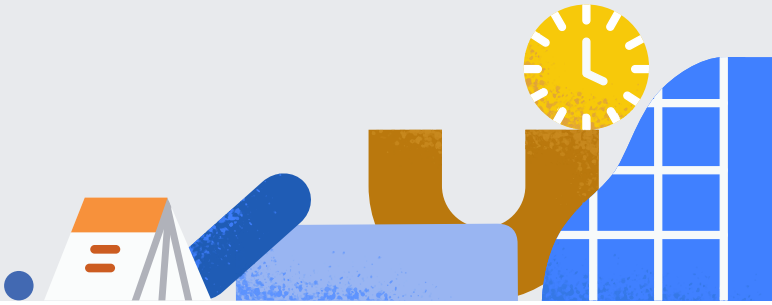
FACEBOOK

DATA SCIENCE – ANALYTICS

Onsite Interview Guide



What You'll Find in This Guide

Welcome to your prep guide for your data scientist onsite interview with the Facebook company. Our data scientists and recruiters put together this guide so you know what to expect and how to prepare.

Interview overview

The structure of your onsite interview

Your onsite interview will be a deeper dive into everything we covered in your initial, with the addition of another focus area, quantitative analysis. Throughout your discussions during the day, your interviewers will be assessing your ability to tell a compelling story with data, make data-driven decisions, and impact change through product development and optimization. The data scientist role at Facebook combines strong analytical and technical skills with sharp product sense. Many of the questions throughout your interviews will be in the context of our products, so considering the different metrics that you'd use to measure the success of different Facebook Products will be useful prep for the interview loop.

Our Data Science team created an **interview prep video** (available **here** with or **without captions**) to help you understand what to expect during your onsite interview, and to provide you with some best practices on how to prepare. Please note this video is only an example of what may be covered during your onsite interview, and is subject to change or modification.

The structure of your onsite interview will include the following 30-minute sections:

- **Analysis Case: Product Interpretation.**
- **Analysis Case: Applied Data.**
- **Quantitative Analysis.**
- **Technical Analysis.**

Analysis case discussions

How to prep for this section of your interview

There will be two 30-minute analysis case discussions:

- Product Interpretation.
- Applied Data.

Both will likely feature a hypothetical or case study to test your analytical skills from slightly different angles.

Analysis Case: Product Interpretation

This interview is a product case study focused on interpretation of user behavior using data and metrics. Product interpretation (PI) focuses broadly on how you translate user behavior into product ideas and insights using data and metrics. An example of how we might position a PI interview question is: "How would you evaluate YouTube's video recommendations?" The open-ended format and style of this question might sound similar to the analysis question in your initial interview.

With this type of question, you'll have the opportunity to exemplify what the expectations of the PI scope will be. Your interviewer will be assessing your ability to:

- Understand hypotheses for launching new features: "How can I improve a product?"
- Consider and quantify tradeoffs of a feature in terms of metrics.
- Design experiments to test these hypotheses.
- Interpret results of experiments.
- Communicate decision-making via metrics.

Analysis Case: Applied Data

The applied data interview focuses more on the technical side of solving a problem using data, for example: "How do you frame a problem, from selecting the most suitable data sets all the way down to execution?"

Visit the links below to gain deeper context on what data science means to Facebook. Also, it's helpful to engage with each of our core products, trying to reverse-engineer in your mind how these products came to be, what metrics, and what testing and experimentation were involved.

Applied data questions will require you to:

- Consider what data sets are best suited to answer a product question.
- Draw inferences from a data set.
- Combine multiple signals into a data-informed statement.
- Map analytical insights back to product impact.

Suggested links and resources for analysis case interviews:

- **Facebook News**
- **VP of Analytics Alex Schultz's Talk at Stanford on Growth at Facebook**

Quantitative analysis

How to prep for this section of your interview

This part of your interview is centered around basic stats designed to evaluate quantitative reasoning and applied statistics. It'll be helpful to brush up on the core stats concepts that would be most relevant to solving business problems. Although this session will not cover advanced stats and math concepts (e.g. calculus, machine learning models, etc.), if you have advanced stats knowledge, you can incorporate your knowledge into your answers for a more nuanced discussion with your interviewer.

Quantitative Reasoning

Your interviewer will be assessing your knowledge of relevant mathematical, probabilistic and statistical concepts, and how they relate to Facebook Products.

Sample questions are: "What do you think the distribution of time spent per day on Facebook looks like?" or "What metrics would you use to describe that distribution?"

Applied Statistics

This part of your interview focuses more on applying core statistical concepts to real-world problems. For instance: "How do you apply A / B testing?" or "Do you know how to interpret experiment results?" or "Do you understand common distributions?"

Aspects of these questions include:

- Estimation and logical reasoning in the context of a real-world product.
- Elements of descriptive statistics (mean / expected value, median, mode, percentiles, etc.).
- Common distributions, such as binomial or normal distributions.
- The profile of real-world data.
- Law of Large Numbers, Central Limit Theorem, Linear Regression.
- Conditional probabilities, including Bayes' Theorem.

We WON'T ask you the following:

- Advanced stats / math concepts: calculus or advanced statistical / machine-learning models.
- More complex distributions like the exponential, Weibull, Beta, etc.
- Brainteasers.
- Contrived estimation problems (i.e., "How many golf balls fit in a model 747 plane?" or "How many piano tuners are there in NYC?").

Suggested links and resources for your quantitative analysis interview:

- The **combinatorics** page on **brilliant.org** offers many questions around probability and statistics. Please note, this page can lead to going down a rabbit hole of fun math quizzes and questions. We're looking for just the fundamentals here.

Technical analysis

How to prep for this section of your interview

This is a coding interview that's designed to help your interviewer assess your ability to think carefully about data, and analyze open-ended product problems with code. The open-ended nature of the question will echo the format and style of the coding problem we gave you in your initial interview.

Examples of questions include:

- Given timestamps of logins, how many people on Facebook were active all seven days of a week on a mobile phone?
- How do you determine what product in Facebook was used most by the non-employee users for the last quarter?

You can successfully answer the coding question through any language, so use the one that you're most comfortable with. Note that coding will be via whiteboard, so it's worth practicing manually writing out code (no pseudocode allowed). While you want to aim for as much accuracy as possible, it's OK to forget syntax or grammar here and there, as long as you're clearly speaking out the intention of your code and the logic behind it.

Aspects of these questions include:

- Structuring and articulating a solution based on data when we present you with an open-ended problem.
- Coding an executable solution based on the articulated approach.
- Identifying and addressing edge cases.
- Adapting or changing code based on new information and / or constraints.

We WON'T assess you on the following:

- The ability to code in a specific language or flavor of a language (e.g. any type of SQL is acceptable).

Please note:

- Most questions are designed with SQL in mind, but you should feel free to execute in your language of choice. Please let the recruiter know your preference.
- We'll discourage you from using any convenient "magic" functions that trivially solve the problem.
- While we might forgive some syntax details that you can easily Google, pseudo-code that allows you to gloss over details isn't acceptable.

Appendix / resources

Links to exercises, information and guides to help you prepare

About Facebook

- **Facebook News**
- **Facebook Quarterly Earnings**
- **Facebook Products**
- **VP of Analytics Alex Schultz's Talk at Stanford on Growth at Facebook**
- **How Facebook Used Science and Empathy to Reach Two Billion Users**
- **A Post from Mark Zuckerberg**

Technical prep

- **SQLZOO**
  - Offers both SQL problems and a self-paced tutorial.
  - The problems are probably the most analogous to what we'll ask in the interview.
- **W3Schools**
  - Offers a slowly paced, broadly scoped tutorial.
  - Covers more topics than SQLZOO but is less challenging.
- **ActiveSQL**
  - Offers SQL exercises sequenced according to complexity.

Thanks for taking the time to review this guide and good luck in the interview - you'll do great!