

# MODULE 04

## Consider fairness

Previously, you learned that part of a data professional’s responsibility is to make certain that their analysis is fair. **Fairness** means ensuring your analysis doesn't create or reinforce bias. This can be challenging, but if the analysis is not objective, the conclusions can be misleading and even harmful. In this reading, you’re going to explore some best practices you can use to guide your work toward a more fair analysis!

### Consider fairness

Following are some strategies that support fair analysis:

Best practice	Explanation	Example
Consider all of the available data	Part of your job as a data analyst is to determine what data is going to be useful for your analysis. Often there will be data that isn't relevant to what you're focusing on or doesn't seem to align with your expectations. But you can't just ignore it; it's critical to consider all of the available data so that your analysis reflects the truth and not just your own expectations.	A state's Department of Transportation is interested in measuring traffic patterns on holidays. At first, they only include metrics related to traffic volumes and the fact that the days are holidays. But the data team realizes they failed to consider how weather on these holidays might also affect traffic volumes. Considering this additional data helps them gain more complete insights.

Identify surrounding factors	As you'll learn throughout these courses, context is key for you and your stakeholders to understand the final conclusions of any analysis. Similar to considering all of the data, you also must understand surrounding factors that could influence the insights you're gaining.	A human resources department wants to better plan for employee vacation time in order to anticipate staffing needs. HR uses a list of national bank holidays as a key part of the data-gathering process. But they fail to consider important holidays that aren't on the bank calendar, which introduces bias against employees who celebrate them. It also gives HR less useful results because bank holidays may not necessarily apply to their actual employee population.
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Include self-reported data	<p><b>Self-reporting</b> is a data collection technique where participants provide information about themselves. Self-reported data can be a great way to introduce fairness in your data collection process. People bring conscious and unconscious bias to their observations about the world, including about other people. Using self-reporting methods to collect data can help avoid these observer biases. Additionally, separating self-reported data from other data you collect provides important context to your conclusions!</p>	<p>A data analyst is working on a project for a brick-and-mortar retailer. Their goal is to learn more about their customer base. This data analyst knows they need to consider fairness when they collect data; they decide to create a survey so that customers can self-report information about themselves. By doing that, they avoid bias that might be introduced with other demographic data collection methods. For example, if they had sales associates report their observations about customers, they might introduce any unconscious bias the employees had to the data.</p>
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Use oversampling effectively	<p>When collecting data about a population, it's important to be aware of the actual makeup of that population. Sometimes, oversampling can help you represent groups in that population that otherwise wouldn't be represented fairly. <b>Oversampling</b> is the process of increasing the sample size of nondominant groups in a population. This can help you better represent them and address imbalanced datasets.</p>	<p>A fitness company is releasing new digital content for users of their equipment. They are interested in designing content that appeals to different users, knowing that different people may interact with their equipment in different ways. For example, part of their user-base is age 70 or older. In order to represent these users, they oversample them in their data. That way, decisions they make about their fitness content will be more inclusive.</p>
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Think about fairness from beginning to end	To ensure that your analysis and final conclusions are fair, be sure to consider fairness from the earliest stages of a project to when you act on the data insights. This means that data collection, cleaning, processing, and analysis are all performed with fairness in mind.	A data team kicks off a project by including fairness measures in their data-collection process. These measures include oversampling their population and using self-reported data. However, they fail to inform stakeholders about these measures during the presentation. As a result, stakeholders leave with skewed understandings of the data. Learning from this experience, they add key information about fairness considerations to future stakeholder presentations.
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## Data analyst roles and job descriptions

To name a few others that sound similar but may not be the same role:

- Business analyst—analyzes data to help businesses improve processes, products, or services
- Data analytics consultant—analyzes the systems and models for using data
- Data engineer—prepares and integrates data from different sources for analytical use
- Data scientist—uses expert skills in technology and social science to find trends through data analysis
- Data specialist—organizes or converts data for use in databases or software systems
- Operations analyst—analyzes data to assess the performance of business operations and workflows

## Decoding the job description



	Data Analysts	Data Scientists	Data Specialists
Problem solving	Use existing tools and methods to solve problems with existing types of data	Invent new tools and models, ask open-ended questions, and collect new types of data	Use in-depth knowledge of databases as a tool to solve problems and manage data
Analysis	Analyze collected data to help stakeholders make better decisions	Analyze and interpret complex data to make business predictions	Organize large volumes of data for use in data analytics or business operations
Other relevant skills	<ul style="list-style-type: none"><li>• Database queries</li><li>• Data visualization</li><li>• Dashboards</li><li>• Reports</li><li>• Spreadsheets</li></ul>	<ul style="list-style-type: none"><li>• Advanced statistics</li><li>• Machine learning</li><li>• Deep learning</li><li>• Data optimization</li><li>• Programming</li></ul>	<ul style="list-style-type: none"><li>• Data manipulation</li><li>• Information security</li><li>• Data models</li><li>• Scalability of data</li><li>• Disaster recovery</li></ul>

## Job specializations by industry

Other industry-specific specialist positions that you might come across in your data analyst job search include:

- Marketing analyst—analyzes market conditions to assess the potential sales of products and services
- HR/payroll analyst—analyzes payroll data for inefficiencies and errors
- Financial analyst—analyzes financial status by collecting, monitoring, and reviewing data
- Risk analyst—analyzes financial documents, economic conditions, and client data to help companies determine the level of risk involved in making a particular business decision
- Healthcare analyst—analyzes medical data to improve the business aspect of hospitals and medical facilities