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PCR PURCHASING REPORT WUHAN CHINA

AUKUS RESEARCH TEAM

Authored by:

David Robinson, Australia

Robert Potter, Australia

Michael Lammbräu, PhD, USA

Luke McWilliams, UK

Procuring for a Pandemic: An Assessment of Hubei Province (China) PCR Procurement Contracts

INTRODUCTION

Public assessment of the early days of the COVID-19 Pandemic has focused heavily on public statements and interviews. Internet 2.0, specializing in digital forensics and intelligence analysis, has instead elected to evaluate information on actions undertaken by the Government of China. This study has no insights into the origins of COVID-19, however we have come to the conclusion that based on the data analysed it suggests the virus was highly likely to be spreading virulently in Wuhan, China as early as the summer of 2019 and definitely by the early Autumn. We have done this through a robust and exhaustive assessment of Hubei Province, People's Republic of China PCR procurement contracts (open-source research methods) that demonstrated a dramatic increase in total Polymerase Chain Reaction (PCR) procurement contracts and contract value in the second half of 2019. PCR equipment is ubiquitous in laboratories and is used to research DNA and genes at a molecular level. Real time PCR systems have been used widely to identify and categorise variants of the COVID-19 virus.

During the study we have also identified notable, significant and abnormal 2019 purchases of PCR equipment in Wuhan by the People's Liberation Army Airborne Army Hospital (May 2019), The Wuhan Institute of Virology (Nov 2019), the Wuhan University of Science and Technology (Oct 2019) and the Hubei Province Districts Centres for Disease Control and Prevention (May-Dec 2019).

BACKGROUND

The lack of publicly available data concerning COVID-19 origins and patients in 2019 has led our team to ask whether we can answer questions using open-source research methods. Internet 2.0's Advanced Practice team has expertise in analysing and assessing data from a wide range of sources particularly from China and we therefore asked whether we could apply these skills for the public's interest.

Our aim is to provide another perspective and help contribute to the on-going investigation using data and insights derived only from this open-source procurement data.

This study aims to investigate and understand the coronavirus outbreak in Wuhan, China through a quantitative analysis of all open-source Hubei Province, People's Republic of China PCR procurement contracts. Through collection and analysis of all online searchable PCR procurements in Hubei Province from 2007 to 2019 we came to the following results and conclusions.

METHODS

Collection and Pre-processing

Using the search term “PCR” (in the summary and title of the contract), we collected 1716 procurement contracts from 2007 to the end of 2019 by 21 variables. The data was collected through **bidcenter.com.cn** (See Appendix A) and was entered manually into our database from 12 July 2021 to 14 September 2021. The dataset was then processed for analysis (examined for duplicate entries and the creation of sub-categories: PCR Use Requirement), resulting in a final dataset of 506 observations by 21 variables (See Appendix B, C, and D). The PCR Use Requirement categorical variable and its levels were defined by an examination of the Purchaser variable and Title variable. See Appendix E for an in-depth description of this variable. For each winning bid (PCR procurement contract) two dates were provided, the Awarding Date and Announcement Date. For the purposes of this study, the Announcement Date was used as the basis for the analysis and report (See Appendix F). To confirm the hypothesis that a significant increase in purchasing is linked to the spread of COVID-19 we looked at a data control sample across China, see Appendix H for confirmation of the hypothesis.

RESULTS

Annual Increase

An initial view of the data depicts the dramatic increase of PCR procurement contracts in 2019. The increase was present in both contract total value and number of contracts. The total PCR procurement purchase price increased from 2015 to 2018, until a dramatic increase was witnessed in 2019: 10.1M Yuan (2015); 19.1M Yuan (2016); 29.1M Yuan (2017); 36.7M Yuan (2018); and **67.4M Yuan (2019)**. For perspective the total 2019 contract value is higher than the sum of the previous two years.

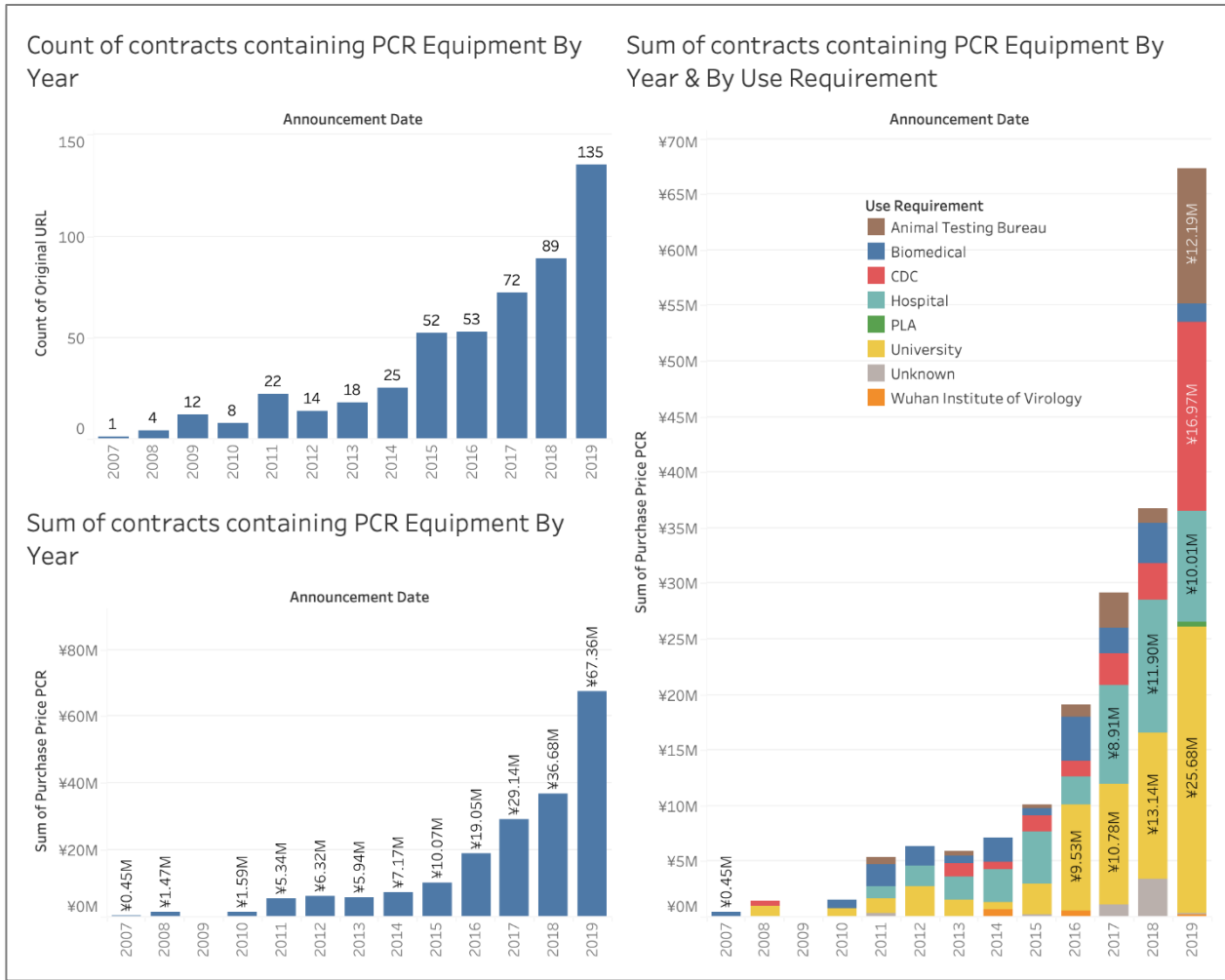


Figure 1: PCR Equipment Contract Purchase Price and Count by Year, Hubei Province

The total count of PCR procurement contracts year over year also witnessed a similar trend: 52 contracts (2015); 53 contracts (2016); 72 contracts (2017); 89 contracts (2018); and 135 contracts (2019). Notably an increase of 46 contracts from 2018 to 2019. The increase in 30.7M Yuan in spending from 2018 to 2019 is explained through the analysis breakdown by Use Requirement, while total PCR purchase price from 2018 to 2019 remained relatively equal for Hospital Purchases: 11.9M Yuan (2018) and 10.01M Yuan (2019). The total PCR purchase price by the Chinese Centres for Disease Control (CDC), Animal Testing Bureaus and Universities dramatically increased in 2019.

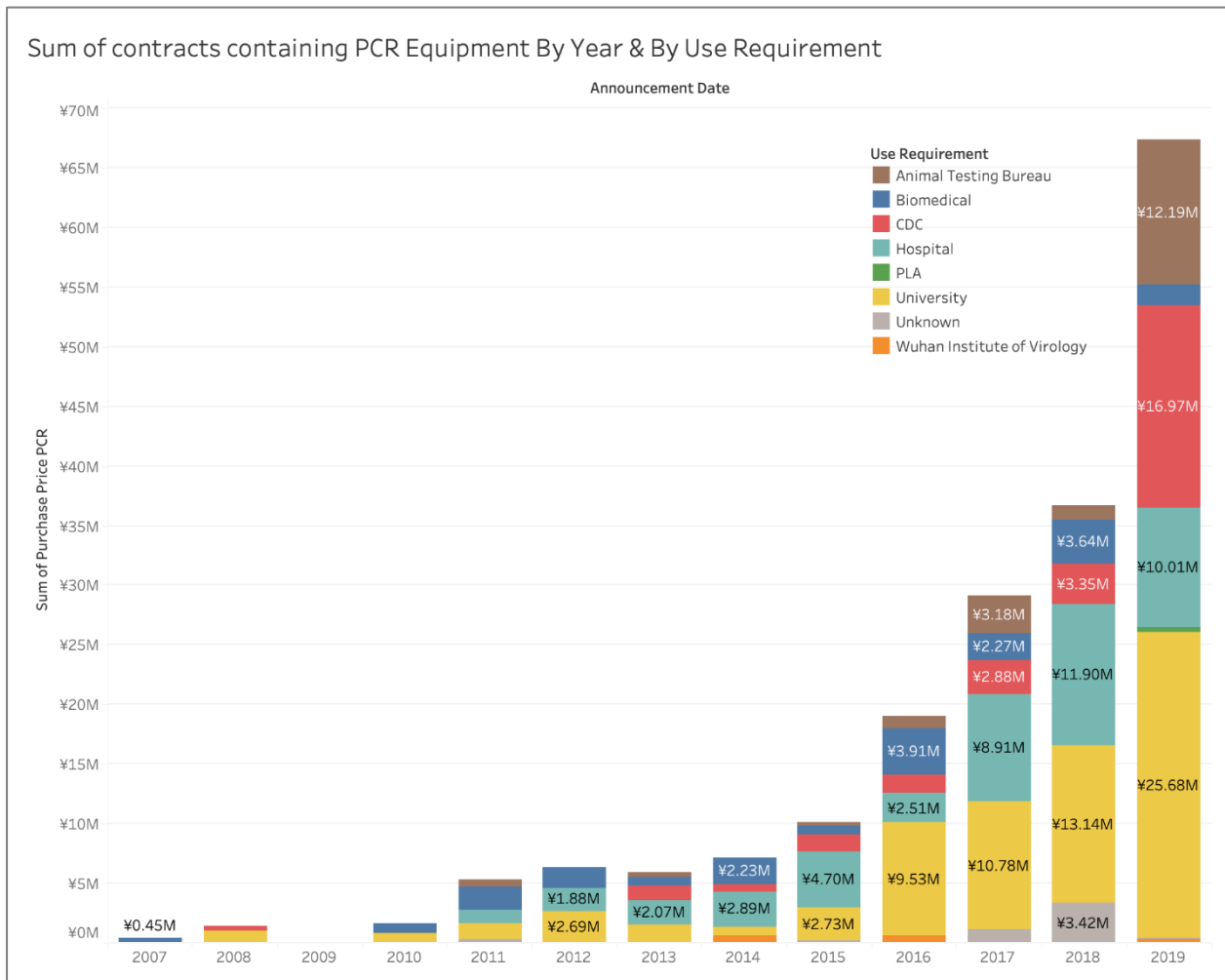


Figure 2: PCR Equipment Contract Purchase Price and Count by Year and Use Requirement, Hubei Province

MAIN PURCHASING ORGANISATIONS

In this section we broke down the total PCR purchase price for each year (2018 and 2019) by Use Requirement and Purchaser to show the dramatic increase between 2018 and 2019 in contract value and difference in purchasers contributing to this increase.

2019

The 2019 graphic clearly shows Wuhan University of Science and Technology, Wuhan CDC, Hubei CDC, and the Institute of Husbandry and Veterinary Medicine (combined) as the primary purchasers, that directly drove the overall increase from 2018 to 2019. For Universities the Wuhan University of Science and Technology was the largest purchaser of PCR procurement contracts at 8.92M Yuan (13.25%) for 2019 which was a significant 7.84M Yuan increase from 2018 (see Appendix F for detailed analysis explaining this trend).

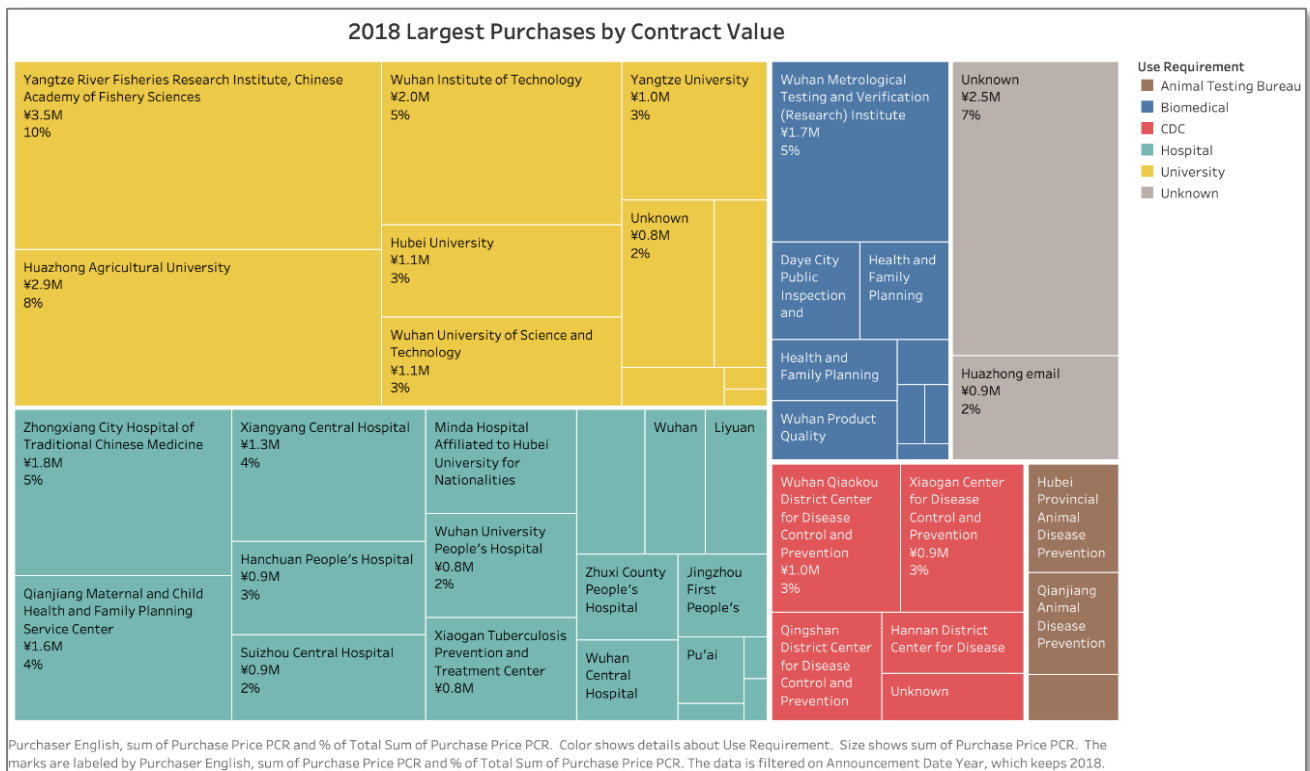


Figure 4: 2018 PCR Equipment Contract Purchases by Purchaser and Use Requirement, Hubei Province

2019 PURCHASES BY MONTH

Looking at the 2019 by month gave us the ability to note the significant increase in spending over the summer of 2019, that started in May 2019. To verify the significance of the 2019 trend we compared the cumulative sum of the preceding years by month. We believe the purchasing activity trend in 2019 is substantial because it clearly departs from procurement trends from 2007 to 2018. See Appendix H for a detailed comparative analysis of monthly purchasing trends, that confirms 2019 monthly procurement as distinct and notable.

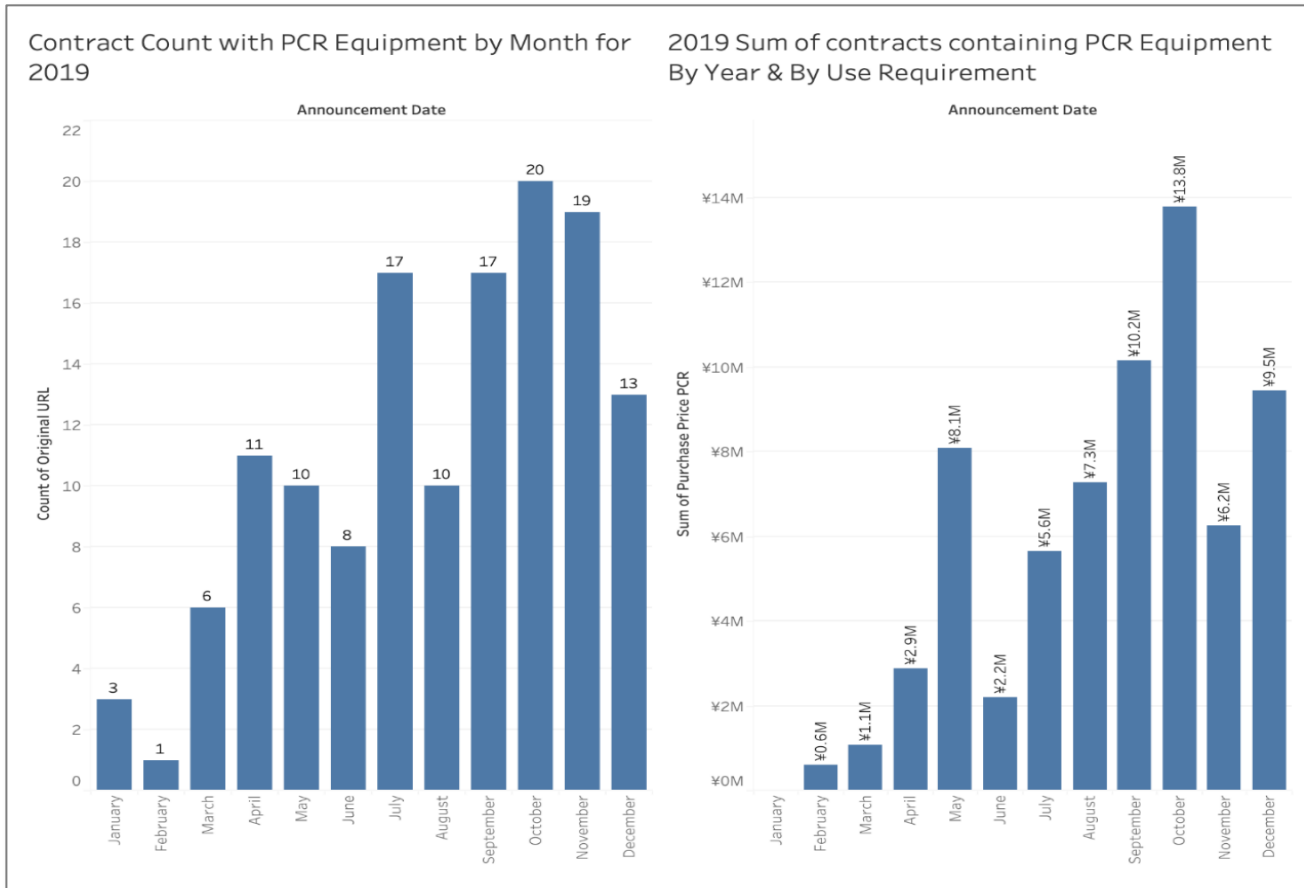


Figure 5. 2019 PCR Equipment Contract Purchase Price and Count by month, Hubei Province

When spending is broken down by Use Requirement starting in May 2019 we see an elevated purchasing trend by the CDC, Animal Testing Bureaus and PLA. We believe the increased spending in May suggests this as the earliest start date for possible infection. We assess with medium confidence that the significant increase in PCR purchasing starts in July 2019. We also highlight measurable Wuhan University Science and Technology purchases began in September 2019. The Wuhan University Science and Technology is important because it was the largest purchaser, it had a dramatic increase in 2019 as an organization and it has 35 teaching practice bases (including 22 general hospitals and 10 disease prevention and control centers). See Appendix F. The increase by the Animal Testing Bureaus from July through December 2019 also brings to light that the Disease Control and Prevention systems that work in animal husbandry were also conducting an elevated purchasing program in Hubei Province. This raises more questions rather than answers in relation to the origins of COVID-19. We can suggest that the Disease Control and Prevention System might not have fully understood the virus yet or if there was a relationship between animal and human transmission.

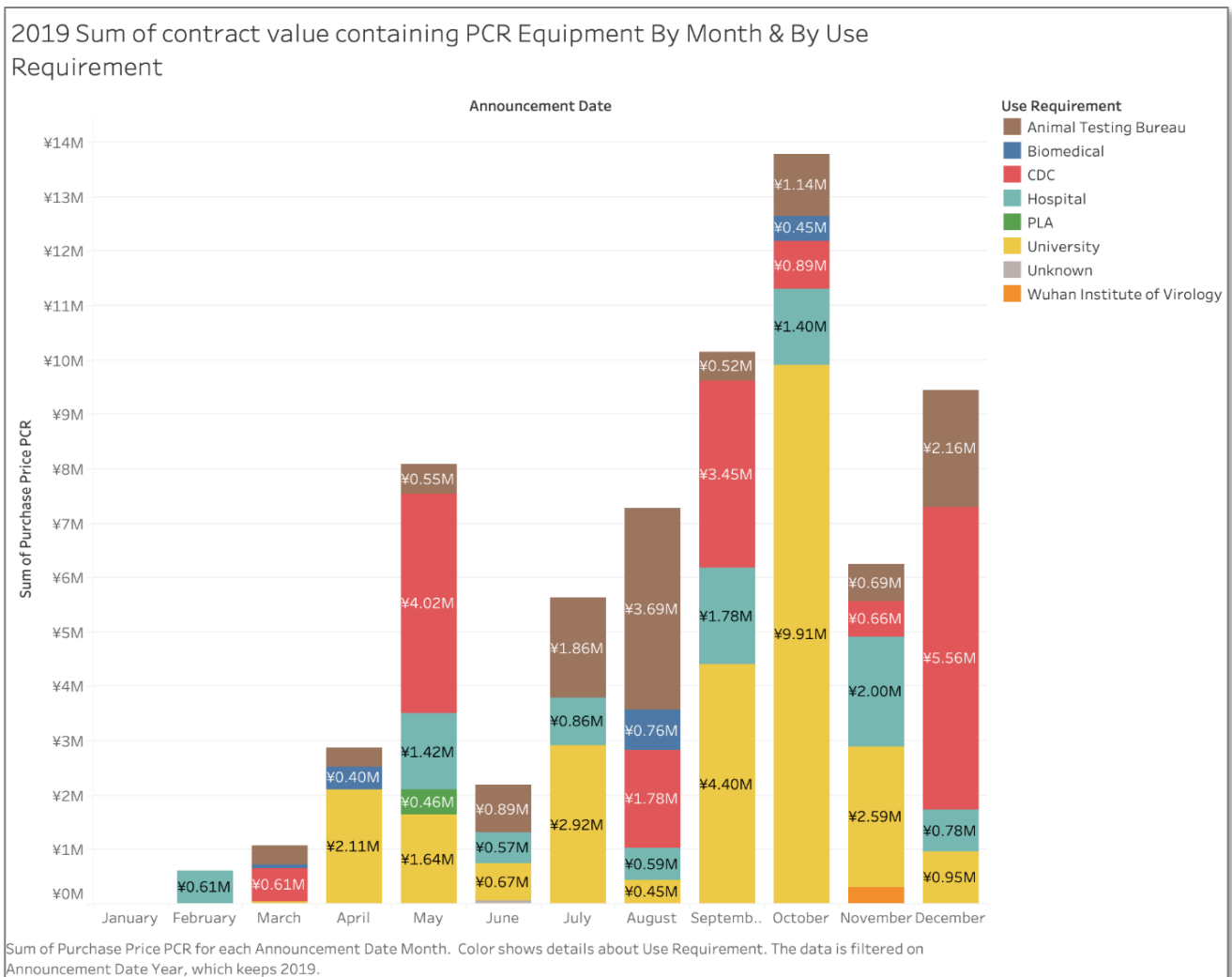


Figure 6: 2019 PCR Equipment Contract Purchase Price by Month and Use Requirement, Hubei Province

NOTABLE CONTRACTS

(1) The Wuhan Institute of Virology made a purchase of a Fluorescent Quantitative PCR Instrument for 308,440 Yuan and announced the requirement on 06 November 2019. The purchase was made from the Wuhan Bai Lei Zhen Biological Technology Co., Ltd. See Appendix F for a detailed explanation of the Wuhan Institute of Virology Supplier. They were the largest supplier of PCR Equipment in 2019 and the entire dataset.¹

(2) The Wuhan Hongshan District Center for Disease Control and Prevention made two purchases of pathogen detection equipment for the Military Games at 1,809,800 Yuan and announced the requirement on 21 September 2019. This is significant due to reported anecdotal infections that were hard to verify conclusively at the Military Games held in October 2019 in Wuhan.²

¹ <https://archive.ph/3k38m>

² <https://archive.ph/cOF2e>

(3) The Chinese People’s Liberation Army Airborne Hospital made a purchase of a Fluorescent Quantitative PCR Instrument for 458,000 Yuan announcing the requirement on 27 May 2019. The purchase was made from the Sinopharm Hubei Medical Devices Co., Ltd. The contract price was waived by the supplier and the equipment was gifted at no cost to the PLA. We found this trend to occur in other PLA procurements and believe the practice to be standard between state owned entities and the PLA. This is noteworthy because the supplier was a CPC controlled entity. The PLA only had one entry in the dataset and on a cursory search through the entirety of China for PLA purchasing of PCR equipment we could not find many other examples that fit this trend. See Appendix G for a detailed explanation of the complex CPC ownership structure of the supplier Sinopharm Medical Device Co. Ltd.³

CONCLUSION

In conclusion these findings challenge existing assumptions around when the pandemic began and support further investigation. The study concludes that a significant increase in spending in PCR equipment correlates to the spread of COVID-19 (See Appendix H). We assess with medium confidence the significant increase from 2018 to 2019 in Hubei province (67.4M Yuan of total PCR equipment in 2019) is due to an event like the emergence of COVID-19.

The out of trend purchases, starting in 2019, by the Hubei Province Centers for Disease Control and Prevention, the Animal Testing Bureaus and the Wuhan University of Science and Technology (organisations in direct connection with responding to an outbreak of any new virus) confirms the increase of purchasing was most likely linked to the emergence of COVID-19 in Hubei Province in 2019.

Finally, we assess with high confidence that the pandemic began much earlier than China informed the WHO about COVID-19.

³ <https://archive.ph/uULA1>

APPENDIXES

APPENDIX A – Database Source

APPENDIX B – Data Sample Observation

APPENDIX C – Variable Use Requirement Category Description

APPENDIX D – Announcement Date Description

APPENDIX E – PLA Contract Award Bid

APPENDIX F – Wuhan University of Science and Technology

APPENDIX G – Mona Biotechnology -Largest Supplier Operating Companies

APPENDIX H – Research Limitations and Data Control Samples

APPENDIX I – Sinopharm Medical Device Co. Ltd Complex State Ownership Structure

APPENDIX A

Database Source: Bidcenter.com.cn

Bidcenter.com.cn is an aggregator website that holds Chinese government procurement data aggregated from government website data. It has been active online since June 2007. According to rankchart.org “bidcenter.com.cn” traffic estimate is about 27,211 unique visitors and 54,422 pageviews per day. Every unique visitor makes about 2 pageviews on average. Alexa Traffic Rank estimates that bidcenter.com.cn is ranked number 1,394 in the world, while most of its traffic comes from China (99.4%), where it occupies as high as 1,515 place.⁴ The website is registered by Beijing Haicheng Tongsheng Network Technology Co., Ltd (北京海诚通胜网络科技有限公司) under the owners Li Huasheng 34%, Liu Cheng 33% and Wang Ligang 33%. These three people operate three other companies together. Bidcenter.com.cn is hosted in the public Alibaba cloud space for most of its hosting records. We assess this is a commercial entity that has a good aggregation service of procurement information that it provides to the Chinese customers. It does this so they can understand the government procurement market, pricing and so the market can monitor requests for tender China wide. We assess that this service enables a lot of transparency in the Chinese government procurement market and this type of service will only increase in China as it goes through digital transformation of its own procurement processes.



Figure 7: Data Source Homepage

⁴ <https://webrate.org/index.php/site/bidcenter.com.cn/>

APPENDIX A

Sample PCR Procurement Contract Bid Result from Data Source

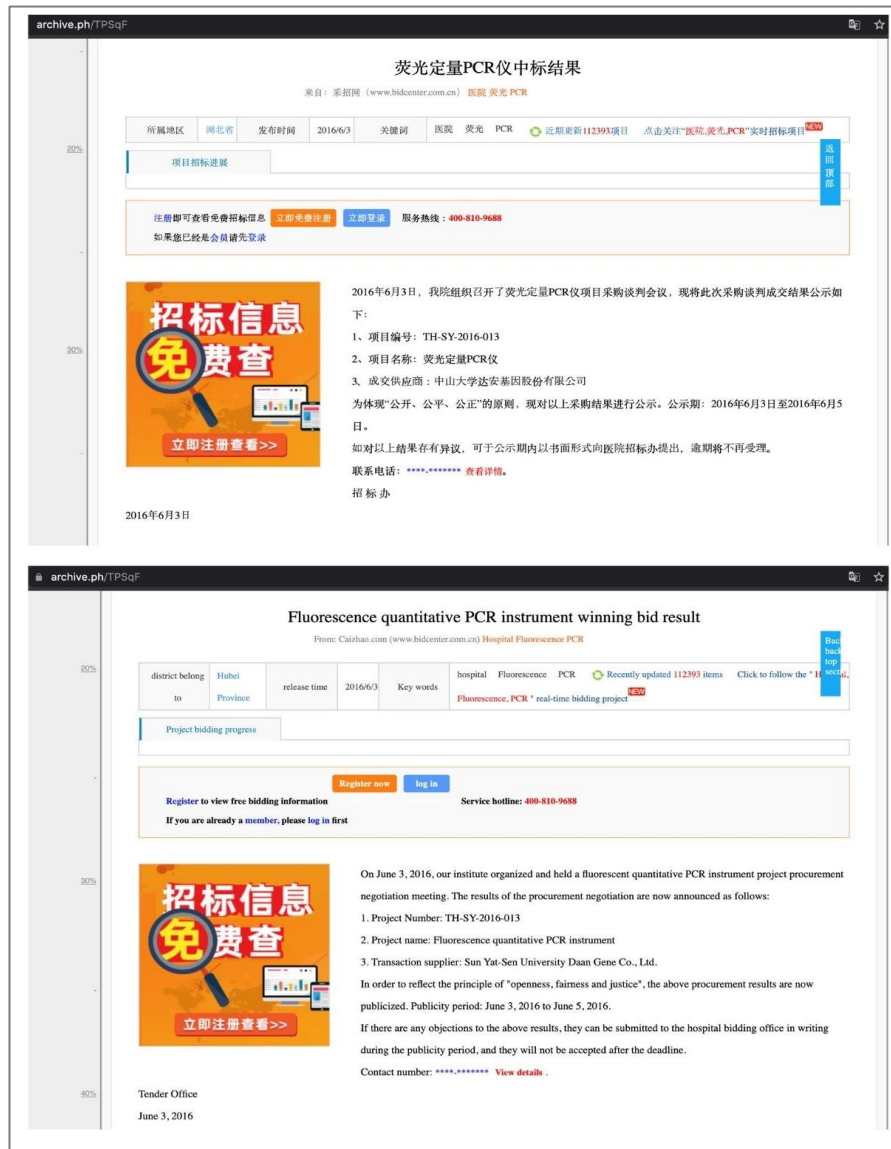


Figure 8: PCR Contract Example from Data Source

APPENDIX B
Data Sample Observation

Variable	Sample Observation
Project Number	CSJ-ZCA-2019-267
URL	https://archive.ph/STpnR
Original URL	https://www.bidcenter.com.cn/newscontent-102094328-4.html
Title	湖北省省级政府采购竞争性谈判成交结果公示（武汉科技大学荧光定量PCR仪等设备采购项目（二次））
Title English	Announcement of the results of competitive negotiations for provincial government procurement in Hubei Province (Wuhan University of Science and Technology Fluorescence Quantitative PCR Instrument and other equipment procurement projects (secondary))
Status	中标结果
Use Requirement	University
Status (English)	Winning bid result
Awarding Date	October 30, 2019
Announcement Date	October 22, 2019
Purchaser	武汉科技大学
Purchaser English	Wuhan University of Science and Technology
Agency	武汉创世纪招标有限公司
Agency English	Wuhan Genesis Tendering Co., Ltd.
Supplier	武汉佰尔玛特科技发展有限公司
Supplier (English)	Wuhan Baiermate Technology Development Co., Ltd.
Budget	N/A
Purchase Price PCR	789,000
Purchase Price Total Contract	789,000
Model	Jena, qTOWER 3G; Thermo, nanodrop one; Ohaus, FC5706; Shimadzu, RF-6000; Suzhou, MU; Sibel, WA810303
Quantity	N/A
Notes	N/A

APPENDIX C

Variable Use Requirement Category Description

PCR Use Requirement levels are defined as follows: **Animal Testing Bureau**– PCR equipment purchased by various Animal Centers for Disease Control (Jingzhou Animal Disease Prevention and Control Center); **Biomedical** – PCR equipment purchased by biomedical facility (For example: Wuhan Municipal Health Bureau); **CDC** – PCR equipment purchased by Chinese State Center for Disease Control (Wuhan Center for Disease Control and Prevention); **Hospital** – PCR equipment purchased by civilian Chinese hospitals (Wuhan Children's Hospital); **PLA** – PCR equipment purchased by the People's Liberation Army (Chinese People's Liberation Army Airborne Army Hospital); **University** – PCR equipment purchased by various Universities in China (Wuhan University of Science and Technology) and **Unknown** – PCR equipment purchased by unknown entities (NA). **Wuhan Institute of Virology** – PCR equipment purchased by the Wuhan Institute of Virology

APPENDIX D

Announcement Date description

For each winning bid (PCR procurement contract) an awarding date and announcement date is provided. In the example in Appendix D, “12 June 2019” is the award date for the contract. The contract award announcement also includes the date the bid was published for competition (Announcement Date: “27 May 2019”). The median difference between the award date and announcement date is 19 days in the dataset. For this study, we selected the announcement date as the consistent reference date. We did this as the aim of the study was to accurately identify when the PCR equipment was required. The announcement date better represents when the need for the PCR equipment procurement was identified. We assess there could be a lead time between identifying the need for the equipment and announcing the procurement requirement but due to a lack of data we believe the most accurate date to use is the announcement date.

APPENDIX E

PLA Contract Award

Chinese People's Liberation Army Airborne Army Hospital Real-time Fluorescent Quantitative PCR Instrument Procurement Project

Announcement of Competitive Negotiation Results

Hubei Zhongtian Tendering Co., Ltd. was commissioned by the Chinese People's Liberation Army Airborne Army Hospital to purchase its "Chinese People's Liberation Army Airborne Army Hospital Real-time Fluorescent Quantitative PCR Instrument Procurement Project". The procurement method: competitive negotiation. The results of this purchase are now announced as follows:

1. Project name and number

Project Name: The Procurement Project of Real-time Fluorescence Quantitative PCR Instrument for the Airborne Corps Hospital of the Chinese People's Liberation Army

Tender No.: HBZT- ***** [View details](#)- H142

2. Purchasing content and budget

For the purchase of real-time fluorescent quantitative PCR instrument, the project budget is 480,000 yuan.

3. Media and date of the announcement of the competitive negotiation

China Government Procurement Network, May 27, 2019

4. Competitive negotiation information

Date of consultation: June 11, 2019

Negotiation place: Hubei Zhongtian Tendering Co., Ltd. meeting room (2) (26th floor, Hongguang Hotel, 782 Minzhu Road, Wuchang District, Wuhan)

Consultation team members: Li Guoxia, Zhang Bo, Ye Dayu

V. Negotiation and transaction information

Purchasing content: real-time fluorescent quantitative PCR instrument

Transaction supplier name: Sinopharm Hubei Medical Devices Co., Ltd.

Transaction amount: RMB four hundred and fifty thousand yuan (¥458000.00)

Delivery time: 7 days after signing the contract

Address of the transaction supplier: Room 1, 9th Floor, Building A20, Bio-Innovation Park, No.666 Gaoxin Avenue, Donghu New Technology Development Zone, Wuhan

Six, questioning

The transaction announcement period is one working day from the date of the announcement of the transaction. If the relevant suppliers disagree with the transaction result, they may raise a question to Hubei Zhongtian Tendering Co., Ltd. within seven working days from the expiration of the deadline for the announcement of the transaction result. When questioning, please submit a written questioning letter (signed by the legal representative and stamped with the official seal of the unit), together with relevant evidence materials.

Seven, contact matters

Purchaser: Chinese People's Liberation Army Airborne Corps Hospital

Address: No. 15, Gongnongbing Road, Jiang'an District, Wuhan

Contact: Director Weng

Agency: Hubei Zhongtian Tendering Co., Ltd.

Address: 26th Floor, Hong Guang Hotel, No. 782 Minzhu Road, Wuchang District, Wuhan

Zip code: 430071

Contact: Zhuang Pengying

Tel: ***** [View details](#)

Fax: ***** [View details](#)

Hubei Zhongtian Tendering Co., Ltd.
June 12, 2019

Figure 9: PLA Contract Award

APPENDIX F

Wuhan University of Science and Technology



The Wuhan University of Science and Technology saw a significant purchasing increase in 2019. It was the largest purchaser of PCR equipment by contract value in 2019 and the increase from 2018 to 2019 was 7.01M Yuan. Most of the contract value was announced and contracted in the Autumn 2019.

We do not have first-hand information about why Wuhan University of Science and Technology had such a critical purchasing role in the 2019 increase. From their website the Wuhan University of Science and Technology is affiliated with eight hospitals “including Tianyou Hospital, Hanyang Hospital, Puren Hospital, China Resources WISCO General Hospital, Wuhan Asian Heart Hospital, Xiaogan Center Hospital, Wuchang Hospital and Xinjiang Cardiovascular and Cerebrovascular Disease Hospital, with a total number of beds of more than 8,000. In addition, the college has 35 teaching practice bases, including 22 general hospitals, 10 disease prevention and control centers, and 5 pharmaceutical companies (pharmaceutical companies).” See-

<https://www.wust.edu.cn/english/2018/0928/c4542a171648/page.htm>

We assess with medium confidence based on the significant purchasing and the self-description of their medical school that if the public health officials were dealing with an outbreak in the summer and autumn 2019 that the Wuhan University of Science and Technology was highly likely to come into close contact with the problem and cases that was the emerging epidemic of COVID-19. We believe their connection with 8 hospitals and 10 disease prevention and control centers makes them a probable institution to initially respond to the emerging epidemic and could explain their part in the purchasing increase.

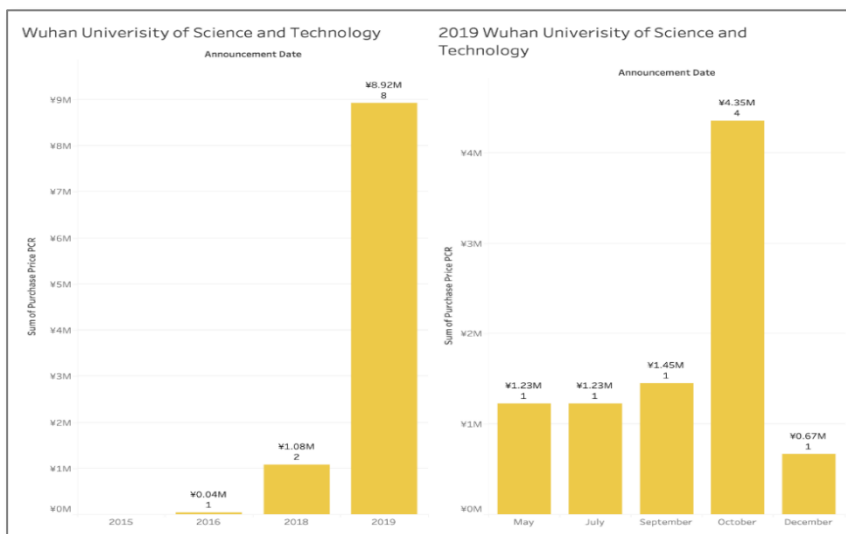


Figure 10: Wuhan University of Science and Technology Purchasing, Hubei Province

APPENDIX H

Research Limitations and Data Control Samples

Multivariate factors influence purchasing needs

It is important to note a multivariate of factors could have influenced the purchasing of PCR equipment between 2008 and 2019. A comparative analysis of the data shows a significant increase in PCR purchasing was linked to the spread of COVID-19. Other factors that could be linked to an increase in spending are as follows: an increase in research programs and/or their funding requiring PCR equipment; the spread of another virus such as Swine Flu or MERS that requires more testing programs; an increase in technology adoption of PCR testing equipment; a technological change that impacts the efficacy of PCR testing in industry; the increase in digitization of Chinese procurement information or an increase in population.

To confirm the hypothesis that an increase in PCR purchasing could be linked with the emergence of COVID-19 we looked at purchasing of PCR equipment in 2020. As can be seen below the exponential increase of more than 2 Billion Yuan in PCR purchasing during 2020 demonstrates a high correlation between the increase in PCR Purchasing and the spread of COVID-19. This data proves that the hypothesis correct, and that we can have high confidence in a link between increased spending and the spread of COVID-19.

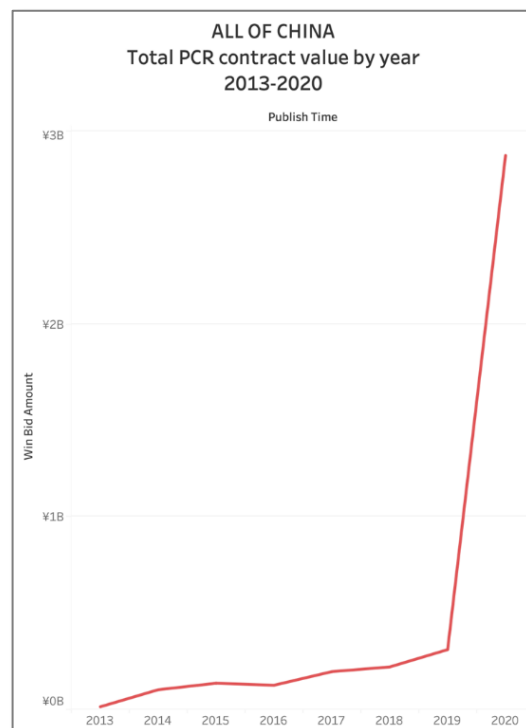


Figure 13: All of China Data Sample, Procurement of PCR equipment 2013-2020. Data sample is 'in title' search only which is not a 100% data representation as it has not been normalized.

Explaining the increases in 2015-2018

There was an increase, although much smaller, in PCR purchasing in Hubei Province between 2015 and 2018 in the study. The lack of data or insight into the research programs or hospital purchases is a research limitation. A control sample was taken across all provinces to rule out the general trend that an increase was occurring across China and that the 2019 increase was not significant. The top five provinces of PCR procurement, according to purchase price, were compared to the trend from the Hubei results. As can be seen here there was a variation in trend between the provinces for PCR equipment purchasing. We note the variation can be explained by the multivariate of factors influencing purchasing requirements. The link between an increase in PCR procurement and the spread of COVID-19 provides an opportunity for future research, particularly in Beijing Province.

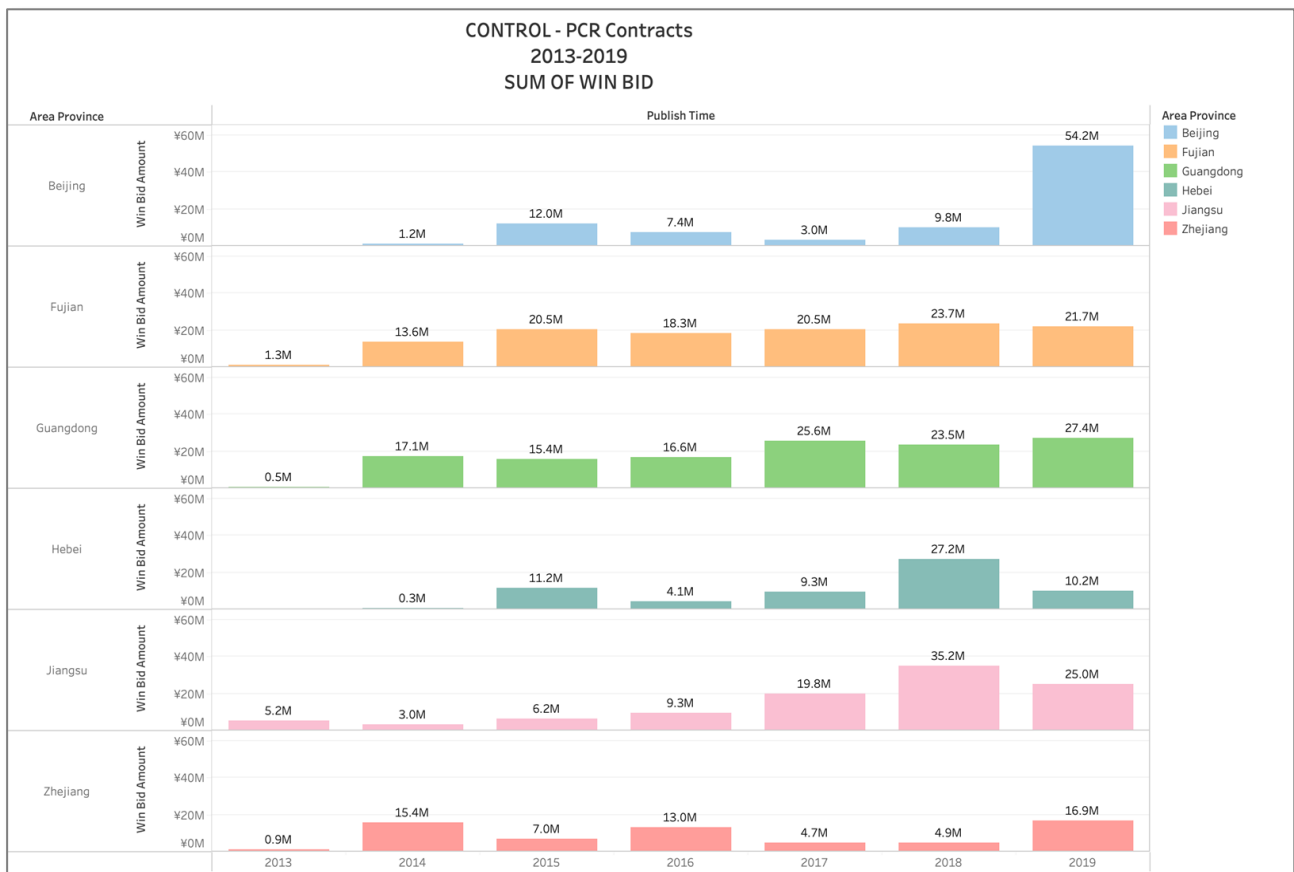


Figure 14: Top Provinces Data sample by year sum of bid value, Procurement of PCR equipment 2013-2020. Data sample is “in title” search only which is not a 100% data representation as it has not been normalized.

Monthly Average before 2019

To ensure the trend of 2019 by month purchasing was significant the cumulative sum of the preceding months purchasing was taken. We believe the purchasing activity and trend in 2019 is significant because it goes against trend in 2019 comparatively to the preceding years of 2007-2018. This enabled us to rule out the factor of planned increases in spending for research because the increase was not seen in traditionally high research spending months.

Below is the total cumulative contract sum of all purchases by month. It is broken down by use requirement in order to identify any trends. This helped identify significant out of trend purchases that occurred in 2019.

We note that July and November had elevated historical purchasing activity for research and December had elevated historical purchasing activity for hospitals. The rest of the months was very evenly distributed, and the CDC was also evenly distributed. In 2019 the significant purchases by the Wuhan University of Science and Technology in September-October, the human and animal Centers for Disease Control and Prevention from May onwards and especially December did not correspond to the historical trends. We were able to come to a medium confidence assessment that these purchases were in response to the emergence of a new event that required significant additional PCR testing support.

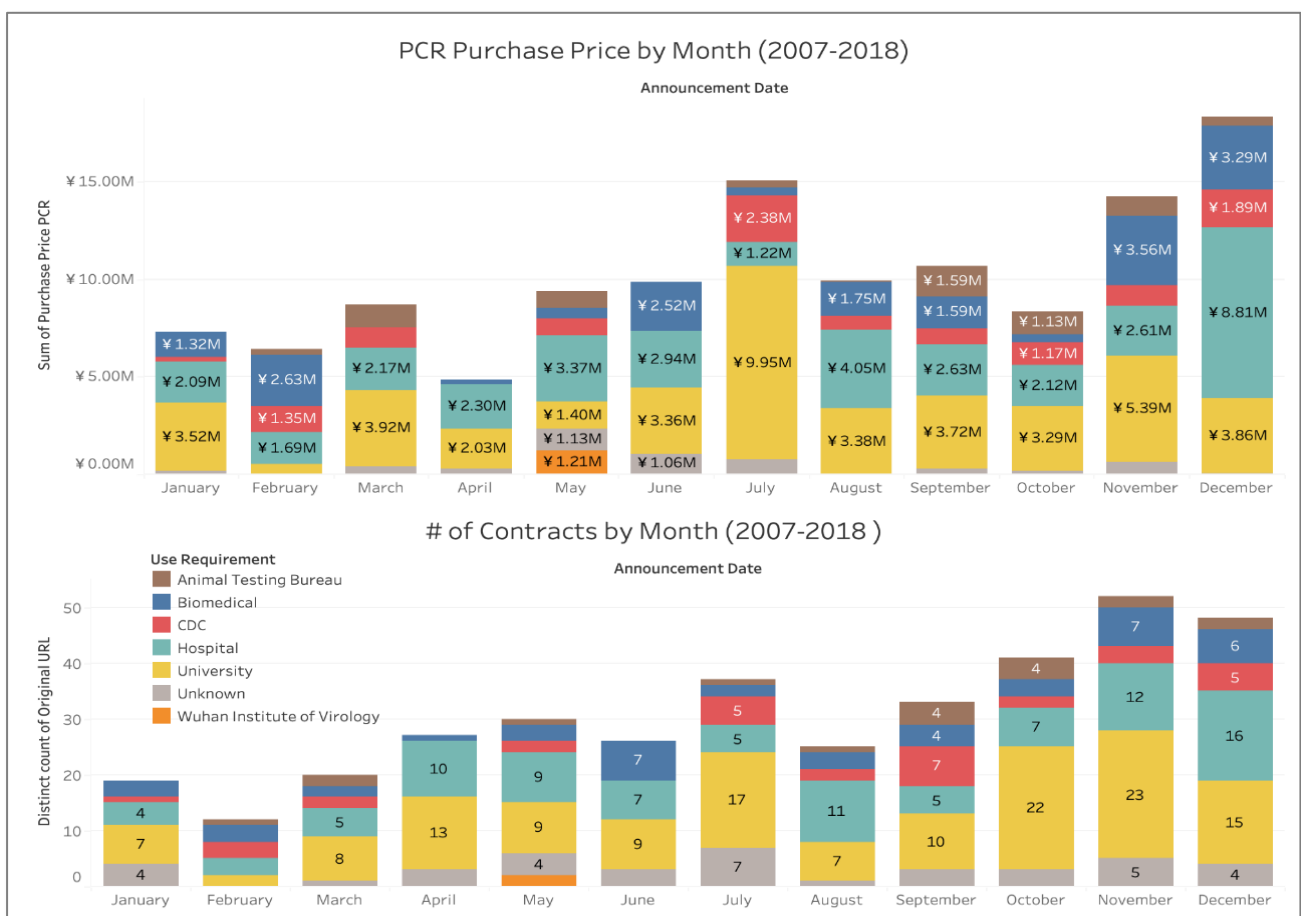


Figure 15: PCR purchases by month sum of contract value 2007-2018, Hubei Province

Appendix I

Sinopharm Medical Device Co. Ltd Complex CPC ownership structure

The PLA PCR purchase in June 2019 from Sinopharm Medical Device Co. Ltd was notable. When looking at the ownership of this company, it was the only Chinese government owned suppliers of PCR equipment in Hubei Province for the entire dataset.

We found it significant to show the complex ownership structure of Sinopharm as a vaccine producer and a supplier to one of the significant and notable purchases in Wuhan in 2019.

We did a cursory search of PLA purchases of PCR equipment from 2008 to 2019. We found very few, but understandably the PLA were probably using a separate procurement system that is not accessible outside of China. We found no other noteworthy purchases or trends on PLA purchasing of PCR equipment.

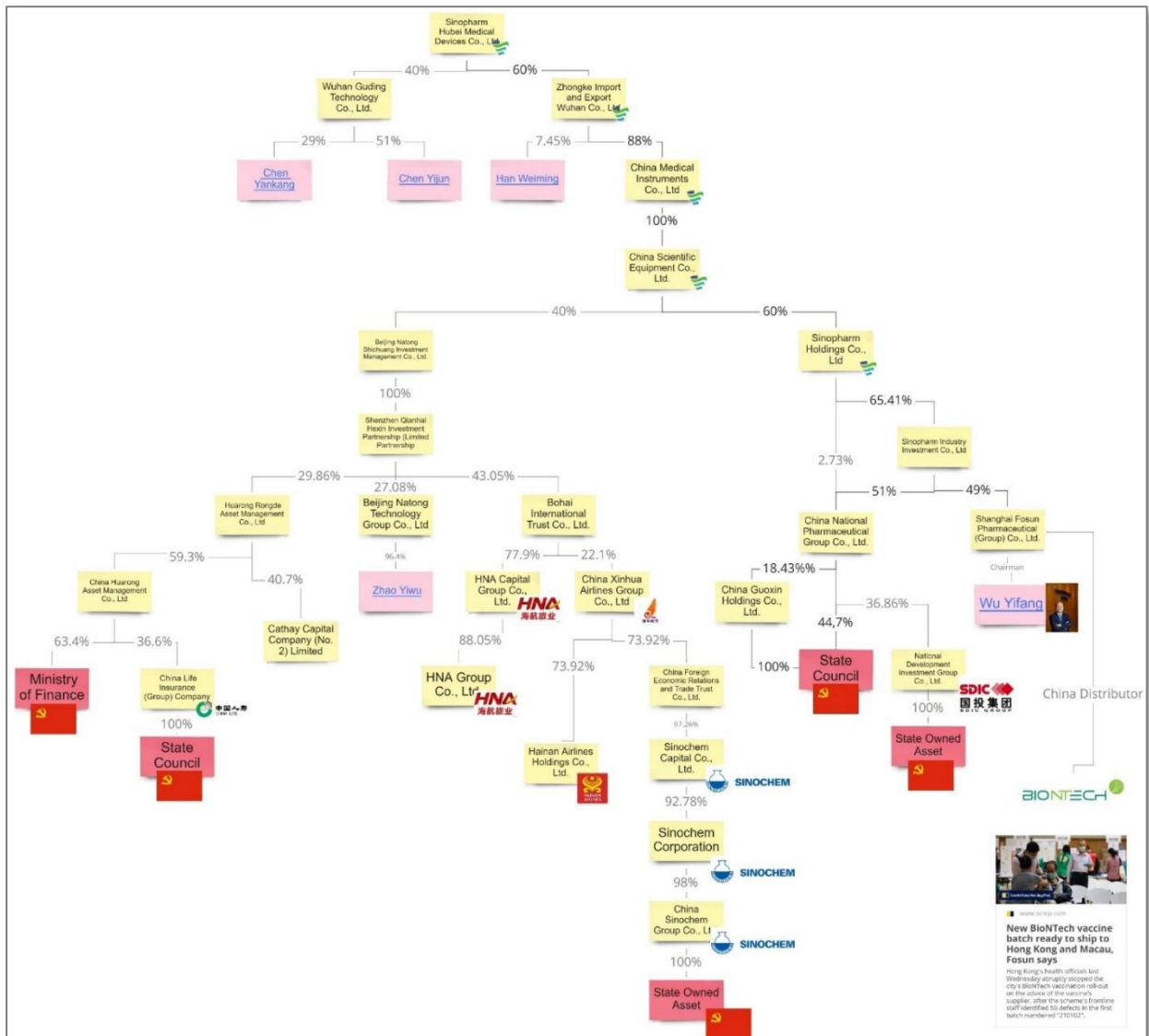


Figure 16: Beneficial Ownership of Sinopharm Medical Device Co. Ltd

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RELENTLESS SECURITY

AUSTRALIA

L1, 18 National Circuit, Barton
ACT, 2600

ABN: 17 632 726 946

UNITED STATES

211 N Union St, Suite 100
Alexandria, 22314

EIN: 86-1567068

E: contact@internet2-0.com

P: (+61) 1300 583 007

Media Enquiries:

media@internet2-0.com