

Does E-PAI support an alternative origin of COVID-19?

The analysis of commercial telemetry data in Wuhan suggests the COVID-19 pandemic began earlier than initially reported. Additionally, this supports the release of COVID-19 at the Wuhan Institute of Virology.

The following data supports this finding:

- Device activity in and around the Wuhan Institute of Virology (WIV), specifically the National Biosafety Laboratory during October and November 2019.
- Traffic Patterns based on device activity IVO the WIV during October.
- Pattern or Life analysis of devices that frequent the WIV
- Open Source Intelligence supporting the early detection of COVID-19.

Decreased Device Activity early in Quarter 4 at the WIV BSL-4 indicates potential facility closure due to a hazardous event

Biosafety Level 4 (BSL-4) Laboratory and the WIV:

- Investigate the most dangerous pathogens
- Maximum biocontainment levels
- Construction began in 2003 and completed in 2014
- In 2017, BSL-4 approved for research of pathogens including Ebola, Nipah, and the Crimena-Congo Hemorrhagic fever viruses
- The second floor of the BSL-4 is the main experiment zone with 3 cellular laboratories, one dissecting room, one virus preservation room



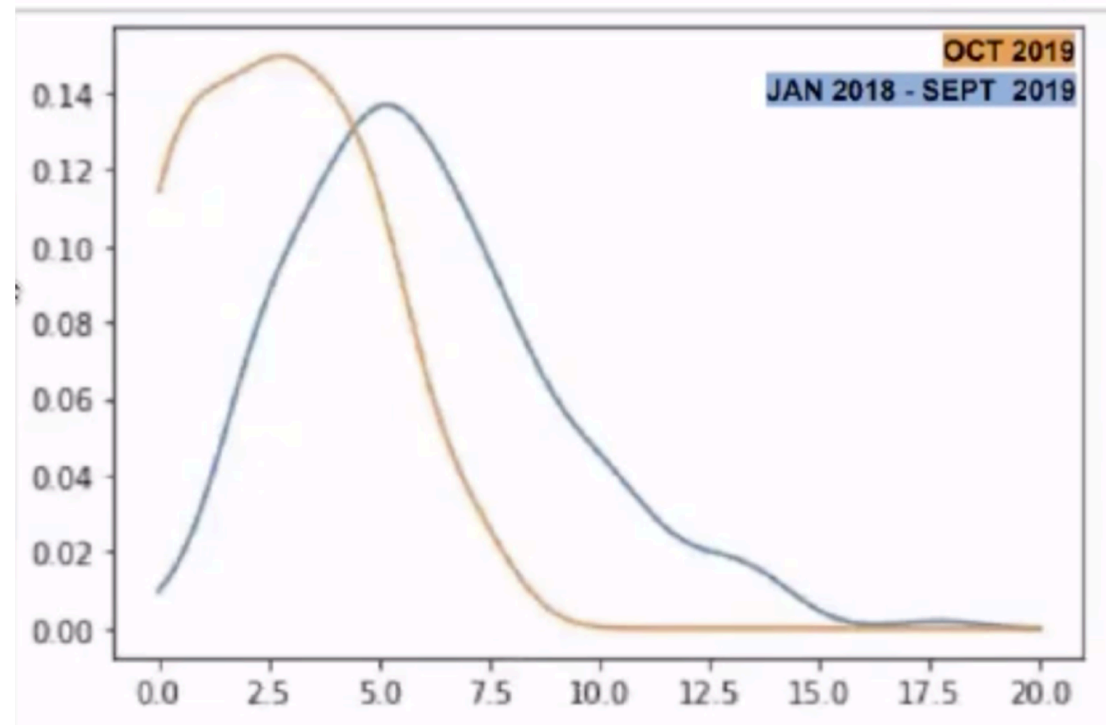
Wuhan National Biosafety Laboratory (Level 4)



Timeline of E-PAI Events and Indications in vicinity of the WIV/BSL-4



Unique Device Analysis in Vicinity of WIV BSL-4



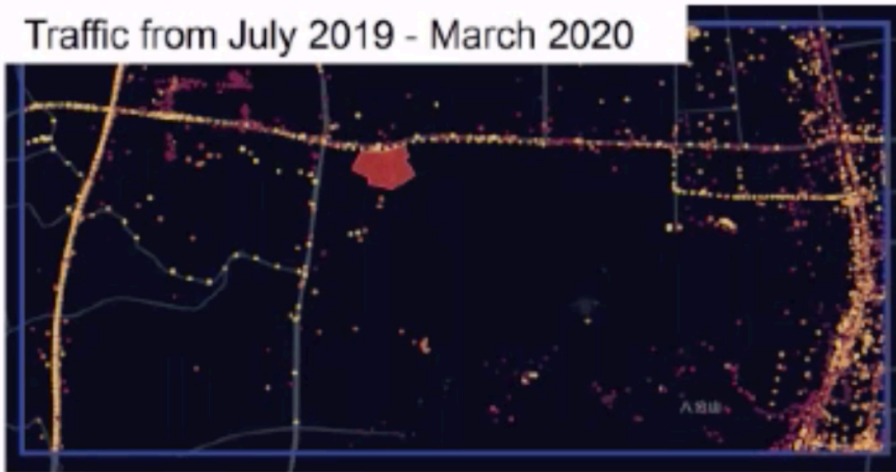
- Unique devices were counted daily from JAN 2018 to OCT 2019.
- The distribution of counts in OCT 2019 **appeared significantly lower** than the rest of the time period.

Compared distributions with Kruskal-Wallis test (non-parametric ANOVA):

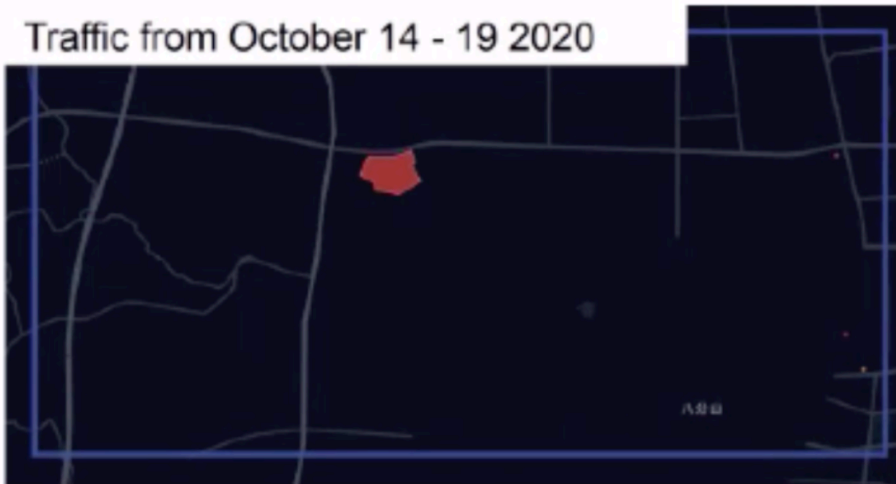
- The null hypothesis that the median of the two distributions are equal is rejected
- $p = 4e-9$ (significance threshold set at 0.05)

Device Analysis Indicates Traffic Closures or Roadblocks

Traffic from July 2019 - March 2020



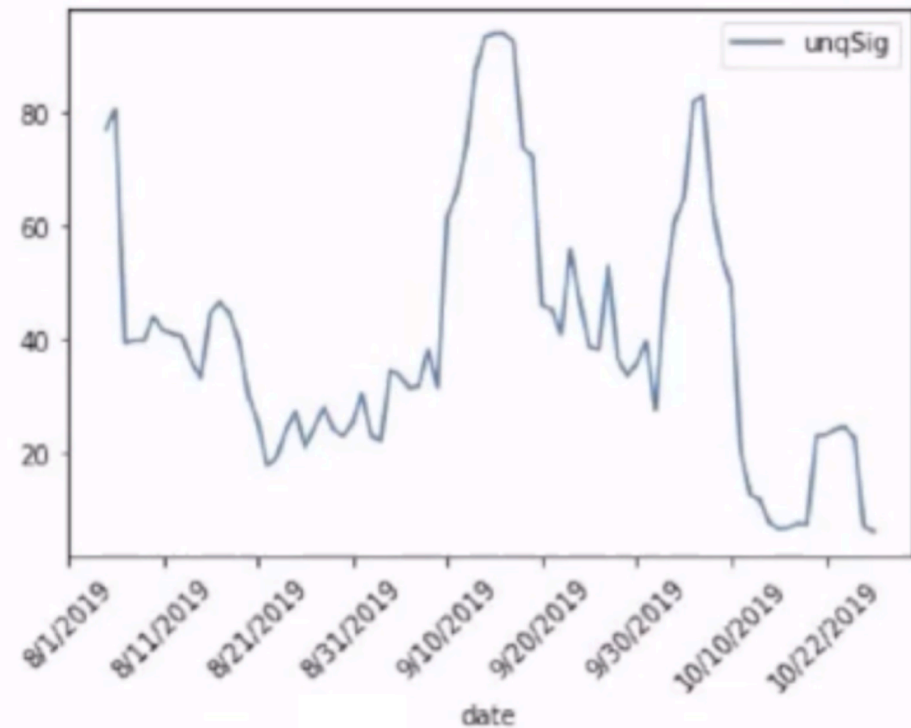
Traffic from October 14 - 19 2020



- Device traffic in and around the WIV in the months prior to October was consistent.
- Beginning on October 11th, there was a substantial decrease in activity.
- The last time a device is active prior to October 11th is October 6th.
- The window for incident at the WIV is October 6th - 11th.
- As illustrated in the second image, there was absolutely no traffic in the area surrounding the WIV from October 14th - 19th.
- During this time, it is believed that roadblocks were put in place to prevent traffic from coming near the facility.

Unique Events in vicinity of the WIV BSL-4

- The rolling 5 day average drops to zero for two consecutive periods in October between the 11th and the 19th.
- Although there is variance in the level of events within the area of interest, at no other point in time did the average drop to zero.



Activity within the WIV supports an event occurring between October 6-11



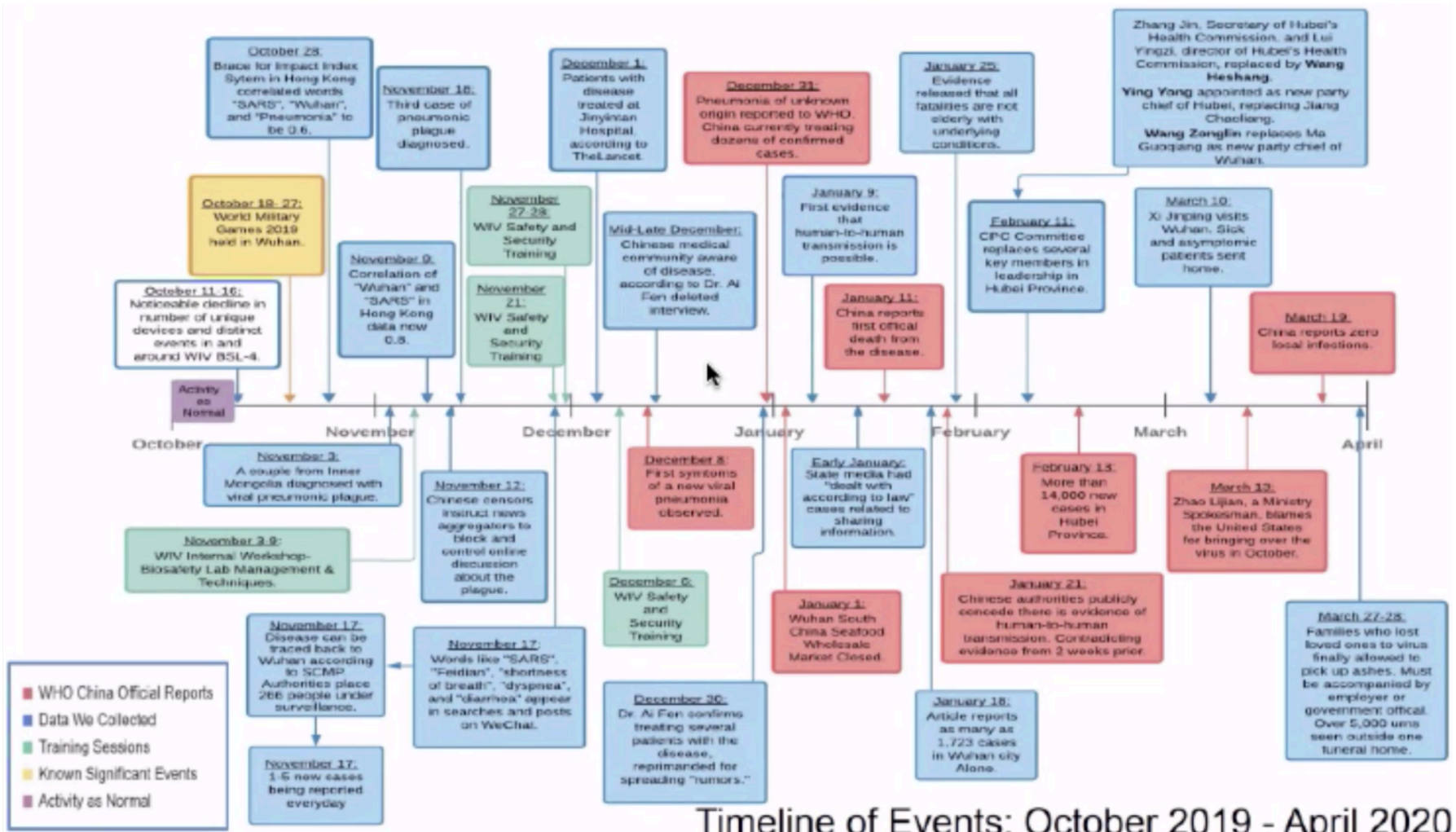
- Activity within the WIV compound.
- It is believed the bunching of points is a security building passed through before accessing the grounds.



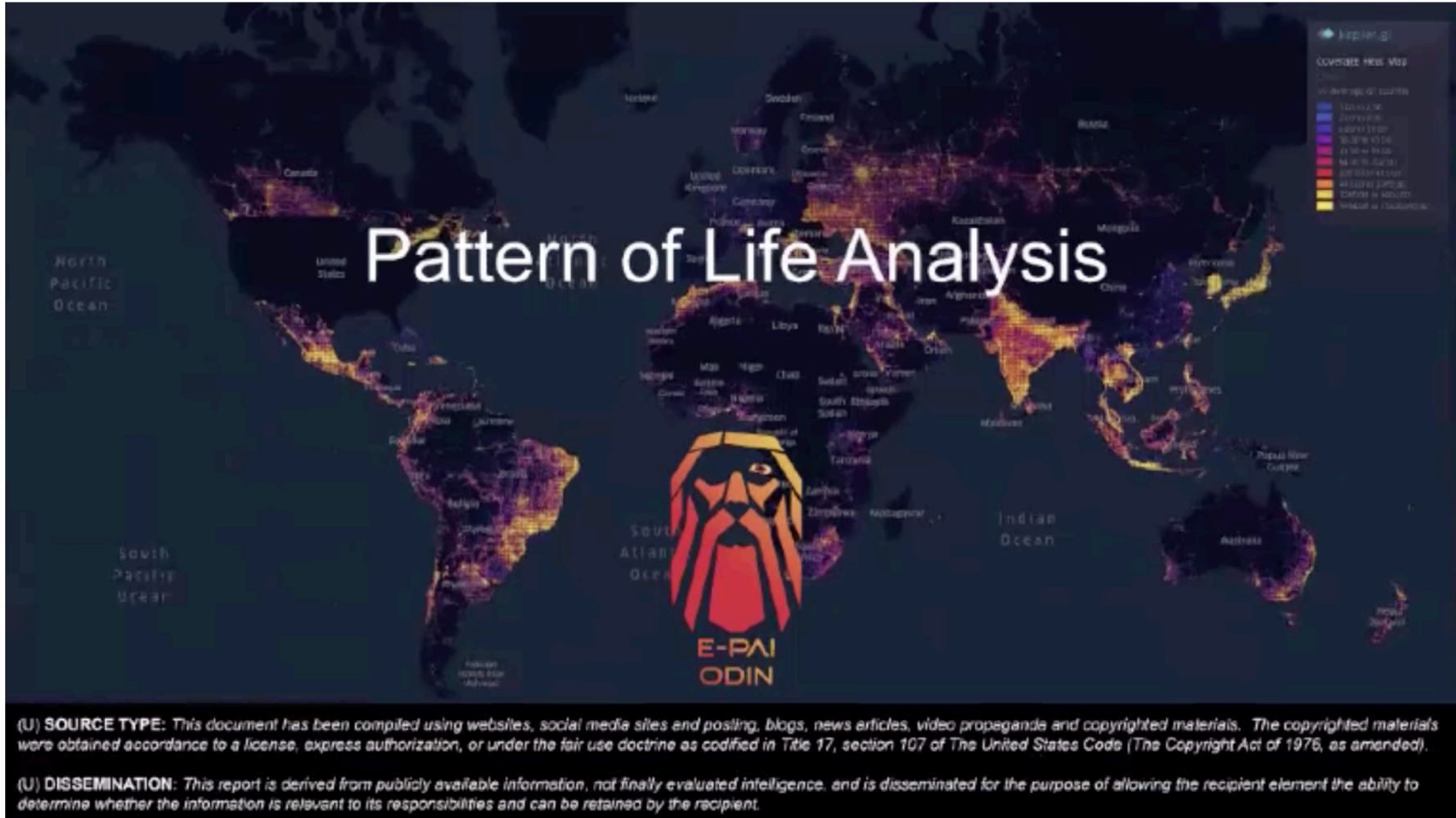
- Between October 7th and 24th there was no activity within the WIV compound.



- On October 25th, one device returns to the WIV facility.
- This device is the only device to return to the facility that was present prior to October 7th.
- It is likely this device belongs to a security guard.



Timeline of Events: October 2019 - April 2020



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Device of Interest: Located at the WIV and Duke-NUS in Singapore

Through pattern of life analysis on devices located at the WIV, one device of particular interest was identified:

- Observed in Wuhan from November 24 - 30
- During this time, the device was observed and the WIV BSL-4 and another unidentified building near the WIV
- This device anchors in Singapore
- Analysis indicates this device belongs to a member of the Emerging Infectious Disease team and Duke-NUS in Singapore

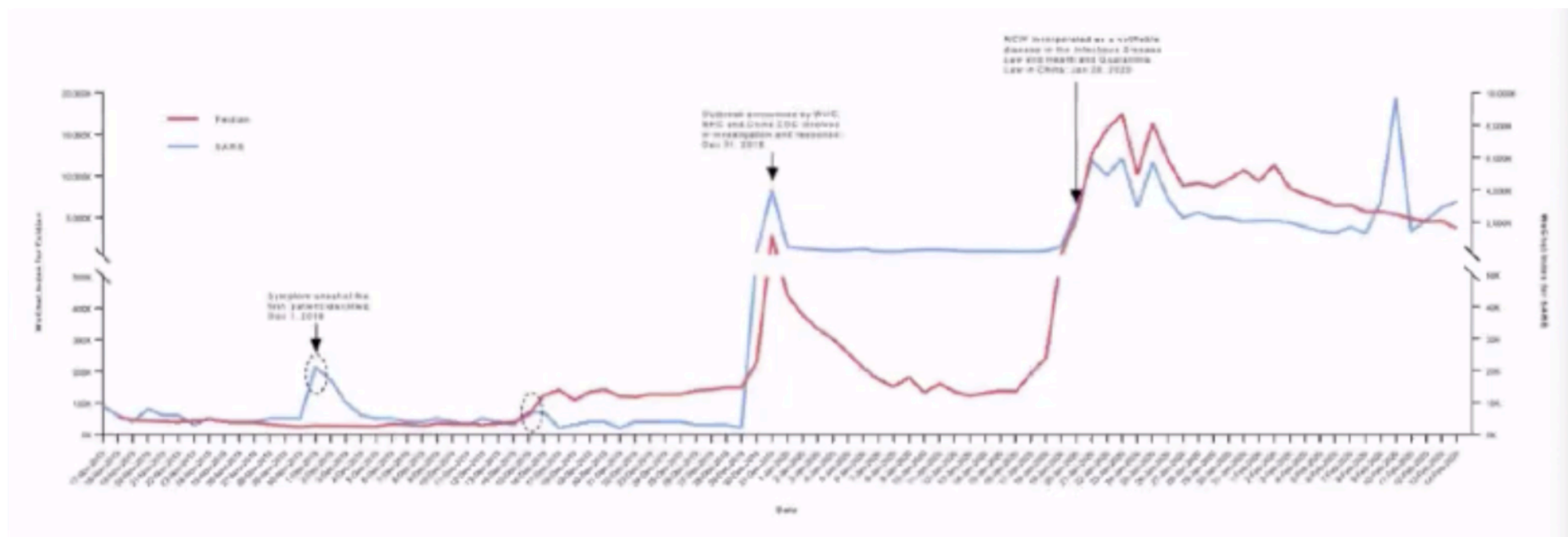


Figure 1. WeChat Index for Feidian and SARS (from Nov 17, 2019 to Feb 14, 2020). The index for Feidian began to rise on Dec 15, 2019 (dashed circle), persisted at relative high levels till Dec 29, 2019 and rose rapidly on Dec 29, 2019 with a peak on Dec 30, 2019. The index for SARS behaved abnormally in the first three days in December with a peak on Dec 1, 2019 (dashed circle). China CDC: Chinese Centers for Disease Control and Prevention; Feidian: Chinese abbreviation for severe acute respiratory syndrome; NCIP: novel coronavirus-infected pneumonia; NHC: National Health Commission of the People's Republic of China; SARS: severe acute respiratory syndrome.

- Another study also suggests that it is likely that Chinese social media companies received official guidance and specific directives on how to handle COVID-19 as early as DEC 2019.
- This study also suggests that YY, a live-streaming platform in China, began to censor keywords related to the coronavirus outbreak on December 31, 2019, a day after doctors tried to warn the public about the then unknown virus.
- WeChat broadly censored coronavirus-related content (including critical and neutral information) and expanded the scope of censorship in February 2020.

Reporting Timeline

- The first cases of the novel coronavirus were reported in Wuhan at the end of December (31 DEC, confirmed by WHO).
- A paper published by Chinese researchers in The Lancet analyzed the first 41 clinical cases and found that the first patient came down with flu-like symptoms on 1 DEC 2019.
- A new paper (WeChat, a Chinese social media, may early detect the SARS-CoV-2 outbreak in 2019) by five infectious-disease researchers in China, analyzed the prevalence of the terms "SARS," its Chinese equivalent "Feidian," "coronavirus," "shortness of breath," "dyspnea," and "diarrhea" in posts and searches on WeChat from 17 NOV to 31 DEC. Their findings suggest "abnormal spikes and increases" in the usage of all the keywords during that time. If confirmed, the findings might indicate that the coronavirus started circulating weeks before the first cases were officially diagnosed and reported.
 - Data showed that usage of "shortness of breath" and "dyspnea" both peaked on 22 DEC and "Diarrhea" peaked on 18 DEC.
 - The report states that "The index for SARS behaved abnormally in the first three days in December with a peak on December 1, 2019."
 - According to the researchers, usage of "Feidian," meanwhile, began to rise on December 15 and stayed at relatively high levels through December 29. Usage "rose rapidly on December 29, 2019 with a peak on December 30, 2019."

Table 1: Keywords for which WeChat Index spiked or increased during the period from Nov 17, 2019 to Dec 30, 2019.

Keyword	A-day	The time from A-day to D-day
Feidian	Dec 15, 2019	16 days
SARS	Dec 01, 2019	30 days
Coronavirus	Dec 30, 2019	1 day
Novel coronavirus	Dec 11, 2019	20 days
Shortness of breath	Dec 22, 2019	9 days
Dyspnea	Dec 22, 2019	9 days
Diarrhea	Dec 18, 2019	13 days

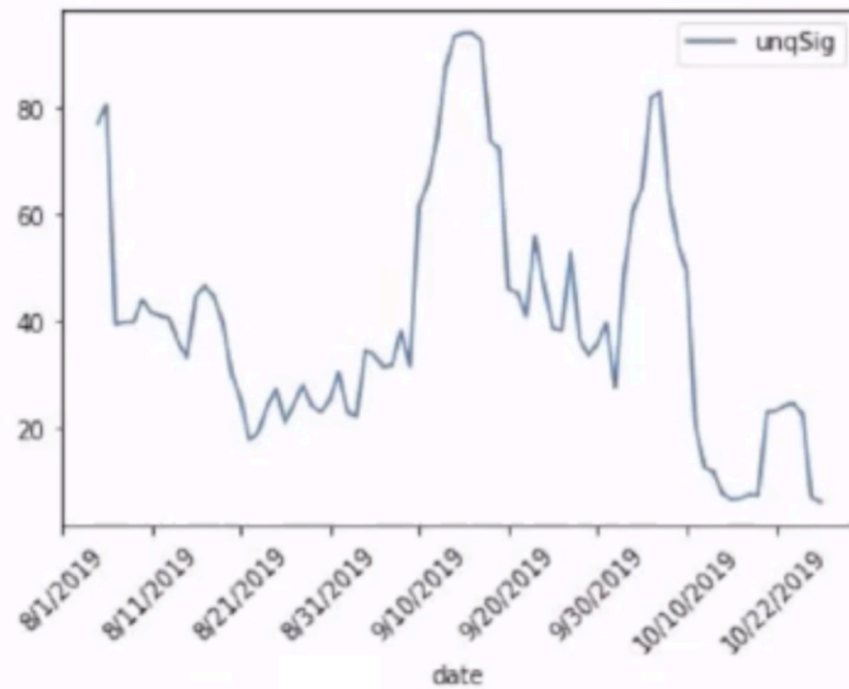
A-day: the day when WeChat index for a keyword spiked or began to increase during the period from Nov 17, 2019 to Dec 30, 2019.

D-day: Dec 31, 2019, the day that the SARS-Cov-2 outbreak was announced by Wuhan Health

Commission and Chinese Center for Disease Control and Prevention involved in investigation and response.

Unique Events in vicinity of the WIV BSL-4

- The rolling 5 day average drops to zero for two consecutive periods in October between the 11th and the 19th.
- Although there is variance in the level of events within the area of interest, at no other point in time did the average drop to zero.



BLUF

- During the months of October and November 2019, there was a noticeable decline in the number of unique devices and device events compared to the previous months of August and September 2019.
- A large area surrounding the WIV BSL-4 was analyzed and findings suggest that during 11-16 OCT, there was a noticeable drop in signals in the area when compared with the week before and the week after.
 - Another analysis in which unique devices were counted daily from JAN 2018 to OCT 2019, suggests that the distribution of counts in OCT 2019 appeared significantly lower than the rest of the time period.
- The first cases of the novel coronavirus were reported in Wuhan at the end of DEC and the WHO confirmed on 31 DEC: However, a new paper by five infectious-disease researchers in China reports that terms such as "SARS," its Chinese equivalent "Feidian," "coronavirus," "shortness of breath," "dyspnea," and "diarrhea" starting showing up in posts and searches on WeChat on 17 NOV. This could suggest that the coronavirus started circulating weeks before the first cases were officially diagnosed and reported.
- Another study also suggests that it is likely that Chinese social media companies received official guidance and specific directives on how to handle COVID-19 as early as DEC 2019.
- The 2019 International Workshop on Biosafety Laboratory Management and Techniques hosted by the WIV, CAS was supposed to take place 3-9 November; However, it appears that this annual event was cancelled and never took place.
- During OCT, NOV, & DEC 2019, the WIV participated in a series of safety and security trainings and conferences. Topics included infectious disease prevention, lab safety and security, construction of a "healthy China", and biosafety as it relates to "national security".

NAI: WIV BSL-4



NAI: WIV BSL-4

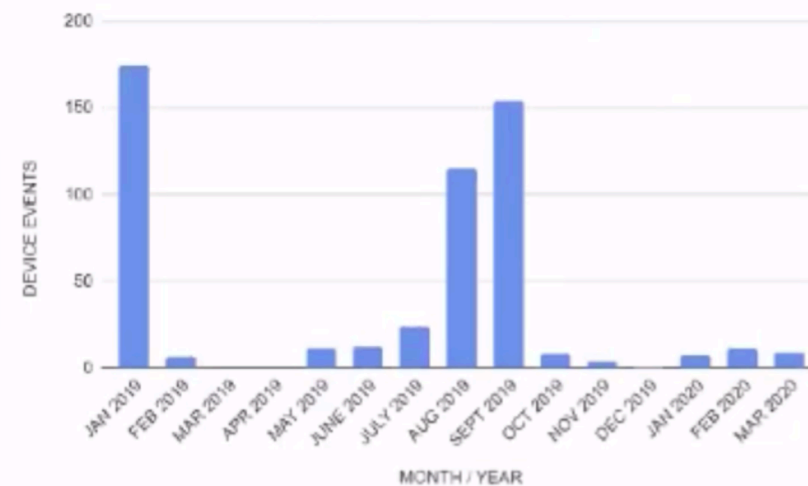
During the months of October and November 2019, there was a noticeable decline in the number of unique devices and device events compared to the previous months of August and September 2019.

- In August and September 2019, there were 5 unique devices and 269 device events.
- In October and November 2019, there were 2 unique devices and 12 device events.

UNIQUE DEVICE COUNT



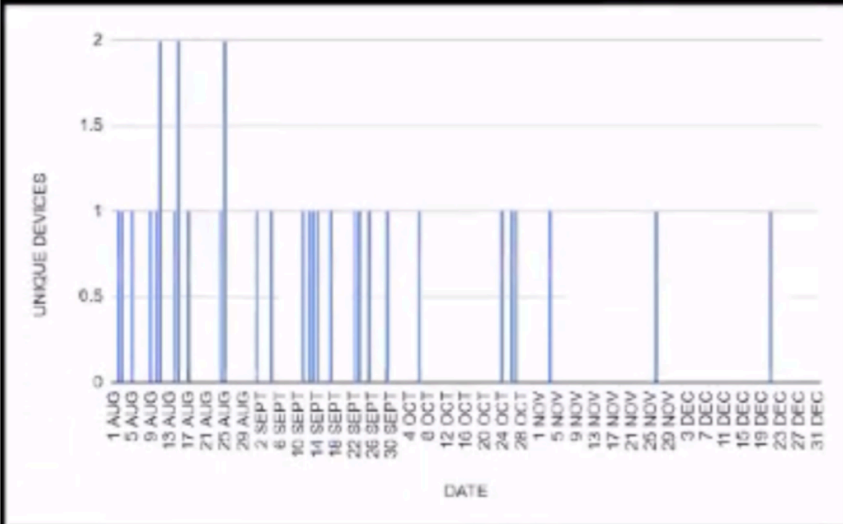
DEVICE EVENT COUNT



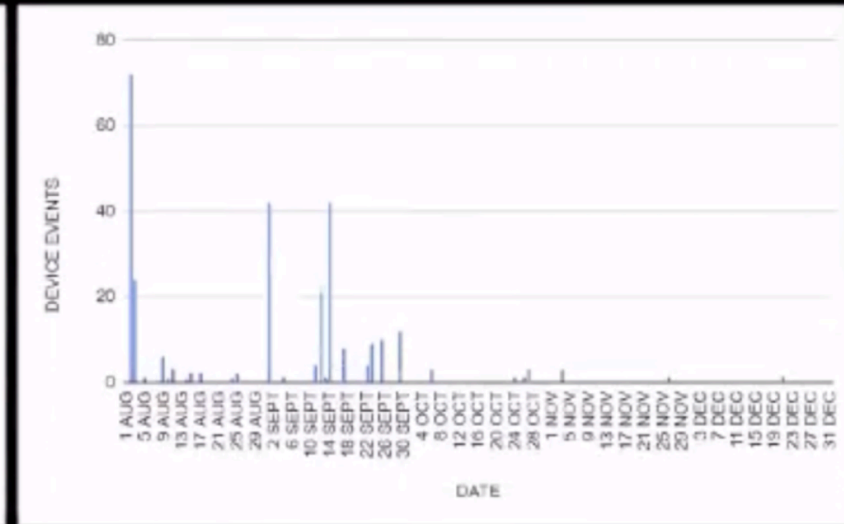
NAI: WIV BSL-4 (Cont.)

- During OCT 2019, there were a total of 8 device events emitting from one device [REDACTED]
 - Device events in OCT were observed on 6 OCT (Su), 24 OCT (Th), and 26-27 OCT (Sa-Su).
- During NOV 2019, there were a total of 4 device events emitting from two devices [REDACTED]
 - Device events in NOV were observed on 2 NOV (Sa) and 26 NOV (Tu).
- In OCT, there was an 18 day gap (6-24 OCT) where there were no observable events and in NOV, there was 24 day gap (2-26 NOV) where there were no observable events.

UNIQUE DEVICE COUNT



DEVICE EVENT COUNT

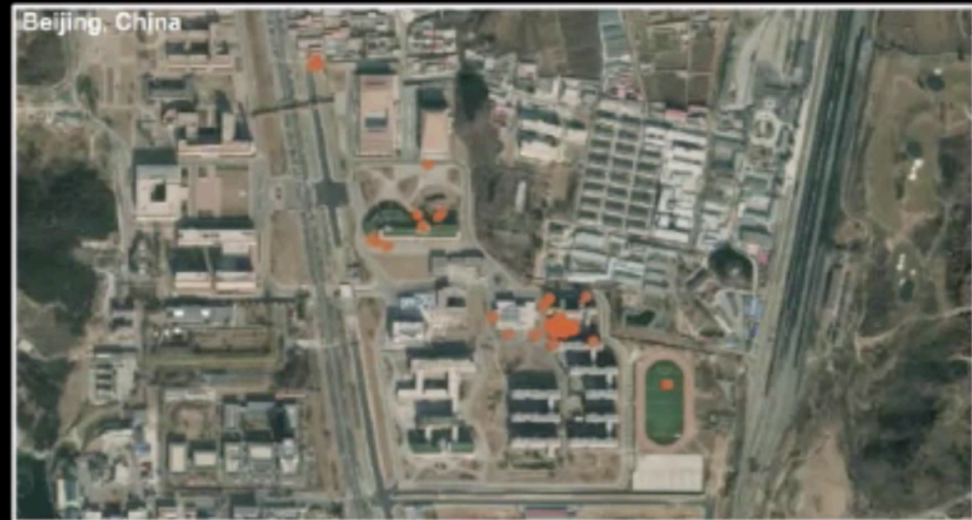


MID:

(Cont.)

- This device was observed at the WIV BSL-4 building JULY - OCT 2019, DEC 2019, and JAN - MARCH 2020.
- Pattern of Life (POL) analysis identified this device was in the following locations:
 - Kenya (21-25 AUG 2018)
 - Dubai International Airport (28 AUG 2018)
 - Beijing, China (1 SEPT 2018 - 10 JAN 2019)
 - Dubai International Airport (11 JAN 2019)
 - Kenya (26 JAN 2019 - 25 FEB 2019)
 - Beijing, China (3 MAR 2019 - 28 JUNE 2019)
 - Wuhan, Hubei, China (28 JUNE 2019 - 30 DEC 2019)

**Possibly @ the University of
Chinese Academy of Sciences
(40.405010, 116.681850)**

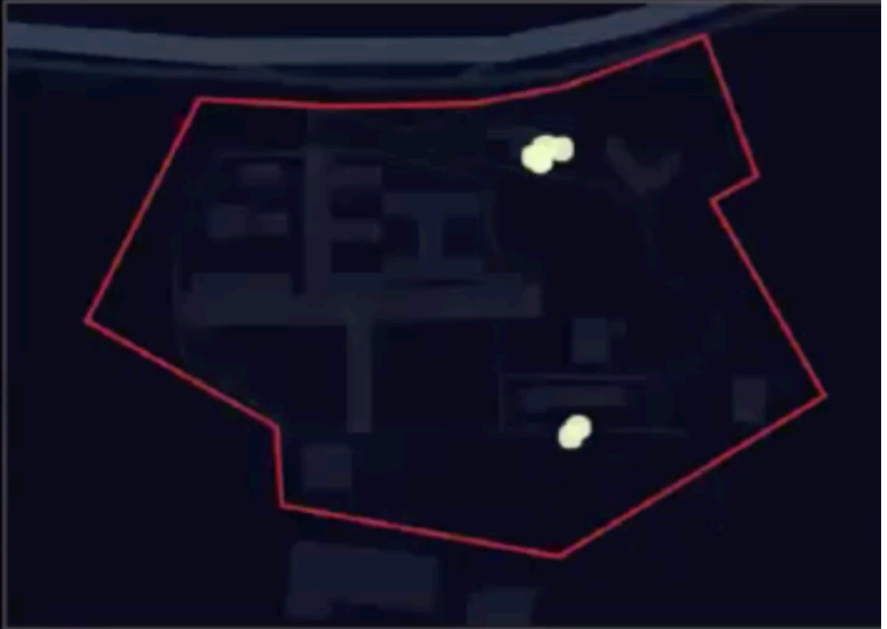


[REDACTED] (MAY 2019, JULY-SEPT 2019)
[REDACTED] (JULY-AUG 2019)
[REDACTED] (JULY-AUG 2019)
[REDACTED] (JULY-OCT 2019, DEC 2019,
JAN-MARCH 2020)

[REDACTED] (NOV 2019)

AUG 2019 - SEPT 2019

OCT 2019 - NOV 2019



Area Surrounding NAI WIV BSL-4

4 OCT 2019 (Fr) - 9 OCT 2019 (We)



Area Surrounding NAI WIV BSL-4

11 OCT 2019 (Fr) - 16 OCT 2019 (We)



Area Surrounding NAI WIV BSL-4

18 OCT 2019 (Fr) - 23 OCT 2019 (We)



