THINK BIG · START SMALL

CHINA THINKS BIG
NATIONAL TRIALS

STUDENT GUIDEBOOK

HAUSCR

SHANGHAI
MARCH 2019

Student Competition Guidebook (Shanghai)

Welcome to the CTB 2019 National Trials competition. This guidebook is designed to help you better understand what to expect during this exciting weekend and how to prepare. If you have any questions about National Trials that are not answered in this guidebook, feel free to write to ask@chinathinksbig.com or friend CTB 小助手 on WeChat and send us your question there. We will continue to post more preparation tips as the competition draws closer!

Before the big day:

❑ **Read this guidebook thoroughly.**
Everything you need to know is already written out clearly. This guidebook includes not just rules and rubrics but also clues to prepare for the competition effectively.

❑ **Have your parents and coach sign the consent form before Mar 10th, 2019.**
The consent forms for parents and coach are also posted on the official website. Have your parents and coach sign the form and upload it on the website. Without the consent form, you will not be able to register and receive your competition pack onsite.

❑ **Book your travel plans.**
If you need to travel between cities, make sure you leave enough time for the whole length of the competition. The team check-in will start around 7 am on March 16th and the awards ceremony is expected to end around 6 pm on March 17th. Each team will be given a specific timesheet for each session, which will be updated to teams next week.

❑ **Make 1 slide and one-page in both Chinese and English for your Final Presentation before Mar 10th, 2019.**
Upload them in PDF format. These files will be shown to judges and displayed during your on-stage presentation. No sound or animation is allowed. Please make sure the slide is readable on large screens from far away. Late and on-site submissions will not be accepted. Please reference the slide guidelines in Appendix III.

❑ **Print out your poster and bring it with you to check-in.**
Make sure the poster is printed with the following dimensions: 36x48 inch (about 91x122cm).
You will turn in your poster during check-in, and they will be mounted on boards for the fair judging round.

❑ **What To Wear For CTB Nationals**
Formal attire is expected both during the competition and the social mixer. Guys wear a business suit and tie with dress shoes. School suits works too. Ladies should wear either a blouse, or a dress with matching shoes. It is common for the ladies to bring more comfortable shoes for between rounds, and then change into professional shoes before competing.

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Introduction

Dear CTB Participants,

We are excited to welcome you to the National Trials for the 2019 CTB Challenge! As you enter this next phase of your CTB journey, we would like to congratulate you on all the hard work you have dedicated to preparing engaging research projects and innovative community implementations. We have followed your efforts closely and cannot wait to meet you all on site in the coming weeks!

To give a brief overview, CTB consists of two days of programming. The first day includes the CTB Fair, Case Studies, and CTB Live! team video recording rounds. The CTB Fair presents you with the opportunity to present your CTB projects to judges and showcase your months of hard work. The Case Study round is a complementary experience to the Fair, and it gives you the opportunity to demonstrate your research and critical thinking skills in a rigorous context. CTB Live! team video recording gives you a forum to share your ideas and CTB experience. The day will end with a mixer, bringing together the CTB community for some fun bonding and activities.

The results of the first day will be made available before **23:59 Beijing Time** via email. **50%** of teams will advance to the second day. On the second day, teams will participate in an intensive final presentation round, where the top CTB winners will be selected. We will also hold a community fair, inviting the CTB community at large to come view team projects! The day will close with an awards ceremony, celebrating everyone's accomplishments.

We know you will all thrive in these exciting rounds. We hope that you take this opportunity to challenge yourselves, take your projects to new heights, and more importantly, learn about the problems and puzzles that the modern world now faces. You are the next generation of leaders and innovators, and we trust that you will keep exploring and discovering new ways to understand the world around us.

Looking forward to getting to know you,



Adeline Choo Natalie Dabkowski Ryan Kim

Directors, China Thinks Big 2018-2019

Program Overview: Day 1

The CTB Fair

What is the Fair Round?

- The fair round is an opportunity for you to present your project to multiple judges, showcasing your work and engaging in an in-depth conversation on your project. It is a culmination of the last few months of your CTB work and is designed to comprehensively evaluate your **research and implementation process** and your ability to **present and discuss your project in detail.**

Fair Structure:

- The fair round allows you to present your project to multiple judges in a series of timed rounds. There are **9** total rounds but you will be judged **6** times throughout the entire fair rotation. This means you will have 3 rounds that are breaks. Among the 6 judged rounds, 3 rounds will be in **Chinese** and 3 rounds will be in **English.**
- Each judging period will last **12 minutes**, followed by a 3 minute transition time for judges to move from project to project.
- When you are not being judged, you are free to take a break, drink some water, use the bathroom, etc., but you should not be disruptive to the students being judged. If you exhibit loud or unruly behavior, tamper with projects, or interrupt judging sessions, you may face penalties or disqualification. Please be respectful of other students' work.

Presentation

- The primary objective of the fair round is to allow you to have a conversation with the judges through an in-depth discussion of your project. You are expected to prepare a **5-7 minute pitch** explaining your project to the judges.
- While we ask you to prepare a 5-7 minute pitch, judges will have viewed your boards before the presentation, and they may start asking questions early in your presentation. Alternatively, they may wait for you to present and then follow up with questions. We ask that you prepare to be able to fully discuss all aspects of your project as judges will be using a mixture of questions and listening to evaluate your project.
- Please be respectful to the judges, and do your best to clearly explain your project. Treat them not as experts with previous knowledges, but as viewers who expect you to walk them through a field you know a lot about. This is where the true challenge lies.

Rubric and Requirements
Here are the guidelines we will be using to evaluate your team during the fair process.

<table>
<tr><th colspan="3">FAIR</th></tr>
<tr><td>TIME</td><td colspan="2">Pitch: 5-7 minutes
Total time including questions: 12 minutes</td></tr>
<tr><td rowspan="5">CONTENT</td><td colspan="2">Language: 3 rounds in English, 3 rounds in Chinese

Prepare to engage in a meaningful conversation about your project. We are evaluating your research and implementation process and your ability to present and discuss your project in detail.</td></tr>
<tr><td>Research</td><td>Make sure to:
Clearly state and explain your research question and hypothesis.
Lead the judge through your research methodology and explain why it helps you answer your research question.
Tie your evidence and results to your hypothesis and discuss merits, limitations, and future applications of your research.</td></tr>
<tr><td>Implementation</td><td>Make sure to:
Show that you have taken your project beyond a plan. For any incomplete parts of your project, you need to provide specific steps for action.
Show that your project has a measurable impact on the community. What impact does your project have and how can you measure it?
Explain how your implementation is different from other implementations. What does it contribute to the field?</td></tr>
<tr><td>Organization</td><td>When you present your project:
Follow a logical order of information.
Make sure that the judges can see the relationship between your research question, your research methods and analysis, and your implementation and its impact.</td></tr>
<tr><td>Presentation</td><td>Make sure your presentation is confident:
Make eye contact
Enunciate and speak clearly.
Use an appropriate tone of voice and speaking speed.
Use appropriate vocabulary and phrasing.
Avoid stuttering, pacing, or fidgeting.</td></tr>
<tr><td>Judge Questions</td><td>In your responses to judge questions:
Prepare to discuss the research process and use what you learned to defend your reasoning.</td></tr>
</table>

		• Prepare to discuss the execution and implications of your implementation.
	Teamwork	Make sure **all** of your team members actively **speak** in the 12 minute presentation and question period. This means going beyond a short comment, and meaningfully contributing to the discussion.
VISUAL AIDS	Please reference the poster and demo guidelines linked **here**. Your poster should **clearly** present your research and implementation. Make sure to use a balance of text and graphics to convey your information. Your demo should reflect the work you have done to make your implementation a reality.	

Display and Safety Regulations for the CTB Fair

Display and Safety Authority

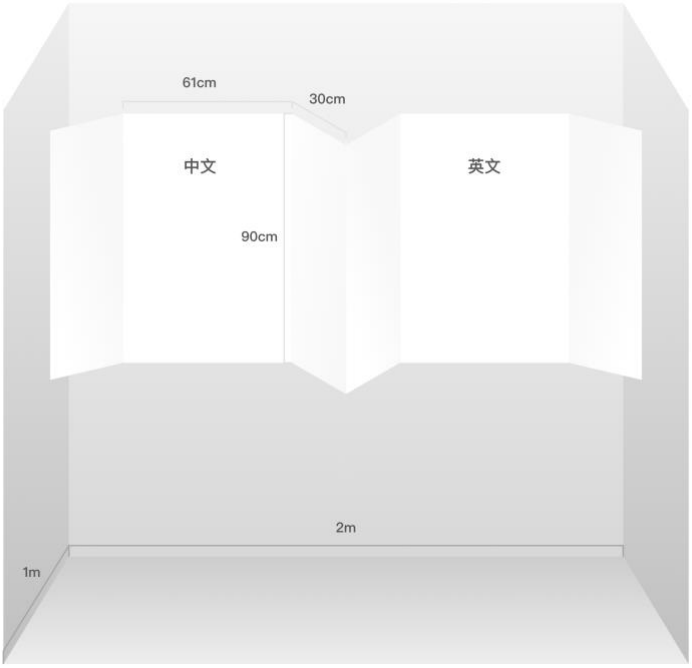
The CTB Organizing Committee is the final authority on display and safety issues for projects to compete in the CTB Fair. Occasionally, the CTB Organizing Committee may require students to make revisions to conform to display and safety regulations. The regulations that follow have been divided into two main categories to separate those that deal specifically with display regulations and those that pertain to safety regulations.

Display Regulations

The following regulations must be adhered to when a team exhibits a project at the CTB Fair.

Maximum Size of Project
Depth (front to back): 100 centimeters
Width (side to side): 200 centimeters
Height (floor to top): 200 centimeters

Shanghai



1. You will have 40 minutes to set up your board at the beginning of the competition day. The time control is very strict. Please use your time wisely.
2. You do not need to bring poster boards to the fair. Bring only the poster paper and glues and scissors so you can tape your poster paper to the board we provide during the setup time.
3. No tables and chairs are provided or allowed at the fair. If you need a support structure for your demonstrations, please create your own and bring to the fair.
4. If a support structure is used, it becomes part of the project and must not exceed the allowed dimensions.
5. All demonstrations must be done within the confines of the team's booth space. When not being demonstrated, all project components must be returned to the project and must fit within allowable dimensions as defined above.

Photograph/Image Display Requirements

Any photograph/visual image/chart/table and/or graph is allowed if:

- It is not deemed offensive or inappropriate (which includes images/photographs showing invertebrate or vertebrate animals/humans in surgical, necrotizing or dissection situations) by the CTB Organizing Committee & the Public.
- It has a credit line of origin ("Photograph taken by..."or "Image taken from..." or "Graph/Chart/Table taken from…"). If all images, etc. being displayed were taken or created by the team or are from the same source, one credit line prominently and vertically displayed on the backboard/poster or tabletop is sufficient. All images MUST BE properly cited. This includes photographs and/or visual depictions of the team or photographs and/or visual depictions of others for which a signed photo/video release form is in a notebook or logbook at the project booth.

Items/Materials Not Allowed on Display or at Project Booth

1. Any awards or medals, except for past or present CTB medals that may be worn by the team.
2. Postal addresses, World Wide Web, email and/or social media addresses, QR codes, telephone and/or fax numbers of a project or team. Note: The only personal information that is permissible to include on the display is information that is also included on the Official Signage (Team ID, Province, Country). Information regarding team's school and grade are **not permitted**.

Safety Regulations

The following regulations must be adhered to when a team exhibits a project at the CTB Fair.

Items/Materials Not Allowed at Project or Booth

1. Glass
2. Taxidermy specimens or parts
3. Preserved vertebrate or invertebrate animals
4. Human/animal parts or body fluids (for example, blood, urine)
5. All hazardous substances or devices (Example: poisons, drugs, firearms, weapons, ammunition, reloading devices, grease/oil and sublimating solids such as dry ice)

6. Items that may have contained or been in contact with hazardous chemicals (Exception: Item may be permitted if professionally cleaned and document for such cleaning is available). Filters (including microbial) may not be displayed unless the CTB Committee can reasonably determine that the device was cleaned or was never used (please include receipts in your notebooks and/or logbooks).
7. Sharp items (for example, syringes, needles, pipettes, knives)
8. Flames and highly flammable materials
9. Batteries with open-top cells or wet cells
10. Drones or any flight-capable apparatus unless the propulsion power source is removed
11. Inadequately insulated apparatus capable of producing dangerous temperatures are not permitted
12. Any apparatus with belts, pulleys, chains, or moving parts with tension or pinch points that are not appropriately shielded
13. Any display items that are deemed distracting (i.e. sounds, lights, odors, etc.)

Electrical Regulations at CTB Fair

1. No electrical power or outlet will be supplied.
2. Teams will be responsible to supply their own power source as needed. Only batteries can be used to power the project.

Internet Regulations at CTB Fair

1. No internet is provided at the fair. The team is responsible for downloading everything needed to showcase in advance.
2. You may use data on your cell phone or wifi hotspot provided by third party. However, when the space is crowded, such connectivity might be affected.

Case Studies

What is the Case Study Round?

- In the case study round, you will be presented with a prompt focusing on a critical societal problem and be provided with the information you need to structure a strong evidence-based argument for a solution. This exercise is meant to test your ability to apply your research and critical thinking skills in a new context, without the help of your mentors, internet resources, or any other kind of medium. We want to see how you use evidence, explain reasoning, structure arguments, and present information on a new topic you have never seen before. Your ability to **synthesize research material** and **structure your ideas** is more important than the solution itself.

Case Study Structure:

- Each case study contains an introduction, specific scenario, task, and background resources. There are multiple background documents, but you **DO NOT** have to use all of them. You need to use at least **3** sources, and you should explain why you choose each piece of evidence clearly. A short, one-word mention does not count as a meaningful use of your background information. Case studies will be held exclusively in **English.**
- Aside from this background information, you are **NOT** allowed to use any electronics for any purpose. This means no language/dictionary resources, internet searches, etc.

Presentation

- You will present your response to the task in a presentation. Your pitch should be approximately **4 minutes** long, and you will answer judge questions for about **6 minutes**. You will also be given a piece of poster paper to write down a few key ideas.

Rubric & Requirements:

Here are the guidelines we will be using to evaluate your team during the case study process.

<table>
<tr><th colspan="3">CASE STUDY</th></tr>
<tr><td>TIME</td><td colspan="2">Preparation: 55 minutes
Pitch: ~4 minutes
Judge Questions: ~6 minutes</td></tr>
<tr><td rowspan="2">PITCH</td><td colspan="2">Language: English

Prepare a ~4 minute oral pitch that responds the task.

The most important part of your pitch is your argument. We are testing your research skills and ability to explain and present your reasoning.</td></tr>
<tr><td>Suggested Work Time</td><td>15 minutes: Read the introduction, scenario, task and source summaries. Skim the articles.</td></tr>
</table>

		10 minutes: Decide on which sources you think will be most important for your argument and decide on your main solution. **30 minutes:** Identify the different claims you need to argue for your solution and choose pieces of evidence to support them. Write key points on the poster.
	Solution	At the start of your pitch, clearly state your solution. Make sure to: ● Answer all parts of the task. ● Present your own ideas based on the research you read.
	Argument	For each step of your solution, back up your claim with evidence: ● Explain **why** you chose this specific step or decision. ● Discuss specific evidence from the **research material**: tell the judge what you read and **why** it supports your solution.
	Evidence	You do **NOT** have to use all of the sources. Quality is more important than quantity: ● Discuss at least **3** sources in your presentation and be sure to explain the information, going beyond a brief reference. ● Focus on information that is important for proving that your solution can help solve the problem.
	Presentation	Make sure your presentation is **confident**: ● Make eye contact. ● Enunciate and speak clearly. ● Use an appropriate tone of voice and speaking speed. ● Avoid stuttering, pacing, or fidgeting.
	Judge Questions	In your responses to judge questions: ● Prepare to use what you learned in your research to defend your reasoning. ● Prepare to discuss limitations of your solution.
	Teamwork	Make sure **all** of your team members actively **speak** in the 10 minute presentation and question period. This means going beyond a short comment, and meaningfully contributing to the discussion.
VISUAL AID	You will be provided with a large sheet of poster paper, which you can utilize to help explain your reasoning. Please do **NOT** spend too much time working on this poster. It is meant to help you present, **NOT** display every single piece of information you read. Your poster sheet **must** include: ● a title ● a short explanation of your solution ● short, clear bullet points of your main argument	

	You may also, but do not have to, include: ● any visuals or diagrams you can create that might help you explain your points ● page or source references the judges can look at

Example:
This is an example prompt and solution:
Please see Case Study Example in Appendix I
Please see Case Study Solution in Appendix II

CTB Live! The Elevator Pitch

What is The Elevator Pitch?

- The elevator pitch is a **non-graded but live broadcasted** component of the first day. You will be given a time slot during the day at the CTB Live! Studio to showcase your work and share your CTB experience.
- During this time, you will tell your CTB story with the camera that will be featured online via a partnered network and shared with general public!
- The elevator pitch is required to be **in Chinese**.
- This is a compulsory round and we ask all teams to participate.

Team Video Recording Structure:

- You will have a **5 minute** time slot, with approximately **3 minutes** of camera time. Make sure to be prompt and ready to go with what you want to say when your team is called. We want to hear your stories and learn about who you are and what CTB means to you.
- **Introduce the team:** Make sure to include your name, school, and city.
- **Share your experience:**
    - Present a condensed 3 minute pitch explaining your project.

OR

    - Comment on the CTB process:
        - What was the most important thing you learned during the CTB process?
        - What is your best CTB memory?
        - What were your greatest challenges or successes?
        - What are you most looking forward to during the competition?
        - What else do you want others to know about your project?

CTB Mixer

What is the Mixer?

The Mixer will take place in the evening of the first day of competition, and is a celebration of all of your hard work and commitment to CTB. We want you to take this as your opportunity to make new friends, connect, and share your thoughts and experiences will all the other CTB participants. Even though the mixer is an optional event, we want to help you celebrate your achievements in a warm and welcoming environment with a series of fun games and events while you wait for the results on the first day. The theme this year is **masquerade.** The word "masquerade" comes from the Old Italian word maschera, which refers to the masks that you wear when you attend masquerade balls. In preparation for the mixer, we ask that you and your team have some fun crafting and designing some masks prior to the start of CTB. **Bring these masks with you to wear during the mixer!** The dress code is formal.

Qualifying for Day 2

- Similar to previous years, only qualifying teams with a standing of **50% percentile** or up can advance to the second day of competition.
- The results will be announced at the end of day 1 before **23:59 Beijing Time** via email.
- The students who advance will be able to participate in one more round of competition on day 2, described below.
- If your team is not qualified, you are welcome to seek help at the Feedback Clinic, or attend the community fair the second day. Alternatively, you can treat it as a day off and return home early. However, you will not be able to observe the rest of other competition or attend the closing ceremony.
- You are responsible for making flexible travel plans and preparing yourself for both scenarios.

Program Overview: Day 2

Final Presentation

What is the Final Presentation?

- The objective of the final presentation is to provide you with a venue to **showcase** and **present** your work to a panel of high level expert judges. This round is meant to **comprehensively evaluate your research and implementation process** and your ability to **present and discuss your project in detail** in front of a large audience and some of the most distinguished judges. As the final round of CTB, the final presentation is an intensive and rigorous experience, where, if you advance, you will be competing for the top CTB awards.

Final Presentation Structure:

- There will be several presentations occurring at the same time. In each final presentation room, each team will have **11 minutes** to present to a panel of leading industry judges and experts while surrounded by peers. Presentation and defense will be exclusively in **Chinese.**
- You will be allowed to have one powerpoint slide projected to the audience, the details of which are explained below. You will **NOT** be able to use your board or your demo during this judging.
- The final presentation will be conducted in a large lecture room, meaning that you will be giving a presentation to both judges and your fellow CTB participants. We ask that when in the audience, you are cordial to the teams presenting and refrain from talking, interruptions, or any distracting behavior that may interfere with the ongoing presentation. Otherwise, you may face disqualification. Please be respectful of fellow teams.

Presentation:

- You will have exactly **5 minutes** to present your project to the judges. This will be followed by a **6 minute** question period.
- This is a highly structured round, meaning that you will be cut off directly at the 5 and 11 minute mark.

Rubric and Requirements
Here are the guidelines we will be using to evaluate your team during the fair process.

<table>
<tr><th colspan="3">Final Presentation</th></tr>
<tr><td>TIME</td><td colspan="2">Presentation: 5 minutes
Total time: 11 minutes including questions</td></tr>
<tr><td rowspan="5">CONTENT</td><td colspan="2">Language: Chinese

Prepare to engage in a meaningful conversation about your project. We are evaluating your research and implementation process and your ability to present and discuss your project in detail.</td></tr>
<tr><td>Research</td><td>Make sure to:
Clearly state and explain your research question and hypothesis.
Lead the judge through your research methodology and explain why it helps you answer your research question.
Tie your evidence and results to your hypothesis and discuss merits, limitations, and future applications of your research.</td></tr>
<tr><td>Implementation</td><td>Make sure to:
Show that you have taken your project beyond a plan. For any incomplete parts of your project, you need to provide specific steps for action.
Show that your project has a measurable impact on the community. What impact does your project have and how can you measure it?
Explain how your implementation is different from other implementations. What does it contribute to the field?</td></tr>
<tr><td>Organization</td><td>When you present your project:
Follow a logical order of information.
Make sure that the judges can see the relationship between your research question, your research methods and analysis, and your implementation and its impact.</td></tr>
<tr><td>Presentation</td><td>Make sure your presentation is confident:
Make eye contact
Enunciate and speak clearly.
Use an appropriate tone of voice and speaking speed.
Use appropriate vocabulary and phrasing.
Avoid stuttering, pacing, or fidgeting.</td></tr>
<tr><td>Judge Questions</td><td>In your responses to judge questions:
Prepare to discuss the research process and use what you learned to defend your reasoning.</td></tr>
</table>

		• Prepare to discuss the execution and implications of your implementation.
	Teamwork	Make sure **all** of your team members actively **speak** in the 11 minute presentation and question period. This means going beyond a short comment, and meaningfully contributing to the discussion.
VISUAL AIDS	Please reference the slide guideline in Appendix III. You are not allowed to have any other visual aids up with you. Make sure your slide is clear and all information is legible. Stay within the slide requirements, and **AVOID** heavy and dense text.	

Community Fair

What is the community fair?

- The community fair brings the mission of CTB full circle. It occurs on the second day of CTB and is mandatory for all projects that advance. The purpose of the community fair is to share your hard work and projects with parents, teachers, mentors, and members of the CTB community at large. You will be able to gain more exposure to all the student projects and see what lies at the core of CTB. We want you to be able to talk about your project and CTB experience with as many people as possible.
- Participating in the community fair will also provide you with the opportunity to win the **People's Choice Award**. As community members go through the fair, they will be able to vote for their favorite projects!

Feedback Clinic

Aside from the written feedback you receive from the competition events on day 1, if you do not advance to the second day, you may also sign up for a slot in the feedback clinic on day 2. The purpose of the clinic is to give you better context for where your project can grow and help you reflect on the CTB process. During the clinic, you will have the opportunity to present your work to judges in order to obtain detailed comments on what you can improve and develop further in your project. The reservation information will be provided in the result notification email. The clinic is meant to serve as a **complimentary** service for educational and counseling purposes only and will in no way change the competition result.

Awards Ceremony & Global Final Registration

At the conclusion of the second day, it is time to celebrate your achievements through the awards ceremony. This ceremony is meant to serve as a coming together for the CTB community to recognize the hard work everyone has put into CTB over the course of the year.

For those who successfully advance to the Global Final, registration will start after the ceremony where Global Final Kit Pack and U.S. Visa invitation letter will be available for pickup.

Awards & Judging

Scoring and Awards Structure

On the first day, you will undergo the fair and case study portion of the competition. Your scores from multiple judgings in these rounds will be factored in to determine whether or not you qualify for the round of competition on the second day. **50%** of teams will qualify as explained above. The scoring is based directly on the criteria and guidelines outlined above.

CTB National Trials Grand Prize (1 team each site)
CTB Young Innovator Award **National Trials Runner-ups** (2 teams each site)
CTB National Trials First Prize (Top 10% of teams at each site)
CTB National Trials Second Prize (Top 20% of teams at each site)
CTB National Trials Third Prize (Top 30% of teams at each site)
Specialty Awards **CTB National Trials People's Choice Award** **CTB National Trials Individual Achievement Award**
National Finalists (All Sunday contestants)
National Semi-Finalists (All Saturday contestants)
Completion Certificate

Advancing to CTB Global Finals

The top teams from both Beijing and Shanghai will have the once-in-a-lifetime opportunity to showcase their project at The CTB Global Finals held at Harvard and MIT throughout April 19th-25th, 2019. Additional college tours to meet the admissions officers from partnering universities will be held after the competition from 25th to 27th.

The CTB Global Finals take China Thinks Big to the international stage, where top contestants gain exposure to premier US universities, connect face-to-face with professors, and network with current students and industry professionals. It is a chance for students to not only develop important skills sought after by the world's best universities but also directly interact with many of these schools. Contestants from last year's Global Finals attracted extraordinary attention from Harvard, MIT, Stanford, Yale and many other top colleges, and many went on to later receive admissions offers from these schools.

- Interact with leading Harvard and MIT professors who posed the official CTB challenges that form the cornerstone of this year's competition.
- Engage with local innovators, start-ups, and labs to see innovation at its best and discover new ideas for taking your own project above and beyond
- Exchange ideas with a community of like-minded peers and aim to improve and cultivate your project
- Pitch your research to top judges and receive evaluations and feedback
- Strive to earn the title of China Thinks Big Global Grand Prize winner!

Details and Logistics

Qualified contestants are expected to have a valid passport before registering on-site. The Global Final Kit Bag and visa invitation letter will be distributed after the Award Recognition.

Date: Apr 19-25, 2019 **Global Final Competition**: Harvard and MIT
Apr 25-27, 2019 **College Awareness Program**: invitation-based visits to top IVY universities. Seats limited.

Cost*: Registration: 180 USD (1200 RMB)
Global Final Competition: 5,500 USD (36,850 RMB)
Cost for invitation-based College Awareness Program varies by destinations, and will be announced separately.

*The fee covers a package including all onsite education program, competition, international travel, lodging, intercity travel in the States, and food during competition. Contestants departing from outside China should inquire separately about travel cost.

Appendix I: Case Study Example: Urban Planning

Introduction

In recent years, thousands of electric scooters have popped up in car-centric cities around the world. These dockless, rent-by-the-minute scooters are GPS-tracked so that riders may locate them easily and end their rides without having to return them to a designated location. While these e-scooters are low-cost and emission free, their sudden appearance in many cities has also sparked criticism from officials and locals alike. Many safety concerns arising from scooter-related accidents and violations have yet to be addressed, and questions of liability have largely been left unanswered.

As more cities consider the addition of electric scooters, smart action by city officials is required to reconcile the interests of cities, scooter share companies, riders, and pedestrians. The following case study presents a scenario in which you will be asked to integrate these various perspectives on e-scooter expansion.

Scenario

New York City is the most densely populated major city in the United States, and houses the headquarters of thousands of companies. Though it has an extensive bus system and one of the largest subway systems in the world, increasing congestion has lead residents and workers of this city to clamor for better transportation. As a result, the City Council is considering a bill that would legalize electric scooters, which are currently banned. Opponents believe that without proper lanes, electric scooters are unsafe and will cause more traffic, while proponents argue that without the option of e-scooters, commuters will turn to taxis and ride-shares that put more cars on roads.

Task

You are a New York City council member who has sponsored the recent bills pushing for the legalization of electric scooters under State and City law. Your goal is to propose a plan that would best incorporate electric scooters operated by multiple companies into the city's transportation system while also:

- Satisfying the transportation needs of riders
- Ensuring the safety of e-scooter riders, car drivers, pedestrians, and the scooters themselves
- Updating the city's infrastructure to best accommodate e-scooters

Background

SOURCE 1: Overview of Electric Scooter Sharing Programs

Title: "Meet the New Urban Menace: The State of the E-scooter"
Author: Molly McHugh
Date of Publication: Jun 1, 2018

Source Type: News Article

Summary:
This excerpt from an article that questions the future of electric scooters provides a brief overview of the various electric scooter sharing programs (ie. docked versus dockless) in the United States. Advantages and disadvantages of different programs are reviewed. It explains how these new vehicles can be used and how companies have been profiting from the sharing programs.

Excerpt:
The e-scooter sharing model is simple: You use an app to locate and unlock a scooter. The app has your credit card information stored, and it charges you for the unlock and for the amount of time spent on the vehicle. When you're done, you ditch it. It's part of the "first mile–last mile" solution, a mode of transportation that gets you home from the bus stop or from the grocery store to the subway, be it via an Uber car or a scooter. The scooter invasion happened quickly—and without regulation—and has escalated from a mock-worthy San Francisco trend to a serious sidewalk danger.

The e-scooter phenomenon is not a passing craze, and they are not without value. Using e-scooters for a short ride is better for the environment than taking an Uber, for instance. (Though not better than a bike, so it depends on what's being replaced.) They are quickly becoming ubiquitous in major cities and filling their sidewalks, and scooter-sharing business models are giving way to a whole new subsector of transit: micro-transportation. The industry has grown rapidly; consider this an update on the state of the e-scooter.

Docked vs. Dockless
There are two kinds of e-scooter sharing programs: docked and dockless. In the former, users have to return their rental scooters to a dock location and lock them to the station via app, which is also how they find and unlock the devices. Most well-known bike share companies use docking stations. Meanwhile, all of the major e-scooter models are dockless. This model allows users to grab scooters wherever they find them and leave them wherever they please.

The benefit to dockless scooters is that riders grab and leave them at starting and ending locations, so users go exactly where they want without having to seek out a dock. The con, of course, is that it can lead to sidewalks full of tipped over, abandoned scooters. These eyesores aren't only obnoxious to look at, but a hazard for pedestrians and cyclists.

The other issue with dockless e-scooters is vandalism and litter. Scooters have been found in many places they shouldn't be (i.e., in trees, bodies of water) and covered in things you'd rather not think about (i.e., body waste). Pedestrians, cyclists, and drivers alike are frustrated not only by electric scooters crowding streets and sidewalks, but also with the new hazards they bring with them. Many riders don't wear helmets, something the companies are supposed to require and are struggling to enforce. And on the other side of the discussion are those using the scooters, who defend them as a quicker, more viable way to finish off their commutes, or to save extra time getting around in places where, in some cases, public transportation is unreliable or inefficient. The e-scooter revolt is real.

SOURCE 2: The Future of Electric Scooters

Title: "The Year Of The Scooter: The Good, The Bad, And The Road Ahead"
Author: Regina Clewlow

Date of Publication: Dec. 21, 2018
Source Type: News Article

Summary: The author discusses the pros and cons of the budding e-scooter presence in cities. While motions for better infrastructure and coordination among cities and share companies have much public support, many questions have arisen in regards to the safety of these scooters. The author also discusses the future influence of electric scooters on cities.

The Good: Better Data and a New Coalition for Pedestrian and Bike-Friendly Streets

There are two important conversations that the arrival of electric scooters has forced upon cities: 1) regulation and active management of mobility services; and related to this: 2) redesigning urban space to make it easier to get around without a car.

Regulation and active management of mobility by cities. "They arrived overnight, without warning." This was a common narrative, where hundreds of scooters might arrive in a city without prior notification or coordination with transportation officials.

From the perspective of someone who has built software for public agencies such as the Bay Area Metropolitan Transportation Commission to plan for the future of transportation for more than a decade, access to better data for the public sector is crucial. Without it, major transportation policy and planning decisions are essentially being made in the dark.

Lack of coordination between private mobility services, public transportation services, and use of public space (i.e. roads, sidewalks, and curbs) leads to lower efficiency, greater inequality, and roads that are less safe because cities are unable to design streets meant to accommodate these new transportation options. With data, which cities now have, transportation planners can design sensible policies and transportation plans that can integrate these new services.

Redesigning urban space for bikes, and yes, scooters. Perhaps the most important contribution of the micromobility revolution has been the groundswell of support for bike- and scooter-friendly infrastructure. Active transportation planners have been calling for more, and better protected, bike lanes for decades. Some bike advocacy groups initially resisted bringing electric scooters into the fold, but have come around, while others still resist doing so. They shouldn't.

Never before has there been this much public support for the creation of more bike lanes and infrastructure. And with better data, cities are now armed with the information they need to justify carving off on-street parking and lanes previously dedicated solely to cars – reclaiming that space for bikes, and yes, scooters too.

The Bad: Questions Arise About Safety and Vehicle Durability

How safe are scooters? We don't really know. As scooter adoption has continued to grow, so have reports of accidents, injuries, and in a few cases, deaths. The CDC recently announced that the first study on the scooter safety would be conducted. It is clear that cities and public health officials need better information about the safety of these vehicles, and to design policies and strategies to ensure that these new transportation options are in fact safe for riders as well as pedestrians.

Many would argue that one of the most important actions cities can take for safety is expand and protect bike lanes. The most severe injuries for anyone riding a bike, electric bike, or electric scooter are likely to occur when that rider collides with a car. Similarly, if you were to ask most scooter riders why they ride on sidewalks, instead of in the streets, the most common reason is that they don't feel safe riding directly alongside cars, which continue to grow alarmingly in size. The solution: cities should take back streets to focus on moving people, not the single occupancy vehicles that currently dominate most travel.

The need for more durable vehicles. The scooters (and bikes) that were initially deployed by Bird, Lime, and Spin were not designed for the beating that they ended up receiving in a shared business model. It is clear that hardware improvements are already being made. JUMP, one of the most seasoned veterans of bikeshare, recently unveiled the next generation of their electric bikes, which are harder to vandalize. Expect more to come in 2019. These companies are going through growing pains, but they are learning and adapting along the way.

The Road Ahead: Collaboration as a New Way of Doing Business

If dockless electric bike and scooter companies can find more ways of partnering with cities to win them over, they'll continue to accelerate their impressive growth. Nearly 50% of trips in the United States are less than 3 miles, and more than 70% of those trips are made by car. The path to exponentially grow trips by electric scooters (and bikes) is for cities and micromobility providers to work hand in hand to take back city streets - to move more people, not cars.

SOURCE 3: Report on Electric Scooter Use (can omit the last 3 pages)

Title: "San Francisco Scooter Use Survey Results"
Author: Lime
Date of Publication: June 19, 2018

Finding 1: Sidewalk riding is less common than expected, and would decrease significantly with more protected bike lanes.

Only 8% of our riders reported riding primarily on the sidewalk.

They do so primarily because the sidewalk feels safer than the street.

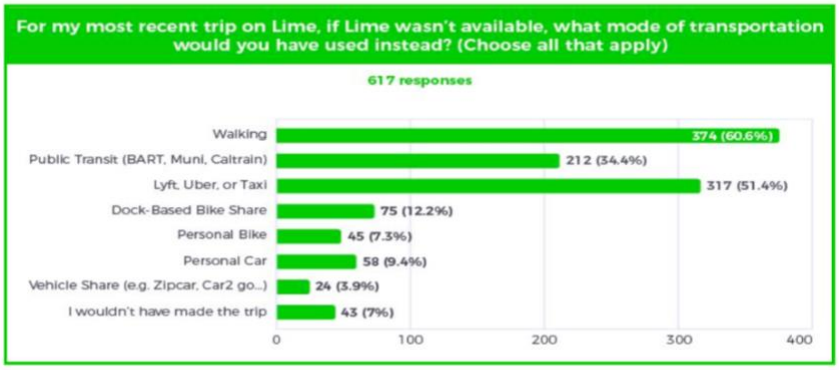
Source Type: Report

Summary: This report was issued by Lime, an electric scooter share company based in San Francisco, CA. It surveys the opinions of e-scooter users in San Francisco on topics including scooter safety, city infrastructure, and common commute times. More information on how the survey was conducted is included in the report.

Excerpt: "We issued a survey to 7,000 randomly selected riders who had completed a ride within San Francisco city limits riders to try to better understand how and why people use our scooters. We received over 600 responses, where we learned what users' experience with Lime were like as well as their opinions about city policy on scooters. Key findings are summarized below, and we plan on using them to inform how our operations can improve."

Finding 3: Lime scooters are replacing single occupancy vehicle trips, particularly Lyft and Uber rides.

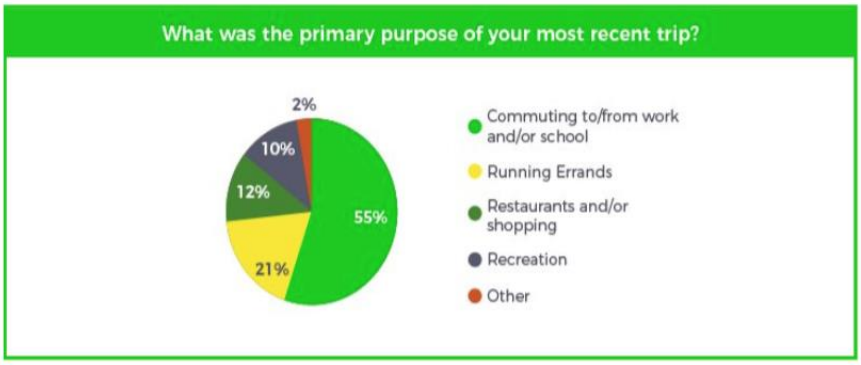
Over 50% of riders said they would have taken a taxi or rideshare service instead. Nearly 65% would have taken some form of automobile.



**Also important to note that 7% of users would not have otherwise made the trip without Lime. This shows that Lime is improving mobility for San Franciscans.

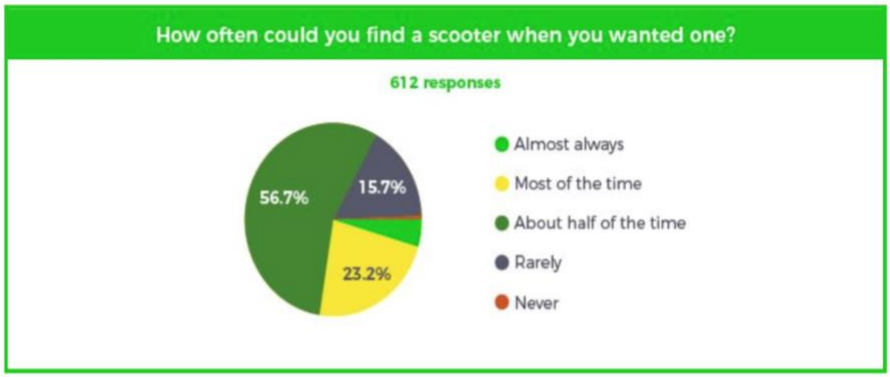
Finding 2: Riders combine scooters with public transportation for their workday commutes.

Riders are primarily commuting on scooters, but a surprising amount are also using Lime to run errands.



Finding 4: Riders believe San Francisco needs more scooters.

Only about a quarter of riders could find a scooter when they needed one; more scooters further reduce automobile trips in the City.



Lime riders overwhelmingly believe that San Francisco needs more scooters.

***This is not a surprising outcome from our survey respondents (who already use scooters), but coupled with the previous data on the difficulty to find a scooter, it demonstrates the need and desire for more scooters.*

SOURCE 4: Report on Micro-Mobility and Perceptions of Electric Scooters

Title: *The Micro-Mobility Revolution: The Introduction and Adoption of Electric Scooters in the United States*
Author: Populus, a data platform for private mobility operators and cities to deliver safer and more efficient streets
Date of Publication: July 2018
Source Type: Report

Summary: This report includes statistics on the rise of electric scooters in American cities and also discusses key factors that may have contributed to the e-scooter's rapid pace of adoption. Electric scooters are also compared to other mobility services that were recently adopted in the U.S. The

report also considers how e-scooters may attract a more diverse group of users than current modes of transportation.

THE RAPID ADOPTION OF ELECTRIC SCOOTERS IN U.S. METROS

Although commercial shared electric scooter services have been available for less than 12 months in the U.S. market, the adoption of these services has grown at an unprecedented pace, mirroring the investment that they have attracted in venture capital. Figure 1 presents the adoption curves in major metropolitan areas for ride-hailing (i.e. Uber and Lyft), carsharing, bikesharing, and electric scooters (e-scooters) based on Populus 2018 Groundtruth data and the limited academic research available on these topics.

Prior data on traditional carsharing services (i.e. Zipcar) suggest that 2% to 3% of the population over the age of 18 in metropolitan areas were members of carsharing services in 2012 and 2013,[1] approximately 12 years after these companies launched commercial service. In comparison, e-scooter sharing has been available for less than 12 *months* (less than 5 months in most markets), and have already experienced an average adoption rate of 3.6% across major cities, as measured by the percentage of people who have ever used these services (Fig.1). There is significant variation by market.

Prior research on the rapid growth of ride-hailing services combined with this new analysis suggest that the adoption of new mobility services continues to accelerate. There are a couple of key factors that support a more rapid pace of adoption:

1. The widespread proliferation of GPS-enabled smartphones has made it possible for the majority of Americans to easily access smartphone-based mobility services. Smartphone adoption has risen from 35% in 2011 to 77% in 2018,[2] and is likely higher in the regions where we have focused our analysis.

2. Traffic congestion in most major U.S. cities continues to increase. In many urban areas, it is faster to travel short distances of 3 miles or less using an e-scooter or human-powered bike than driving a car or using a ride-hailing service.

3. The amount of private financing available for transportation services has grown dramatically, enabling private mobility service companies to deploy larger fleets in a much shorter period of time. Greater supply leads to more convenient access - which ultimately leads to faster adoption.

SOURCE 5: Legalization of Electric Scooters in New York City

Title: "New York City could finally make electric bikes and scooters legal — and Bird is already gearing up to launch"
Author: Graham Rapier

Date of Publication: Nov. 29, 2018
Source Type: News Article

Summary:
New York City is America's largest, bustling city- yet electric scooter sharing programs have not been implemented in the Big Apple. This article discusses the new bills city council members have proposed to bring electric scooters into New York streets. Key legal issues on incorporating these electric scooters are given.

Excerpt:
America's largest city is still a no-man's land for electric bikes and scooters. While dockless scooters are all the rage in cities across the United States, New York has remained on the sidelines. Electric scooters are still illegal on city streets, and electric bikes are limited to "pedal assist" versions which accelerate only when the rider is pedaling. That could soon change.

Three city council members on Wednesday introduced a package of four bills which would legalize most e-bikes as well as electric scooters. One bill would legalize their presence (up to 15 mph) while another would create a pilot program similar to the current one with dockless Lime bikes in areas not served by adequate public transit in Staten Island, the Rockaways, and the Bronx.

In a statement, Lime's senior director for the east coast, Phil Jones, said the company supports the legislation as a way to provide "reliable and affordable" transportation for all New Yorkers.

The key legal issue for electric bikes and scooters currently is how they're classified under the law. This legislation would change that, one of the sponsors said.

"What we're trying to do is classify the e-bikes and scooters as devices instead of vehicles," Councilman Rafael Espinal, a sponsor of the bill, told the Times. "The mayor's position has always been that e-bikes are a nuisance, a problem, within the five boroughs. I think we found a path forward."

It's unclear if Mayor Bill de Blasio — who has a contentious relationship with electric bikes, and has been criticized for the ticketing and seizure of delivery bikes— will support the bill.

A City Hall spokesperson said that "While e-scooters are illegal under State and City law, the Mayor is committed to innovation as part of his all-of-the-above transportation strategy to get New Yorkers moving again. We look forward to reviewing the proposals."

SOURCE 6: Overview of Issues Facing Electric Scooter Incorporation in New York City

Title: "Electric Scooters in New York City? They Just Might Work" & "Fed-up locals are setting electric scooters on fire and burying them at sea"
Author: *New York Times* Editorial Board; Laura Newberry
Date of Publication: Aug. 18, 2018; August 10, 2018
Source Type: News Article

Summary:
The New York Times discusses the possible benefits that electric scooters can bring to New Yorkers as long as certain policies and changes are implemented. Electric scooters may be able to help city

residents reach their destinations faster and avoid heavy car traffic, but as this article points out, these new vehicles have not been quite popular in big cities.

Excerpt:
The dysfunctional subway system notwithstanding, there's no shortage of ways to get around New York City these days — buses, bikes, taxis, mopeds, Uber, Lyft, Via, ferries, even roller skates.

It'd seem natural, then, to welcome warmly electric bicycles and scooters, the latest in for-hire wheels. So the question for New Yorkers is this: Can the city's traffic-clogged streets support yet another mode of transportation?

But, to be useful, these vehicles also need to get people to their destinations in one piece. Also powered by batteries, scooters can travel as fast as 15 miles per hour and are meant to be ridden in bike lanes. Electric scooters are currently illegal in New York, but at least one company, Bird — yes, a name four letters or less does seem to be required in this sector — already is exploring introducing them here in coming months; other services will surely follow.

So far, scooters — or, really, their riders — have not universally won over cities where they've landed. Yes, both scooters and e-bikes are useful to people who cannot get on a regular bicycle for health or fitness reasons, or who prefer not to arrive at work drenched in sweat. But in certain places, pedestrians have been imperiled by users riding scooters on sidewalks. And that dangerous tendency is only where the complaints begin.

San Francisco banned all scooters in June until officials come up with regulations, which should prod their counterparts in New York to proactively do so.

First up, the city must ensure that New York doesn't meet the fate of virtually every city where these vehicles have arrived — finding thousands of scooters haphazardly dumped onto sidewalks one day. Will Bird and others agree to an initial pilot program? Perhaps concentrating first on neighborhoods outside Manhattan that are transit deserts?

It might also make sense to keep scooters outside the busiest neighborhoods, like Midtown, where sidewalks are so crowded that pedestrians often spill over onto the streets. (Rental companies have the ability to remotely lock devices and restrict where they are used.)

The services must also be accessible to all New Yorkers. Citi Bike already offers discounted rates to residents of public housing and to food stamp recipients, and the same should be expected of new entrants. (Bird, for one, says it would do both.)

Safety, however, is the most urgent priority. City officials have to be a lot more serious about protecting people using bike lanes, whether on a bike or a scooter. Lack of protection has been a problem for many years.

New York needs more bike lanes that are behind parked cars and other barriers, which shield bikers and scooter riders from traffic and make it harder for cars, vans and trucks to park in them. Bird has pledged to help pay for such improvements through what it calls its Save Our Sidewalks initiative, promising city governments $1 a day per vehicle on their streets. It's an offer New York shouldn't refuse, and other scooter and bike rental firms should pony up funds, too.

SOURCE 7: Need to Fix Transportation in NYC

Title: Transit Problems Threaten New York's Economic Future
Author: Julie Samuels
Date of Publication: February 19, 2018
Source Type: News Article

Summary: In 2018, Amazon announced it would be looking for a city to host its second headquarters. Since these new headquarters would bring in thousands of jobs, major cities across the United States essentially competed for Amazon's attention by trying to demonstrate the advantages of basing the company there. In this opinion article, the author bemoans the state of transportation in New York City and explains how inefficient transport might lose them the competition.

Excerpt:

Amazon announced that New York is one of the finalist cities that may host the company's new second headquarters.

Amazon is a unique corporate behemoth, but its "HQ2" decision-making process provides a clearer sense of what many companies consider when they decide where to build and grow. Along with a concentration of tech talent, proximity to institutions of higher education, and potential tax incentives, Amazon made it clear that "direct access" to a robust transit network is a core criterion for its HQ2 location.

Transportation matters to Amazon and other companies because it matters to employees. No one wants a difficult commute. When transportation fails, productivity and efficiency suffer, inevitably slowing down business. Last year, the New York City comptroller's office found that 74 percent of surveyed riders had been late to a work meeting because of subway delays. The city's Independent Budget Office estimated the annual economic cost of subway delays is about $307 million.

It's time for our policymakers to recognize and address our transit crisis as an economic crisis too: It's a critical threat to New York's long-term workforce development. Ending this crisis requires a firm and extensive commitment to investing in our transit infrastructure. If New York wants to win the competition for Amazon and, perhaps more important, the startup that becomes the next Amazon, properly-implemented congestion pricing offers the best available option to provide a steady revenue stream for improving our mass transit system.

The region's subways, buses and commuter rail should represent the pinnacle of American urban transit. New York's subways carry 5.7 million riders daily, accounting for 70 percent of American daily rail rides. Extensive and regular trains and buses enable a U.S.-leading 56 percent of households in our city to be car-free.

Everyone acknowledges that the trains and buses need fixing. Congestion pricing offers one good way to work ourselves out of this mess. By charging individual vehicles entering Manhattan below 60th Street, congestion pricing could deliver around $1 billion of annual gross revenue. If every dollar is dedicated to transit improvements in the five boroughs, and the proposal is tied to sorely needed MTA reforms, then we could get subways and buses moving again.

SOURCE 8: Overview of Bike Lanes in NYC

Title: NYC designs the future of safer intersections for cyclists
Author: Diana Budds
Date of Publication: Oct 1, 2018
Source Type: News Article

Summary: This article describes different kinds of bike lanes and their impact on biker and pedestrian safety in New York City, based on a study from the US Department of Transportation.

Excerpt:

Over 1,000 miles of bike lanes snake through New York City, and every year since 2015, the Department of Transportation (DOT) has added at least 50 more miles. Streets are safer today than in years past, but the city is far from reaching its Vision Zero goals of no fatalities from car collisions. In 2017, 4,397 cyclists were injured in car crashes and 25 cyclists died. Parked cars and trucks routinely block bike lanes. Community boards sometimes oppose protected bike lanes. New modes of transportation are coming, and street design is woefully obsolete.

"89 percent of crashes occur within intersections, our Transportation Planning and Management team was charged with doing a clear-eyed analysis of how we could further improve intersections to keep cyclists safe, especially as vehicles turn."

Two of the designs are already established in the city: the "Mixing Zone" intersection where bikes and turning vehicles share space—like a bike lane converging with a turning lane—and have been shown to reduce crashes by 27 percent. The "Fully Split Phase" intersection has separate traffic signals and lanes for bikes and cars; it reduced crashes by 54 percent. DOT recommends prioritizing this design for two-way streets with wider intersections.

DOT piloted two new designs for the study, which focused on Manhattan. In the "Delayed Turn" intersection, vehicles and bikes share a Mixing Zone-like lane but bicycles get a head start with the signal. The "Offset Crossing" or protected intersection, separates bicycles and turning vehicles with things like pedestrian crossing islands, flexible bollards, and contrasting paint on the pavement.

A Fully Split Phase intersection gives cyclists and vehicles separate lanes and signals.

The study concluded that Mixing Zone and Fully Split Phase intersections have substantial bike crash reductions following installation. It also found that Delayed Turn and Offset Crossing intersections make cyclists feel comfortable and reduce conflicts with vehicles, like crashes and right of way confusion.

The Delayed Turn intersection gives bikes a few seconds head start on green lights. DOT plans to build more offset crossings—which are fairly new to North America but established in Europe—as a result of the study. Ninety-three percent of bicyclists surveyed reported feeling safe riding through Offset Crossing intersections compared to just 65 percent in Mixing Zones.

Appendix II: Crafting Your Case Study Pitch

Task

You are a New York City council member who has sponsored the recent bills pushing for the legalization of electric scooters under State and City law. Your goal is to propose a plan that would best incorporate electric scooters operated by multiple companies into the city's transportation system while also:

- **Subtask 1:** Satisfying the transportation needs of riders
- **Subtask 2:** Ensuring the safety of e-scooter riders, car drivers, pedestrians, and the scooters themselves
- **Subtask 3:** Updating the city's infrastructure to best accommodate e-scooters

Here is a **potential example** of how you could answer the above prompt. You will not be writing a response for the case studies, but this is how you could potentially structure your pitch.

Pitch Intro
With bills pushing for the legalization of electric scooters underway, we are here to advocate for the adoption of new safety standards and urban infrastructure that will better support the transportation needs of civilians in New York City. In the process, we will outline a clear proposal with various calls to action, synthesizing sources that comment on the process of accommodating electric scooters in other cities around America and applying those ideas to this particular situation.

Response to Subtask 1:

Main Argument: First, we propose doubling the number of e-scooters present in the city. Why double, you may ask?

Supporting Claims backed up with Evidence:

- As survey results from Source 3 show, scooters can serve as suitable substitutes for single-occupancy vehicle trips; in fact, nearly 65% of those surveyed said that they would have taken some form of automobile otherwise. However, a majority of riders (56.7%) surveyed claimed that they could only find a scooter when they needed one about half of the time. Thus, we propose compensating for this shortage by doubling the number of scooters, which would help offset the current absence felt by riders.
- Furthermore, despite New York City's well-integrated transportation system, traffic congestion remains a major problem; according to Source 7, subway failures and delays are also common. Thus, besides contributing to a reduced carbon footprint in the city, an increase in the number of e-scooters would offer a reliable alternative to less eco-friendly, less-dependable transportation means currently present, especially when most riders in major cities are only commuting short distances, which we see in Source 3 as well.
- Statistics also show that "7% of users would not have otherwise made the trip without Lime," demonstrating that scooter companies are actually increasing mobility for San Franciscans. Consequently, increasing the number of e-scooters contributes to greater transportation equity.
- As Sources 4 and 6 claim, e-scooters are low-cost and easily accessible by city residents regardless of socioeconomic status. By increasing the accessibility of e-scooters, we help

satisfy the transportation needs of city-goers, especially those who benefit most from more economical forms of transportation.

Response to Subtask 2:

Main Argument: Next, we propose various measures to ensure the safety of both pedestrians and e-scooter users, the first of which is increasing the number of protected bike lanes present on city streets.

Supporting Claims backed up with Evidence:

- Though building lanes solely designated for e-scooters would be ideal, the inclusion of more protected bike lanes would solve many of the same problems while simultaneously posing less of a bureaucratic burden on city officials since many bike lanes are already present on the city's streets, leading to the faster adoption and assimilation of e-scooters in the city.
- We also suggest setting a city-wide speed limit of 15mph on e-scooters, which falls in line with a current bill being debated in the city (according to Source 5), in order to reduce the intensity of injury in the case of an accident.
- Lastly, we hope to enact legislation that will prevent vehicles from parking in bike lanes intended for e-scooters, as according to Source 8, parked cars and trucks routinely blocked bike lanes and posed a danger to cyclists, resulting in both injuries and deaths.

Response to Subtask 3:

Main Argument: Finally, we propose a major upgrade and expansion of New York City's bike lanes.

Supporting Claims backed up with Evidence:

- According to Source 3, Lime riders who rode primarily on the sidewalk did so because it felt safer. Of these sidewalk riders, 73% reported that protected bike lanes would increase their likelihood of riding on the street. Thus, more bike lanes would make scooter riders feel safer and alleviate the concerns of pedestrians worried about sharing sidewalks with e-scooters.
- According to Source 8, there are over 1000 miles of bike lanes in New York City; however, in 2017, 4,397 cyclists were injured in car crashes and 25 cyclists died. Eighty-nine percent of crashes happened in intersections; thus, we propose implementing Fully Split Phase intersections and Offset Crossing intersections.
    - The Fully Split intersection, which has separate traffic signals and lanes for bikes and cars, was found by a DOT study to reduce bike crashes by 54%. The "Offset Crossing" or protected intersection, which separates bicycles and turning vehicles with things like pedestrian crossing islands, flexible bollards, and contrasting paint on the pavement, was found to make cyclists feel more comfortable and reduce miscommunication between cyclists and drivers. Ninety-three percent of bicyclists surveyed reported feeling safe riding through Offset Crossing intersections. Therefore, increasing the number of bike lanes and specifically adapting intersections to become more micro-mobility friendly would drastically improve e-scooter safety and comfort in the city.

Here are some notes we took on all of the sources, so you can see what potential arguments you could develop with all the different types of information provided.

Breakdown

Task: *You are a New York City council member who has sponsored the recent bills pushing for the legalization of electric scooters under State and City law. Your goal is to propose a plan that would best incorporate electric scooters operated by multiple companies into the city's transportation system while also:*

1. Satisfying the transportation needs of riders

- We should increase the amount of e-scooters in the city so that riders' needs are met and traffic congestion in countries decreases.
    - Source 3:
        - Scooters are contributing to less vehicle trips.
        - Study also claims that "7% of users would not have otherwise made the trip without Lime. This shows that Lime is improving mobility for San Franciscans."
    - Source 4:
        - Due to advances in private financing of companies, a greater supply of e-scooters will lead to greater convenience for riders.
        - This would decrease traffic congestion
    - Source 7:
        - The city could motivate residents to avoid driving using a congestion tax, offering e-scooters as a transportation alternative. "By charging individual vehicles entering Manhattan below 60th Street, congestion pricing could deliver around $1 billion of annual gross revenue"
- E-scooters increase transportation equity and ease of access to less expensive modes of transportation in cities.
    - Source 4:
        - Women prefer e-scooters over bikes.
        - E-scooters also seem to be preferred by lower-income groups (percentage changes include the figures).
        - E-scooters are more affordable than other modes of transportation.
    - Source 5: Lime e-bike pilot program servicing area with lack of public transit success
    - Source 6:
        - Can easily be made accessible to city residents regardless of socioeconomic background
        - Service transit deserts
- E-scooters offer an alternative to failing and often delayed subways
    - Source 7:
        - 74 percent of surveyed riders had been late to a work meeting because of subway delays.
        - Only 65 percent of our weekday subways arrive on time – the worst rate of any major transit system

2. Ensuring the safety of e-scooter riders, car drivers, pedestrians, and the scooters themselves

- Speed limits on e-scooters
    - Source 5: may be legalized up to 15 mph
- Preventing e-scooters from being ridden on sidewalks

    - Source 6:
        - Pedestrians angry over such riders
        - Keep scooters outside of busiest neighborhoods
- Adding bike lanes or e-scooter-specific lanes so that riders feel safer and the chances of collision with automobiles and pedestrians decreases.
    - Source 3:
        - Not many riders actually ride on sidewalks (8%); most ride on the streets.
        - Those who do ride on sidewalks do so because they feel safer than riding on the streets
- Preventing cars and trucks from blocking/parking in bike lanes
    - Source 8:
        - 2017, 4,397 cyclists were injured in car crashes and 25 cyclists died. Parked cars and trucks routinely block bike lanes.

3. Updating the city's infrastructure to best accommodate e-scooters

- Adding bike lanes so that riders get off sidewalks and main roads.
    - Source 3:
        - Not many riders actually ride on sidewalks (8%); most ride on the streets.
        - Those who do ride on sidewalks do so because they feel safer than riding on the streets
            - However, the "Note" below is important. If students use this point to back up their claims, they should be able to argue why riders on the road (since the survey question was only addressed to those who ride on sidewalks) would also prefer more bike or e-scooter lanes.
    - Source 6:
        - Bike lanes that are behind parked cars and other barriers, which shield bikers and scooter riders from traffic and make it harder for cars, vans and trucks to park in them
- Implementing specific new kinds of bike lanes:
    - Source 8:
        - Mixing Zone and Fully Split Phase intersections have substantial bike crash reductions following installation (27% and 54%). A Fully Split Phase intersection gives cyclists and vehicles separate lanes and signals
        - Ninety-three percent of bicyclists surveyed reported feeling safe riding through Offset Crossing intersections

Team ID: #

Appendix III: Slide Sample

You can format your slide in any way you like, but it should only include the following:

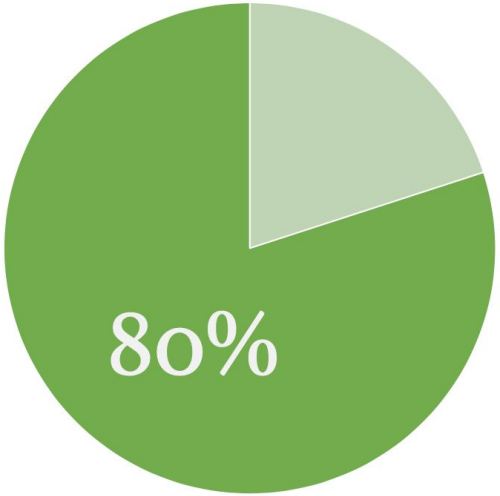
- Title
- Team ID in top right hand corner
- 1 or 2 key images relating to your project (demo, important chart, etc.)

EXAMPLE SLIDE

Team ID:
123456

BioBricks

Engineering Sustainable Housing
Material from Agricultural Waste



ENERGY SAVED
per house built
With **BioBricks**