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RESEARCH ARTICLE

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USE OF THE BIOSAFE SYSTEM FOR THE SAFE RESUMPTION OF ROAD PASSENGER TRANSPORT IN FRONT OF COVID-19 IN THE BRAZILIAN AMAZON

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ABSTRACT

The COVID-19 pandemic hit the transport sector alarmingly, causing damage throughout Brazil. To minimize economic damage to the transport sector, in addition to preserving the health of the population, this study aimed to survey biosafety measures through the biosafe system, which minimize the risks of contagion by COVID-19 in road transport in passengers in the Brazilian Amazon. Through a survey of buses with the biosafe system, which operate in the road transport of passengers traveling interstate in the Amazon region of Brazil, the criteria registered by the World Health Organization for the prevention of the virus were certified. For each criterion, a survey of a biosafety measure was carried out. To protect the contagion areas, the use of a mask inside the bus was mandatory, hand hygiene was performed using gel alcohol dispersers, the distance was performed by readjusting the layout in individual seats, disinfection of the environment with ultraviolet light technology and health conditions of passengers with measurement of body temperature upon boarding. The application of the biosafe system in the road transport of passengers is important to guarantee the quality of life and well-being, preventing the spread of COVID-19 among passengers.

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INTRODUCTION

The road transport of passengers is an essential economic activity for the provision of displacement of people, luggage and parcels across the national territory. In Brazil, all road transport services are regulated by the National Land Transport Agency, which is the authority responsible for the escalation and control of the activity throughout the country (Oliveira Neto and Santos 2021). The Coronavirus Disease 2019 (COVID-19) pandemic affected the transport sector in an alarming manner, causing enormous damage throughout Brazil, coupled with enormous negative impacts. The main premise for preventing COVID-19 is social isolation. This measure has a direct impact on the road passenger transport sector, especially in underdeveloped countries such as Brazil, as it reduces vehicle circulation and causes incalculable damage to companies in this sector (Werneck and Carvalho 2020; Lima et al. 2020). Faced with this problem, the biosafe system arises.

This is a methodology based on the criteria of the World Health Organization (WHO), with a focus on ensuring protection for the road transport of passengers through biosafety measures, thus providing greater security (Marcopolo 2020; World Health Organization 2020). The biosafe system was initially tested and approved in the laboratory, obtaining 99.99% effectiveness.

This appears as a guarantee of safe resumption of passenger transport, in the face of the COVID-19 pandemic, contributing to ensuring the health of road transport users (Podzorova et al. 2020; Universidade de Caxias do Sul 2020). Therefore, the objective was to survey biosafety measures through the biosafe system to minimize the risks of contagion by COVID-19 in road transport of passengers in the Amazon region of Brazil.

MATERIALS AND METHODS

The research was carried out on two buses that operate in the interstate passenger road system. Thus, transport is carried out by air-conditioned buses, equipped with chassis of the Mercedes Benz brand (Model O-500RSD BlueTec 5), with a Marcopolo Paradiso G7 1600 LD body, with a capacity for 34 passengers and manufactured in 2020. Regarding the route, buses operate between the states of Pará and Maranhão, in the Amazon region of Brazil. It consists of a route of 592 km on asphalt pavement, lasting 10 hours. Considering the same mileage to return, the bus makes a total of 1184 km of total route. This is an observational study with inquiry, whose sample consisted of buses equipped with a biosafe system as a prevention methodology for COVID-19. According to the WHO (World Health Organization 2020), to prevent the spread of the virus in confined environments that generate an agglomeration of people, the following criteria must be met:

- Protection of contagion and transmission areas;
- Sanitization of hands;
- Social distancing;
- Environment disinfection;
- Passenger health conditions.

For each criterion, an evaluation result was obtained, in order to guarantee the applicability of the biosafe system for the purpose for which it was proposed.

RESULTS

Protection of contagion and transmission areas: In order to meet the criteria for protecting the areas of contagion and transmission, the biosafe system adhered to the obligation that, at the time of boarding, the passenger wears protective face masks. These must be used by passengers and employees in collective environments and within the vehicle limits. If the passenger does not have a face mask at the time of boarding, an employee of the transport company will supply disposable masks, thus ensuring the continuity of the journey for the passenger.

Sanitization of hands: Using the biosafe system, storage containers and an alcohol gel dispenser were installed. These were installed near the bus access door (Figure 1). The activation is performed manually, allowing for safe, quick and easy hand hygiene, before and after each trip.



Figure 1. Containers for storage and with gel alcohol dispenser

Social distancing: To meet the criterion of social distancing, the biosafe system modified the internal layout of the bus seats. For this, the seats were distributed in a line with three individual seats (Figure 2), so that the spacing between them was 1×1×1 meter. To complement social distancing, antimicrobial curtains were installed between each armchair, serving as a physical barrier for social

distancing (Figure 3). The curtains were made with material based on flexible PVC laminate, which facilitates cleaning and eliminates the possibility of propagation of droplets between the seam holes.

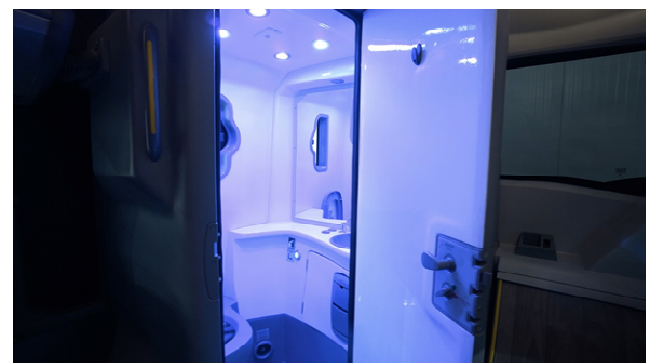


Figure 2. Armchairs distributed in rows with three individual seats



Figure 3. Antimicrobial curtains between the seats

Environment disinfection: To meet the criteria for disinfecting environments, the biosafe system introduced ultraviolet light (UVL) technology for disinfecting toilets (Figure 4). The system consists of a set of ultraviolet luminaires that are activated automatically after using the toilet.



Source: Marcopolo (2020).

Figure 4. Ultraviolet light for toilet disinfection

Passenger health conditions: In order to prevent the spread of the virus through the resumption of road transport, the criterion of passenger health conditions requires that, at the time of boarding, all passengers are subject to individual body temperature measurement by means of digital thermometers (Figure 5).



Figure 5. Measurement of passenger body temperature with digital thermometers

If a possible suspicion of COVID-19 is identified, that is, passengers with a body temperature above 37 °C, some measures are important to be taken in order to protect other passengers. Passengers identified with symptoms of fever will be sent to a specialized health unit closest to the embarkation point for rapid testing of COVID-19 and, if not, their ticket will be rescheduled at the next available time. If the test shows a positive result, the passenger will undergo treatment at home, respecting social isolation, retaking the test after 15 days of starting treatment. After this period, if the retest is negative, it will be able to board and carry out the trip respecting the safety criteria.

DISCUSSION

Protection of contagion and transmission areas: The number of infectious particles needed to cause an infection is often uncertain or unknown for respiratory pathogens. In addition, there is often uncertainty about the influence of factors such as duration of exposure and the nature of clinical symptoms on the likelihood of person-to-person transmission of the infection. (Halpin *et al.* 2020; Hallal *et al.* 2020). For this reason, the mandatory use of masks in confined environments, as in the case of passenger transport buses, limits the transmissibility of COVID-19, drastically reducing the chances of contagion. For the protection to be effective, the ideal is for the mask to cover the entire nose and go down to the chin, so that no gaps are formed where droplets can enter (Garcia 2020; Hallal *et al.* 2020; Sousa Neto and Freitas 2020; Schettino *et al.* 2021; Ortelan *et al.* 2021).

Sanitization of hands: To meet the hand hygiene criteria, it is essential that there is constant washing with soap and water, both by passengers and employees. This is the best way to prevent the spread of the virus, however, in the impossibility of this action, the use of alcohol-based disinfectants are the most recommended methods (Sequinel *et al.* 2020a; Nascimento 2020). Alcohol in gel became an essential item in the face of the COVID-19 pandemic. Its use for hand hygiene works to minimize the risk of contamination through indirect contact, which occurs when the virus is transferred from one surface to another by contaminated hands, reaching other people who have contact with that surface. Therefore, if the passenger is contaminated with COVID-19, there is a likelihood of a reduction in the spread of this virus with other passengers (Sequinel *et al.* 2020b; Fernandes and Ramos 2020; Fröhlich *et al.* 2021).

Social distancing: Social distancing measures have already been used to mitigate past epidemics and pandemics, such as influenza, severe acute respiratory syndrome (SARS), and H1N1 influenza (Bell 2004; Markel *et al.* 2007; Fong *et al.* 2020), they are currently widely recommended for mitigating and combating the COVID-19 pandemic (Ferguson *et al.* 2020).

Scientific evidence indicates that the adoption of this strategy in various scenarios has been effective in containing the uncontrolled advance of COVID-19 cases, however it results in inevitable social and economic impacts (Malta *et al.* 2020; Aquino *et al.* 2020). For this reason, it is important that there is a careful assessment of the most appropriate epidemiological moment for the application of these measures (LIMA 2020; Silva *et al.* 2020). In this case, the adoption of spaced seats with antimicrobial curtains allows the safe resumption of road transport of passengers, minimizing the risk of contagion during the journey.

Environment disinfection: UVL is capable of inactivating microorganisms, limiting their ability to grow and multiply when inhaled or aspirated from surfaces. This system is more than 99.9% efficient in its antimicrobial action, eliminating viruses, bacteria and other microorganisms, including other coronaviruses (Souza *et al.* 2020). In general, sanitary facilities are characterized by the presence of biological hazards. In addition to the microorganisms present in the excreta, there is also the inherent moisture in the environment that directly influences the survival of bacteria, providing an adequate environment for their proliferation (Nascimento *et al.* 2019; Silva *et al.* 2019). The COVID-19 virus can be transmitted through excreta, raising the hypothesis of fecal-oral transmission (Heller *et al.* 2020; Jesus *et al.* 2021). In situations where objects or even the environment itself are contaminated, if the site is not properly sanitized, the virus can remain viable for up to 72 hours, causing new transmissions (Aquino *et al.* 2020; Nascimento *et al.* 2021).

Passenger health conditions: Regarding the clinical and laboratory findings of confirmed cases of COVID-19, between 83% to 98% of cases show symptoms of fever (Huang *et al.* 2020), characterizing the febrile condition as a warning sign for confirming a possible contamination of passengers by the virus (Torres *et al.* 2020). Thus, it is essential to identify passengers with this condition before entering the bus environment, so that, if the passenger is infected with the virus, the contamination will not be spread to others.

CONCLUSION

The biosafety interventions provided through the biosafe system are configured in methods of protection and promotion offered to public health, guaranteeing the safety of passengers through criteria proven by the WHO. This appears as a measure to guarantee the quality of life and well-being, preventing the spread of COVID-19, a disease that is currently a concern due to the alarming numbers of deaths and sequelae. Thus, aiming at the need for displacement, in view of those who do not have other means, the most effective thing to do is the insurability of these passengers.

REFERENCES

- Aquino, Estela M. L., Ismael Henrique Silveira, Julia Moreira Pescarini, Rosana Aquino, Jaime Almeida de Souza-Filho, Aline dos Santos Rocha, Andrea Ferreira, *et al.* 2020. "Medidas de Distanciamento Social No Controle Da Pandemia de COVID-19: Potenciais Impactos e Desafios No Brasil." *Ciência & Saúde Coletiva* 25 (suppl 1): 2423–46. <https://doi.org/10.1590/1413-81232020256.1.10502020>.
- Bell, David M. 2004. "Public Health Interventions and SARS Spread, 2003." *Emerging Infectious Diseases* 10 (11): 1900–1906. <https://doi.org/10.3201/eid1011.040729>.
- Ferguson, Neil M, Daniel Laydon, Gemma Nedjati-Gilani, Natsuko Imai, Kylie Ainslie, Marc Baguelin, Sangeeta Bhatia, *et al.* 2020. "Report 9: Impact of Non-Pharmaceutical Interventions (NPIs) to Reduce COVID-19 Mortality and Healthcare Demand." *Imperial College COVID-19 Response Team*. <https://doi.org/10.25561/77482>.
- Fernandes, Pedro, and Maria João Ramos. 2020. "O Álcool Contra a COVID-19." *Revista de Ciência Elementar* 8 (2). <https://doi.org/10.24927/rce2020.018>.

- Fong, Min W., Huizhi Gao, Jessica Y. Wong, Jingyi Xiao, Eunice Y.C. Shiu, Sukhyun Ryu, and Benjamin J. Cowling. 2020. "Nonpharmaceutical Measures for Pandemic Influenza in Nonhealthcare Settings—Social Distancing Measures." *Emerging Infectious Diseases* 26 (5): 976–84. <https://doi.org/10.3201/eid2605.190995>.
- Fröhlich, Gustavo Fernando, Kilma Mônica Donato de Araújo, and Fabiano Peruzzo Schwartz. 2021. "Variações de Preço e Quantidade Nas Compras Públicas de Álcool Em Gel Durante a Pandemia Da COVID-19." *Comunicação Em Ciências Da Saúde* 31 (03): 25–31. <https://doi.org/10.51723/ccs.v31i03.764>.
- Garcia, Leila Posenato. 2020. "Uso de Máscara Facial Para Limitar a Transmissão Da COVID-19." *Epidemiologia e Serviços de Saúde* 29 (2). <https://doi.org/10.5123/S1679-49742020000200021>.
- Hallal, Pedro Curi, Bernardo L Horta, Aluísio J D Barros, Odir A Dellagostin, Fernando P Hartwig, Lúcia C Pellanda, Cláudio José Struchiner, et al. 2020. "Evolução Da Prevalência de Infecção Por COVID-19 No Rio Grande Do Sul, Brasil: Inquéritos Sorológicos Seriados." *Ciência & Saúde Coletiva* 25 (suppl 1): 2395–2401. <https://doi.org/10.1590/1413-81232020256.1.09632020>.
- Halpin, David M G, Rosa Faner, Oriol Sibila, Joan Ramon Badia, and Alvar Agusti. 2020. "Do Chronic Respiratory Diseases or Their Treatment Affect the Risk of SARS-CoV-2 Infection?" *The Lancet Respiratory Medicine* 8 (5): 436–38. [https://doi.org/10.1016/S2213-2600\(20\)30167-3](https://doi.org/10.1016/S2213-2600(20)30167-3).
- Heller, Léo, César R. Mota, and Dirceu B. Greco. 2020. "COVID-19 Faecal-Oral Transmission: Are We Asking the Right Questions?" *Science of The Total Environment* 729 (August): 138919. <https://doi.org/10.1016/j.scitotenv.2020.138919>.
- Huang, Chaolin, Yeming Wang, Xingwang Li, Lili Ren, Jianping Zhao, Yi Hu, Li Zhang, et al. 2020. "Clinical Features of Patients Infected with 2019 Novel Coronavirus in Wuhan, China." *The Lancet* 395 (10223): 497–506. [https://doi.org/10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5).
- Jesus, Anderson Avelino, Felicson Leonardo Oliveira Lima, Alanna Evangelista Santos, and Bruna Rayanne Viana Brito. 2021. "Amostra Fecal Como Espécime Diagnóstica Para a COVID-19 e o Risco de Contaminação Para Os Profissionais Das Análises Clínicas." In Anais Do I Congresso Brasileiro de Parasitologia Humana On-Line. *Revista Multidisciplinar em Saúde*. <https://doi.org/10.51161/rem/s/752>.
- Lima, Gregório Costa Luz de Souza, Gabriel Stumpf Duarte de Carvalho, and Miguel Zobarán Figueiredo. 2020. "A Incompletude Dos Contratos de Ônibus Nos Tempos Da COVID-19." *Revista de Administração Pública* 54 (4): 994–1009. <https://doi.org/10.1590/0034-761220200292>.
- Lima, Rossano Cabral. 2020. "Distanciamento e Isolamento Sociais Pela Covid-19 No Brasil: Impactos Na Saúde Mental." *Physis: Revista de Saúde Coletiva* 30 (2). <https://doi.org/10.1590/s0103-73312020300214>.
- Malta, Deborah Carvalho, Crizian Saar Gomes, Célia Landmann Szwarcwald, Marilisa Berti de Azevedo Barros, Alanna Gomes da Silva, Elton Junio Sady Prates, Ísis Eloah Machado, et al. 2020. "Distanciamento Social, Sentimento de Tristeza e Estilos de Vida Da População Brasileira Durante a Pandemia de Covid-19." *Saúde Em Debate* 44 (spe4): 177–90. <https://doi.org/10.1590/0103-11042020e411>.
- Marcopolo. 2020. "Marcopolo Biosafe, Solutions Platform for Safely Resuming Passenger Transport." 2020. <https://www.marcopolo.com.br/marcopolo/communication/news/marcopolo-biosafe-solutions-platform-for-safely-resuming-passenger-transport>.
- Markel, Howard, Harvey B. Lipman, J. Alexander Navarro, Alexandra Sloan, Joseph R. Michalsen, Alexandra Minna Stern, and Martin S. Cetron. 2007. "Nonpharmaceutical Interventions Implemented by US Cities During the 1918-1919 Influenza Pandemic." *JAMA* 298 (6): 644. <https://doi.org/10.1001/jama.298.6.644>.
- Nascimento, Denise Morado. 2020. "Lavar as Mãos Contra o Coronavírus: Mas, e a Água?" *APS EM REVISTA* 2 (1): 66–69. <https://doi.org/10.14295/aps.v2i1.61>.
- Nascimento, Jacy Carvalho do, Milady Renata Apolinário da Silva, Rita de Cássia Magalhães Trindade Stano, Melina Espanhol-Soares, Paloma Alinne Alves Rodrigues, and Marcia Matiko Kondo. 2019. "O Processo de Elaboração Do Mapa de Riscos de Uma Escola Pública: Uma Experiência Pedagógica." *Research, Society and Development* 8 (4): e2584854. <https://doi.org/10.33448/rsd-v8i4.854>.
- Nascimento, Roberta Zaninelli do, Ana Carolina Santana Vieira, Viviane Vanessa Rodrigues da Silva Santana Lima, Beatriz Kempe Torrezan, Barbara Vitória dos Santos Torres, Katiane da Silva Mendonça, Mariana de Oliveira Moraes, and Mizael de Barros Tavares. 2021. "Meio Ambiente e a Sua Propagação Da COVID-19 / Environment and Its Spread of COVID-19." *Brazilian Journal of Development* 7 (1): 6888–6900. <https://doi.org/10.34117/bjdv7n1-465>.
- Oliveira Neto, Thiago, and Bruno Candido dos Santos. 2021. "Transporte Rodoviário de Passageiros e Os Novos Aplicativos." *Revista Transporte y Territorio* 24: 172–202. <https://doi.org/10.34096/rtt.i24.7607>.
- Ortelan, Naiá, Andréa Jacqueline Fortes Ferreira, Luciana Leite, Julia Moreira Pescarini, Ana Cristina Souto, Mauricio Lima Barreto, and Estela M. L. Aquino. 2021. "Máscaras de Tecido Em Locais Públicos: Intervenção Essencial Na Prevenção Da COVID-19 No Brasil." *Ciência & Saúde Coletiva* 26 (2): 669–92. <https://doi.org/10.1590/1413-81232021262.36702020>.
- Podzorova, M. V., Yu. V. Tertshnaya, D. M. Ziborov, and M. Poletto. 2020. "Damage of Polymer Blends Poly lactide-Polyethylene under the Effect of Ultraviolet Irradiation." In , 020259. <https://doi.org/10.1063/5.0034902>.
- Schettino, Stanley, Ana Carolina Pereira Ruas, Denise Lopes da Silva, Saulo Rodrigues Costa, Luciano José Minette, and Denise Ransolin Soranso. 2021. "Forest Operations in COVID-19 Times: Making the Work Environment Safe." *Brazilian Journal of Development* 7 (1): 613–32. <https://doi.org/10.34117/bjdv7n1-043>.
- Sequinel, Rodrigo, Guilherme Lenz, Francis Silva, and Fabiano Silva. 2020a. "Soluções a Base de Álcool Para Higienização Das Mãos e Superfícies Na Prevenção Da Covid-19: Compêndio Informativo Sob o Ponto de Vista Da Química Envolvida." *Química Nova* 43 (5): 679–84. <https://doi.org/10.21577/0100-4042.20170553>.
- Sequinel, Rodrigo, Guilherme Lenz, Francis Silva, and Fabiano Silva. 2020b. "Soluções a Base de Álcool Para Higienização Das Mãos e Superfícies Na Prevenção Da COVID-19: Compêndio Informativo Sob o Ponto de Vista Da Química Envolvida." *Química Nova*. <https://doi.org/10.21577/0100-4042.20170553>.
- Silva, Lara Livia Santos da, Alex Felipe Rodrigues Lima, Démerson André Polli, Paulo Felipe Silvério Razia, Luis Felipe Alvim Pavão, Marco Antônio Freitas de Hollanda Cavalcanti, and Cristiana Maria Toscano. 2020. "Medidas de Distanciamento Social Para o Enfrentamento Da COVID-19 No Brasil: Caracterização e Análise Epidemiológica Por Estado." *Cadernos de Saúde Pública* 36 (9). <https://doi.org/10.1590/0102-311x00185020>.
- Silva, Luiz Anildo Anacleto, Marinês Tambara Leite, Leila Mariza Hildebrandt, Taís Da Rocha Governadi, and Aline Piacieski Kovalski. 2019. "Práticas de Enfermagem Relativas à Segurança No Cuidado a Idosos Em Serviços de Saúde." *Ciência & Saúde* 12 (3): 33147. <https://doi.org/10.15448/1983-652X.2019.3.33147>.
- Sousa Neto, Antonio Rosa de, and Daniela Reis Joaquim de Freitas. 2020. "Utilização de Máscaras: Indicações de Uso e Manejo Durante a Pandemia Da COVID-19." *Cogitare Enfermagem* 25 (July). <https://doi.org/10.5380/ce.v25i0.72867>.
- Souza, Susana Oliveira de, Carlos Leandro Silva dos Prazeres, Jodnes Sobreira Vieira, Wandson Almeida, Aquiles Sales Craveiro Sarmento, Paula Viviane Dantas da Cruz, José Joatan Rodrigues Junior, Eraldo Nascimento Oliveira, Márcia Regina Pereira Attie, and Walderi Monteiro da Silva Júnior. 2020. "Desenvolvimento de Cabine de Luz UVC Para Desinfecção de Máscaras Médicas N95." *Revista Interdisciplinar de Pesquisa e Inovação* 7 (2): 17–30.
- Torres, Aurimárcia da Silva, Iana Ciara Santos de Albuquerque, Debora Santos Umbelino de Farias, and Gisele Correia Pacheco

- Leite. 2020. "Assistência Multiprofissional Ao Paciente Com Febre Reumática Em Tempos de Pandemia Pelo Covid-19: Um Relato de Experiência." *Revista Extensão & Sociedade* 12 (1): 236–46.
- Universidade de Caxias do Sul. 2020. "Laboratório de Microbiologia Clínica Atesta Sistema de Desinfecção de Sanitários Com Luz Ultravioleta Da Marcopolo." 2020. <https://www.ucs.br/site/noticias/laboratorio-de-microbiologia-clinica-atesta-sistema-de-desinfeccao-de-sanitarios-com-luz-ultravioleta-da-marcopolo>.
- Werneck, Guilherme Loureiro, and Marília Sá Carvalho. 2020. "A Pandemia de COVID-19 No Brasil: Crônica de Uma Crise Sanitária Anunciada." *Cadernos de Saúde Pública* 36 (5). <https://doi.org/10.1590/0102-311x00068820>.
- World Health Organization. 2020. "Coronavirus Disease (COVID-19) Outbreak." 2020. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.
