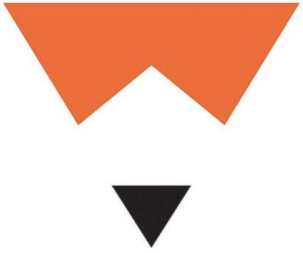
Ripton Rosen

NBA Prediction Model

Basketball Reference and the NBA

Goal

Create a classification model that can accurately predict NBA wins and losses



FiveThirtyEight

Forbes

Data Process

Web Scrape

From Basketball-Reference.com

Data Cleaning

Deal with missing values and rename columns

Data Exploration

Sort through and understand the data

Modeling

Create models based on the data to predict game outcomes

Interpretation

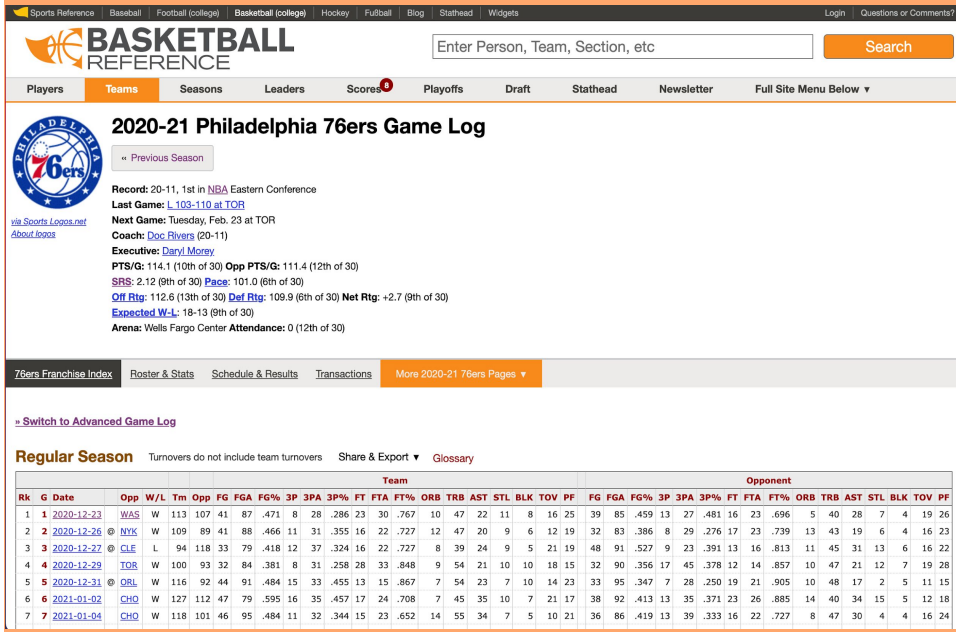
Learn from the models

Further Work

Come up with plans for the next steps in the project

Game Logs

- All 30 NBA teams
- 2009-2010 season up until 2019-2020 season
- Basic game statistics and advanced game statistics



Sports Reference | Baseball | Football (college) | Basketball (college) | Hockey | Fußball | Blog | Stathead | Widgets — Login | Questions or Comments?

BASKETBALL REFERENCE

Enter Person, Team, Section, etc — Search

Players | Teams | Seasons | Leaders | Scores | Playoffs | Draft | Stathead | Newsletter | Full Site Menu Below ▾

2020-21 Philadelphia 76ers Game Log

« Previous Season

via Sports Logos.net
About logos

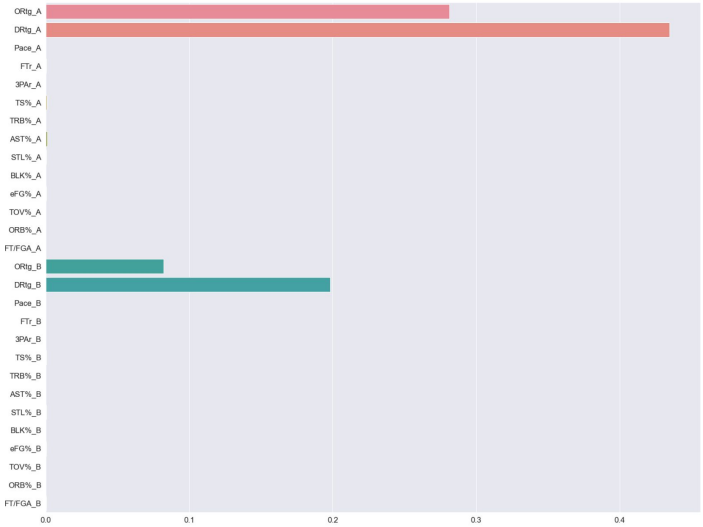
Record: 20-11, 1st in NBA Eastern Conference
Last Game: L 103-110 at TOR
Next Game: Tuesday, Feb. 23 at TOR
Coach: Doc Rivers (20-11)
Executive: Daryl Morey
PTS/G: 114.1 (10th of 30) **Opp PTS/G:** 111.4 (12th of 30)
SRS: 2.12 (9th of 30) Pace: 101.0 (6th of 30)
Off Rtg: 112.6 (13th of 30) Def Rtg: 109.9 (6th of 30) **Net Rtg:** +2.7 (9th of 30)
Expected W-L: 18-13 (9th of 30)
Arena: Wells Fargo Center **Attendance:** 0 (12th of 30)

76ers Franchise Index | Roster & Stats | Schedule & Results | Transactions | More 2020-21 76ers Pages ▾

» Switch to Advanced Game Log

Regular Season Turnovers do not include team turnovers Share & Export ▾ Glossary

						Team														Opponent										
Rk	G	Date		Opp	W/L	Tm	Opp	FG	FGA	FG%	3P	3PA	3P%	FT	FTA	FT%	ORB	TRB	AST	STL	BLK	TOV	PF	FG	FGA	FG%	3P	3PA	3P%	FT	FTA	FT%	ORB	TRB	AST	STL	BLK	TOV	PF
1	1	2020-12-23		WAS	W	113	107	41	87	.471	8	28	.286	23	30	.767	10	47	22	11	8	16	25	39	85	.459	13	27	.481	16	23	.696	5	40	28	7	4	19	26
2	2	2020-12-26	@	NYK	W	109	89	41	88	.466	11	31	.355	16	22	.727	12	47	20	9	6	12	19	32	83	.386	8	29	.276	17	23	.739	13	43	19	6	4	16	23
3	3	2020-12-27	@	CLE	L	94	118	33	79	.418	12	37	.324	16	22	.727	8	39	24	9	5	21	19	48	91	.527	9	23	.391	13	16	.813	11	45	31	13	6	16	22
4	4	2020-12-29		TOR	W	100	93	32	84	.381	8	31	.258	28	33	.848	9	54	21	10	10	18	15	32	90	.356	17	45	.378	12	14	.857	10	47	21	12	7	19	28
5	5	2020-12-31	@	ORL	W	116	92	44	91	.484	15	33	.455	13	15	.867	7	54	23	7	10	14	23	33	95	.347	7	28	.250	19	21	.905	10	48	17	2	5	11	15
6	6	2021-01-02		CHO	W	127	112	47	79	.595	16	35	.457	17	24	.708	7	45	35	10	7	21	17	38	92	.413	13	35	.371	23	26	.885	14	40	34	15	5	12	18
7	7	2021-01-04		CHO	W	118	101	46	95	.484	11	32	.344	15	23	.652	14	55	34	7	5	10	21	36	86	.419	13	39	.333	16	22	.727	8	47	30	4	4	16	24

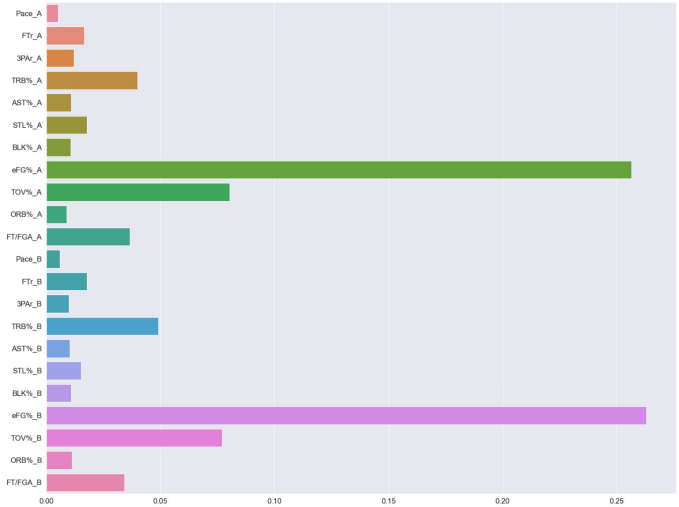


	Train_accuracy	Test_accuracy	F1_score	False_Negative	True_Positive
Decision Tree	100.00	99.62	1.00	9.0	3290.0
XGBoost	100.00	99.89	1.00	2.0	3297.0
Logistic Regression	100.00	100.00	1.00	0.0	3299.0
Support Vector Machine	99.99	100.00	1.00	0.0	3299.0
Random Forest	100.00	99.07	0.99	25.0	3274.0
K-Nearest Neighbors	98.53	97.27	0.97	77.0	3222.0

Findings

- Offensive Rating and Defensive Rating have complete priority

- Models' accuracy perfect/nearly perfect



	Train_accuracy	Test_accuracy	F1_score	False_Negative	True_Positive
XGBoost	99.95	94.54	0.95	196.0	3103.0
RS XGBoost	99.96	94.82	0.95	175.0	3124.0
Random Forest	100.00	90.85	0.91	307.0	2992.0
Random Search Random Forest	99.55	91.05	0.91	290.0	3009.0
Logistic Regression	87.55	87.83	0.88	402.0	2897.0
Support Vector Machine	83.53	84.10	0.84	542.0	2757.0
Decision Tree	81.96	80.36	0.81	579.0	2720.0
K-Nearest Neighbors	81.89	70.97	0.71	963.0	2336.0

New Findings

(Without Offensive and Defensive ratings)

- Other metrics find new life within the models

- Models no longer perfect… simply nearly

Further Work

Last 10 games statistics

Aggregate statistics on a last 10 games level to avoid running into data issues

Betting lines

Use point spreads as a next level for the model to predict

Artificial Neural Network

Implement a neural network model into the project to help with predictions

Thank You!

Does anyone have any questions?

Ripton.Rosen@gmail.com

Findings

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

Because they’re simple
You can organize your ideas clearly
And because you’ll never forget to buy milk!

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

1

2

Creative info

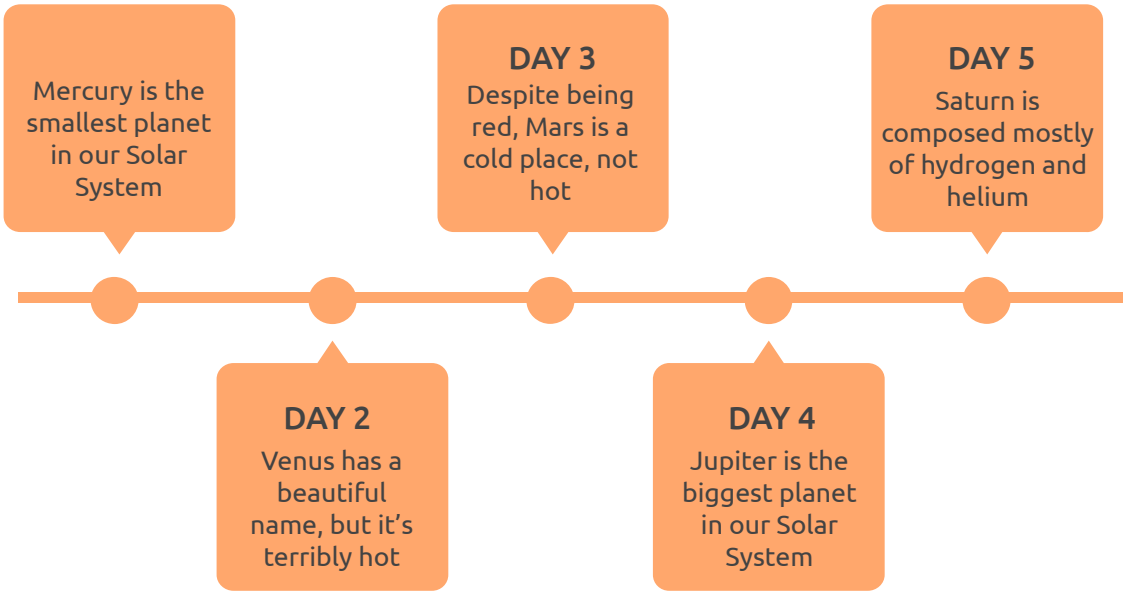
This is the subtitle that makes it comprehensible

3

Data analysis

This is the subtitle that makes it comprehensible

A timeline always works fine



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

—Someone famous

And this is the subtitle that makes it comprehensible

You could use three columns, why not?

MARS

Despite being red, Mars is a cold place, not hot. It’s full of iron oxide dust, which gives the planet its reddish cast

JUPITER

It’s a gas giant and the biggest planet in our Solar System. Jupiter is the fourth-brightest object in the sky

VENUS

Venus has a beautiful name and is the second planet from the Sun. It’s terribly hot—even hotter than Mercury

A picture always reinforces the concept

Images reveal large amounts of data quickly, so remember: use an image instead of long texts. Your audience will appreciate that.

Venus has a beautiful name and is the second planet from the Sun. It’s terribly hot—even hotter than Mercury—and its atmosphere is extremely poisonous

And here too!

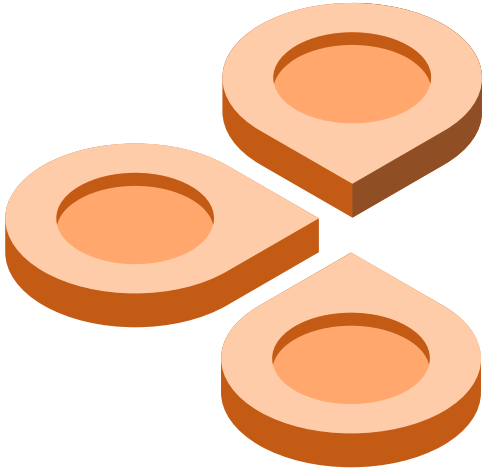
Images reveal large amounts of data quickly, so remember: use an image instead of long texts. Your audience will appreciate that

Awesome words

Because key words are great for catching your audience’s attention

Infographics make your idea understandable…

JUPITER
It’s a gas giant and the biggest planet in our Solar System



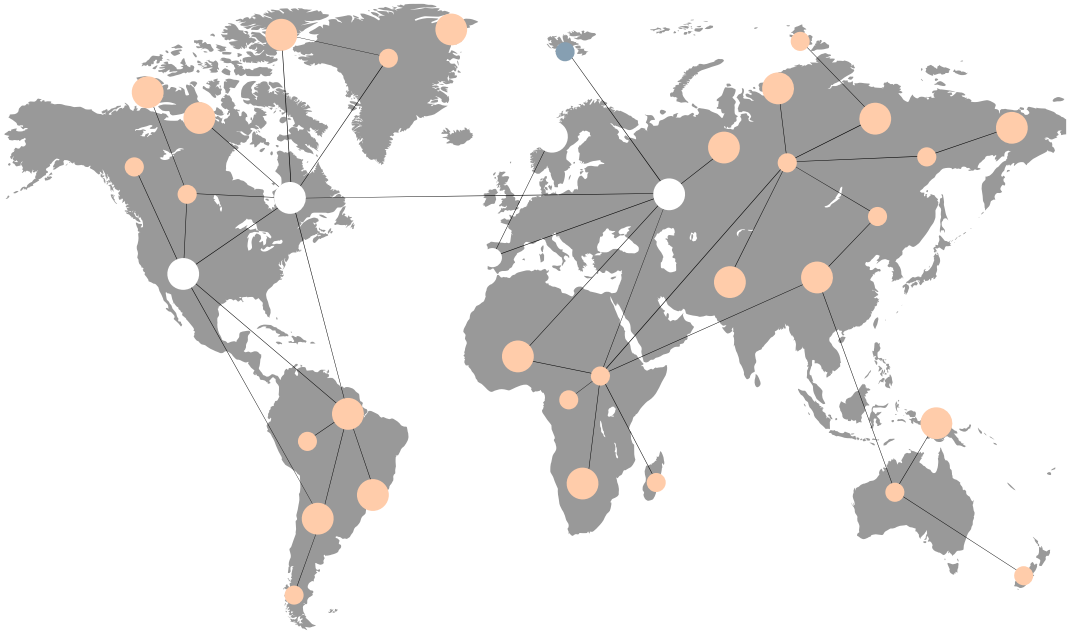
MARS
Despite being red, Mars is a cold place, not hot

VENUS
Venus has a beautiful name, but it’s terribly hot

… and the same goes for tables

	MASS (earths)	DIAMETER (earths)	SURFACE GRAVITY (earths)
MERCURY	0,06	0,38	0,38
MARS	0,11	0,53	0,38
SATURN	95,2	9,4	1,16

This is a map



4,498,300,000

Big numbers catch your audience’s attention

333,000.00

earths is the Sun’s mass

24h 37m 23s

is Jupiter’s rotation period

386,000 km

is the distance between the Earth and the Moon

Sometimes, reviewing concepts is a good idea

VENUS

Venus has a beautiful name and is the second planet from the Sun. It's terribly hot

MARS

Despite being red, Mars is a cold place, not hot. The planet is full of iron oxide dust

SATURN

Yes, this is the ringed one. It's a gas giant, composed mostly of hydrogen and helium

NEPTUNE

Neptune is the farthest planet in our Solar System and also the fourth-largest

Your services

MERCURY

Mercury is the closest planet to the Sun and the smallest one in the Solar System—it's only a bit larger than our Moon. The planet's name has nothing to do with the liquid metal since it was named after the Roman messenger god, Mercury

VENUS

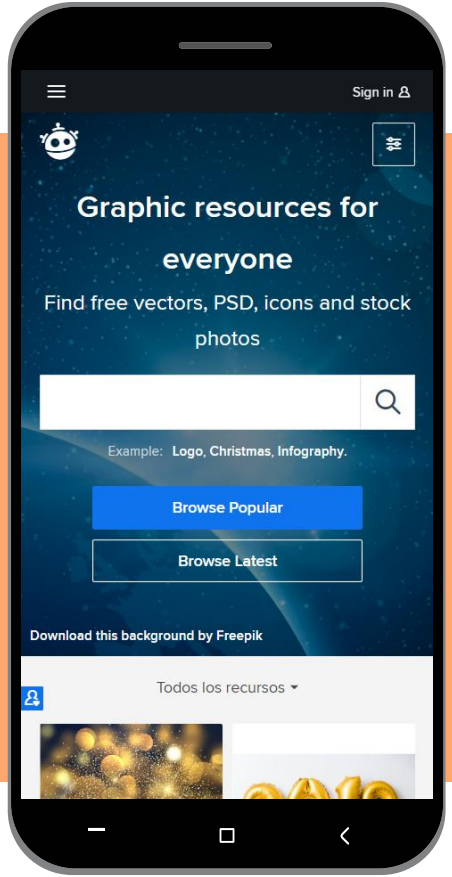
Venus has a beautiful name and is the second planet from the Sun. It's terribly hot—even hotter than Mercury—and its atmosphere is extremely poisonous. It's the second-brightest natural object in the night sky after the Moon

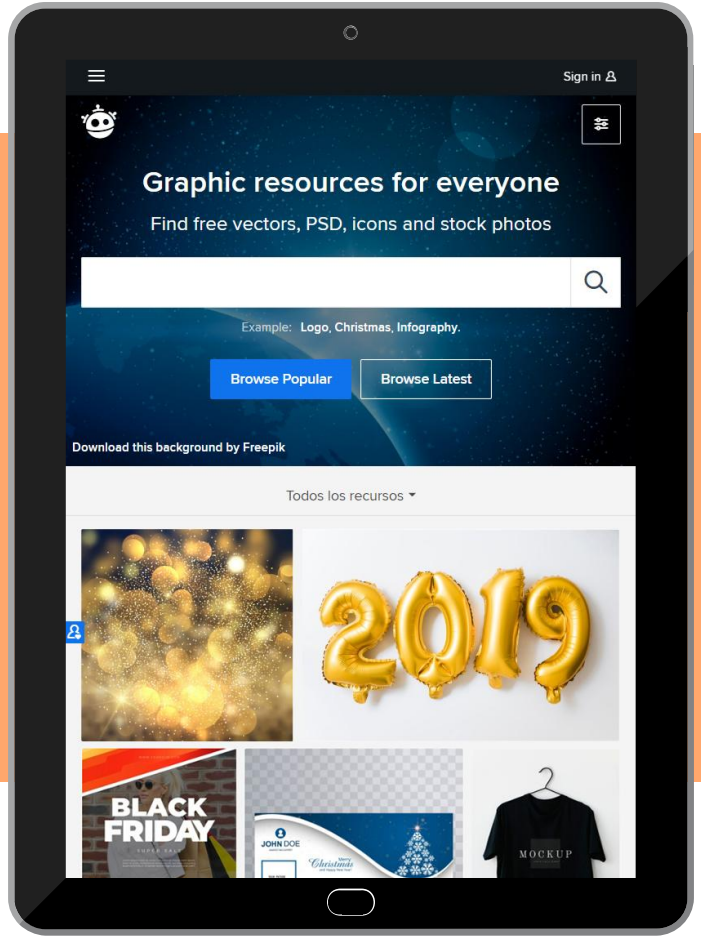
Desktop Software

You can replace the image on the screen with your own work. Just delete this one, add yours and send it to the back

Mobile Web

You can replace the image on the screen with your own work. Just delete this one, add yours and send it to the back





Tablet App

You can replace the image on the screen with your own work. Just delete this one, add yours and send it to the back

Credits

This is where you give credit to the ones who are part of this project.

Did you like the resources on this template? Get them for **free** at our other websites.

Presentation template by Slidesgo

Icons by Flaticon

Images & infographics by Freepik

Author introduction slide photo created by **katemangostar** - Freepik.com

Big image slide photo created by **jcomp** - Freepik.com

Text & Image slide photo created by **rawpixel.com** - Freepik.com

Text & Image slide photo created by **Freepik**

Instructions for use

In order to use this template, you must credit **Slidesgo** by keeping the Credits slide.

You are allowed to:

- Modify this template.
- Use it for both personal and commercial projects.

You are not allowed to:

- Sublicense, sell or rent any of Slidesgo Content (or a modified version of Slidesgo Content).
- Distribute Slidesgo Content unless it has been expressly authorized by Slidesgo.
- Include Slidesgo Content in an online or offline database or file.
- Offer Slidesgo templates (or modified versions of Slidesgo templates) for download.
- Acquire the copyright of Slidesgo Content.

For more information about editing slides, please read our FAQs:
https://slidesgo.com/faqs

Fonts & colors used

This presentation has been made using the following fonts:

Ubuntu
(https://fonts.google.com/specimen/Ubuntu)

#ffa76c

#ffccaa

#ffffffff

Storyset

Create your Story with our illustrated concepts. Choose the style you like the most, edit its colors, pick the background and layers you want to show and bring them to life with the animator panel! It will boost your presentation. Check out How it Works.

Pana

Amico

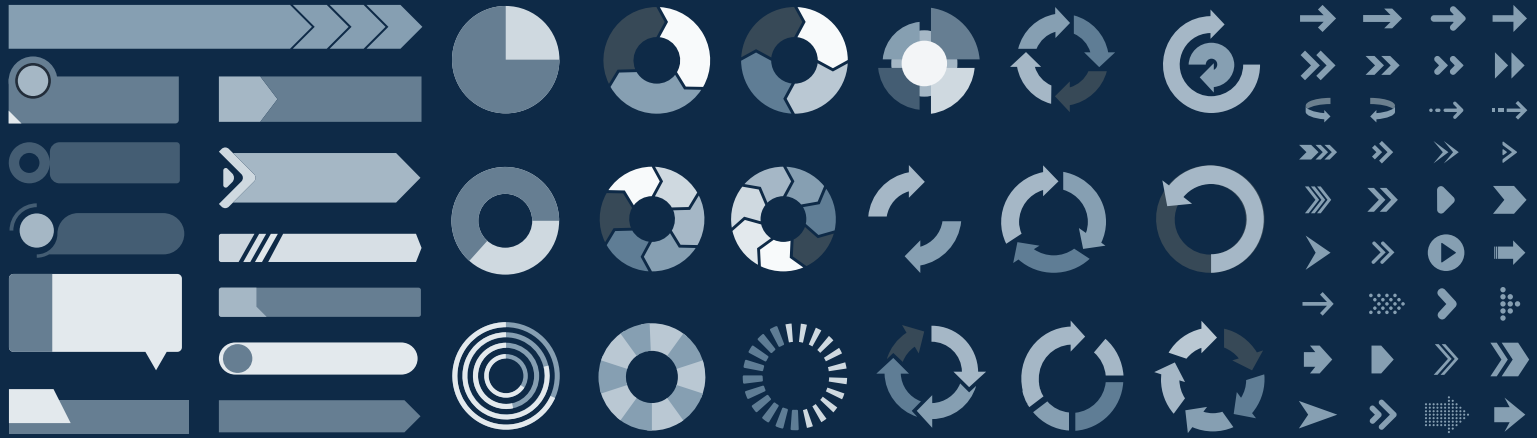
Bro

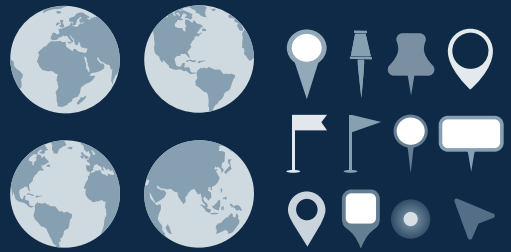
Rafiki

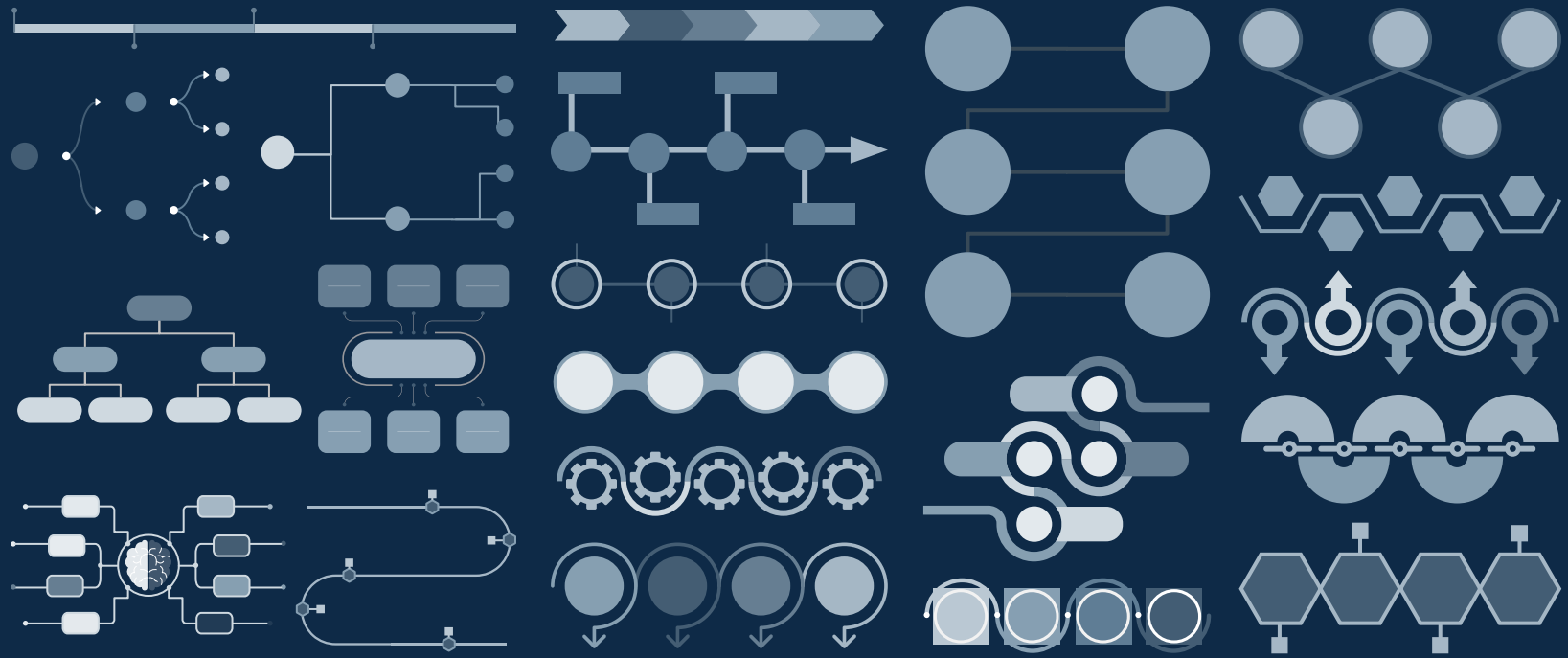
Cuate

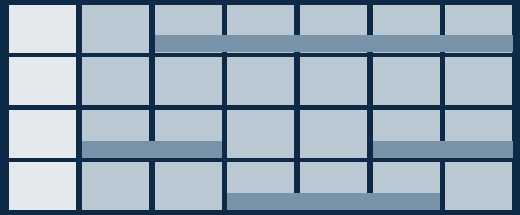
Use our editable graphic resources...

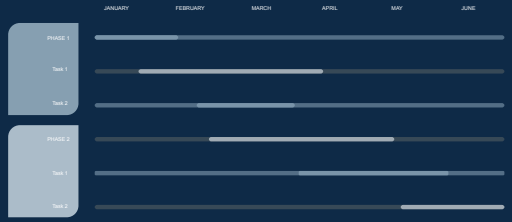
You can easily resize these resources without losing quality. To change the color, just ungroup the resource and click on the object you want to change. Then, click on the paint bucket and select the color you want. Group the resource again when you're done. You can also look for more infographics on Slidesgo.

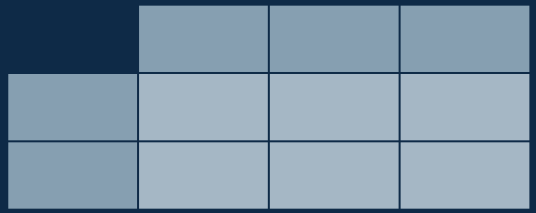


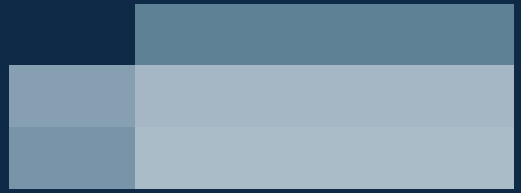


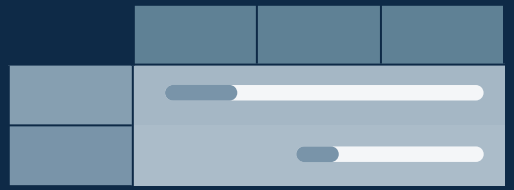


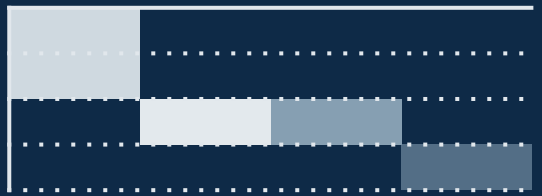


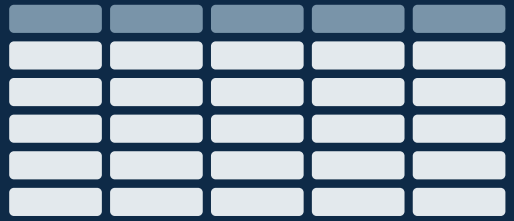

JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
PHASE 1
Task 1
Task 2
PHASE 2
Task 1
Task 2

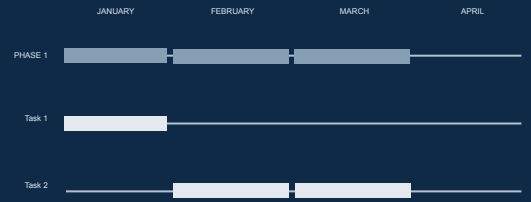


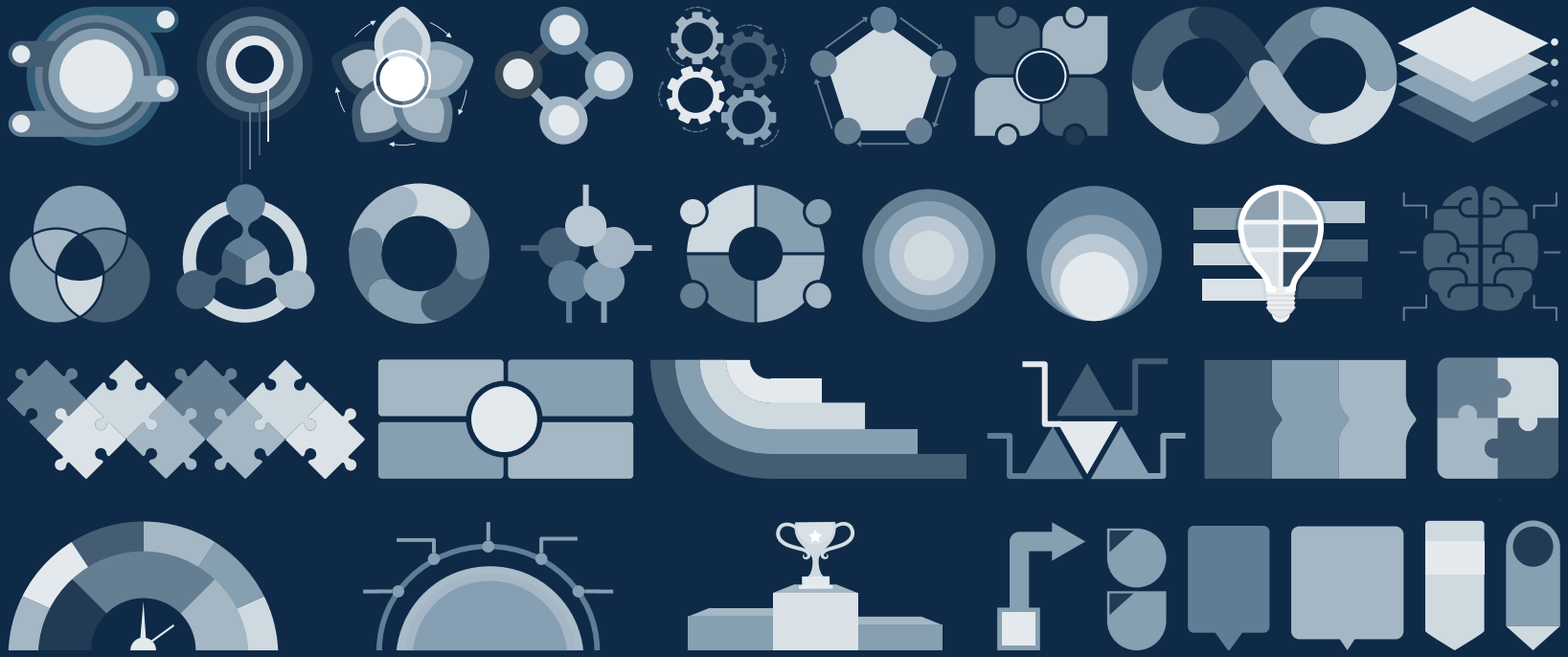


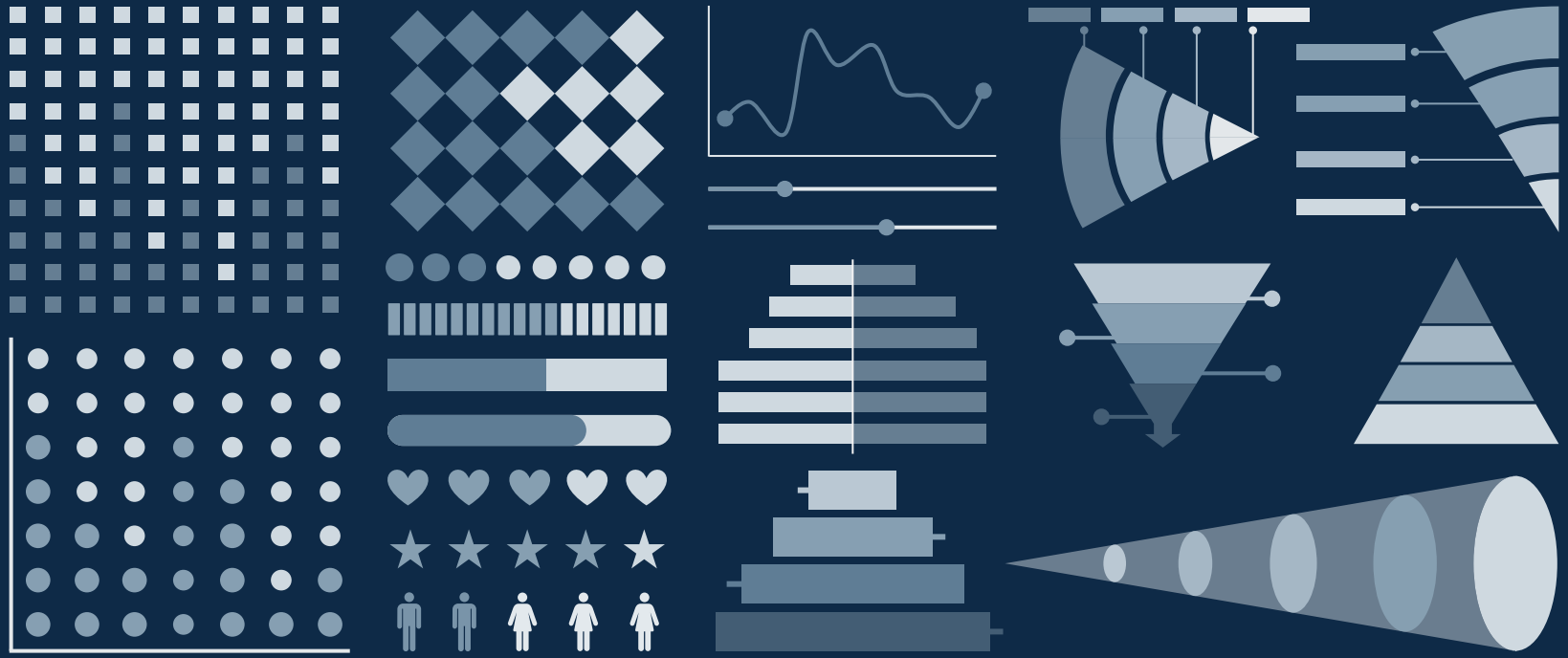







JANUARY
FEBRUARY
MARCH
APRIL
PHASE 1
Task 1
Task 2





...and our sets of editable icons

You can resize these icons without losing quality.
You can change the stroke and fill color; just select the icon and click on the paint bucket/pen.
In Google Slides, you can also use Flaticon's extension, allowing you to customize and add even more icons.

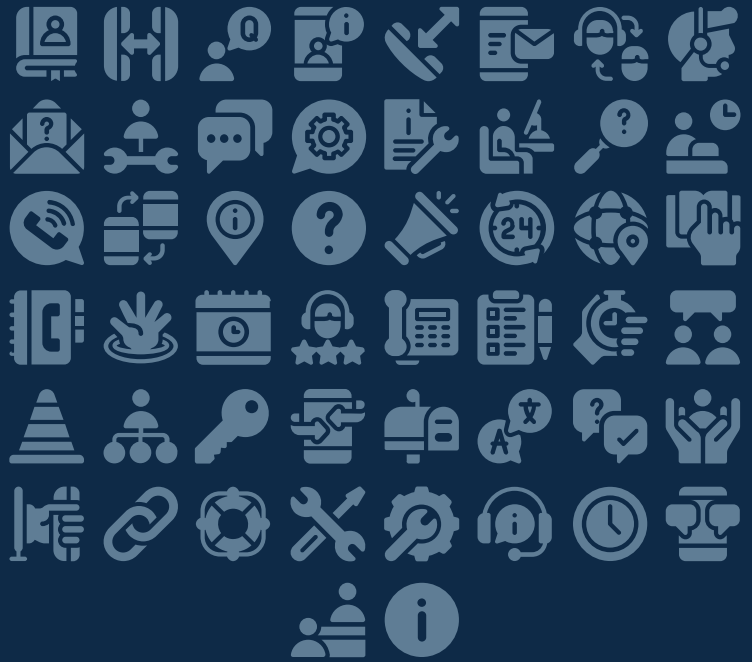
Educational Icons

Medical Icons

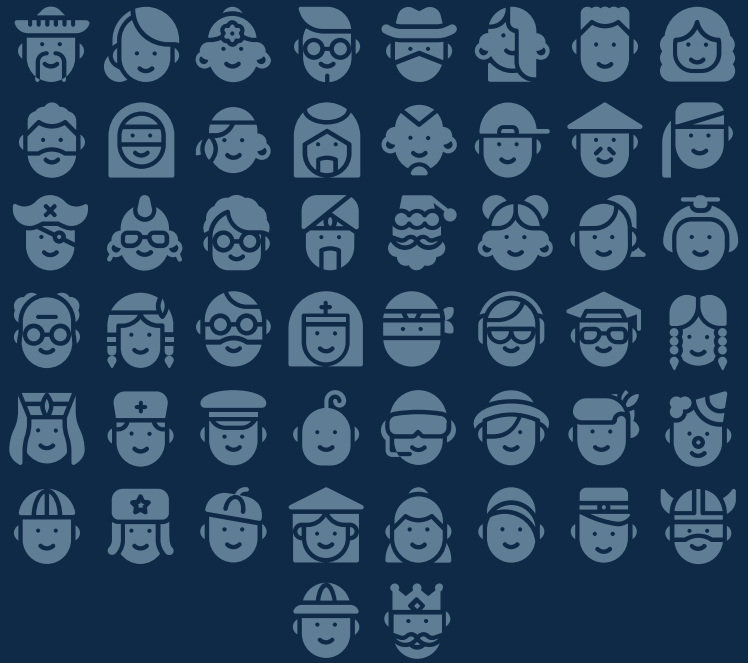
Business Icons

Teamwork Icons

Help & Support Icons



Avatar Icons



Creative Process Icons

Performing Arts Icons

Nature Icons

SEO & Marketing Icons

slidesgo