

Quant 101

BFS Winter 2026



February 2, 2026



Keep an eye
out for the
password!



**RSVP here →
for Quant 102**



What is Quant?





Quantitative Finance

Quants leverage advanced mathematical models and massive datasets to analyze financial markets, driving decision-making in pricing, risk, and investment strategy



Four Pillars of Quant Finance

01

Mathematical Models

Probability, statistics, and optimization

02

Backtesting

Strategy tests before risking real capital

03

Automation

Utilizing algorithms to execute trades with speed and precision

04

Monitoring Risk

Monitoring drawdowns, volatility, tail events



Applications of Quant Finance



"Right now I think the wisest strategy is to diversify among your mattresses."

Core Functions



Asset Pricing & Valuation

Determining the fair value of assets using the **Black-Scholes model** or **Monte Carlo simulations**



Portfolio Optimization

Maximize returns for a target risk level using the **Modern Portfolio Theory (MPT)** framework



Risk Management

Quantify potential losses from volatility and model "**Black Swan**" events to ensure firm stability



Industry Uses

Algorithmic Trading

Executing trades with **machine learning** to maximize speed and remove human bias



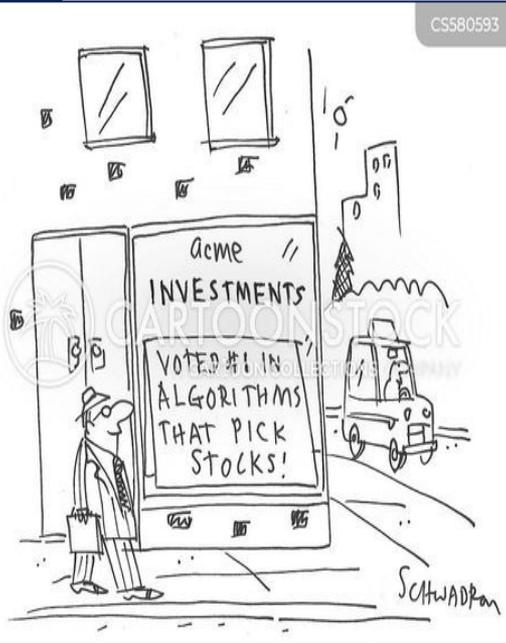
Hedge Fund Strategies

Using **statistical arbitrage** and trend analysis to generate profits in all market conditions



Credit Risk Assessment

Evaluating borrower data to predict **default likelihood** and price loans accurately



Sign in Sheet

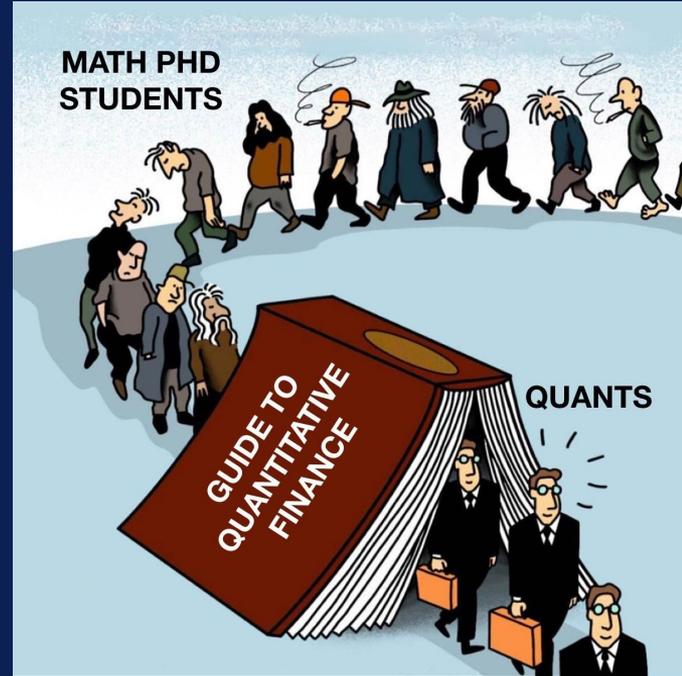
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How Quants be saving society:



Careers in Quant



Careers in Quant

Researcher

Designs models and backtests strategies

Developer

Implements models and optimizes trading infrastructure

Trader

Manages live positions and executes trades based on model outputs

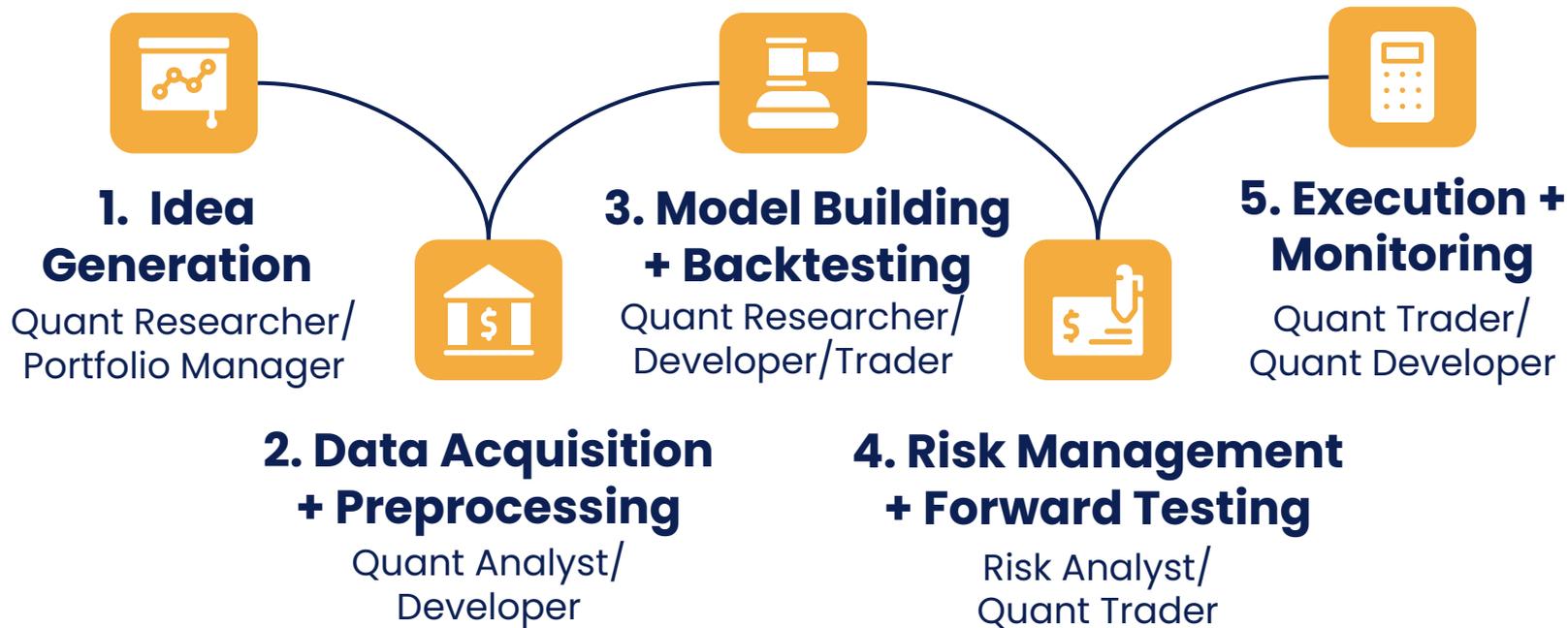
Risk Analyst

Measures market exposure and executes hedging to ensure compliance

Portfolio Manager

Directs asset allocation to meet long-term client goals and risk targets

Quant Strategy Lifecycle



Key Quant Strategies

Statistical Arbitrage

Capitalize on market inefficiencies

Factor Investing

Target specific drivers of return



Risk Parity

Allocate by risk rather than capital

Machine Learning/AI

Process large datasets, simulate decision-making



Time Series Patterns

Time Series: data collected over regular time intervals, helps us understand market behavior

- E.g. stock price over time

Core Ideas in time series market data:

- Momentum
- Mean Reversion
- Volatility Clustering
- Regime Shifts
- Fat Tails + Black Swans

Time Series Analysis: identify trends, seasonal/cyclical patterns, generate predictions

- Autoregressive Integrated Moving Average (ARIMA)



Technologies and Tools

Programming Languages

Python, R, C++, Java
MATLAB, Julia

Data Visualization Tools

Tableau, PowerBI,
Python Matplotlib

Cloud Computing

AWS, Google Cloud,
Microsoft Azure

Machine Learning/ AI Frameworks

Scikit-Learn, LLMs,
TensorFlow, PyTorch

High-Performance Computing Systems

Supercomputers, GPU
clusters, high-speed servers



Requirements



Education

- Bachelors (groundwork)
- Masters (desired)
- PhD (ideal for research/ niche topics)



Technical Skills

- Mathematics
- Financial Acumen
- Programming



Soft Skills

- Problem-Solving
- Communication
- Detail Orientation



Recruitment



Online Assessments (OAs)

- Math/logic tests
 - mental math, stats/probability, trading/gambling simulations
- Zetamac to practice mental math



Interviews

- Probability, statistics, problem solving
- Assess aptitude in math, stats, cs, finance, and problem-solving



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for Quant 102**



Questions?

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Substack linked
[here!](#)



Introductio

n

Images reveal large amounts of data, so remember: use an image instead of a long text. Your audience will appreciate it



01

Objectives

You can enter a subtitle here if you need it



The slide title goes here!

Do you know what helps you make your point clear?
Lists like this one:

- They're simple
- You can organize your ideas clearly
- You'll never forget to buy milk!

And the most important thing: the audience won't miss
the point of your presentation



The slide title goes here!



Mercury

Mercury is the closest planet to the Sun and the smallest one



Venus

Venus has a beautiful name and high temperatures



Objectives



Stopping poverty

Mercury is the closest planet to the Sun and the smallest one



Sustainable development

Venus has a beautiful name and high temperatures





02

Obstacles

You can enter a subtitle here if you need it



Obstacles



Geopolitical factors

Venus is the second planet from the Sun



Financial volatility

Saturn is a gas giant and has several rings



Commercial disputes

Jupiter is the biggest planet of them all



Non-economic factors

Despite being red, Mars is a cold place



03

Key elements

You can enter a subtitle here if you need it



Key elements



Asset Pricing & Valuation

Determining the fair value of assets using the **Black-Scholes model** or **Monte Carlo simulations**



Portfolio Optimization

Maximize returns for a target risk level using the **Modern Portfolio Theory (MPT)** framework.



Risk Management

Quantify potential losses from volatility and model "**Black Swan**" events to ensure firm stability.



Key elements



Data A

Venus is a hot planet



Data B

Jupiter is a big planet



Data C

Mars is a cold planet



Data D

Mercury is a small planet



Risks

Volatility

Mercury is the smallest planet

Imbalance

Venus is the second planet from the Sun

Uncertainty

Mars is actually a very cold place

Debts

Jupiter is the biggest planet of them all

Salaries

Earth is the planet we live on

Financing

Neptune is very far from the Sun



Risks

Money

Jupiter is the biggest planet



Debts

Saturn is the ringed planet



Loans

Neptune is far away from us



Awesome words





“This is a quote, words full of wisdom that someone important said and can make the reader get inspired.”

—Someone Famous





**A picture is worth
a thousand words**



**A picture is worth
a thousand words**



Main keys for bank day

Images reveal large amounts of data, so remember: use an image instead of a long text. Your audience will appreciate it





Main keys for bank day

Images reveal large amounts of data,
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appreciate it



150,000

Big numbers catch your audience's attention



386,000 km

Distance between the Earth and the Moon

333,000

The Sun's mass compared to Earth's

9h 55m 23s

Jupiter's rotation period



333,000

The Sun's mass compared to Earth's

9h 55m 23s

Jupiter's rotation period



Profitability percentage

25%



Venus is the second planet from the Sun

50%



Mars is actually a very cold place

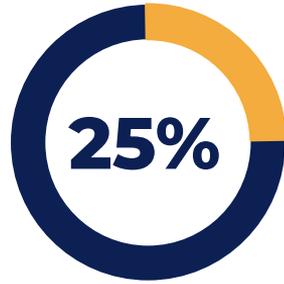
75%



Mercury is the smallest planet



Profitability percentage



Venus

Venus is the second planet from the Sun



Mars

Mars is actually a very cold place



Structure of banking industry

Bank name	Type	Banking system
Write here the name...	International	Conventional
Write here the name...	Local	Digital
Write here the name...	International	Digital
Write here the name...	Local	Conventional

Currency checklist



	Name	Symbol	Description
✓	Dollar	\$	Mercury is the smallest planet
✗	Euro	€	Venus has a beautiful name
✓	Yen	¥	Mars is actually a very cold place
✗	Pound	£	Jupiter is the biggest planet



Global overview of banking

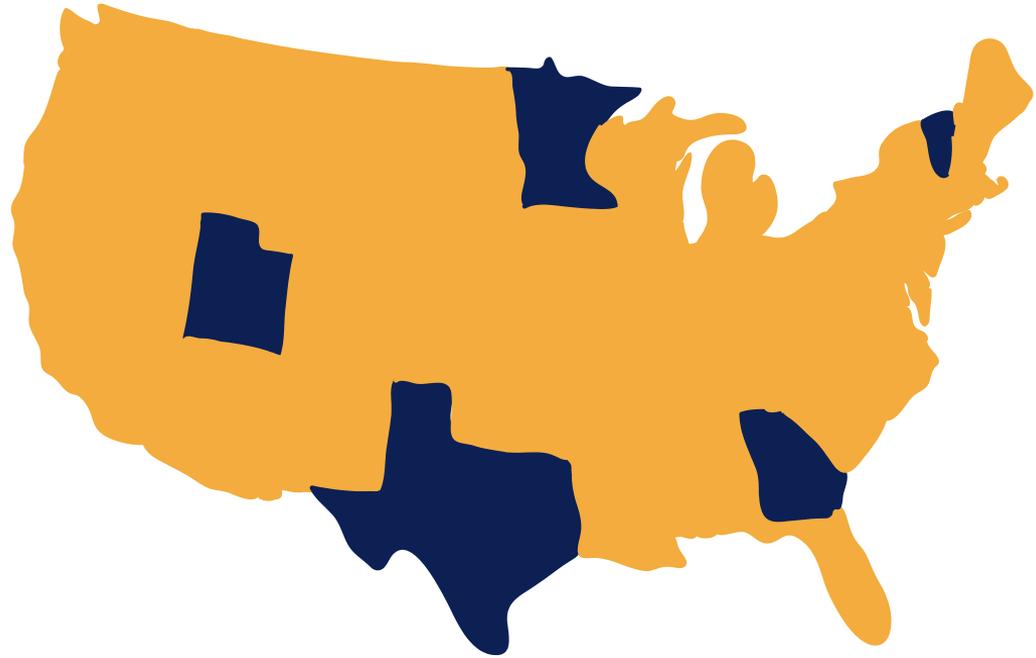


USA overview of banking



Mars

Mars is actually
a cold planet



Number of new banks



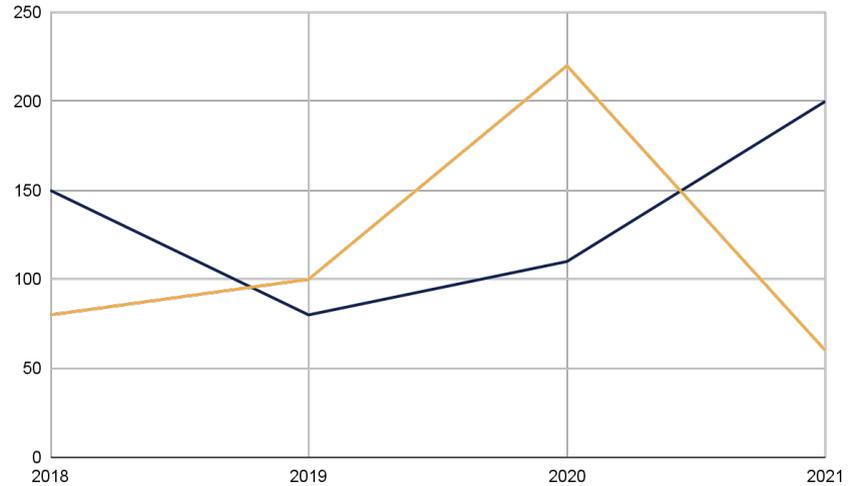
Digital

Venus has a beautiful name



Non-digital

Jupiter is the biggest planet of them all



Follow the link in the graph to modify its data and then paste the new one here. For more info, click [here](#)



Number of new banks

■ Non-digital ■ Digital ■ Traditional



Follow the link in the graph to modify its data and then paste the new one here. For more info, click here



25%

Jupiter is the biggest planet of them all



25%

Venus has a beautiful name, but also high temperatures



50%

Despite being red, Mars is actually a cold place



The benefits of banking

Loans

Neptune is the farthest planet from the Sun

Mortgage

Jupiter is the biggest planet in the Solar System



Charges

Saturn is a gas giant and has several rings

Assets

Despite being red, Mars is actually a cold place



The benefits of banking



Loans

Neptune is the farthest planet from the Sun



Mortgage

Jupiter is the biggest planet in the Solar System



Charges

Saturn is a gas giant and has several rings



History of the event



1990

Venus is a beautiful place



2015

Mars is a very cold planet



2020

Neptune is far away from us



2002

Saturn is the ringed planet

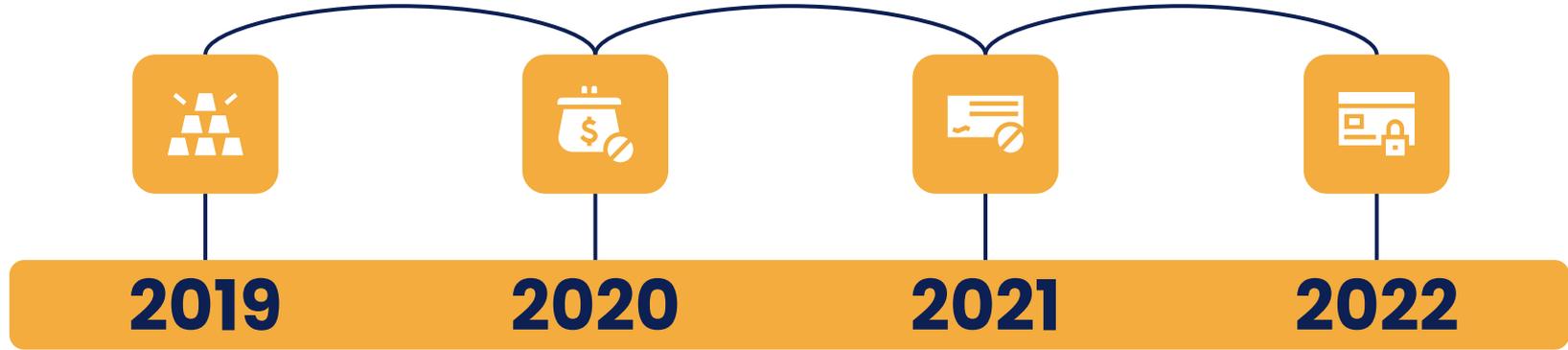


2019

Jupiter is the biggest planet



History of the event



Saturn

Saturn is the ringed planet

Jupiter

Jupiter is a big planet

Earth

Earth harbors lots of life

Mars

Mars is a very cold planet



When is it celebrated?



December 4th

Mercury is the
closest planet to
the Sun

Mon	Tue	Wed	Thu	Fri	Sat	Sun
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2



When is it celebrated?

Check list for the day

- Go to the bank
- Call to the bank
- Open a bank account
- Deposit money
- Transfer money
- Ask for a loan

Notes for the day

- Jupiter is the biggest planet
- Mars is actually a cold planet
- Mercury is the smallest planet
- Neptune is far away from the Sun
- Saturn is a gas giant and has rings
- Earth is the third planet from the Sun



Banking progress

Step 1

Mercury is a small planet



Step 3

Mars is a very cold place

Step 2

Saturn is the ringed planet

Step 4

Jupiter is the biggest planet



Banking progress

Step 1

Mercury is the closest planet to the Sun and the smallest



Step 2

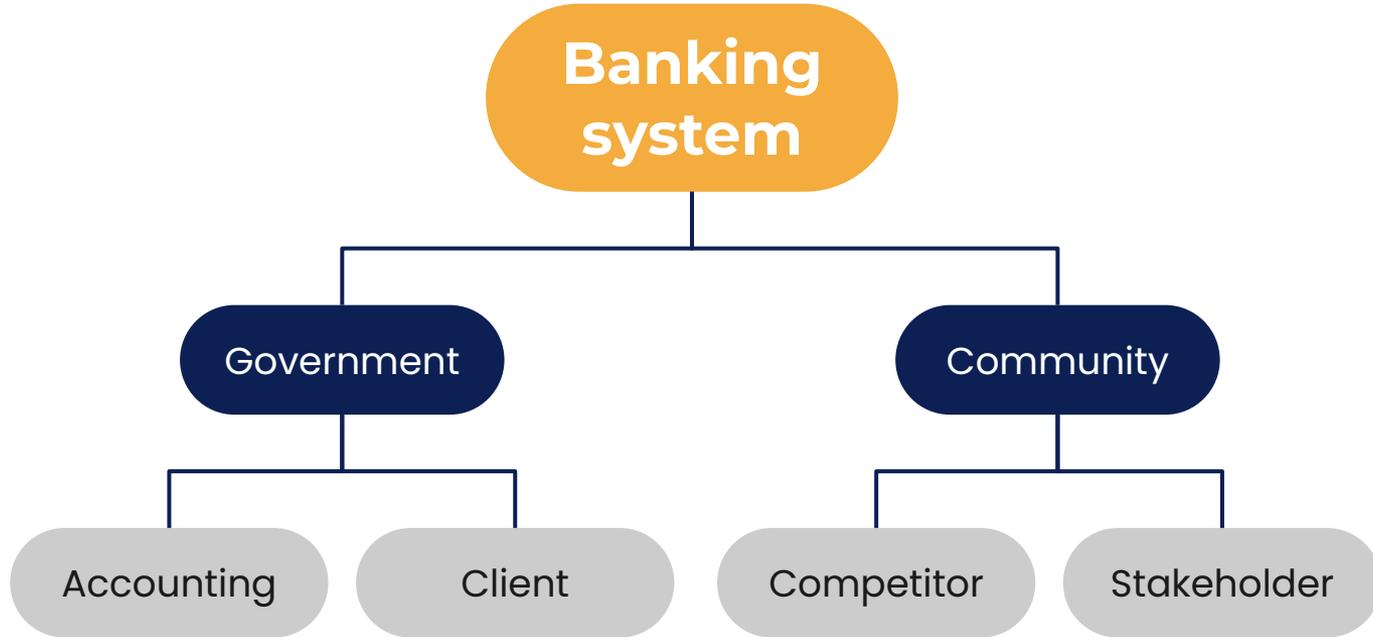
Venus has a beautiful name, but also high temperatures

Step 3

Despite being red, Mars is actually a cold place



Diagram of banking



Organizational chart



CEO

You can tell more
about this person



Staff

You can tell more
about this person

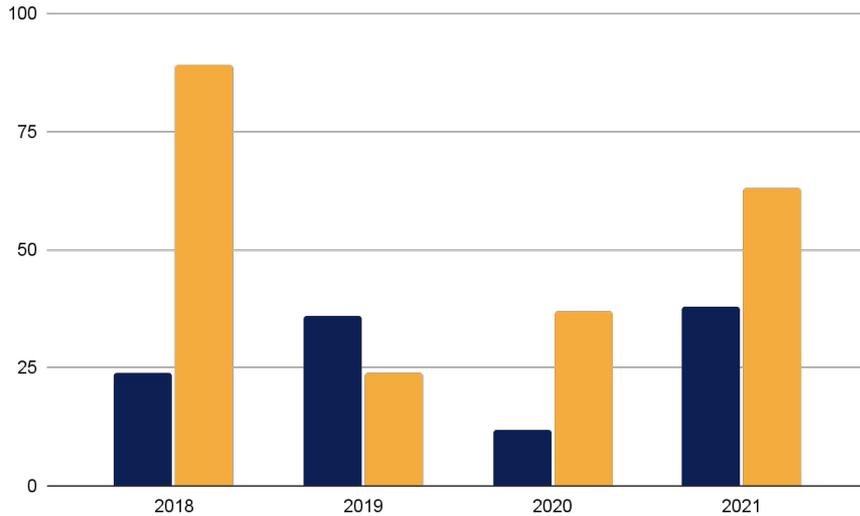


Staff

You can tell more
about this person



Digital banking market



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Digital payments

Venus has a beautiful name

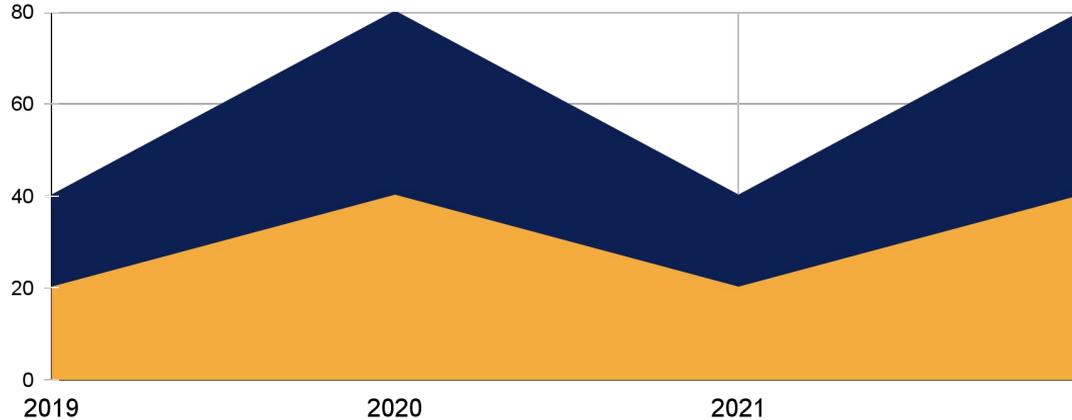


Digital sales

Jupiter is the biggest planet



Digital banking market



■ Payments

Venus has a beautiful name

■ Sales

Jupiter is the biggest planet

Follow the link in the graph to modify its data and then paste the new one here. For more info, click here





Conclusions

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Conclusions

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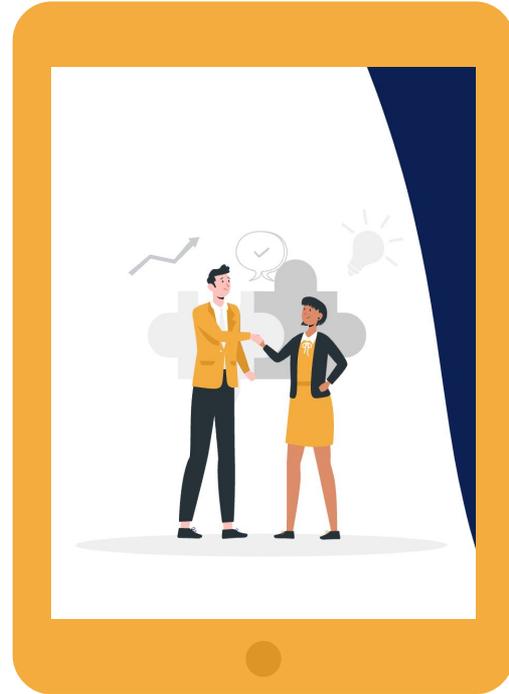
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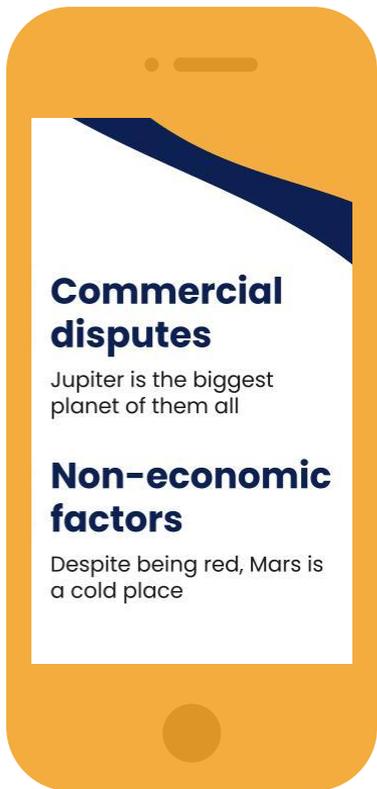
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Our team



Jenna Doe

You can talk a bit
about this person



Mark Stone

You can talk a bit
about this person



Our team



**Wilson
Moore**

You can talk a bit
about this
person here



**Barbara
Scott**

You can talk a bit
about this
person here



**Peter
Jones**

You can talk a bit
about this
person here



**Elsa
Segal**

You can talk a bit
about this
person here



Percentages



20%



Despite being red, Mars is a very cold place



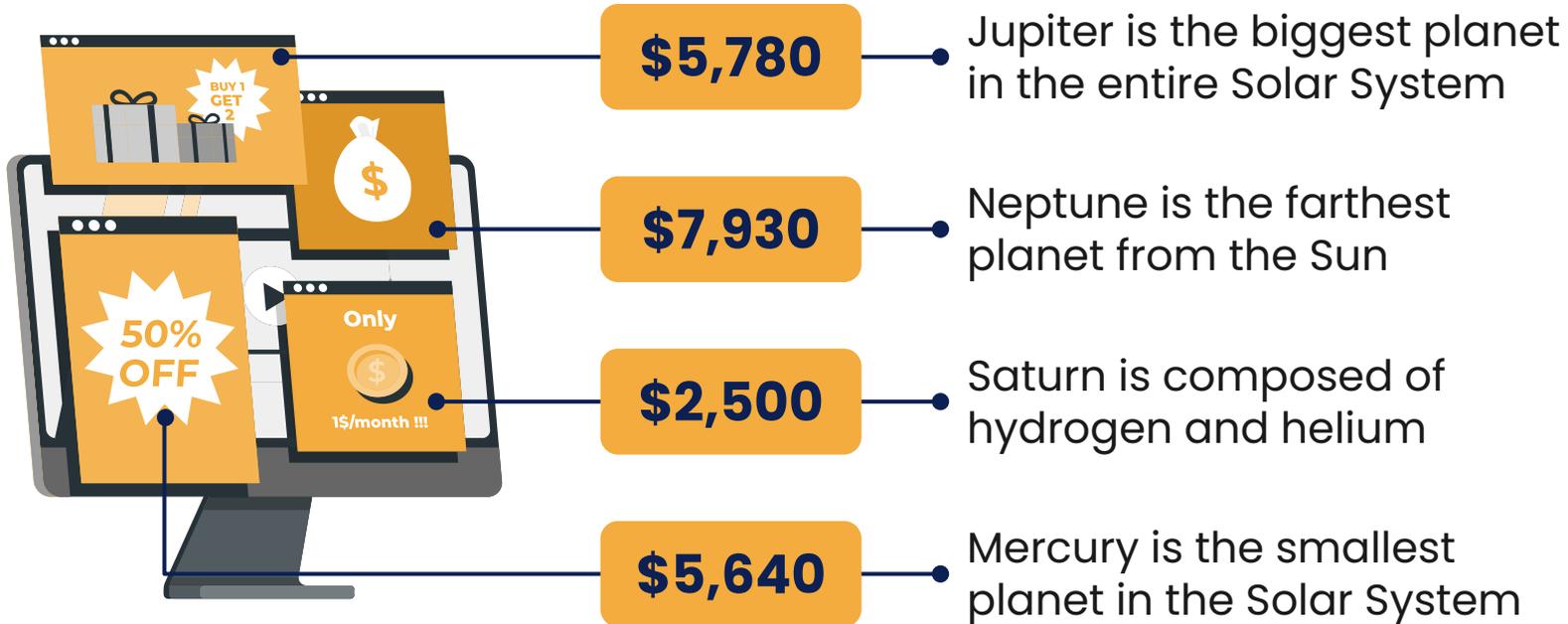
80%



Saturn is composed of hydrogen and helium



Investments: data



Thanks!

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Icon pack: economic crisis



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- Investing Flat Illustrations
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Alternative resources

- Money motivation
- Banknote



- Credit card
- Spreadsheets



Alternative resources

- Development focus
- Online report



Alternative infographics



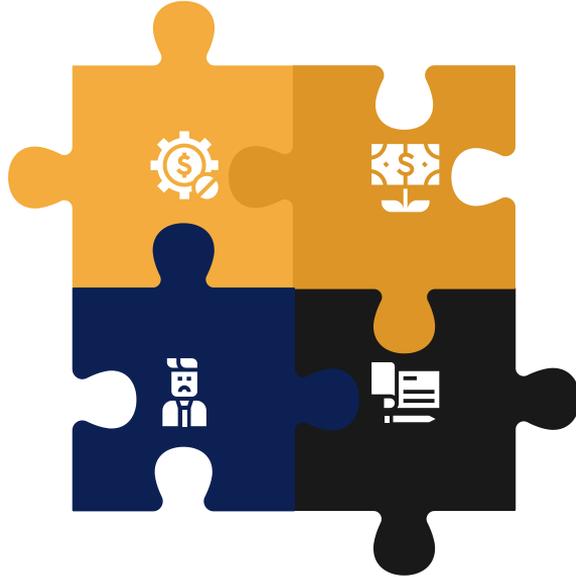
Saturn

Saturn is the ringed planet



Jupiter

Jupiter is the biggest planet



Mercury

Mercury is a small planet



Mars

Mars is actually a cold place



Alternative infographics

Saturn

01

Saturn is the ringed planet

Jupiter

02

Jupiter is the biggest planet

Venus

03

Venus is the hottest planet

Mars

04

Mars is actually a cold place



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- Medium shot woman holding pen
- Smiling african young businessman talking on mobile phone sitting on staircase with laptop

Icons:

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- Brunette businesswoman posing
- Rear view of a woman holding debit card and using laptop for shopping online
- Woman keeping reports at table

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Cuate

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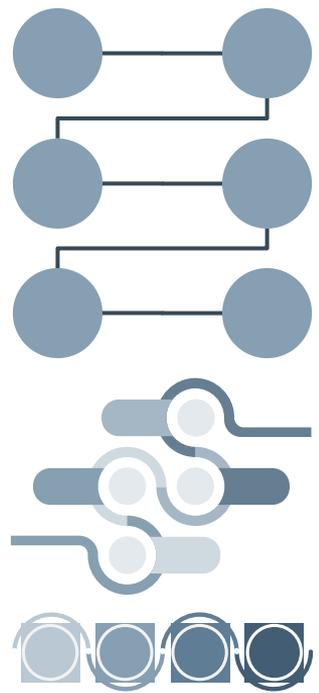
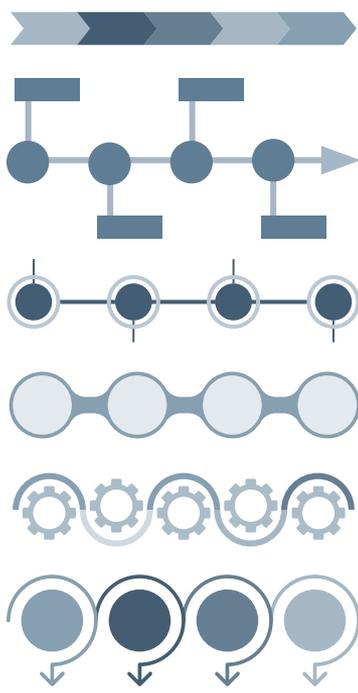
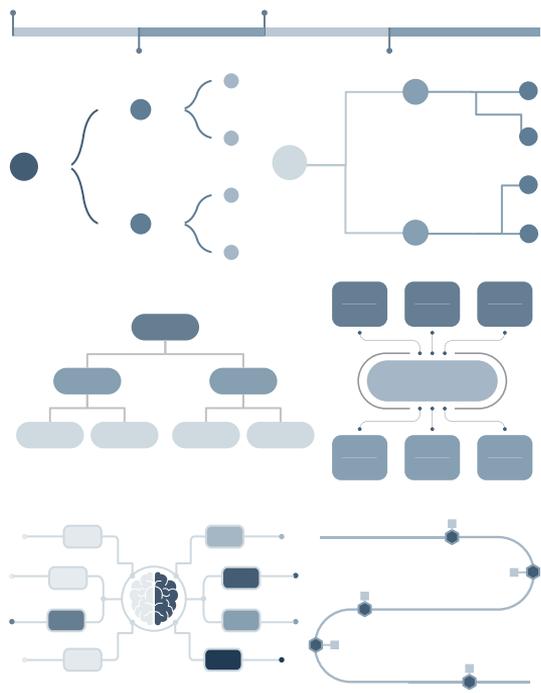
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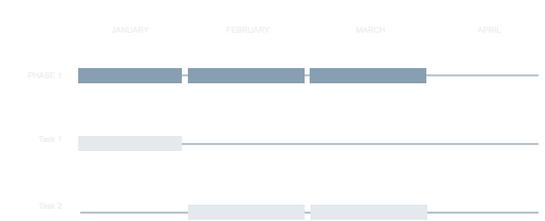
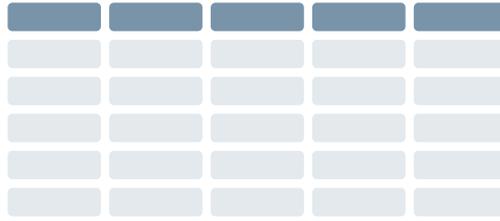
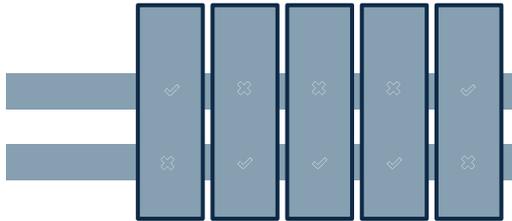
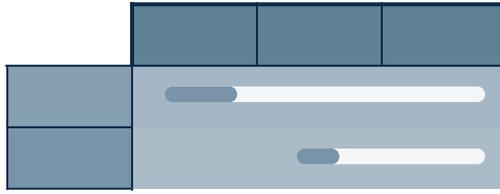
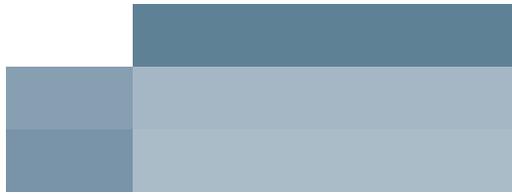
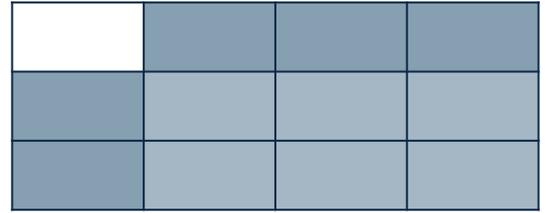
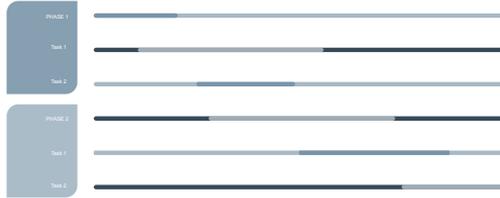
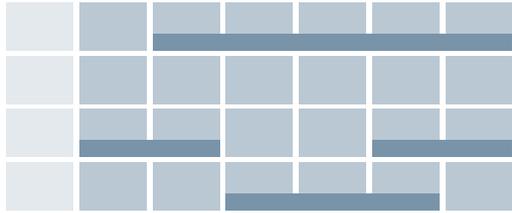
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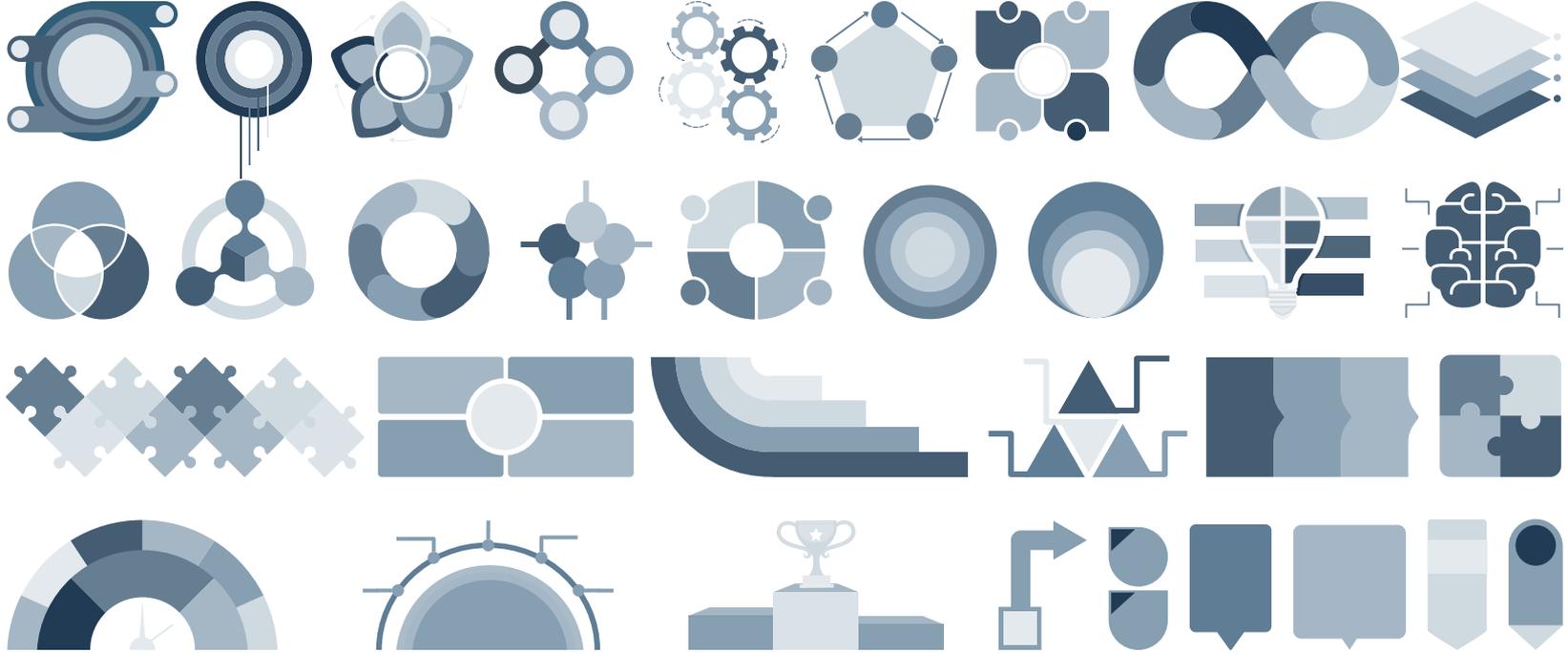
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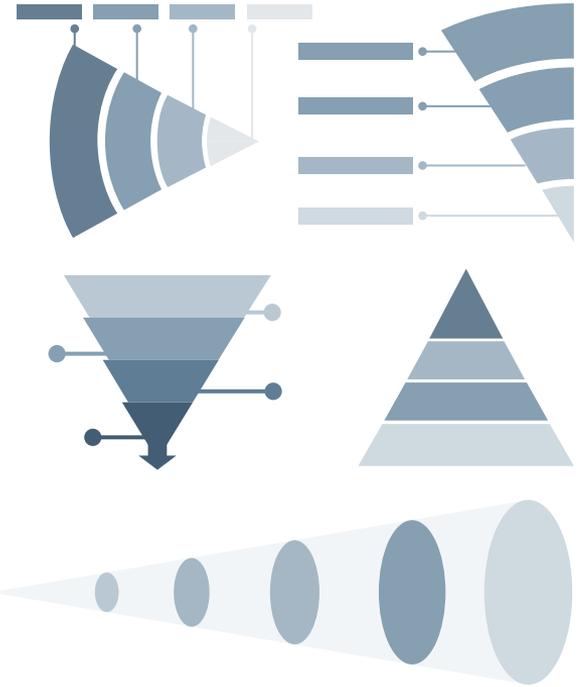
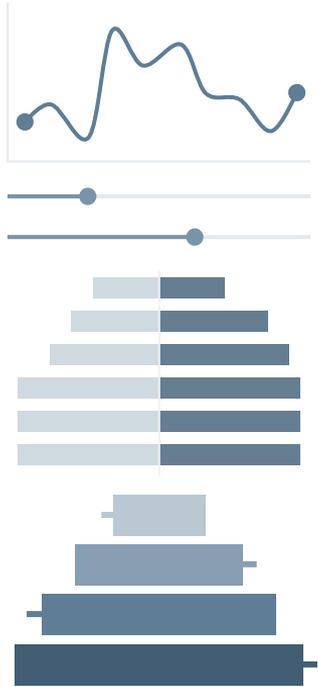
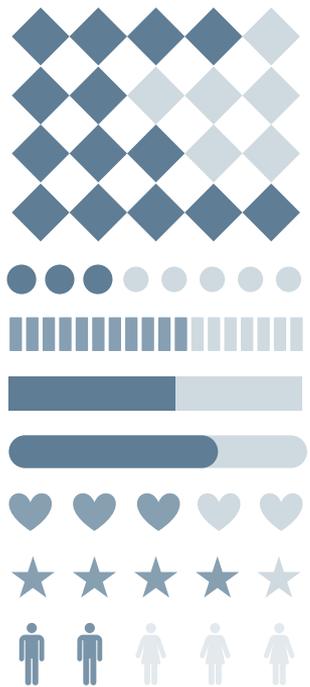
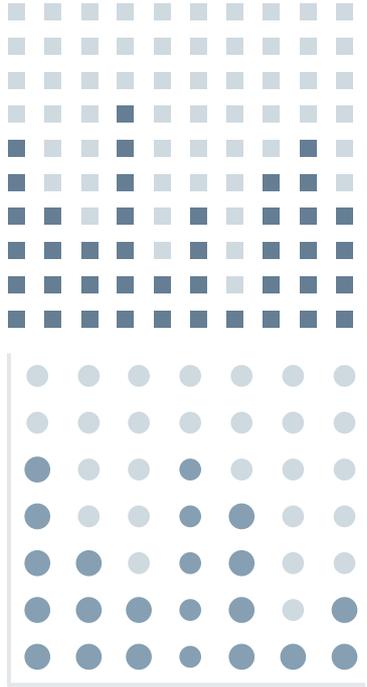












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Educational Icons



Medical Icons



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