining Messages: 43

The latest data time: 4/24/2022, 10:32 PM
Program updated time: 5/1/2022, 9:04 PM

Detailed Information

ID: 5518
Detailed Messages: 需要一个准确的体温计玻璃的退烧药因为发烧一直反复具体多少度不知道一首高烧四次皮肤
Poster: 李米人
Phone Number: 176****0116
Post date: 4/18/2022, 6:26 PM

ID: 5713
Detailed Messages: 急需胰岛素，家里母亲糖尿病患者，已经断药了，急需胰岛素，急需帮助！！！
Poster: 谢迪明
Phone Number: 138****0754
Post date: 4/19/2022, 6:44 PM

ID: 5565
Detailed Messages: 需要哺乳

The Distribution Map of Messages
Statistical Analysis in Fine Scale

The Daily Number of Posting Messages
Covid-19 Help Messages in Shanghai

**Posting Messages** 3713

**Solved Messages** ✓ 2066

**Following Messages** ➤ 1604

**Remaining Messages** ⇧ 43

### Statistical Analysis of Different Levels in Each District

- Extreme Urgent
- Urgent
- More Urgent

### Statistical Analysis of Different Types in Each District

- Others
- Memorial Requirements
- Disease
- Seriously Illness

The Distribution Map of Messages | Statistical Analysis in Fine Scale

### The Daily Number of Posting Messages
## Access to medical resources

<table>
<thead>
<tr>
<th>Type</th>
<th>Count</th>
<th>Relation</th>
<th>Min Dist</th>
<th>Avg RC 400m</th>
<th>Avg RC 1500m</th>
<th>Avg RC 4000m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease</td>
<td>447</td>
<td>Hospital</td>
<td>23</td>
<td>2.13</td>
<td>30</td>
<td>162.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pharm</td>
<td>13</td>
<td>2.01</td>
<td>23.83</td>
<td>136.53</td>
</tr>
<tr>
<td>Serious Disease</td>
<td>497</td>
<td>Hospital</td>
<td>43</td>
<td>2.25</td>
<td>28.75</td>
<td>173.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pharm</td>
<td>32</td>
<td>1.99</td>
<td>25.26</td>
<td>79.95</td>
</tr>
</tbody>
</table>
Temporal Patterns

Sum of confirmed cases over date by district

Counts over datetime by district

- Bao Shan
- Chang Ning
- Chong Min
- Feng Xian
- Hong Kou
- Huang Pu
- Jia Ding
- Jin Shan
- Jing An
- Min Hang
- Pu Dong
- Pu Tuo
- Qing Pu
- Song Jiang
- Xu Hui
- Yang Pu
Temporal Patterns of the Confirmed Cases

Sum of confirmed for date and district

District
- Bao Shan
- Chang Ning
- Chong Ming
- Feng Xian
- Hong Kou
- Huang Pu
- Jia Ding
- Jin Shan
- Jing An
- Min Hang
- Pu Dong
- Pu Tuo
- Qing Pu
- Song Jiang
- Xu Hui
- Yang Pu

Date

Legend:
- ≤ 10
- ≤ 30
- ≤ 55
- ≤ 85
- ≤ 124
- ≤ 180
- ≤ 268
- ≤ 435
- ≤ 756
- ≤ 1,456
**Word Cloud Visualization**

Keywords:
- Hospital
- Old man
- Medication
- Capsule
- Insulin
- Treatment

……

Keywords:
- Hospital
- Old man
- Positive
- Chemotherapy
- Testing
- Patients
- Shanghai

……

Serious Disease

Disease
<table>
<thead>
<tr>
<th>Category</th>
<th>Topic Number</th>
<th>Topics Chinese</th>
<th>Topic English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely Urgent</td>
<td>4</td>
<td>老人需要化疗</td>
<td>Aged people need chemotherapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>核酸阳性需隔离转运</td>
<td>Covid test positive; need transfer to hospital</td>
</tr>
<tr>
<td></td>
<td></td>
<td>家里需要配药</td>
<td>Need medicine at home</td>
</tr>
<tr>
<td>Urgent</td>
<td>4</td>
<td>家中母亲需要胰岛素</td>
<td>Mother at home need insulin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>需要奶粉配送</td>
<td>Require milk powder delivery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>家中需要物资及药物</td>
<td>Need supplies and medication</td>
</tr>
<tr>
<td>Normal</td>
<td>4</td>
<td>蔬菜泡面鸡蛋</td>
<td>vegetables, instant noodles, eggs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>居委会核酸检测</td>
<td>community covid test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>隔离物资及药物</td>
<td>quarantine supplies and medicine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>药品精神</td>
<td>psychotropic drugs</td>
</tr>
<tr>
<td>Disease</td>
<td>4</td>
<td>胰岛素、盐酸、高血压、注射液</td>
<td>insulin, hydrochloric acid, high blood pressure, injection</td>
</tr>
<tr>
<td>Serious Disease</td>
<td>4</td>
<td>普兰，西酞，富马酸，草酸，胰岛素</td>
<td>Citalopram, oxalic acid, fumaric acid, insulin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>老人需要化疗</td>
<td>Aged people need chemotherapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>老人病重透析</td>
<td>Aged people need dialysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>老人核酸阳性</td>
<td>Aged people covid test positive</td>
</tr>
<tr>
<td>Supply</td>
<td>3</td>
<td>奶粉泡面卫生巾牛奶</td>
<td>milk powder, instant noodles, milk, sanitary pad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>蔬菜面包大米</td>
<td>vegetables, bread, rice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>团购蔬菜水果</td>
<td>group purchase vegetables and fruit</td>
</tr>
<tr>
<td>Others</td>
<td>4</td>
<td>希望隔离酒店</td>
<td>wish quarantine hotel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>社区接种疫苗</td>
<td>vaccination by community service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>隔离返乡火车站</td>
<td>isolation, train station back home</td>
</tr>
</tbody>
</table>
Conclusions

**Dashboard**
Dashboard has been created to help local and visualize help requests in near real time...

**Temporal**
Over 4000 help request posted. Daily number drop 2-3 days after confirmed cases drop...

**Spatial**
The city centers are affected more intensely than the other parts of Shanghai...

**Semantic**
People who require long-term or frequent medical treatment are unable to be serviced...
Thank you!