**Scenario**

https://d3c33hcgiwev3.cloudfront.net/imageAssetProxy.v1/N5H0A-s-S3G5J81EkyrMxw_5a679ae844f443c781c604282e2b62f1_image.png?expiry=1697846400000&hmac=p2dnSs1tQoeybjAHRjflWcS_hr9p3QhY2mAvu_5SM4U

Your Waze team is nearing the midpoint of their project to develop a machine learning model to predict user churn. So far, you’ve completed a project proposal, and used Python to explore and analyze Waze’s user data. You’ve also used Python to create data visualizations. The next step is to use statistical methods to analyze and interpret your data.

You receive a new email from Sylvester Esperanza, your project manager. Sylvester tells your team about a new request from leadership: to analyze the relationship between mean amount of rides and device type. You also discover follow-up emails from three other team members: May Santner, Chidi Ga, and Harriet Hadzic. These emails discuss the details of the analysis. A final email from Chidi includes your specific assignment: to conduct a two-sample hypothesis test.

***Note:*** *All names used in this workplace scenario are fictional and are not representative of Waze.*

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**Email from Sylvester Esperanza, Senior Project Manager**

**Subject:** New Request - Analyze rides based on device type

**From:** “Sylvester Esperanza,” Sylvester@Waze

**Cc:** “May Santner,” May@waze; “Harriet Hadzic,” Harriet@waze**;** “Chidi Ga,” Chidi@waze

Hello, data team!

Excellent work so far. The leadership team is impressed with the results, especially the analysis on the last report!

On that note, they have requested a new deliverable be added to the initial project scope. They would like a statistical analysis of ride data based on device type. In particular, leadership wants to know if there is a statistically significant difference in mean amount of rides between iPhone® users and Android™ users.

Should you conclude that the difference in mean amount of rides between iPhone users and Android users is statistically significant, please discuss next steps: what are your thoughts on strategies our team could implement to address these differences, such as improving user experience on a specific device?

Many thanks!

Sylvester Esperanza

Senior Project Manager

Waze

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**Email from May Santner, Data Analysis Manager**

**Subject:** RE: New Request - Analyze rides based on device type

**From:** “May Santner,” May@waze

**Cc:** “Harriet Hadzic,” Harriet@waze**;** “Chidi Ga,” Chidi@waze**;** “Sylvester Esperanza,” Sylvester@Waze

Thanks, Sylvester.

It’s great to hear leadership is happy. I’m reminded again what a great data team we have!

Please tell leadership we will provide them with this analysis in two weeks time.

@Chidi, my initial thought is for us to conduct a two-sample t-test to analyze the difference in the mean amount of rides between iPhone users and Android users. What do you think?

Thanks,

May Santner

Data Analysis Manager

Waze

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**Email from Chidi Ga, Senior Data Analyst**

**Subject:** RE: New Request - Analyze rides based on device type

**From:** “Chidi Ga,” Chidi@waze

**Cc:** “May Santner,” May@waze;“Harriet Hadzic,” Harriet@waze**;** “Sylvester Esperanza,” Sylvester@Waze

Hi all,

@May, I agree with you on hypothesis testing. We’ll share a summary of the results before we present to leadership.

We’ll get started right away.

Thank you,

Chidi Ga

Senior Data Analyst

Waze

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**Email from Harriet Hadzic, Director of Data Analysis**

**Subject:** New Request - Analyze rides based on device type

**From:** Harriet Hadzic,” Harriet@waze

**Cc**: “May Santner,” May@waze; “Chidi Ga,” Chidi@waze**;** “Sylvester Esperanza,” Sylvester@Waze

I support this plan of action. Thank you all.

Harriet Hadzic

Director of Data Analysis

Waze

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**Email from Chidi Ga, Senior Data Analyst**

**Subject:** New Request - Analyze rides based on device type

**From:** “Chidi Ga,” Chidi@waze

Hi there, fellow data guru!

You’ve been handling all of this work really well, by the way. Excellent job.

I was wondering if you’d like to try the hypothesis test on the user data yourself? Based on what you’ve shared with me, I’m confident you have all the skills and experience needed for this task.

What do you think?

Also, as I said in my email to May, you’ll need to draft an executive summary of the results to share with Harriet and the rest of the leadership team.

Thanks so much!

Chidi Ga

Senior Data Analyst

Waze

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*“You can have data without information, but you cannot have information without data.”*

*—-Daniel Keys Moran*

**Step-By-Step Instructions**

https://d3c33hcgiwev3.cloudfront.net/imageAssetProxy.v1/CtrraTxDRlqqf68Ffvw7zA_8d03896d6c0345dba7ae92fbeb6ff9f1_image.png?expiry=1697846400000&hmac=5rlQxNzJfUpHvf6Nz4QdZ7zCSLbkjWotP-a1yJkLNdg

Follow the instructions to complete the activity. Then, go to the next course item to compare your work to a completed exemplar.

**Step 1: Access the templates**

https://d3c33hcgiwev3.cloudfront.net/imageAssetProxy.v1/iB2EUHr2RX-H4CrLCWEokw_1e2f5ad2a0134c119f863d10d46ee2f1_image.png?expiry=1697846400000&hmac=H2Uj99a1tvzspfUbuRatGlS8XfjzrMIApZSvRRBs8CY

To use the templates for this course item, click the following links and select *Use Template*.

Links to templates:

* [Course 4 PACE strategy document](https://docs.google.com/document/d/1n7DYOeacqICE-ZPPzMb3Sy_twD1qhWKMNkgVTV3T-YE/template/preview?resourcekey=0-pgR83axlo1MzL3JUpy2-vw)
* [Course 4 Executive summary](https://docs.google.com/presentation/d/1Pps5GKxi1V31y2oRHRzU-xhJubkEYzCgEIfNjlEY3Og/template/preview)

OR

If you do not have a Google account, you can download the templates directly from the attachments below:

[Activity Template\_ Course 4 PACE strategy document](https://d3c33hcgiwev3.cloudfront.net/DYzUqefJSf6d8k1Ikyyc4g_de6282fc81554b36854b991a89a506f1_Activity-Template_-Course-4-PACE-strategy-document.docx?Expires=1697846400&Signature=QF-qlnqBO7Kz2wC39jzJI2r0LwiMSApTURp~kOrOH~RuMpZL-Il2MNs0KzZacS6hTCblpn9v-ezIw6DnoREhpfhMNwHgCqmFFMWLsgp499kgD4JhmV33UlnqMVqZrOKzq2-nXv4e9-Uf7wrxtjf5MoegtQ4TzoSa0JsB~ebcHYI_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)

[DOCX File](https://d3c33hcgiwev3.cloudfront.net/DYzUqefJSf6d8k1Ikyyc4g_de6282fc81554b36854b991a89a506f1_Activity-Template_-Course-4-PACE-strategy-document.docx?Expires=1697846400&Signature=QF-qlnqBO7Kz2wC39jzJI2r0LwiMSApTURp~kOrOH~RuMpZL-Il2MNs0KzZacS6hTCblpn9v-ezIw6DnoREhpfhMNwHgCqmFFMWLsgp499kgD4JhmV33UlnqMVqZrOKzq2-nXv4e9-Uf7wrxtjf5MoegtQ4TzoSa0JsB~ebcHYI_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)

[Activity Templates\_ Executive summaries](https://d3c33hcgiwev3.cloudfront.net/hvFFRyNES3u35lJNhJ3JUQ_96f1353f45594d52bdd4992d4a0676f1_Activity-Templates_-Executive-summaries.pptx?Expires=1697846400&Signature=XbA9HAcNp5dePScTbHGX7Vyv9CTOPcZcibxSiKrAsayOfwJS4TzxUB60K0tNnsJmoIKZa6MYhgZrphjq4SbyOmksbFafFcuk~C4PZl6o6nuvGCv8fRIGYJUmEMG1GcUKRJ3fWA7JhNNAP8lQjRt75lAFh96aoRaRRHVAxYRM48I_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)

[PPTX File](https://d3c33hcgiwev3.cloudfront.net/hvFFRyNES3u35lJNhJ3JUQ_96f1353f45594d52bdd4992d4a0676f1_Activity-Templates_-Executive-summaries.pptx?Expires=1697846400&Signature=XbA9HAcNp5dePScTbHGX7Vyv9CTOPcZcibxSiKrAsayOfwJS4TzxUB60K0tNnsJmoIKZa6MYhgZrphjq4SbyOmksbFafFcuk~C4PZl6o6nuvGCv8fRIGYJUmEMG1GcUKRJ3fWA7JhNNAP8lQjRt75lAFh96aoRaRRHVAxYRM48I_&Key-Pair-Id=APKAJLTNE6QMUY6HBC5A" \t "_blank)

Step 2: Access the end-of-course project lab

https://d3c33hcgiwev3.cloudfront.net/imageAssetProxy.v1/25iBz17uQruhoe8WTAR8Hw_bd709b86cdd041d6b2429d25d309e5f1_image.png?expiry=1697846400000&hmac=_xYLaxlQSJywkZOq18PG2htQJZIqdy9lGUtI28w0MxU

***Note****: The following lab is also the next course item. Once you complete and submit your end-of-course project activity, return to the lab instructions’ page and click* ***Next*** *to continue on to the exemplar reading.*

To access the end-of-course project lab, click the following link and select *Open Lab*.

* [Course 4 Waze project lab](https://www.coursera.org/learn/the-power-of-statistics/ungradedLab/S4vKd/activity-course-4-waze-project-lab)

Your Python notebook for this project includes a guided framework that will assist you with the required coding. Input the code and answer the questions in your Python notebook to conduct a hypothesis test. You’ll find helpful reminders for tasks like:

* Computing descriptive statistics
* Conducting a two-sample hypothesis test

You will also discover questions in this Python notebook designed to help you gather the relevant information you’ll need to write an executive summary for your team.

Use your completed PACE strategy document and Python notebook to help you prepare your executive summary in the next step.

Data Dictionary

https://d3c33hcgiwev3.cloudfront.net/imageAssetProxy.v1/68mzHK31Tpmmhd-wij46sg_0e044971aac2401cb76933fc4708c6f1_image.png?expiry=1697846400000&hmac=fj1A6APJS85Shhn-GUYFfAe_g4OfQplZqeO6zrKL4hI

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Step 3: Complete your PACE strategy document

Step 4: Prepare an executive summary

**Pro Tip: Save the templates**

Finally, be sure to save a blank copy of the templates you used to complete this activity. You can use them for further practice or in your professional projects. These templates will help you work through your thought processes and demonstrate your experience to potential employers.

**What to Include in Your Response**

https://d3c33hcgiwev3.cloudfront.net/imageAssetProxy.v1/sR73iO0eTayw8zTJMV7eRQ_37fd8910e0b847af9808bd2473a608f1_image.png?expiry=1697846400000&hmac=NHu4nohNEumWLeVOyIkio3w16Q6HZhVtYbJBGhBRuww

Later, you will have the opportunity to self assess your performance using the criteria listed below. Be sure to address the following elements in your completed activity:

**Course 4 PACE strategy document**:

* Answer the questions in the PACE strategy document

**Course 4 Waze project lab**:

* Compute descriptive statistics
* Conduct a hypothesis test

**Course 4 executive summary**:

* State the hypothesis test results clearly
* List recommended next steps for the data project