WITHERING COVID 19 STORM: SURVIVAL STRATEGIES EMPLOYED BY INFORMAL TRADERS IN MASVINGO URBAN, ZIMBABWE

TakupiwaNyanga* Herbert Zirima** Nhamo Mashavira***

ABSTRACT

COVID 19 has shaken and destabilized the whole world and caused untold suffering of the human kind. It has caused serious business and social tremors that have resulted in several huge financial, materials, psychological and social losses throughout the world. The main thrust of this study was to explore the survival strategies that were employed by informal traders in Masvingo urban, Zimbabwe. A qualitative approach, which utilized a multiple case design, was utilized to carry out the study. The study population comprised all cross border traders in Masvingo urban. A sample of 15, 9 female and 6 Male, informal traders were selected using the snow balling sampling technique. All the selected participants were in the business of buying and selling clothes, electrical goods, groceries and foreign currency trading. A 13 item interview guide was used to solicit data from participants. Data was analysed using the thematic data analysis method. The study found out that flexibility and use online applications enabled informal traders to remain afloat during the COVID-19 disruptions. Traders sold their goods in foreign currency mainly the USD and South African rand, ICT aided trading systems. The other strategy adopted to survive included relocation of businesses to growth points and other business centres in rural areas and high density suburbs. Future studies should quantitatively assess the impact of COVID-19 disruptions on the informal sector.

Keywords: COVID 19, Informal Traders, Businesses, Coping strategies, Lockdown

*Department of Human Resource, Management, Julius Nyerere School of Social Sciences, Great Zimbabwe University, takupiwa@gmail.com

**Department of Psychology, Julius Nyerere School of Social Sciences, Great Zimbabwe University

*** Department of Human Resource, Management, Julius Nyerere School of Social Sciences, Great Zimbabwe University

INTRODUCTION

The COVID 19 which started in Wuhan in China in 2019 has hit hard all the businesses throughout the world leading to the closure of some businesses and leaving others reeling debts related to labour and other operational costs such as electricity, water and rental bills. All the businesses irrespective of size and location lost and continue to lose financial, material and human resources due to COVID 19 pandemic. Wang and Bray (2020) also argue that COVID 19 is impacting the Global economy in various ways hence it needs to be arrested as quickly as possible so as to avoid further putting businesses in economic and financial disasters and distresses. The COVID 19 has been confirmed in all the five continents of the world and has caused devastating consequences among all the people and businesses throughout the globe. Keevs et al (2020) observed that as the COVID 19 crisis spreads to new epicenter in Europe, US companies are scrambling to mobilize resources to deal with the scourge. It therefore implies that there are no easy answers to the COVID 19 pandemic due to the unpredictability of diseases. The Entrepreneur Middle East International Franchise media (2020) reported that while it is acknowledged that all the businesses suffered from the COVID 19 tremor, small business and self employed people were the hardest affected by the pandemic mainly because they usually survive with a few months or zero months cash flow. If a natural disaster strikes such as COVID 19 and cyclones which lead to temporary closures of businesses small businesses are bound to suffer because they normally operate on a 'hand to mouth' basis. Small businesses especially the informal traders only produce enough to meet their month on month expenses and do not generate enough to put in their reserves. The effects of the COVID 19 pandemic to organizations, workers in particular are devastating and disheartening. The economic turbulence induced by COVID 19made it difficult for small businesses especially the informal traders to survive and later alone continue operating. Covid 19 costed organisations their workforce through death, loss of market shares and in worst cases the closure of the entire businesses (ILO, 2020).

Globally, SMEs were seriously affected by the COVID-19 disturbances. Based on a survey of SMEs in February 2020, reports from China showed that a third of SMEs only had enough cash to cover fixed expenses for a month, with another third running out within two months, putting millions of Chinese SMEs at risk. By the 14th of March, 60% of Chinese SMEs were back in business, but faced further challenges due to reduced demand from other markets (OECD, 2020). A survey released on 25 February 2020 by Business Finland of 300 companies (80% of which are SMEs) indicated that one third of respondents anticipated a negative or very negative impact on their business in the short term, with the strongest effect felt because of restrictions to (international) travel of employees (OECD, 2020).

Governments all over the world have been putting in measures to assist informal traders to cope with the COVID-19 disruptions. Commercial banks in several countries have introduced support packages that include emergency loans to support their SME clients as well as flexibility for repayments of existing loans, for example in Korea, Singapore and Malaysia. In Italy, backed by the Government, the Italian Banking Association and several business associations have agreed on a large-scale moratorium on debt repayments, including mortgages and repayments of small loans and revolving credit lines for businesses (World Bank, 2020). In Chile, a programme of targeted subsidies to firms undergoing hardship was extended to firms in the tourism sector, starting in April 2020 (OECD, 2020). Whilst governments in the developed world have been putting mechanisms to assist SMEs to cope, not much has been reported in Africa and Zimbabwe in particular.

Like many other countries throughout the world, the Zimbabwean government reacted swiftly to the pandemic by putting in place measures that restricted the movement of people and encouraging

citizens to practice high personal hygiene standards and taking other precautionary measures in the WHO COVID 19 guidelines (Nyanga & Zirima, 2020). After the confirmation of the first positive COVID-19 case in Zimbabwe, the government instituted a raft of measures meant to limit the spread of the virus. These measures included nationwide closure of schools, colleges and universities effective from the 24th of March 2020. This was followed by a 21 day national lockdown effective the 30th of March 2020. In order to contain the spread of COVID-19, all gatherings for whatever purposes during the lockdown, all non-essential businesses were supposed to be closed during that period (S.I. 83 of 2020). The lockdown resulted in the total closure of all big and small businesses that were not offering essential services. Only those organizations offering essential services such as security forces, health services, local authorities and others were allowed to operate but on condition that they employ strict measures that minimize the spread and transmission of the pandemic (S.I. 83 of 2020). The total lockdown resulted in all businesses whether big or small losing business due to restrictions on the movement of people. Liue and Parilla (2020) are of the opinion that the drastic and desperate measures to fight the scourge such as to quarantine people at home as the spread of the Corona virus continue to surge has adversely affected businesses. Since the beginning of employing restrictions on the movement of people most organizations began to register low sales which technically meant that they would not be able to raise enough money to meet their monthly financial obligations such as salary, rental, water, electricity and other operation related bills.

Zimbabwe has a significant number of people who run informal businesses in both urban and rural areas (Nyanga & Zirima 2020). Informal traders are those people who operate unregistered business entities mainly for purposes of generating income for domestic use. Informal traders in Zimbabwe include among others cross border traders, vegetable and fruit vendors, clothes and electrical vendors and other appliances vendors. Informal traders provide services and products that enrich people's lives and support developing countries' efforts to curb unemployment and also eradicate poverty. Selfemployment is also a major source of livelihood and an essential source of income and wealth generation. Like many other small businesses throughout the world, informal businesses in Zimbabwe were also hit by COVID 19 in various ways. However, it is not clear to what extent informal businesses were affected by the pandemic since a lot of research efforts on the pandemic has been focusing on how it affected big corporations throughout the world and left out the informal sector. Little if any research has been done to assess the strategies employed by the informal sector to survive the effects of the pandemic in the short run and in the long run. The informal sector in Zimbabwe and other developing countries has become a major player in economic development and significantly contribute to GDP yet continue to receive little attention from researchers in times of pandemics and economic recessions. Moreover, there appears to be no meaningful government support for informal traders. It is therefore the purpose of this study to examine the survival strategies employed by informal traders during the COVID 19 pandemic period.

OBJECTIVES

- a) To establish the extent to which informal businesses have been affected by the Corona virus pandemic.
- b) To examine survival strategies employed by the informal sector during the lockdown period.
- c) To assess the effectiveness of the survival strategies employed by the informal sector to hedge their businesses from the effects of the COVID 19 pandemic.

RESEARCH METHODOLOGY

A purely qualitative research methodology was utilized, with a 13 item interview guide being utilized

to solicit data from fifteen participants who were selected using the snow balling sampling technique. The population of the study comprised all the informal traders in Masvingo urban. It was however not easy to establish the exact number of the population because there is no system in the country that has an accurate register of the informal traders since informal traders get in and out of businesses unceremoniously. Informal traders in Zimbabwe include mainly the following; 'illegal' foreign currency traders, welders, manufacturers of building materials such as door frames and window frames, cross border traders and vendors. Telephone conservations were used to interview participants. With the concurrence of the respondents almost all the telephone conversations were recorded. Data was analyzed using thematic data analysis method. Themes and sub themes were developed as the researchers analyzed the audio recorded responses and notes.

RESULTS AND DISCUSSION

Effects of COVID 19 on Informal Traders

COVID 19 emotionally, socially, psychologically and financially affected informal traders in Zimbabwe. Measures put in place by government to arrest COVID 19 resulted in all the informal traders who were selling their goods in the streets, under trees and squatting in market places such the Chitima market in the city of Masvingo being driven away. Before the COVID 19 pandemic informal traders would be noticed at various places in town and suburbs selling their goods to the public. Some informal traders would be moving around town or in suburbs selling their wares such as vegetables, small imported items such as pesticides and nail cutters, electrical appliances like small radios and others. Other informal traders were selling their goods from fixed places such as under trees or under an informally constructed shade. The closure of all informal trading markets due to COVID 19 lockdown deprived informal traders' financial earnings since all the buying and selling activities in the informal sector were put to a halt. Furthermore, COVID 19, specifically the lockdown period disturbed social set ups since it was no longer easy if not impossible for people to visit their friends and relatives for financial and food stuff assistance. Some informal traders depended on their relatives for food provision but the lockdown made it almost impossible for them to visit their relatives in suburbs such as Rhodene, Eastvale and others. The inability by informal traders to raise enough money to meet their basic needs and their failure to connect with their relatives and friends bred a lot of emotional and psychological disorders such as stress. The findings are consistent with (Mataruse et al 2020, Mohammed 2020, Chirombe et al 2020, Alexandru, 2020, Nyanga & Zirima 2020) who observed that COVID 19 had adverse ramifications to various institutions in Zimbabwe and abroad.

STRATEGIES EMPLOYED BY INFORMAL TRADERS

1. Diversification

The study revealed that a significant number of informal traders diversified and introduced totally new product lines and or more products in the same product line. For instance informal traders who used to sell vegetables diversified and introduced new products such as fruits and traditional beer. The findings resonates with the 10 April 2020 Herald Newspaper report which indicated that there was a youthful vendor who took advantage of the lockdown and closure of beer halls and made brisk business at Chitubu business centre in Harare by selling traditional beer brewed overnight. The traditional beer is popularly known as "chione day" (brewed overnight). One of the informal trader, a food vendor who used to order food items from South Africa for resale at his musika (market place) in Mucheke suburb remarked, "I ran out of stock two days after the South African president announced a lockdown in his country. My customers bought all the goods that I had, to stock as they anticipated that the Zimbabwean government would announce a lockdown. I had to diversify and look for goods that I could order

locally and resale. I am now a vegetable vendor; I buy vegetables from farmers and resale to residences of Mucheke, KMP, Sisk and Runyararo West suburbs."If informal traders stop operating, they will experience huge financial problems since most of them meet their financial obligations such as rentals, electricity, water and refuse collection bills by buying and selling goods. The findings are consistent with the Chronicle newspaper report of 11 March 2020, which reported that the lockdown was hitting hard on vendors since they can no longer generate income they require to meet their daily needs. For this reason most informal traders employed the diversification strategy to survive during the lockdown so that they could raise enough money to buy food for their families and also meet other essential bills.

2. Trading in foreign currency

One of the strategies that were employed by informal traders in Zimbabwe during the 21 days COVID 19 lockdown period was to trade in foreign currency such as United states dollars (USD), South Africa Rand and the Botswana pula. Trading in foreign currency helped the self employed to exchange their goods and services with more stable currency and avoid the risk of losing the value of their money because of inflation. Trading with unstable currency in economic turbulent times may results in losses of the injected capital. Participants 7 remarked, "The COVID 19 lockdown motivated me to sell my imported goods in foreign currency so as to avoid the erosion of my capital by inflation." Participant 1, "Selling goods in foreign currency would help me to keep my stock in a more reliable and stable currency which will assist me when I want to restock after the lockdown." The Zimbabwean government through the Reserve bank of Zimbabwe authorized businesses to trade in foreign so that the public can easily access COVID 19 preventionand treatment material and equipment. The self-employed capitalized on this opportunity and started trading in foreign currency. Traders preferred to use the USD, the Botswana pula and the South African rand during the COVID 19 lockdown period since it was not easy for them to buy foreign currency from the street foreign currency vendors.

COVID 19 lockdown resulted in the removal of all the 'illegal' foreign currency dealers best known as "ma change money' from the central business district, which consequently made it difficult for all the informal traders to have easy access to foreign currency. However, the removal of the 'illegal' foreign currency traders did not hinder the 'ma change money' from operating. They simply relocated from the central business district to high density residential areas. Participant 3, "isu ma change money hatipererwi, takatoita plan kuti tirarame, takango buda mu town tikauya kune vanhu, ku location" loosely translated (we the illegal foreign currency traders do not run out of ideas, we made a plan to survive, we simply moved out of town and came to the high density surburbs where the people are).Such flexibility is not new to Zimbabwean informal traders as they have done that before during the 2018 economic crisis. Nyanga et al (2013) reported that a number of informal traders and SMEs managed to remain afloat during the 2008 economic crisis largely because of a variety of flexible strategies that they employed. For instance, they revealed that most business adjusted their operating times depending with the demand at the time.

3. Digital Marketing and Trading

Informal traders moved from the conventional, marketing and trading approaches where they would physically and face to face meet with their customers and suppliers and utilized online trading strategy. In any business the most important thing to do is to keep in touch with customers, informing them of the available goods and the new goods that would becoming into the market. Since business activities were suspended in town informal traders had to communicate with their clients through email and social media. The findings are consistent with the USA chamber of commerce (2020) report which encouraged businesses to establish remote work options. Business should utilize the tools that can be used to keep the business in touch with us customers and suppliers. Informal traders especially cross

border traders employed online services such as email and social media to sell and promote their products. One informal trader, participant 9, who specializes in DSTV connections, resorted to establishing a WhatsApp group where he would make arrangements with his clients "Please inbox me on my whatsapp number if you have any challenges with your decoder, connection or subscription issues, I will come wherever you are"

Participant 14 who specializes in foreign currency trading posted in an online business forum that. " fonai muchitaura pamuri, tokuvigirai mari chero kwamuri mu Masvingo" translated (call stating your location, we will bring you money wherever you are in Masvingo).

Informal traders would communicate with their clients using online channels of communication and then make arrangements to deliver goods to their customers. The approach helps them to remain in business though operating at low scale. Reeves et-al (2020) argues that organizations and small businesses in China used social media such as WeChat to coordinate employees, their business partners and customers. The strategy helps organizations to maintain a market share, build confidence in customers, and promote business and product loyalty. Customers also emphasize right businesses that keep them informed of the problems and challenges they face, hence the use of online or e-commerce to conduct business was the best strategy.

4. Suspensions of Business Activities

The study also found out that some informal traders such as cross border traders suspended their businesses operations or reduced operations as a way of complying with the government directive to stop all businesses activities which do not provide essential services. The strategy of suspending operation helped business to keep their stock and not to release it during the time when the economy is at its worst in terms of stability. Participant 7 said, "I had to suspend my business because restocking after the lockdown would be difficult because money would have lost value. Furthermore, the Beitbridge border that links Zimbabwe and South Africa is closed which makes restocking almost impossible." Participant 18, "I suspended my business activities because I was afraid of losing my goods during the enforcement of the lockdown by security forces. This helps me to keep my capital in the form of goods and would sell as and when it becomes convenient and less risky. Suspension of business activities bring with it a number of challenges such as cash flow problems, challenges to raise enough money to pay service charges such as electricity and water bills. The informal traders also make an effort to tap into financial material resources provided by government and non-government organizations to support the public during the lockdown period. The distressed and unstable economic environment requires businesses to regularly scan the environment so that opportunities are maximized on while threats are quickly defected and acted upon. Suspending operation also gave informal traders time to reflect about their operation and develop new insights and strategies. A reflection of operations help organizations to formulate new objectives and strategies which would help rejuvenate the business when the lockdown is lifted.

5. Relocation of businesses to Growth Points and Business Centres in Rural Areas

The study also revealed that some informal traders such as cross border traders who buy and sell clothes imported from South Africa, China and Tanzania relocated to growth points and big busy business centres in rural areas where they felt that the enforcement of the lockdown was not as strict as in town. Participant16 who used of conduct his business in Masvingo urban relocated to Makuvaza business centre in Bikita district and had this to say, "I have temporarily relocated to Makuvaza business centre because I could not afford stay for 21 days without generating income because I need to pay rent, raise money for my children's fees and also pay service bills. I am receiving better sales than

what I used to get in town."Relocation of business activities in rural areas and growth points was a good move because a significant number of people relocated to rural areas where they preferred to spend the 21 days lock down period. The relocation therefore opened new business opportunities and new markets for informal traders. Participant 9, who is in the business of buying and selling clothes remarked, "The relocation strategy helped me because 1 continued doing my business as usual and more so sold my ware using the runs which is a more stable currency."The major challenge that was faced by those who temporarily relocated to growth points and business centres in rural areas was restocking. Restocking was impossible because they could not go back to town or cross the border to restock because of the lockdown. Furthermore, people in rural areas also had a perception and feeling that those people who were coming from urban centers were the potential carriers of the Corona virus hence they did not want to do business with them.

5. Capitalize in Times of Crisis

It is not pleasant and ethical business practice to capitalize in times of crises or pandemics, but most informal traders capitalized on the crises by hiking the prices of their products and goods. Fruit vendors hiked their prices for fruits because the demand had increased during the COVID 19 pandemic. The demand for fruits such as lemons astronomically went up because people wanted to boost their immune system so as to reduce chances of contracting the disease. Besides hiking prices for their goods, some vendors ventured into illegal business activities such as selling mbanje (dagga) or any other alcoholic substances. Reeves et-al (2020) are of the view that during crises business need to develop dynamic trajectory that is viewed constantly so as to develop new recovery strategies (ecommerce).Self employed utilised business opportunities amid adversity for example in the case of fruit vendors, the demand for lemons increased significant so they ordered the fruit from surrounding rural areas such as Chikarudzo, Zimuto, Mhandamabwe and sold them to their customers in town at exorbitant prices. Online marketing was used to trade as the self employed embrace the less popular business marketing strategy in informal businesses. The strategy assisted informal traders to meet the new needs of their customers and also to boost the number of their clients. Clientele increased because a number of vendors had relocated to other areas and in some instances suspended and closed their businesses. The few businesses that remained operating increased their market share by approximately 20%. Participant said,"I communicate with my suppliers of lemons using social media and also communicate with my transporter using social media, which imply that I continue to do business while at the same time complying with the lockdown."Participant 8 said; "I have increased the prices of my goods with 157% because the goods are in short supply and the demand is very high."

6. Limit Credit to Customers

During turbulent times it is essential for the informal traders to manage, plan and fully understand the cash flow of the business. Most informal traders restricted and limited their customers from buying on credit because they anticipated a huge economic recession due to COVID 19. Furthermore, they also revised their credit collection policies and ensured that they received almost all the money which was due for payment by their customers. Furthermore, the self employed people timed their overheads so as to maintain profitability and/or reduce loses. For example, most informal traders such as vendors significantly reduced their telephone bills, electricity and water bills because of mostly relying on digital marketing. Energy conservation strategy was employed so as to save money. Less expensive but effective marketing strategies such as social media initiatives were used. The initiatives helped to increase cash flows in businesses while at the same time complying with the government directive to minimize people from meeting and conducting business in ways that promote the spread of the Corona virus. It makes little business sense to sell goods on credit when the economic environment is

distressed and unstable because money is bound to lose value before payments are made. The few customers who were allowed to buy on credit were charged in foreign currency mainly the USD so that the sale is not distorted by inflation.

CONCLUSION

COVID 19 has destabilized all the businesses around the globe, but the informal traders were the hardest hit because of their limited cash flows, unavailability of backup and support systems. A sizable number of informal traders folded their business due to the effects of the Corona virus. Customers preferred to buy their goods from supermarkets where efforts to prevent the transmission of the various was made. For example, big shops used sanitizer for customers to wash their hands. The market share for informal traders significantly went down hence they needed to develop survival strategies. Their situation was worsened by the lockdown period which denied them from conducting their business in the streets or city centres. The survival strategies most informal businesses employed include trading in foreign currency, ICT aided business, suspension of business activities, relocating business to growth points and busy rural areas and capitalizing on opportunities that emerged due to the COVID 19 pandemic.

RECOMMENDATIONS

- Informal traders should continuously scan the environment so that they capitalize on all the businesses opportunities that come their way. Environmental scanning also assists businesses to quickly identify threats and deal with them before they cause a major harm to their businesses.
- Informal traders should keep all their financial resources in more stable and reliable currencies such as the South African Rand, Botswana pula and the United States of America dollar.
- Informal traders should fully utilize online trading systems so that they remain in business and comply with government directives regarding minimizing and managing the spread and transmission of COVID 19.
- Future studies should quantitatively explore the economic impact that the COVID-19 disruptions have had in the informal sector.

REFERENCE

Alexandru, T. (2020). Happiness Facing to the Perfidious and Invisible Challenge of COVID 19. Business Excellence and Management, 2020 Special Issue 1.

Baldwin, R. and Di Mauro B.W (2020). Economics in the Time of Covid-19. CEPR

Chirombe, T., Benza, S., Munetsi, E., and Zirima, H. (2020). Coping Mechanisms Adopted by People during the COVID 19 Lockdown in Zimbabwe. Business Excellence and Management, 2020 Special Issue 1.

International Labour Organisation (2020). COVID 19 and the world of work: Impact and

policy responses. Retrieved fromhttps://www.ilo.org/wcmsp5/groups/public/---dgreports/

International Trade Centre (2020). COVID 19 and Small Businesses. Retrieved from

http://www.intracen.org/news/Message-from-ITC-Executive-Director-ai-on-COVID-19-and-small-businesses/

Lillie S. and Parilla J. (2020). What the Great Recessions Can tell us about the COVID 19

Small Business Crisis, http.www.bookings.edu.

Mataruse I, Karuma C, Mavurudza F, Gadzikwa P., Zirima H & Nyanga T, (2020). E-Learning in Universities in Zimbabwe during the COVID-19 Total Lockdown: Challenges and Alternatives. Business Excellence and Management, 2020 Special Issue 1.

Mohammed, M. (2020) New Trends in Human Resource Management in the Health Sector beyond Corona Virus – A Practical Model. Business Excellence and Management, 2020 Special Issue 1.

Nyanga, T (2018) Examining the Usefulness of Job Satisfaction Theories in Armed Conflict

Society. Amity Global Human Resource Management Review, 8(2), 40-48.

Nyanga T. & Sibanda R. (2019) Magnet that Truss Domestic Workers and Employers in

Armed Conflict Societies: A Case of Mazoe in Changara District in Mozambique, Journal of Vietnam Academy of Social Sciences, 20(4), 22-36.

Nyanga, T. & Zirima H. (2020) Reactions of Small to Medium Enterprises in Masvingo, Zimbabwe to COVID 19: Implications on Productivity. Business Excellence and Management, 2020 Special Issue 1.

Nyanga, T., Zirima, H., Mupani, H., Mashavira, N., & Chifamba, E. (2013). Survival of the

Vulnerable: Strategies Employed By Small to Medium Enterprises in Zimbabwe to Survive an Economic Crisis. Journal of Sustainable Development in Africa, 15(6), 20-29

OECD (2020).Covid-19: SME Policy Responses. Retrieved from https://www.oecd.org/economic-outlook/

Reeves M, Faeste L, Clen C, Carlsson- Szlezak P and Whitaker K. (2020) How the Chinese Companies have responded to Corona virus, Harvard Business Review, https,ihr,org/2020/03

Statutory Instrument number 83 (2020). Public Health (COVID-19 Prevention, Containment and Treatment) (National Lockdown) Order. Harare, Government Printer

The Chronicle Newspaper, 11 April 2020,

The Herald Newspaper, 10 April 2020,

US Chamber of Commerce 2020 WWW// US chamber.com/co/small business.

Wag, P. and Bray D (2020) Pandemic Survival Strategies: A Leadership Guide For Organisations Wanting to Weather The COVID19 Storm https// Atlantic commercial org Atlantic council of Geo Tech Center

World Health Organisation (2020). Situation reports on COVID 19 Outbreak. Retrieved from

https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200402-sitrep-73-covid-19.pdf?sfvrsn=5ae25bc7_2

World Bank (2020). Swift action can Help Developing Countries Limit Economic Harm.

Retrieved from https://blogs.worldbank.org/voices/swift-action-can-help-developing-countries-limit-economic-harm-coronavirus?cid=ECR_E_NewsletterWeekly

Wu, JT., Leung, K., Bushma, M., Kishore, N., Niehus, R., Pablo, P., Salazar, B., Cowling,

B.J., Lipsitch, M., & Leung, G.M. (2020). Estimating Clinical Severity of COVID-19 from the Transmission Dynamics in Wuhan, China. Nature Medicine, https://doi.org/10.1038/s41591-020-0822-7