The Impact of Traffic Congestion on the Attendance of STI College Students in Malolos, Bulacan: Basis for an Interactive Traffic Dashboard

A Research Presented to the Faculty of the

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Practical Research 2

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LIST OF ABBREVIATIONS

1. BACOMM: (Bachelor of Arts in Communication)
2. BMMA: (Bachelor of Multimedia Arts)
3. BSA: (Bachelor of Science in Accountancy)
4. BSAIS: (Bachelor of Science in Accounting Information System)
5. BSBA-OM: (Bachelor of Science in Business Administration major in Operations Management)
6. BSCPE: (Bachelor of Science in Computer Engineering)
7. BSHM: (Bachelor of Science in Hospitality Management)
8. BSIT: (Bachelor of Science in Information Technology)
9. BSN: (Bachelor of Science in Nursing)
10. BSTM: (Bachelor of Science in Tourism Management)
11. CEU / C.E.U.: Centro Escolar University
12. EDSA: (Epifanio de los Santos Avenue)
13. e.g.: (exempli gratia) meaning "for example"
14. et al.: (et alia) meaning "and others"
15. FCIC: Franciscan College of the Immaculate Conception
16. IoT: Internet of Things
17. IT: Information Technology
18. ITS: Intelligent Transportation Systems
19. NCR: National Capital Region
20. QR: Quick Response
21. RFID: (Radio-Frequency Identification)

22. STI: (STI College Malolos / STI College Pasay EDSA)

CHAPTER I

INTRODUCTION

Traffic congestion is a daily problem that affects many people, especially students who rely on timely transportation to attend their classes. In cities like Malolos, Bulacan, the high number of vehicles and crowded roads make traveling to school challenging. Students often experience delays due to heavy traffic, which can affect their punctuality and attendance. Since consistent attendance is crucial to academic performance, understanding how traffic conditions influence students is important. This study examines the impact of traffic congestion on the attendance of college students at STI College Malolos and explores the potential of an interactive traffic dashboard as a practical solution.

A. Background of the Study

Traffic congestion is a critical issue that affects productivity and quality of life, particularly in growing cities such as Malolos, Bulacan. As the city develops, the increasing number of vehicles leads to crowded roads, especially during rush hours. This persistent congestion not only impacts the general public but also presents challenges for students who depend on public or private transportation to arrive at classes on time.

Regular attendance is essential for college students' academic success. However, frequent traffic congestion can lead to tardiness and absenteeism. Delays along major roads like MacArthur Highway can disrupt students' schedules, negatively affecting their academic performance. Time Management Theory (Lakein, 1973) explains that students facing heavy traffic have less control over their schedules and reduced capacity to manage their time effectively.

Technology offers potential solutions to these challenges. An interactive traffic dashboard allows real-time monitoring, helping students understand traffic patterns and plan their commutes efficiently. According to Travel Behavior Theory and the Theory of Planned Behavior (Ajzen, 1991), students' transportation choices, such as leaving earlier or selecting alternative routes, are influenced by their perception of current and expected traffic conditions. This study aims to assess the effect of traffic congestion on college students' attendance at STI College Malolos and to use the findings to develop an interactive traffic dashboard.

B. Research Questions

1. How does traffic congestion affect the attendance of college students in Malolos, Bulacan?
2. How much time do college students spend commuting due to traffic in Malolos?
3. What are the common modes of transportation used by college students, and which areas are most affected by heavy traffic?
4. What is the relationship between commuting time, traffic frequency, and student tardiness?

Objectives of the Study

1. To assess the overall impact of traffic congestion on the attendance and punctuality of college students in Malolos, Bulacan.
2. To measure average commuting times and identify the most common, traffic-affected routes used by college students.
3. To analyze the specific relationship between commuting factors (like travel time and traffic frequency) and student attendance, specifically in terms of tardiness and absences.

C. Significance of the Study

To Students: The study helps students understand how traffic conditions influence their attendance and academic responsibilities. It may guide them in planning travel schedules more effectively.

To Teachers and School Administrators: Findings can assist faculty and administrators in recognizing external factors that affect attendance. This may support more flexible class management strategies, including adjusted start times or attendance policies for students frequently delayed by traffic.

To the Local Government: Data on traffic congestion's impact on student attendance can help local authorities develop measures to reduce congestion and improve traffic flow, particularly along routes heavily used by students.

To System Developers: The study demonstrates how research data can be applied to create digital tools. The interactive traffic dashboard can serve as a model for developers seeking to visualize real-world issues, such as traffic congestion, and their effects on student behavior.

To Future Researchers: The study provides a foundation for further research on the broader effects of transportation and urban conditions on education. Future studies may expand to other schools or investigate solutions to minimize traffic-related challenges.

D. Review of Related Literature

D.1. Introduction

This chapter presents literature and studies that provide a background for the current research. It focuses on the effects of traffic congestion on student attendance and punctuality, technology-based solutions for monitoring, and systems that visualize real-time data. The chapter

highlights existing findings, identifies research gaps, and establishes the theoretical foundation of the study.

D.2. Review of Related Literature/Studies

D.2.1. Traffic Congestion and Commuting Challenges Among Students

Several international studies have examined the relationship between traffic congestion and commuting experiences. Wen et al. (2019) found that congestion primarily results from inefficient land-use planning and rapid urban development. They argued that expanding road networks alone cannot fully address congestion; integrated urban planning that manages travel demand and promotes mixed-use development is more effective. These findings are relevant to student commuters who rely on public transport systems affected by such urban conditions. Similarly, Subair, Ibitoye, and Kuranga (2024) emphasized that Intelligent Transportation Systems and improved public transport significantly enhance traffic flow, while road widening can paradoxically increase congestion by encouraging greater car use. These studies indicate that infrastructure and policy decisions directly influence daily commuting efficiency and students' travel experiences.

In the Philippine context, Moreno (2023) studied traffic congestion management in Zamboanga City from the perspective of public-transport commuters. The study found that inadequate infrastructure, poor traffic rule enforcement, and limited parking regulation caused longer travel times and commuter fatigue. Quitlong and Napiza (2023) reported similar experiences among students from Laguna State Polytechnic University–Sta. Cruz, noting delays, physical strain, and reduced academic readiness due to long distances and unreliable public transport.

Manaois et al. (2024) explored the use of motorcycle-taxi-hailing services among students in the National Capital Region, highlighting reliance on these services for speed and convenience during congestion. The Nueva Ecija University of Science and Technology (2024) assessed the effects of the Santa Rosa Bridge rehabilitation on student mobility, showing construction disrupted routines and forced alternative routes. Dela Cruz et al. (2024) found that students traveling from southern Metro Manila faced long and unpredictable commutes, creating significant barriers to punctuality and attendance.

Mfungo (2020) studied traffic congestion effects on secondary school students in Dar es Salaam, Tanzania, including 174 respondents. The study reported that 88% of students felt overwhelmed by city traffic, contributing to declines in academic performance due to fatigue during morning lessons. This finding is relevant for understanding similar challenges faced by college students in urban areas.

Laman et al. (2021) investigated commuting difficulties of STI College Pasay EDSA students using survey questionnaires and Likert-scale measurements. The study confirmed that travel-related challenges, including traffic congestion, can disrupt attendance.

Overall, both international and local studies indicate that traffic congestion and commuting difficulties extend beyond inconvenience, affecting students' time management, focus, and punctuality. These findings provide a foundation for studying the specific experiences of college students in Malolos.

D.2.2. Effects of Traffic Congestion on Student Attendance

Traffic congestion significantly impacts students' routines, often causing tardiness and missed classes. David et al. (2025) found that long commutes negatively affect attendance. Shaaban and Reda (2021) observed that providing transportation for college students in Qatar

improved attendance, based on two years of data including records of majors and bus ridership. Sakib et al. (2025) reported that students in Dhaka who relied on public transport were often late and fatigued, highlighting the relationship between traffic congestion and poor attendance.

Local studies confirm similar patterns. Serut et al. (2023) found that among 194 first-year students at Franciscan College of the Immaculate Conception, tardiness caused by long commutes and traffic affected attentiveness and caused missed instructions. Chua et al. (2024) reported that poor road conditions in Zamboanga City contributed to tardiness among 50 Level III BSN students. Rellon et al. (2024) focused on student motivation rather than attendance records, making it harder to measure traffic's direct impact on attendance.

Commuting distance is closely linked to traffic congestion, as longer distances increase travel time, which is further affected by congestion. Measuring commuting time can provide insight into traffic conditions and their effect on punctuality.

Foreign and local studies consistently demonstrate that traffic congestion contributes to student tardiness. However, few studies have focused on IT-related programs, specific routes such as MacArthur Highway in Malolos, or larger and more generalizable sample sizes. Addressing these gaps can clarify the relationship between traffic congestion and student attendance using visualized data such as dashboards and charts.

D.2.3. Technology-Based Solutions for Monitoring Traffic and Attendance

Technology has improved monitoring of traffic flow and attendance. Garg, Singhal, and Tiwari (2018) highlighted that switching from manual to biometric attendance systems increases efficiency and data reliability. Kheder and Mohammed (2023) developed an IoT system with AI and robotics for real-time traffic monitoring, demonstrating how data visualization can address

congestion. Cempron and Llao (2019) used computer vision to count vehicles, highlighting the reliability of digital monitoring tools for instant feedback.

Locally, Dultiao and Duldulao (2020) created an RFID-based IT Center Attendance Monitoring System, automating attendance but not integrating external factors such as traffic conditions. Tuco and Salapa (2025) systematically reviewed 15 traffic management studies in mid-sized Philippine cities, identifying key themes such as technology integration, infrastructure quality, and policy gaps. These studies underscore the potential of interactive dashboards to visualize traffic data and analyze its impact on student attendance.

D.3. Synthesis

Existing studies indicate that traffic congestion significantly affects students' commuting experiences and academic readiness. Wen et al. (2019) and Subair, Ibitoye, and Kuranga (2024) noted that inefficient transport systems and urban congestion lead to delays that reduce productivity. Local studies by Serut et al. (2023) and Sakib et al. (2025) found that long travel times and road congestion cause tardiness and reduced attentiveness. These findings align with Lakein's (1973) Time Management Theory, as congestion limits effective schedule management, and Ajzen's (1991) Theory of Planned Behavior, which suggests that perceiving traffic as stressful affects motivation and classroom behavior.

Foreign and local literature converge in showing that traffic congestion is both a global and local issue affecting attendance and learning. Technology-based solutions such as RFID attendance systems, IoT traffic monitoring, and dashboards demonstrate potential to improve attendance and academic performance. However, limited studies have examined traffic congestion's effect on college students in Malolos, Bulacan. This research addresses this gap by analyzing traffic impacts on attendance using technological interventions.

D.4. Summary

Studies consistently show that traffic congestion affects student attendance and commuting well-being. International studies identified poor urban planning and high private vehicle use as key contributors (Wen et al., 2019; Subair, Ibitoye, & Kuranga, 2024). Local studies highlighted inadequate road planning, poor conditions, weak enforcement, and unreliable transport as major causes of congestion affecting punctuality and academic performance (Moreno, 2023; Quitlong & Napiza, 2023; Chua et al., 2024). Technology-based systems such as RFID attendance monitoring, IoT traffic management, and dashboards have been proposed to address these challenges (Garg et al., 2018; Kheder & Mohammed, 2023; Dultiao & Duldulao, 2020).

Overall, the literature demonstrates that traffic congestion has a significant impact on students' attendance, emphasizing the need to specifically study college students in Malolos, Bulacan, and examine how traffic affects their academic routines.

E. Theoretical Framework

This study is anchored on two theories: Time Management Theory by Lakein (1973) and the Theory of Planned Behavior by Ajzen (1991).

Lakein's Time Management Theory posits that individuals who manage and allocate their time effectively are more likely to achieve their goals and maintain punctuality. However, external factors such as traffic congestion can disrupt these plans. As a result, students may lose track of time, leading to lateness or absences. In this study, heavy traffic is considered a factor that diminishes students' ability to manage commuting time efficiently, disrupts their routines, and increases the likelihood of being late to class.

Ajzen's Theory of Planned Behavior suggests that a person's actions are influenced by behavioral intentions, which are shaped by attitudes, subjective norms, and perceived behavioral control. Applied to this study, the theory explains how students' commuting behaviors, such as leaving home earlier, choosing alternative routes, or selecting specific modes of transportation, are affected by their perception of traffic conditions. Students who perceive traffic as uncontrollable may be less motivated to arrive on time or may not allocate sufficient time for their commute.

Together, these theories provide a framework for understanding how traffic congestion, time management, and perceived control interact to influence student attendance. They support the study's objective of examining the relationship between traffic congestion and the attendance of college students in Malolos, which will be further analyzed using an Interactive Traffic Dashboard.

CHAPTER 2

METHODS

A. Introduction

This chapter presents the methods and procedures employed in conducting the study. It outlines the research design, locale, population and sampling techniques, instruments, data gathering procedures, and data analysis methods used to examine how traffic congestion affects the attendance of college students in Malolos, Bulacan. The methodology is structured to ensure accuracy, reliability, and adherence to ethical standards throughout the research process.

B. Research Design

This study employs a quantitative-descriptive and correlational research design. This approach allows the researchers to collect measurable data from respondents and analyze the relationship between traffic congestion variables, such as commuting time, mode of transportation, traffic frequency, and student attendance. The design was selected because it facilitates the collection of objective data and helps determine whether traffic congestion significantly impacts attendance. It is particularly suitable for studies that aim to observe and analyze relationships between variables without manipulating them. The findings will serve as the foundation for developing an Interactive Traffic Dashboard that displays how traffic conditions affect student attendance in real time.

C. Research Locale

The study will be conducted at STI College Malolos, located in Malolos, Bulacan, and along the main road frequently used by students. STI College Malolos is a private institution with a student population of 2,287 for the academic year 2025–2026. The school was selected due to its large student body, which provides an adequate sample for collecting reliable data.

The main road passes by several key landmarks, including Centro Escolar University (CEU), MacArthur Highway, Robinsons Mall, Xentro Mall, South Supermarket, and Graceland. This route was chosen because it represents the primary path students use to commute from home to school. Both the school and the road offer a relevant context for understanding students' daily travel experiences and the challenges they encounter.

D. Population and Sampling

The target population consists of all college students enrolled at STI College Malolos during the Academic Year 2025-2026. The population by each program is:

- BACOMM: 31
- BMMA: 238
- BSA: 16
- BSAIS: 39
- BSBA-OM: 157
- BSCPE: 123
- BSHM: 607
- BSIT: 501
- BSTM: 575
- Total N = 2287

$$n = \frac{2287}{1 + 2287(0.10)^2} = \frac{2287}{1 + 2287(0.01)} = \frac{2287}{1 + 22.87} = \frac{2287}{23.87} \approx 95.8 \approx 96$$

Using Slovin's Formula with a 10% margin of error, the calculated sample size is n = 96.

A stratified random sampling method will be used. Each program will serve as a stratum. Respondents within each program will be selected randomly to ensure balanced representation

and minimize sampling bias. This approach guarantees that the sample reflects the composition of the entire student population. Sample sizes for each program were determined based on their proportion of the total population. The resulting allocation is as follows:

Program	Population (Ni)	Share of Total (%)	Sample (ni)
BACOMM	31	1.36%	1
BMMA	238	10.41%	10
BSA	16	0.70%	1
BSAIS	39	1.71%	2
BSBA-OM	157	6.87%	7
BSCPE	123	5.38%	5
BSHM	607	26.54%	25
BSIT	501	21.91%	21
BSTM	575	25.14%	24
Total	2287	100.00%	96

Table 1: Population and Sample Distribution by Program

E. Research Instrument

The research instrument for this study is a survey questionnaire, which will be administered online using Google Forms. It is designed to collect data on how traffic congestion

affects the attendance of college students at STI College Malolos. The questionnaire is divided into three sections:

E.1. Demographics

This section will use multiple-choice questions to collect basic information, including age, gender, and course of the respondents. These data will help compare the commuting experiences of different student groups.

E.2. Transportation and Commuting Information

This section will focus on respondents' commuting experiences, including mode of transportation, average travel time, distance from home to school, usual time of departure, the usual time of the first class, estimated travel cost, number of vehicles used.

E.3 Traffic Congestion Experience

This section will use multiple-choice to understand respondents perceived level of traffic congestion (light, moderate, or heavy).For example: "Where do you think is the most congested area in Malolos?" with options: A. Crossing, B. South, C. CEU, D. Barasoain. Responses from this section will also be used for an interactive traffic dashboard, which will help users identify areas with heavy congestion. The study also acknowledges that STI College Malolos students have different class schedules for each program. Some classes start in the morning, while others start in the afternoon. This might influence travel time due to traffic congestion, which can affect the consistency of the results. To address this limitation, the questionnaire includes questions about class start time and departure time.

E.4. Attendance and Tardiness

This section will focus on the respondents' attendance and tardiness in class, it will also use multiple-choice questions to see how traffic congestion can affect students' attendance. This section will include questions such as the number of times the respondents were absent, how many of the absences were caused by traffic congestion, and how often they show up late.

E.5. The Perceived Impact of Traffic Congestion (Likert Scale)

This section will use a Likert scale to measure the respondents' level of agreement regarding how traffic congestion affects student attendance and punctuality. For example:

1 – Strongly Disagree

2 – Disagree

3 – Neutral

4 – Agree

5 – Strongly Agree

F. Data Gathering Procedure

The researchers will first send a formal letter to the school administrator of STI College Malolos to request permission to conduct the study on campus. Once approved, the questionnaire will be submitted to the research adviser to ensure it meets ethical standards and is relevant to the study.

After validation, the questionnaire will be distributed to respondents according to the sampling plan. Data collection will be conducted through Google Forms, which can be accessed via a QR code linked to the questionnaire and website. Respondents will be informed of the study's purpose and assured that their responses will remain confidential and used solely for academic and research purposes.

Once all responses are collected, the researchers will carefully check and encode the data in Microsoft Excel or Google Sheets to ensure clarity, organization, and accuracy. The summarized results will then be uploaded to a dashboard, which will visually present the findings using line graphs and bar graphs. The dashboard will serve as an informative platform for students and teachers, providing insights into traffic congestion and offering real-time route suggestions.

G. Data Analysis / Statistical Treatment

The study will use both descriptive and inferential statistics to analyze the data collected from respondents. Demographic and commuting profiles, such as mode of transportation, time of departure, and level of traffic congestion, will be summarized using frequency and percentage. The mean will describe the level of traffic congestion experienced by students. The Pearson correlation coefficient (r) will be used to examine the relationship between student attendance and traffic congestion. The significance level will be set at 0.05, which will determine whether the null hypothesis is accepted or rejected.

H. Ethical Considerations

Participants will be informed of the study's purpose and procedures. Participation is voluntary, and respondents may withdraw at any time. No personal information will be collected, ensuring anonymity and confidentiality. The results will be used solely for academic and research purposes. The researchers will comply with the Data Privacy Act of 2012 to protect respondents' information.

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APPENDIX A. UI DESIGNS

This appendix presents the conceptual design and user interface (UI) for the proposed "STI Traffic & Attendance Dashboard." These designs were created in Canva to visualize the intended functionality and user experience of the final application. Google maps and Waze are very powerful tools for navigation, but our dashboard goes a step further. It will notify the user when and where a traffic congestion begins in real time, allowing them to react immediately. The dashboard will also plan daily commutes for the user in advance and will suggest alternative routes to help them save time.

Figure A1 shows the dashboard's **Home Page**. This screen serves as the main home page, introducing the project and the buttons to go to the other pages.

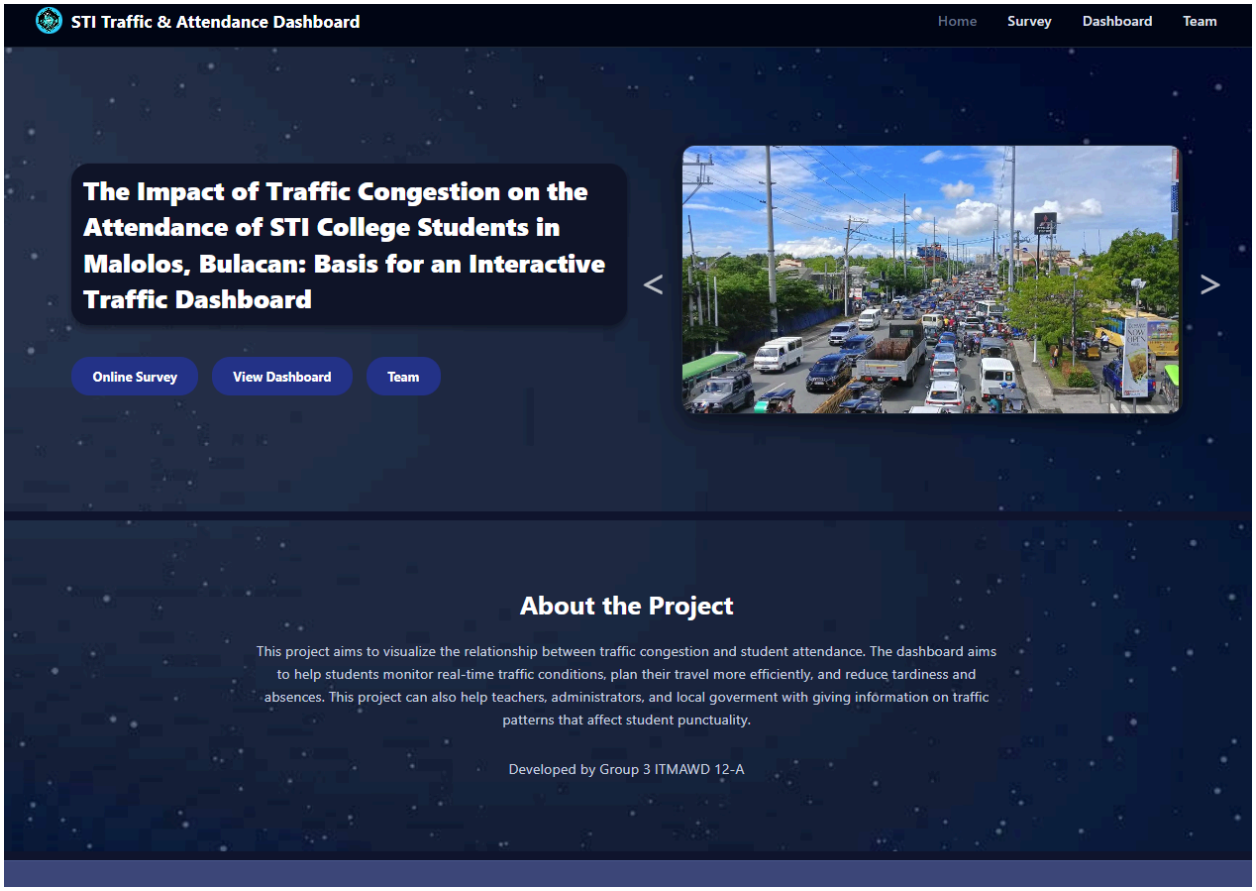


Figure A1: Home Page | About & Buttons

Figure A2 is still on the home page, scrolling down shows the **Abstract**, which summarizes the research and includes a button for users to view the full research paper.

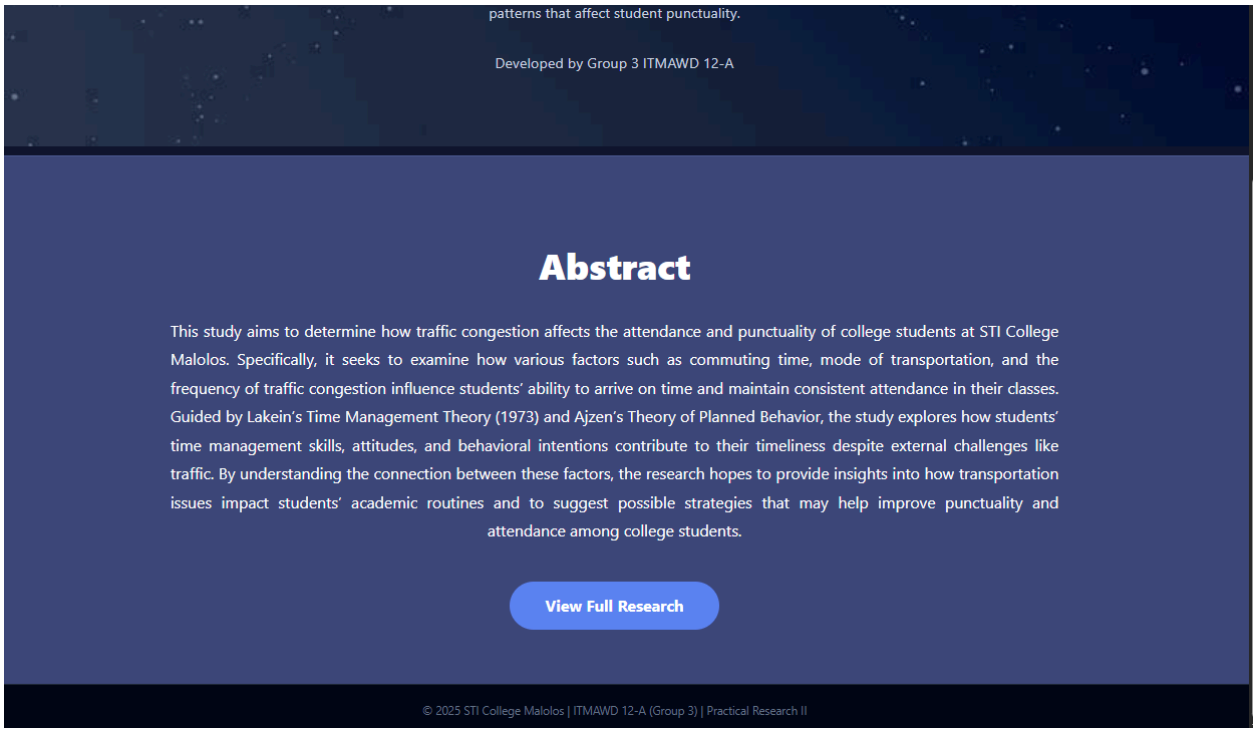


Figure A2: Home Page | Abstract & Full Research Button

Figure A3 shows the **Survey Page**, which is the primary data-gathering tool for the project. It's designed to put the Google Form directly into the website using **<iframe>**. This allows the respondents to fill out their commuting and attendance data within the website. The page also has a brief introduction to users that their responses are confidential and will be used solely for the research.

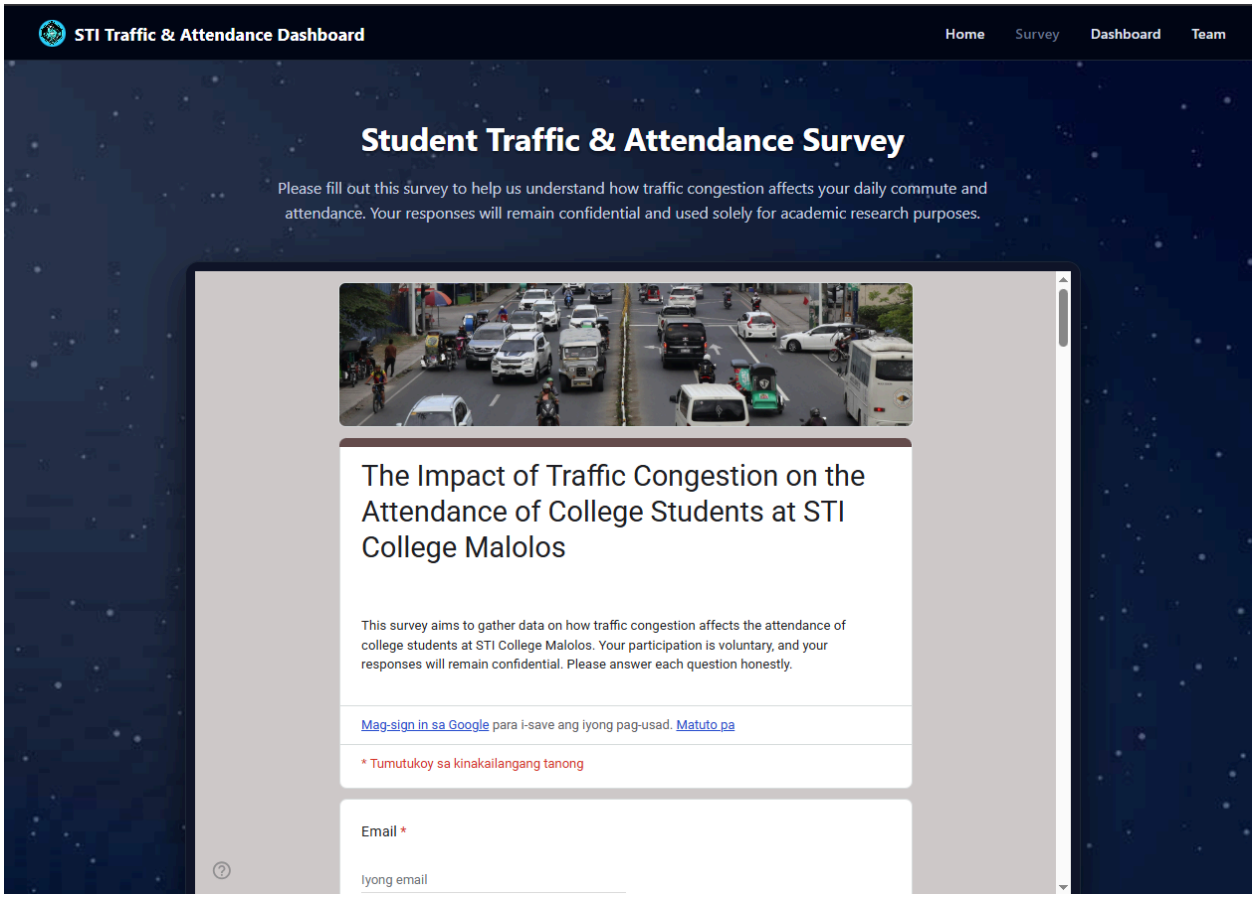


Figure A3: Survey Page | Google Forms in iframe

Figure A4 & A5 shows the main **Dashboard Page**, which is the primary output of the study. This interface allows users to interact with and analyze the collected data.

Key features include several **f**ilters at the top, allowing users to sort the data by "Day of the Week," "Mode of Transportation," "Traffic Level," and "College Program." Based on these filters, the dashboard displays various **data visualizations**, such as the "Attendance Vs Traffic Level" chart and graphs showing daily attendance patterns.

A real-time component is also included, featuring an **"Alert" box** for immediate traffic warnings (e.g., "Heavy traffic near Malolos Crossing") and an **"Interactive Traffic Map"** to

show current conditions. Finally, users can export their specific findings using the "Export Filtered CSV" button and the “Reset” button to reset the filters.

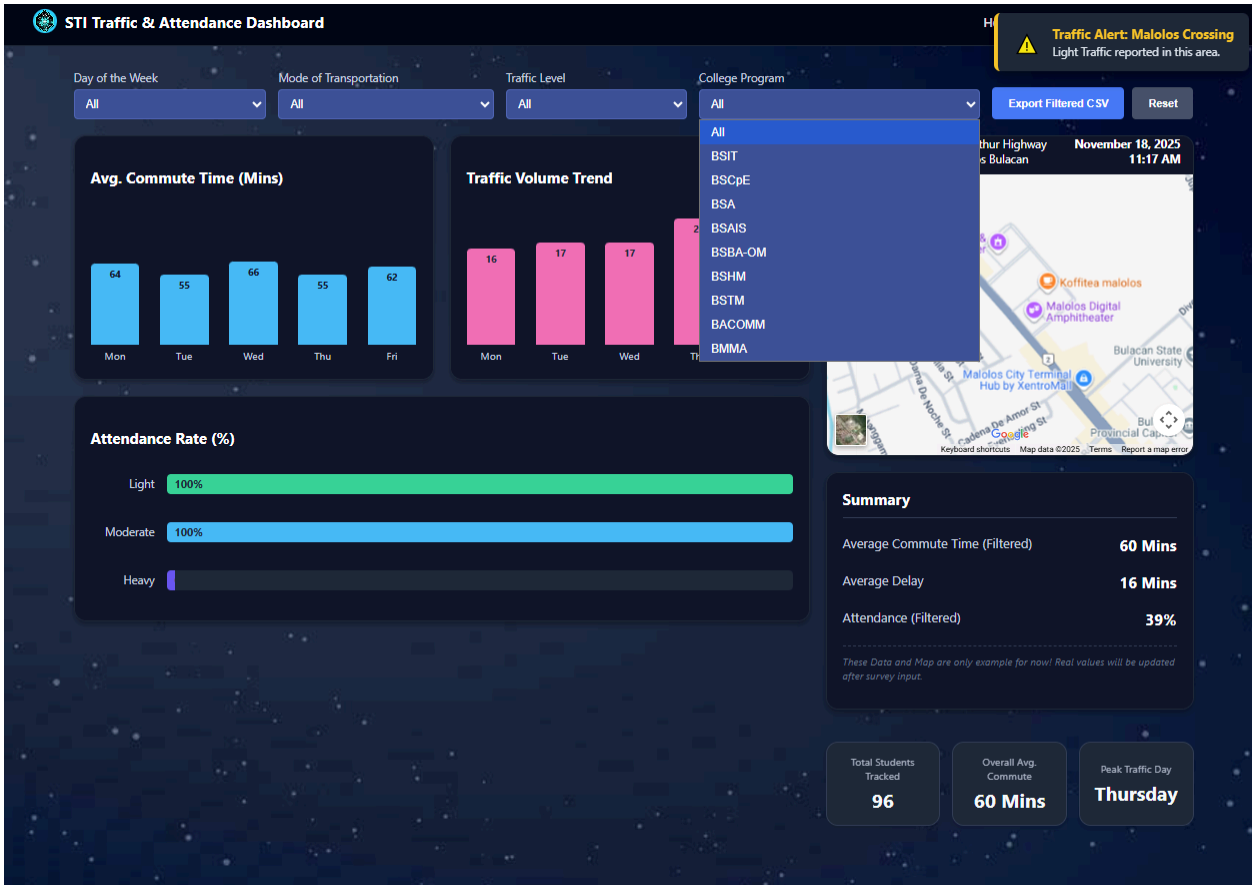


Figure A4: Dashboard Page

Figure A5 shows the **"The Team"** page, this is the researchers and developers involved in the project. It identifies each member of Group 3 (ITMAWD 12-A) and their roles in the project, such as the Research Leader.

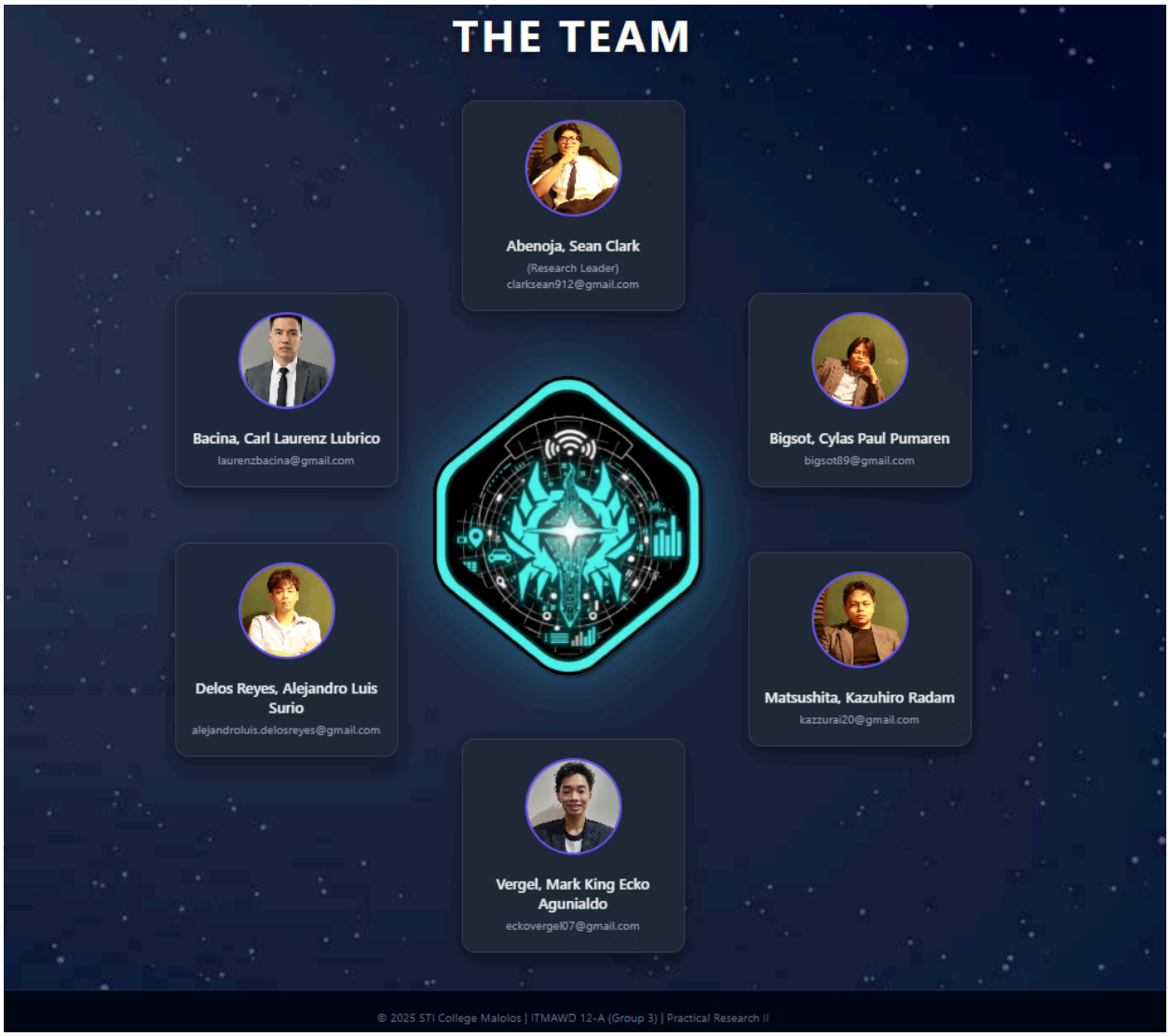


Figure A5: Team Page

APPENDIX B. RESEARCH INSTRUMENT

STRUCTURED SURVEY QUESTIONNAIRE

A. **Section I:** Demographic Profile

- **Question 1:** What is your Age?
  - ○ 17-18 ○ 19-20
  - ○ 21-22 ○ 23 and above
- **Question 2:** What is your Gender?
  - ○ Male ○ Female
- **Question 3:** What is your Course or Program?
  - ○ BSIT ○ BSCPE ○ BSA
  - ○ BSAIS ○ BSBA-OM ○ BSHM
  - ○ BSTM ○ BACOMM ○ BMMA

B. **Section II:** Transportation and Commuting Information

- **Question 4:** What is your primary mode of transportation to school?
  - ○ Jeepney ○ Tricycle ○ Bus
  - ○ Private vehicle ○ Motorcycle ○ Walking
  - ○ Other:
- **Question 5:** What is your average travel time to school?
  - ○ Less than 15 minutes ○ 15-30 minutes
  - ○ 31-45 minutes ○ 46 minutes - 1 hour
  - ○ More than 1 hour
- **Question 6:** What is the approximate distance from your home to STI College Malolos?

- Less than 1 km
- 1-3 km
- 4-6 km
- 7-10 km
- More than 10 km

- **Question 7:** What time does your first class usually start?
  - Morning (7:00 AM-11:59 AM)
  - Afternoon (12:00 PM-4:59 PM)
  - Evening (5:00 PM or later)
- **Question 8:** What time do you usually leave home for class?
  - [Time box question]
- **Question 9:** What is the estimated daily travel cost (round trip)?
  - Below ₱20
  - ₱21-₱40
  - ₱41-₱60
  - ₱61 and above
- **Question 10**: How many rides or vehicle transfers do you usually take to reach school?
  - 0 (walk only)
  - 1 ride
  - 2 rides
  - 3 or more rides

C. **Section III:** Traffic Congestion Experience

- **Question 11:** How would you describe the level of traffic congestion on your usual route?
  - Light
  - Moderate
  - Heavy
- **Question 12:** Which area do you think experiences the heaviest traffic in Malolos?
  - Malolos Crossing
  - South Supermarket

- Centro Excolar University (CEU) Area
- Graceland/Xentro Mall
- Robinsons Mall
- Other:

- **Question 13:** How many days per week do you usually experience heavy traffic?
  - 0
  - 1-2 days
  - 3-4 days
  - 5 or more days

D. **Section IV:** Attendance and Tardiness

- **Question 14:** In the past month, how many times have you been absent?
  - 0
  - 1-2 times
  - 3-4 times
  - 5 or more times
- **Question 15:** How many of these absences were caused by traffic congestion?
  - 0
  - 1-2 times
  - 3-4 times
  - 5 or more times
- **Question 16:** How often do you arrive late to class?
  - Never
  - Rarely

- Sometimes
- Often
- Always

- **Question 17:** How often is your lateness caused by traffic congestion?
  - Never
  - Rarely
  - Sometimes
  - Often
  - Always
- **Question 18:** On days that you arrive late, how many minutes late are you on average?
  - I am never late
  - Less than 5 minutes
  - 5-10 minutes
  - 11-20 minutes
  - More than 20 minutes
- **Question 19:** Have you ever missed a quiz or exam because of traffic congestion
  - Yes
  - No

E. **Section V:** The Perceived Impact of Traffic Congestion (Likert Scale)

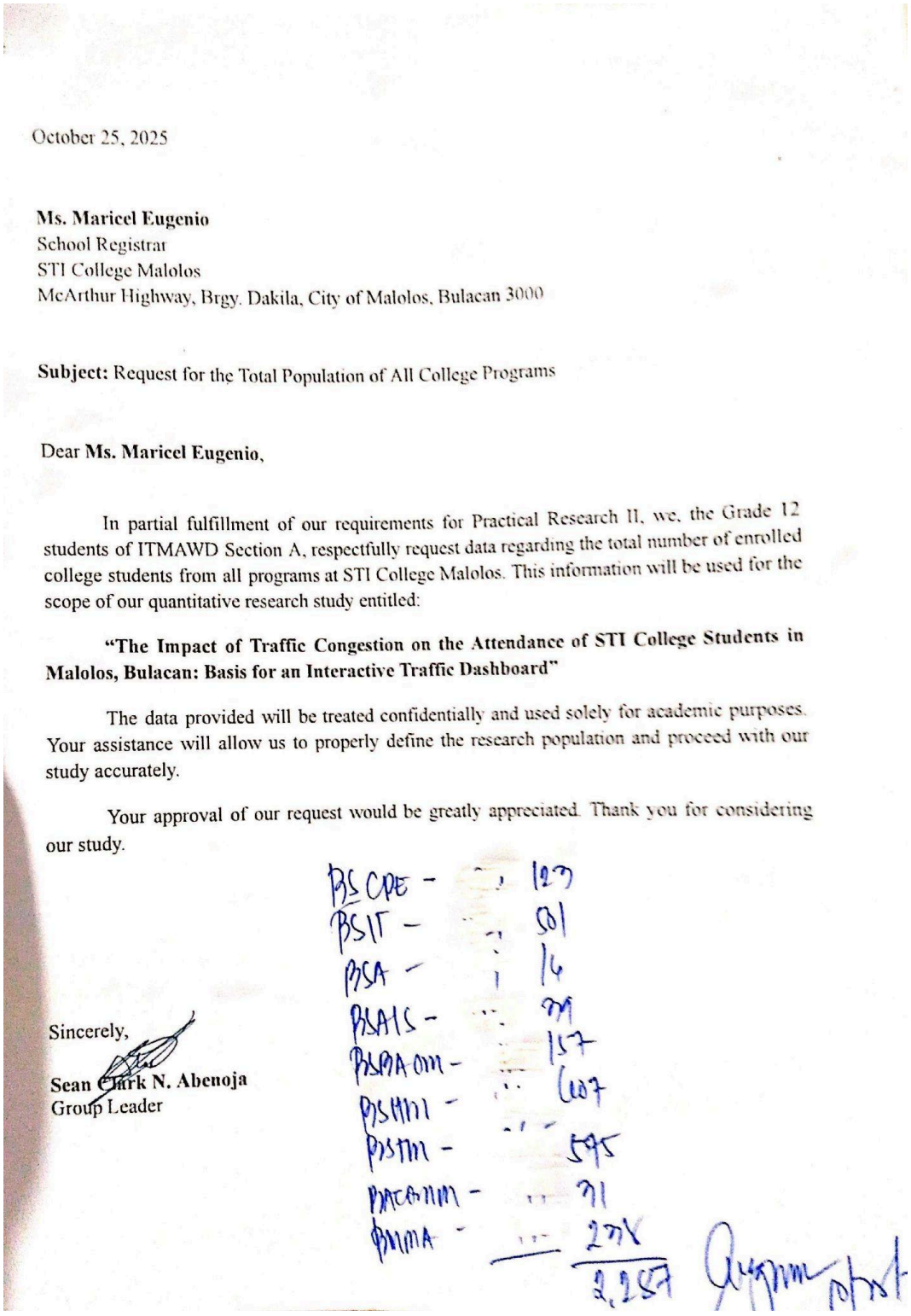
- **Question 20:** What is the impact of Traffic Congestion on Attendance?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Traffic congestion causes me to	☐	☐	☐	☐	☐

arrive late for class.					
I often have to leave home much earlier than usual to avoid being late.	☐	☐	☐	☐	☐
Heavy traffic makes it difficult to maintain consistent attendance.	☐	☐	☐	☐	☐
Long travel time due to traffic affects my energy and focus in class.	☐	☐	☐	☐	☐
Traffic congestion occasionally prevents me from attending class.	☐	☐	☐	☐	☐
I experience more stress on days with heavier traffic.	☐	☐	☐	☐	☑
I believe improving traffic flow would improve student attendance.	☐	☐	☐	☐	☐

Table D4: Likert Scale

APPENDIX C. POPULATION REQUEST



October 25, 2025

Ms. Maricel Eugenio
School Registrar
STI College Malolos
McArthur Highway, Brgy. Dakila, City of Malolos, Bulacan 3000

Subject: Request for the Total Population of All College Programs

Dear **Ms. Maricel Eugenio**,

In partial fulfillment of our requirements for Practical Research II, we, the Grade 12 students of ITMAWD Section A, respectfully request data regarding the total number of enrolled college students from all programs at STI College Malolos. This information will be used for the scope of our quantitative research study entitled:

"The Impact of Traffic Congestion on the Attendance of STI College Students in Malolos, Bulacan: Basis for an Interactive Traffic Dashboard"

The data provided will be treated confidentially and used solely for academic purposes. Your assistance will allow us to properly define the research population and proceed with our study accurately.

Your approval of our request would be greatly appreciated. Thank you for considering our study.

Sincerely,

Sean Clark N. Abenoja
Group Leader

BS CPE - 127
BSIT - 501
BSA - 16
BSAIS - 99
BSBA OM - 157
BSHM - 607
BSTM - 595
BACOMM - 31
BMMA - 274
2,257

Figure E1: Picture of the Population Request form.