

A Case Study on the Correlation of Occupational Factors and Health-Related Behaviors to the Physical and Mental Health Problems of the Truck Drivers of 168 Rock Corporation

Carlos Ignacio P. Lugay Jr., Lyza Teresita V. Bernal, Troy Gabriel B. Dagdagan, Andre Sidney D. Lapasaran, Vashti Jan P. Sanchez

Department of Industrial Engineering, Faculty of Engineering

University of Santo Tomas

España Blvd, 1015, Manila Philippines

cplugay@ust.edu.ph, lyzateresita.bernal.eng@ust.edu.ph, troygabriel.dagdagan.eng@ust.edu.ph,
andresidney.lapasaran.eng@ust.edu.ph, vashtijan.sanchez.eng@ust.edu.ph

Abstract

Most enterprises in the Philippines transport their products, whether trash or supply, via truck. Hence, truck drivers are hired to transport goods, typically over vast distances. Studies revealed that drivers of large vehicles experienced strain both mentally and physically during their driving schedule (Chen et al. 2015). This paper aimed to know the correlation of occupational factors and health-related behaviors to the mental and physical health of the heavy truck drivers of 168 Rock Corporation in San Simon, Pampanga. Through purposive sampling and survey questionnaires, the data was analyzed using Ordinal Regression to assess the causal relationship between independent and dependent variables. Based on the results, the researchers concluded that between the study's two independent variables, occupational factors and health-related behaviors, only health-related behaviors showed a significant correlation with the dependent variables, mental and physical health. It is recommended to include in areas for further studies the demographics of the drivers and other company details, such as views on income and employment status, in the survey, as it could impact the study results. Furthermore, it is advised to include other trucking companies in the vicinity of Pampanga, Philippines, to increase the number of respondents and different company policies.

Keywords

Trucking Industry, Occupational Factors, Health-Related Behaviors, Mental Health, Physical Health

1. Introduction

The trucking industry plays an important role in a country's economic stance (Abasiz and Sezer 2017). Many businesses and companies rely on this industry to deliver their products across the country to reach their customers. Given the rapid growth of the Philippines' economy, the demand for trucking businesses grows as well. In fact, there is a 0.6% projected increase in the logistics and trucking market in the Philippines from 8.2% to 8.8% from the years 2018 to 2024 according to the Lobien Realty Group (Transportify n.d.).

Companies and businesses depend on this industry to deliver their goods to their consumers. These are made possible with the effort and dedication of truck drivers. However, behind their devotion and commitment to their work, they continue to be undervalued and their well-being is consequently put at stake (Apostolopoulos et al. 2012). Truck drivers have strict schedules and delivery cut-offs that they have to accomplish within the day. Which entails pressure, as well as promoting longer hours of time at work to finish tasks. This could then lead to health problems in the future, which could hurt not just the driver's work performance, but also the flow of the supply chain of the company. According to a study conducted by Kudo (2020), long-haul truck drivers have a high probability of suffering workplace hazards. A study related to this elaborated that in the U.S., 756 truck drivers had died due to sustaining work-related injuries (Kudo 2020). It was also pointed out in this study that truck drivers are more prone to fatal occupational injuries than most jobs in the country.

The target company for this study, 168 Rock Corporation, has 35 truck drivers aged 20 to 57 years old. It was established in 2019 for hauling filling materials from San Simon, Pampanga to different parts of Northern Luzon (M, Bernal, personal communication, April 1, 2022). This company mainly focuses on hauling ready-mixed concrete and special concrete products. In addition, they also undertake concrete work and concrete incidental work. According to the Head Secretary, their routes cover mostly Northern Luzon. With the company located in San Simon, Pampanga, the route they take usually involves the North Luzon Expressway (NLEX) and the main roads in Metro Manila. Working hours vary depending on the distance and load to be covered. Although, personal sources stated that the drivers spend most of their time lining up in quarries while waiting for the truck ban to be lifted or being forced to reroute, taking away more of their time, instead of driving along the main road (J. Melquiades, personal communication, April 3, 2022). The salary of dump truck drivers is based on the number of trips they make per week. Their weekly average salary ranges from Php 8,000 to Php 10,000 if the driver is consistent with his trips; and Php 15,000 to Php 17,000 if his trips are purely for hauling aggregates. Different rates exist since the distances between the sources and destinations vary.

Truck driver accident and arrest compensation is case-by-case (M, Bernal, personal communication, April 1, 2022). The driver's pay is deducted for every negligence. The company has the authority to deduct from the driver's salary before they get their license back. Examples of this act are not wearing a seatbelt, beating the red light, over-speeding, reckless driving, etc. Meanwhile, the company only shoulders the expenses if the truck is deemed to be overloading. In terms of car accidents, if the damage to the truck is severe, it is included in the insurance. Although, there are cases where drivers get to talk and pay their way out if the damage is not that severe. In this case, the company and the driver split the payment in half. On the other hand, if there is an injury on the 3rd party, usually motorcycle riders going in between the blind spots of the truck, the hospitalization is charged to the driver. For the benefits of the drivers of 168 Rock Corporation, they are provided with free barracks and utilities. Weekly incentives are given to drivers if they reach 18 trips and above. Drivers that reach 18 to 19 trips have an additional Php 1000 in their salary. Php 1500 is added to the salary of drivers when they reach 20 trips in a week. Meanwhile, with drivers that reach 22 trips and above per week, the company adds Php 2000 to their salary. On a side note, all 168 Rock Corporation dump truck drivers have no employment contract, no government mandatories, 13th-month pay, leave credits, and holiday pay.

1.1 Objectives

The study's goal was to investigate the relationship between health behaviors and occupational factors to the mental and physical health problems of the truck drivers of 168 Rock Corporation. Hence, to contribute significant information to the target company or other related sectors for the development of better and more efficient strategies and programs.

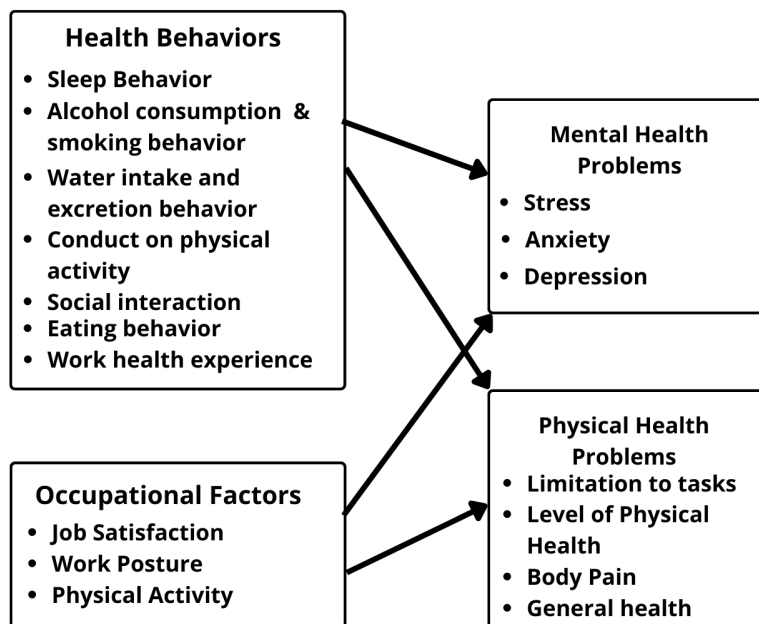


Figure 1. Research Conceptual Framework

2. Literature Review

Constantly exposed to rigorous workloads, prolonged driving, and stressful environment, drivers always experience inevitable fatigue. Several studies all over the world have reported that 50% of commercial vehicle casualties and accidents happen due to fatigue (Davidovic et al. 2020). This percentage is too high to risk as these drivers shoulder high responsibilities such as transporting goods and ensuring the safety of the people around them. There are several contributors that lead to fatigue, but mainly, work factors, sleep factors, and health factors influence its onset the most (Bener et al. 2017).

Truck drivers usually do not get enough rest due to the nature of their work. Prolonged driving due to truck ban, rerouting, and traffic, subject the drivers to sleep and rest deprivation and lack of physical activity. Sleeping is a vital mechanism of the body. It gives the body the opportunity to rest and restore the energy lost to perform its best again (Leech 2022). Without enough sleep, the body becomes sluggish and unalert (Fletcher 2019). Studies show that 40% to 50% of truck accidents are caused by the drowsiness or sleepiness of the driver (Crizzle et al. 2020). Furthermore, poor sleeping habits and lack of physical activity increase the risk of acquiring health conditions such as cardiovascular disease, diabetes, obesity, and depression (Holland 2019). Research conducted in the United States of America reveals that about 88% percent of long-haul truck drivers suffer from one or more health problems and that 50% of them are obese due to a lack of physical activity (National Institute for Occupational Safety and Health 2018).

Mental health is also a big issue for commercial transportation and material moving occupations. Truck drivers are frequently exposed to a stressful and lonely working environment. Long hours of truck driving put the drivers in a vulnerable state, specifically with high occupational stress, poor social and familial support, and limited access to health care (Shattell et al. 2012). In fact, truck drivers complain about psychological distress more often than the general population (Garbarino et al. 2018). Physical distress mainly affects the driving behavior of the driver which contributes to the safety on the road (Delhomme and Gheorghiu 2021). According to research, significant issues that affect the mental health of truckers include loneliness (27.9%), depression (26.9%), chronic sleep disturbances (20.6%), anxiety (14.5%), and other emotional problems (13%) (Shattell et al. 2012). Mental health is often neglected and ignored because of the common misconception that only weak-minded people experience such problems and that it is not dangerous for their health, however, that claim is not true. The mind and body are connected. There are several effects of poor mental health on the body such as a higher risk of heart attack, constriction of blood vessels, weight fluctuation, fatigue, increased pain sensitivity, weak immune system, and many more (Pietrangelo 2019)

3. Methods

This study is a correlational research as it studies the relationship between associated factors namely: occupational factors, health-related behaviors, mental health, and physical health of the truck drivers from 168 Rock Corporation in San Simon, Pampanga.

All of the 35 truck drivers of 168 Rock Corporation were interviewed for this study, therefore, no statistical tool was used to get the required sample size. The research approach was non-experimental as it only tackles the experiences and lifestyle of the truck drivers via survey. The study also utilizes a deductive approach as the researchers attempted to predict what factors had an effect on the drivers (Scientific Inquiry in Social Work, n.d.).

The survey questionnaire was composed of varied questions from different sources. The questions used in the survey were adapted from scientific and medically used tools such as DASS21 (Motor Accident Insurance Commission, 2016), Barthel Index (Ability Lab 2017), employee engagement form (Jotform, n.d.), and health and behavior survey (University College London, n.d.)

To interpret the data, Ordinal Regression was used to identify the causal relationship between the variables. The interpretation of data was mostly done in SPSS, as the data from the survey was encoded and analyzed through this statistical program. The data from the survey was structured based on the concepts of the conceptual framework.

4. Data Collection

In order to evaluate the relationship between occupational factors and health behaviors on the physical and mental health of the truck drivers, the researcher shall deploy a google form questionnaire to the 19 to 56 years-old

respondents. The dissemination of the questionnaires was done with the help of the researchers' personal contacts and connections with 168 Rock Corporation. The survey contains questions that could help the researchers assess the drivers' situation in their workplace as well as their lifestyle. These questions shall include their occupational experience, health behaviors, and physical and mental struggles due to the nature of the job.

5. Results and Discussion

5.1 Numerical Results

- **Mental Health**

Occupational Factors

$H1_0: Lx1 = 0$; The truck drivers' occupational factors have no significant relationship with their mental health.

$H1_1: Lx1 \neq 0$; The truck drivers' occupational factors have a significant relationship with their mental health.

Alpha: 0.05

P-value: 0.293

Conclusion:

Fail to reject H_0 . Since the p-value acquired was 0.293 and greater than the α of 0.05, the null hypothesis cannot be rejected. Therefore, it can be concluded that the independent variable "Occupational Factors" have no significant relationship with the truck drivers' mental health.

Health-Related Behavior

$H2_0: Lx1 = 0$; The truck drivers' health-related behaviors have no significant relationship with their mental health.

$H2_1: Lx1 \neq 0$; The truck drivers' health-related behaviors have a significant relationship with their mental health.

Alpha: 0.05

P-value: 0.049

Conclusion:

Reject H_0 . Since the p-value acquired was 0.049 and less than the α of 0.05, the null hypothesis can be rejected. Therefore, it can be concluded that the independent variable "Health-Related Behaviors" have a significant relationship with truck drivers' mental health. Moreover, the parameter estimate's predictive model suggests that behaviors related to health are significant positive predictors of mental health.

- **Physical Health**

Occupational Factors

$H3_0: Lx2 = 0$; The truck drivers' occupational factors have no significant relationship with their physical health.

$H3_1: Lx2 \neq 0$; The truck drivers' occupational factors have a significant relationship with their physical health.

Alpha: 0.05

P-value: 0.942

Conclusion:

Fail to Reject H_0 . Since the p-value acquired was 0.942 and greater than the α of 0.05, the null hypothesis cannot be rejected. Therefore, it can be concluded that the independent variable "Occupational Factors" have no significant relationship with the truck drivers' physical health.

Health-Related Behavior

$H4_0: Lx2 = 0$; The truck drivers' occupational factors have no significant relationship with their physical health.

$H4_1: Lx2 \neq 0$; The truck drivers' occupational factors have a significant relationship with their physical health.

Alpha: 0.05

P-value: 0.030

Conclusion:

Reject H_0 . Since the p-value acquired was 0.030 and less than the α of 0.05, the null hypothesis can be rejected. Therefore, it can be concluded that the independent variable "Health-Related Behaviors" have a significant relationship with the truck drivers' physical health. Moreover, the parameter estimate's predictive model suggests that behaviors related to health are significant positive predictors of physical health. The log odds of having a greater level of physical health rise by 2.005 for every unit increase in health-related behaviors. This means that health-related behavior is a good indicator of a truck driver's physical health. Therefore, a higher score indicates better physical health.

5.2 Graphical Results

Table 1. Results of Hypothesis Testing

FACTORS		Alpha	P-value	Decision	Interpretation
Mental Health	Occupational Factors	0.05	0.293	Fail to Reject H0	The truck drivers' occupational factors have no significant relationship on their mental health
	Health-Related Behaviors	0.05	0.049	Reject H0	The truck drivers' health-related behaviors have a significant relationship on their mental health
Physical Health	Occupational Factors	0.05	0.942	Fail to Reject H0	The truck drivers' occupational factors have no significant relationship on their physical health
	Health-Related Behaviors	0.05	0.030	Reject Ho	The truck drivers' health-related behaviors have a significant relationship on their physical health

The table above shows the summary of Results in the Hypothesis Testing for the correlation of Occupational Factors and Health-Behaviors in relation to the Physical and Mental Health of Truck Drivers in 168 Rock Corporation, located in San Simon, Pampanga. Occupational Factors in regard to Mental Health are non-significant, as the p-value was found not to be less than the alpha (0.05). Meanwhile, an effect on Mental Health due to Health-Related behaviors was found to be significant, with a p-value of 0.049. For Physical Health, there were a similar trend wherein only the Health- Related Behaviors had an impact on the Physical Health of the truck drivers.

Table 2. Parameter Estimates Summary

FACTORS		Dependent Variables	
		Mental Health	Physical Health
Independent Variables	Occupational Factors	No Significant Difference	No Significant Difference
	Health-Related Behaviors	The higher the value of Health-Related Behavior, the more likely the truck driver is to experience greater mental health.	The higher the value of Health-Related Behavior, the more likely the truck driver is to experience greater physical health

The table above states that only Health-Related Behaviors have a higher probability of making significance to both Mental Health and Physical Health. Parameter Estimates were used to help predict the significance of the specific factors that affect the truck drivers' well-being.

5.3 Proposed Improvements

Including demographic information such as age, marital status, and estimated income can contribute greatly to the data that will be gathered and analyzed since these data can also serve as factors to the truckers' physical and mental well-being. The questionnaire can ask about their satisfaction with these factors in mind. Additionally, other factors such as the number of dependents, and parts of their contract that can be disclosed can also be added for further analysis.

Moreover, since 168 Rock Corporation is only one of the many trucking companies currently operating in Pampanga, Philippines, it is recommended that future researchers conduct studies in other companies, as company rules and regulations might differ from each other. These companies may also have a larger population of truck drivers, which would help in getting more consistent and reliable results. Conducting a study with all the companies involved as a whole is also recommended by the researchers, and doing so would also open up possibilities for other models, such as Structural Equation Modeling (SEM), as this model proposes that "the sample size should be greater than 10 times the maximum number of inner or outer model links pointing at any latent variable in the model." (Hair et al. 2011)

Lastly, since the researchers have limited knowledge about SPSS, it is recommended for future researchers to use SPSS using other extensions that may make the data more accurate and reliable or redo the data inputting if necessary. It is also recommended to consult a statistician if they have the contacts for it since this would then ensure the data inputted is consulted with an expert in the field mentioned.

5.4 Validation

According to Laerd Statistics (n.d.), "Ordinal logistic regression (often just called 'ordinal regression') is used to predict an ordinal dependent variable given one or more independent variables." Assumptions needed to be fulfilled when using ordinal regression since the researchers would need to validate if the data is able to be used for this model. The assumptions required are the following:

Assumption 1: Dependent variable should be measured at the ordinal level.

The screenshot shows the SPSS Variable View window. The table below represents the data shown in the screenshot:

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	MentalHealth	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
2	PhysicalHe...	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
3	OF1	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
4	OF2	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
5	OF3	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
6	HB1	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
7	HB2	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
8	HB3	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
9	HB4	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
10	HB5	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
11	HB6	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
12	HB7	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input

Figure 2. Assumption 1: Dependent Variables

The assumption is met in the sense that the dependent variables are set to an Ordinal Measure as seen in the image above. This is done before the results are taken. A likert scale is also used in the survey to determine the respondents' answers.

Assumption 2: One or more independent variables that are continuous, ordinal or categorical (including dichotomous variables).

OF1	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
OF2	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
OF3	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
HB1	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
HB2	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
HB3	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
HB4	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
HB5	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
HB6	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input
HB7	Numeric	8	2		{1.00, Stron...	None	8	Right	Ordinal	Input

Figure 3. Assumption 2: Independent Variables

Assumption 3: There is no multicollinearity.

According to Statology.org (n.d), A value greater than 5 indicates a potentially severe correlation between a given predictor variable and other predictor variables in the model ($n \geq 5$). If the predictor variable is greater or equal to 5, then there is too much multicollinearity which would then mean that there is too much error in the data to be used for the model.

Testing for Multicollinearity

Coefficients ^a								
Model	Unstandardized Coefficients			Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta	Tolerance			VIF	
1	(Constant)	2.113	1.197		1.765	.090		
	OF1	.361	.298	.379	1.211	.238	.219	4.570
	OF2	-.210	.314	-.157	-.670	.509	.389	2.573
	OF3	.169	.226	.186	.750	.461	.348	2.873
	HB1	-.100	.255	-.113	-.394	.697	.259	3.858
	HB2	.060	.094	.118	.636	.531	.628	1.592
	HB3	.331	.291	.294	1.137	.267	.322	3.110
	HB4	.232	.146	.406	1.592	.125	.330	3.031
	HB5	.124	.197	.140	.631	.534	.438	2.283
	HB6	-.102	.243	-.128	-.418	.679	.231	4.333
	HB7	-.410	.222	-.368	-1.853	.076	.543	1.840

a. Dependent Variable: MentalHealth

Figure 4. Test for Multicollinearity - Mental Health

In this case, the assumption is met because none of the variables were over 5, meaning that there is low multicollinearity between the data. It is then usable for Ordinal Regression.

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.816	.701		2.592	.016		
	OF1	.081	.174	.149	.467	.645	.219	4.570
	OF2	.341	.184	.443	1.856	.076	.389	2.573
	OF3	-.038	.132	-.073	-.288	.776	.348	2.873
	HB1	.015	.149	.030	.103	.919	.259	3.858
	HB2	.096	.055	.329	1.753	.092	.628	1.592
	HB3	-.014	.171	-.021	-.080	.937	.322	3.110
	HB4	-.079	.085	-.241	-.929	.362	.330	3.031
	HB5	.086	.115	.169	.749	.461	.438	2.283
	HB6	.081	.142	.177	.571	.574	.231	4.333
	HB7	-.039	.130	-.061	-.304	.764	.543	1.840

a. Dependent Variable: PhysicalHealth

Figure 5. Test for Multicollinearity - Physical Health

Similar to the indicator in “Mental Health,” the VIF must not go over 5 ($n \geq 5$). In this case, there is no variable data that goes over 5, therefore there is low and acceptable multicollinearity between the data shown.

6. Conclusion

Between the study’s two independent variables, Occupational Factors and Health-Related Behaviors, only Health-Related Behaviors had shown a significant correlation with the dependent variables, Mental and Physical Health. Health-Related Behaviors, in relation to the two dependent variables of the study, had shown a significance of 0.049 and 0.030, respectively. Furthermore, it has been found that Health-Related Behaviors are a positive predictor of Mental and Physical Health since the estimates’ coefficients had positive values, 1.8 and 2.005, respectively. This suggests that for every one-unit increase in Health-Related Behaviors, there is a predictive increase of 1.8 in the log odds of being on a higher level of Mental Health and 2.005 in the log odds of being on a higher level of Physical Health. That is to say that when a truck driver has a high value of Health-Related Behavior, they are more likely to have positive mental health. And lastly, Health-Related Behaviors are also moderately correlated with both mental and physical health, as shown by the coefficients of 0.541 and 0.441, respectively, in the nonparametric correlations.

References

- Abasiz, T. & Sezer, S., (2017). The Impact Of Logistics Industry On Economic Growth: An Application In Oecd Countries. *Eurasian Journal of Social Sciences*, Eurasian Publications, vol. 5(1), pages 11-23.
- Ability Lab. (2017). Barthel Index, Available: <https://www.sralab.org/sites/default/files/2017-07/barthel.pdf>
- Bener, A., Yildirim, E., Ozkan, T., & Lajunen, T. (2017). Driver sleepiness, fatigue, careless behavior and risk of motor vehicle crash and injury: Population based case and control study. *Journal of Traffic and Transportation Engineering (English Edition)*, S209575641730212X-. doi:10.1016/j.jtte.2017.07.005
- Bernal, L. Conversation with 168 Rock Corporation Truck Drivers (168 Rock Corporation, Truck Driver). 2022 March 25.
- Bernal, L. Conversation with: Melquiades, J. (168 Rock Corporation, HR). 2022 March 25.
- Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., et al. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, 39(2), 216–236. doi:10.1007/s11031-014-9450-1
- Crizzle, A., Toxopeus, R., & Malkin, J. (2020). Impact of limited rest areas on truck driver crashes in Saskatchewan: a mixed-methods approach. *Journal of Public Health*. <https://doi.org/10.1186/s12889-020-09120-7>
- Davidovic, J., Pesic, D., Lipovac, K., & Antic, B. (2020). The Significance of the Development of Road Safety Performance Indicators Related to Driver Fatigue. *Transportation Research Procedia*, 45(), 333–342. doi:10.1016/j.trpro.2020.03.024
- Delhomme, P., & Gheorghiu, A. (2021). Perceived stress, mental health, organizational factors, and self-reported risky driving behaviors among truck drivers circulating in France. *Journal of Safety Research*, 79 (2021) 341-351. <https://doi.org/10.1016/j.jsr.2021.10.001>

- Fletcher, J. (2019). Why sleep is essential for health, Available: <https://www.medicalnewstoday.com/articles/325353>
- Garbarino, S., Guglielmi, O., Sannita, W., Magnavita, N., & Lanteri, P. (2018). Sleep and Mental Health in Truck Drivers: Descriptive Review of the Current Evidence and Proposal of Strategies for Primary Prevention. *International Journal of Environmental Research and Public Health*, 15(9), 1852. <https://doi.org/10.3390/ijerph15091852>
- Garbarino, S., Magnavita, N., Guglielmi, O., Maestri, M., Dini, G., Bersi, F. M., Toletone, A., Chiorri, C., & Durando, P. (2017). Insomnia is associated with road accidents. Further evidence from a study on truck drivers. *PLOS ONE*, 12(10), e0187256. <https://doi.org/10.1371/journal.pone.0187256>
- Hair Jr., & Ringle, Christian & Sarstedt, Marko. (2011). PLS-SEM: Indeed a silver bullet. *The Journal of Marketing Theory and Practice*. 19. 139-151. 10.2753/MTP1069-6679190202. doi:10.2753/MTP1069-6679190202
- Holland, K. (2019). What Do You Want to Know About Healthy Sleep? Retrieved from <https://www.healthline.com/health/healthy-sleep>
- Jotform. (n.d). Employee Engagement Survey, Available: <https://www.jotform.com/build/223561207843454>
- Kudo, T., & Belzer, M. H. (2020). Excessive work hours and hypertension: Evidence from the NIOSH survey data. *Safety Science*, 129, 104813. <https://doi.org/10.1016/j.ssci.2020.104813>
- Laerd Statistics. (n.d.). How to perform an Ordinal Regression in SPSS, Available <https://statistics.laerd.com/spss-tutorials/ordinal-regression-using-spss-statistics.php?fbclid=IwAR0IA9FyWjOSHFXtv0Oy0yzaRoP1yYCs6ItvKypCM7Y0ibNA9aOq2qakag>
- Leech, J. (2022). 10 Reasons to Get More Sleep, Available: <https://www.healthline.com/nutrition/10-reasons-why-good-sleep-is-important>
- Motor Accident Insurance Commission. (2016). DASS21, Available: <https://maic.qld.gov.au/wp-content/uploads/2016/07/DASS-21.pdf?fbclid=IwAR2u390TXyR4RoduBdxNNPiUh4ENvGs4V4XY1Q-YixSLfV18cLSPOLCT4FM>
- National Institute for Occupational Safety and Health. (2018). Health. Available: <https://www.cdc.gov/niosh/topics/truck/health.html>. 2018
- Pietrangelo, A. The Effects of Depression in Your Body. Available: <https://www.healthline.com/health/depression/effects-on-body>. 2019.
- Scientific Inquiry in Social Work. Inductive and deductive reasoning. Available: [https://scientificinquiryinsocialwork.pressbooks.com/chapter/6-3-inductive-and-deductive-reasoning/#:~:text=The%20deductive%20approach%20begins%20with,that%20a%20researcher%20is%20studying.\(n.d.\)](https://scientificinquiryinsocialwork.pressbooks.com/chapter/6-3-inductive-and-deductive-reasoning/#:~:text=The%20deductive%20approach%20begins%20with,that%20a%20researcher%20is%20studying.(n.d.))
- Shattell, M., Apostopoulos, Y., Collins, C., Sonmez, S., & Fehrenbacher, C. (2012). Trucking organization and mental health disorders of truck drivers. *Issues in Mental Health Nursing*, 33:436–444. <https://doi.org/10.1016/j.imh.2012.05.001>
- Statology.org. (n.d.). How to Test for Multicollinearity in Stata. Available: <https://www.statology.org/multicollinearity-stata/>
- Transportify. The Impact of the Pandemic to Philippine Logistics and Trucking. Available: <https://www.transportify.com.ph/the-impact-of-the-pandemic-to-philippine-logistics-and-trucking>, October 20, 2022.
- University College London. Health and Behavior Survey. Available: <https://www.ucl.ac.uk/epidemiology-health-care/research/bsh/research/psychobiology/health-and-behaviour-survey>

Biographies

Carlos Lugay Jr. is an Associate Professor in the Department of Industrial Engineering, University of Santo Tomas. He has been with the University since November 1992. He earned his BSIE degree from the University of Santo Tomas in 1992. After this, he went to the University of the Philippines-Diliman and earned his MS IE Degree in 1999. While teaching and holding academic/administrative positions, he earned his Ph.D. in Commerce degree from the University of Santo Tomas in 2015. He is a Professional Industrial Engineer and an ASEAN Engineer. His areas of specialization are Ergonomics and Operations Management. He has published and presented papers in local and internal conferences/symposia.

Lyza Bernal is currently a fourth (4th) year undergraduate student in the Department of Industrial Engineering at the University of Santo Tomas – Manila, Philippines.

Troy Dagdagan is currently a fourth (4th) year undergraduate student in the Department of Industrial Engineering at the University of Santo Tomas – Manila, Philippines.

Andre Lapasaran is currently a fourth (4th) year undergraduate student in the Department of Industrial Engineering at the University of Santo Tomas – Manila, Philippines.

Vashti Sanchez is currently a fourth (4th) year undergraduate student in the Department of Industrial Engineering at the University of Santo Tomas – Manila, Philippines.