

MIDTERM PROJECT

Predicting Flight Delays

Oliver Lean & Robyn Mundle



PREDICTING FLIGHT DELAYS



ARRIVAL DELAYS



01. AIR CARRIER DELAY

Maintenance or crew problems, aircraft cleaning, baggage loading, fueling ...

02. LATE AIRCRAFT DELAY

Previous flight delay concerning same aircraft, delaying present flight from leaving ...

03. SECURITY DELAY

Evacuation of a terminal or concourse, reboarding, security breaches, long screening lines ...

04. EXTREME WEATHER DELAY

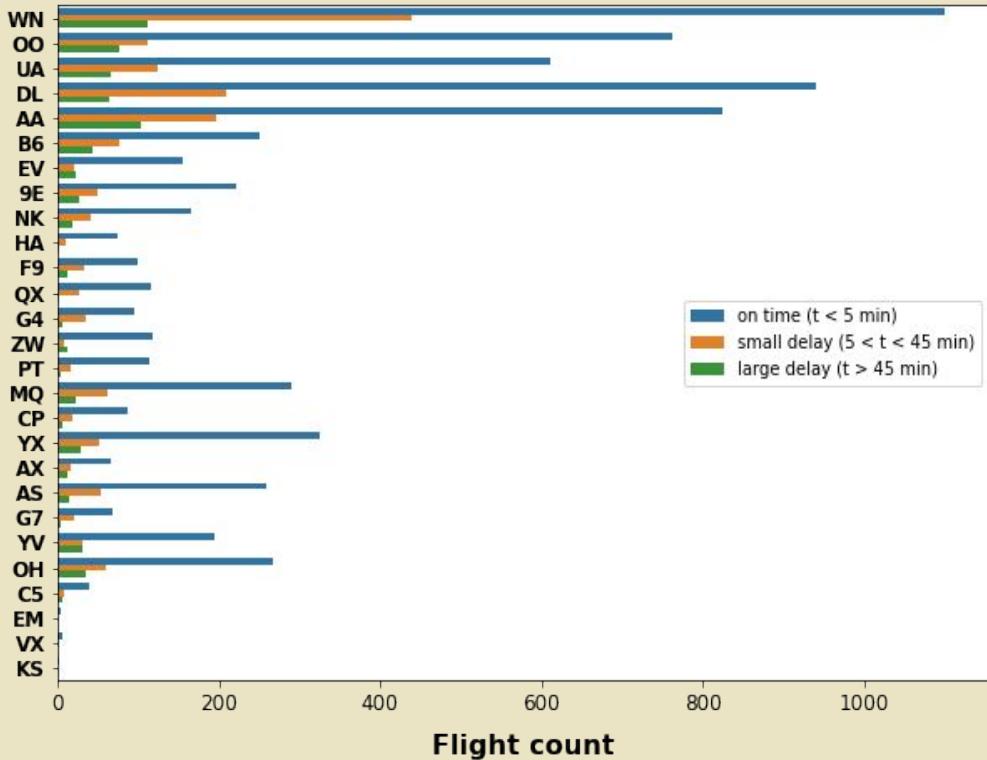
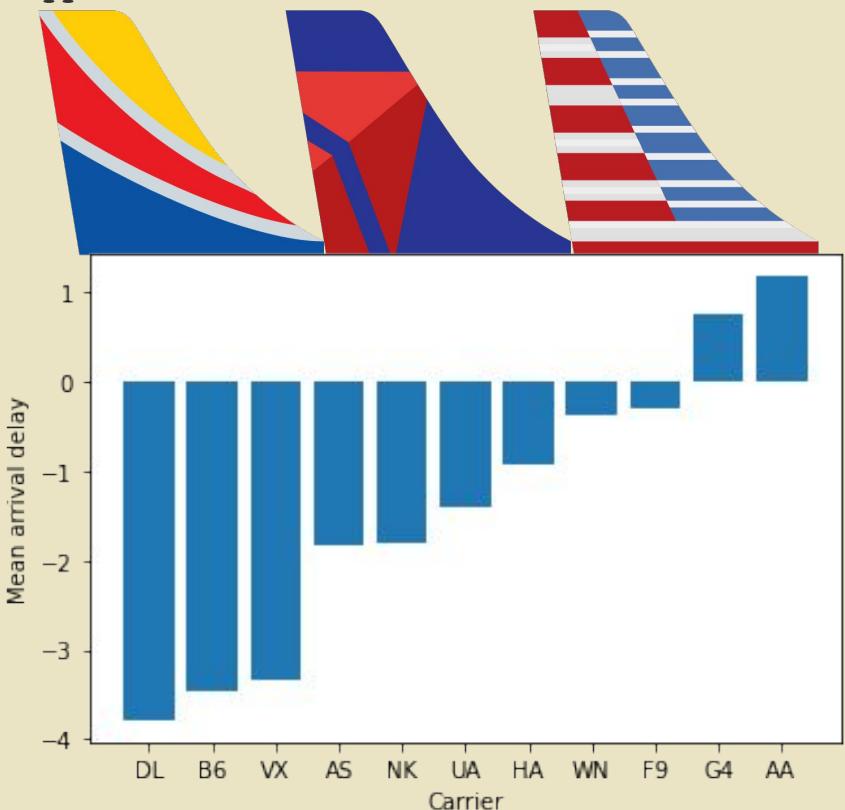
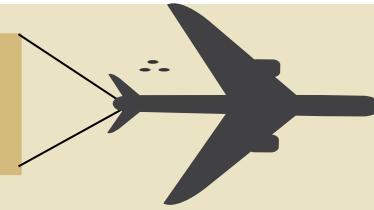
Significant meteorological conditions preventing flight operations ...

05. NAS DELAY - NATIONAL AVIATION SYSTEM

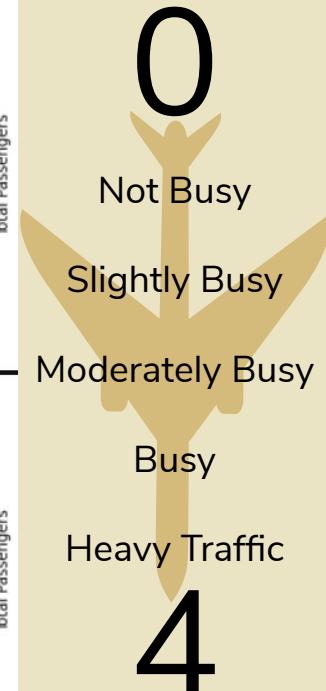
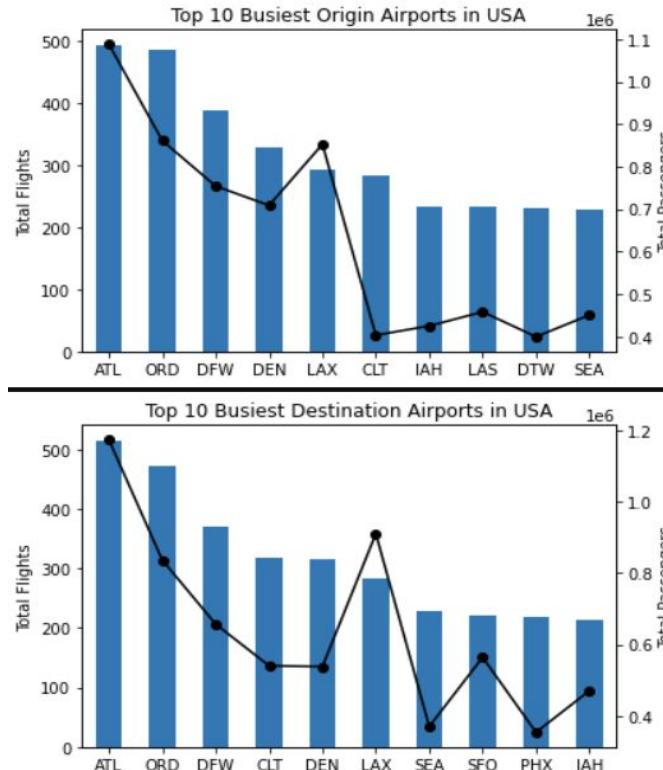
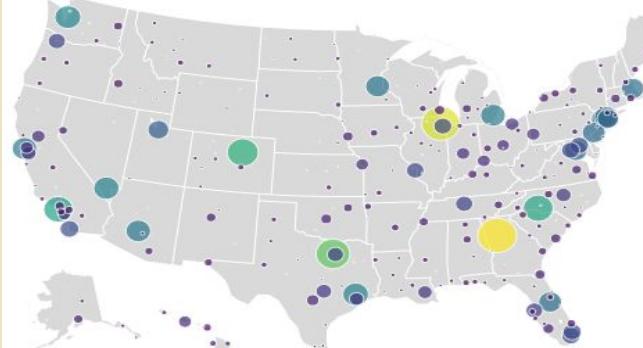
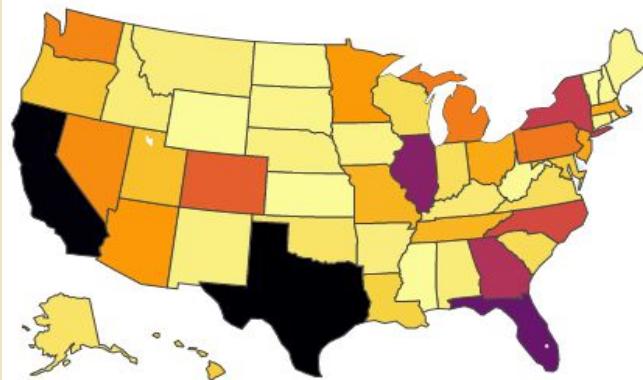
Broad set of conditions: non-extreme weather, airport operations, traffic volume, ATC ...

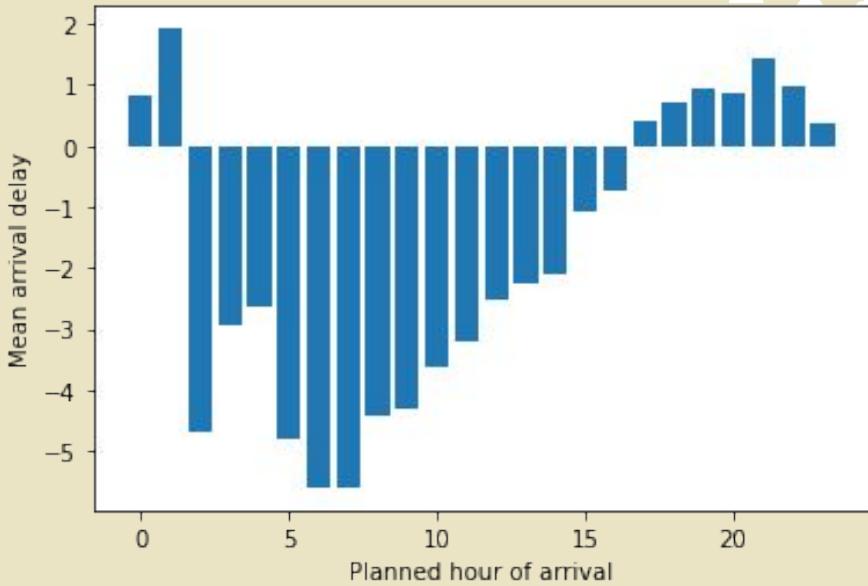
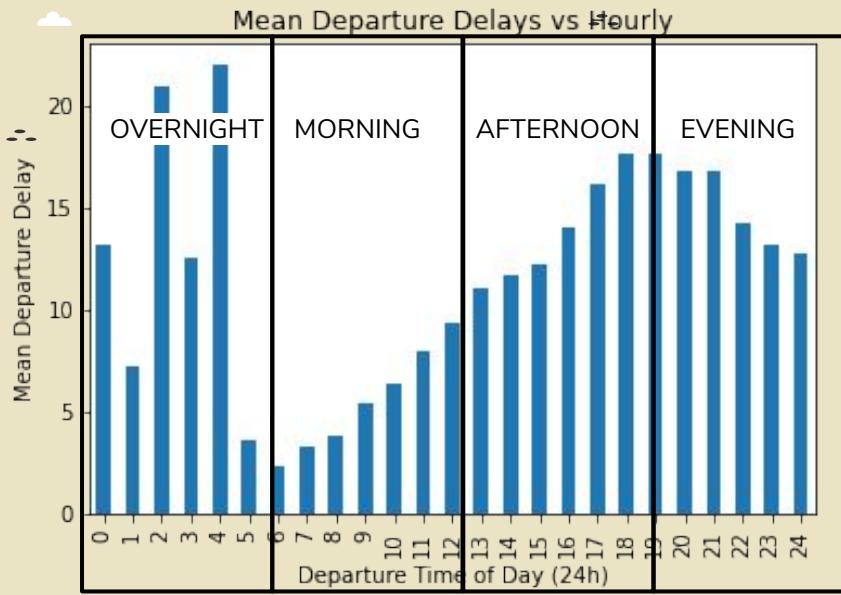
30%

AIR CARRIER



AIRPORT TRAFFIC ANALYSIS



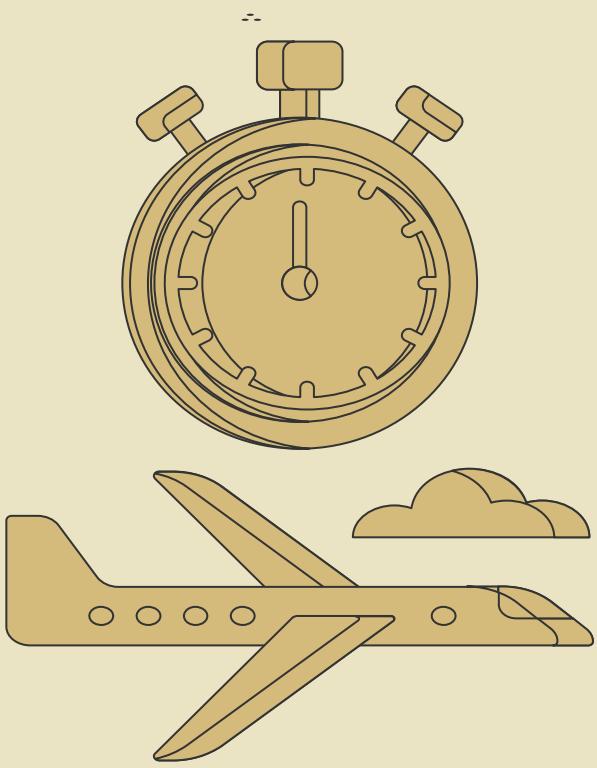


DEPARTURE & ARRIVAL TIME

Historical flight information finds higher average delays at certain hours of the day



Rank expected mean delay for flight time / time of day

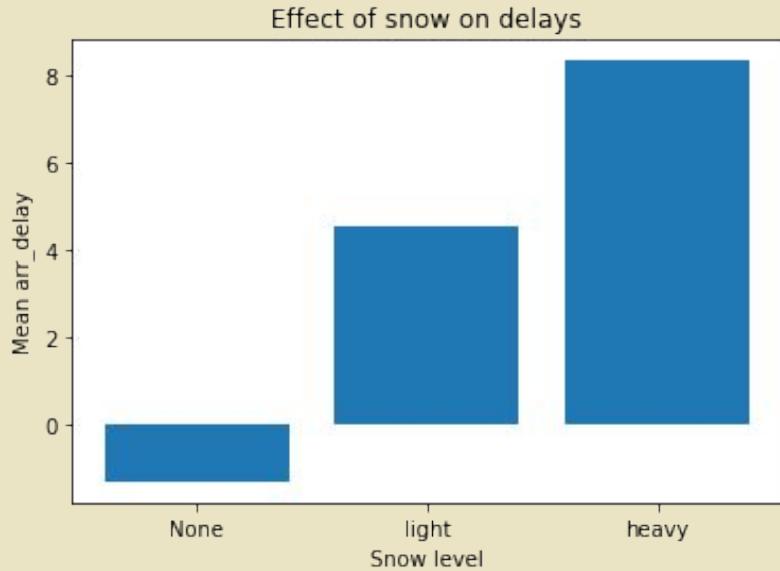
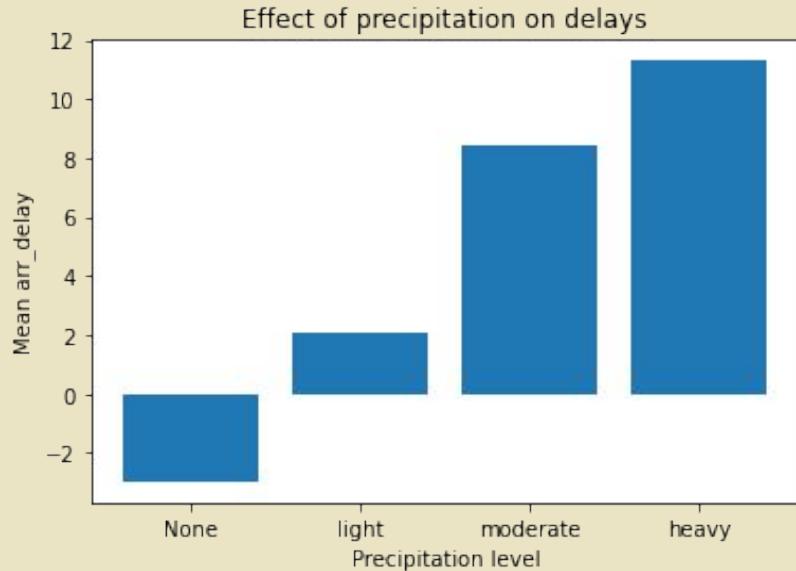


74%

Of delays take place at
the origin

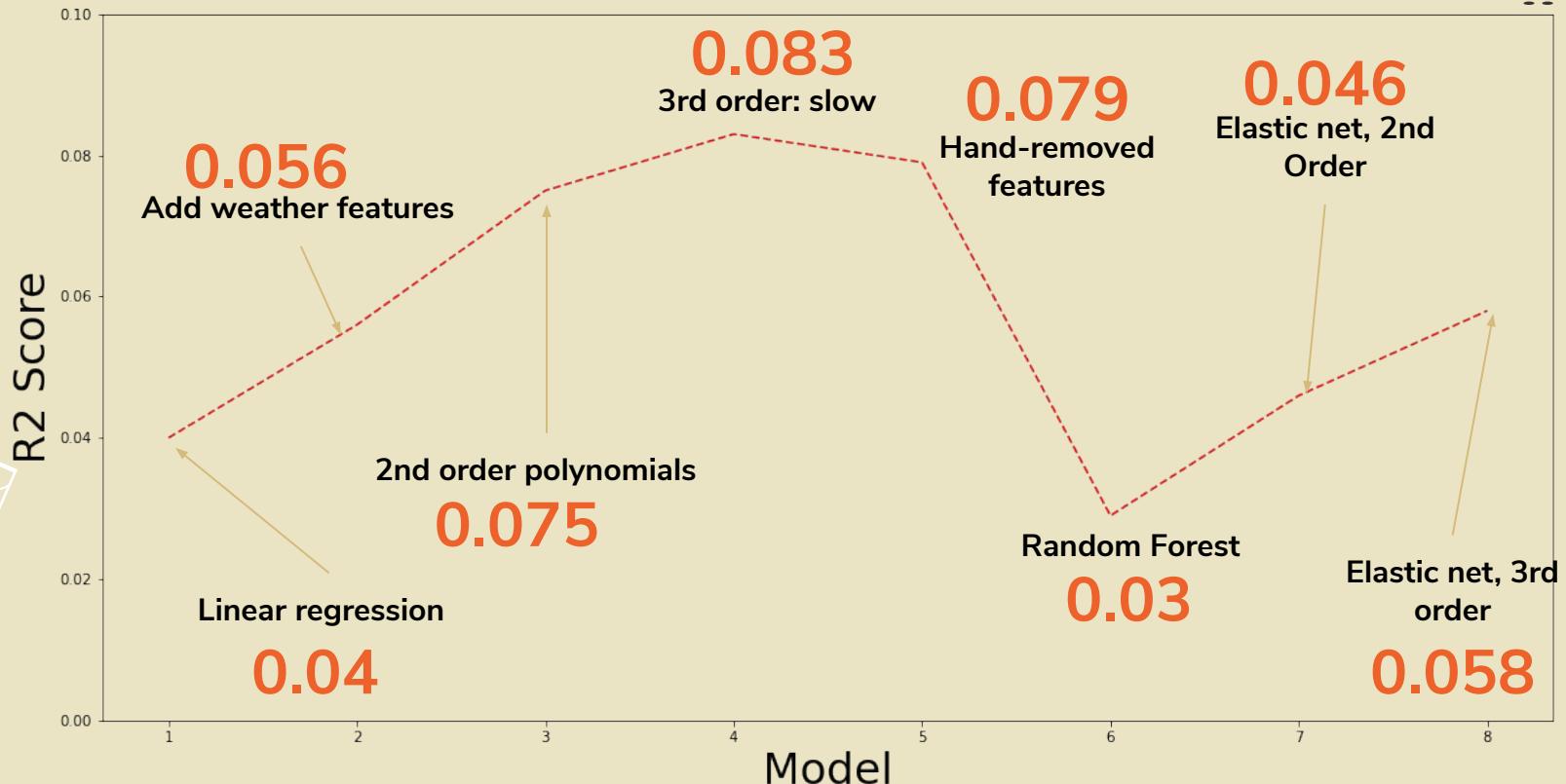
WEATHER TRENDS

Adverse weather conditions are an important external factor affecting delays in the air traffic system





REGRESSION





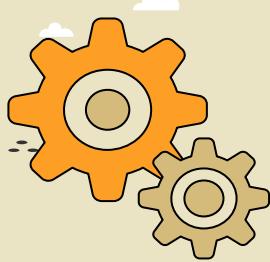
DELAY RANGE

- (0) < 5 min
- (1) 5 - 10 min
- (2) 10 - 20 min
- (3) 20 - 45 min
- (4) 45+ mins

CLASSIFICATION

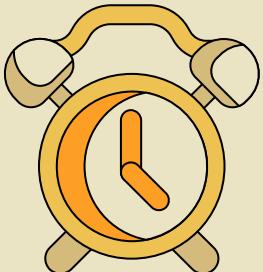
		Logistic Regression	K-Nearest Neighbours	Gaussian Naive Bayes	Random Forest Classifier	XGBoost
	Accuracy	72.9%	70.9%	62.7%	72.9%	72.9%
	Recall	.729	.709	.627	.729	.729
	Precision	.531	.569	.564	.595	.575
	F1 Score	.614	.617	.589	.615	.617



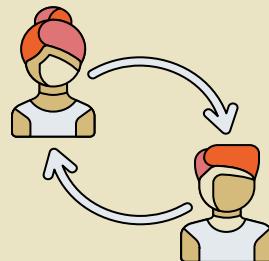


Limited **processing power**
→ Long processing times
→ Costly mistakes

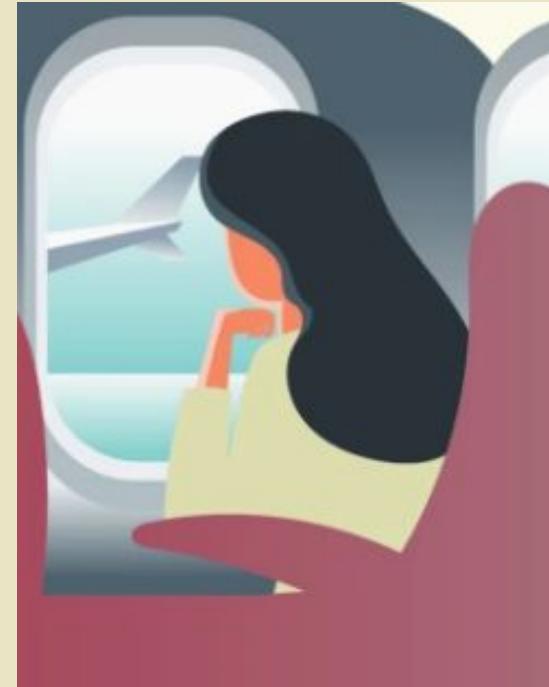
Coordination: Individual exploration needs
to be easily shared & integrated



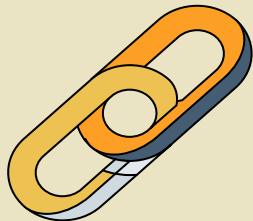
Managing **Expectations**



REFLECTION



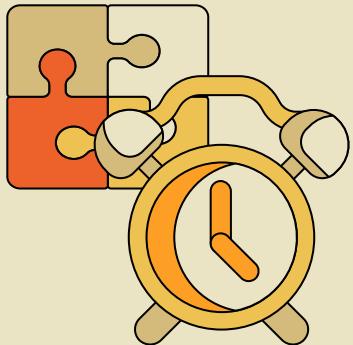
Future Improvements



Preprocessing and feature engineering:
Scale and **integrate** workflow

Basic models → parameter hypertuning

Feature Selection Improvement



THANKS!



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Travel
POSTCARD

To:



5 min presentation

Motivation - What is the problem? Why? Info from Domain Knowledge

Graphs about the general correlations seen in the data (EDA) → Feature selected because of information

- carrier effect
- airport
- delays made up for in the air
- etc.

Modeling? Attempts and Failures (Give scores)

What wasn't working and why? ← recognition of lack of correlation between features and target (delays)

- processing power
- managing expectations
- expensive mistakes due to inexperience

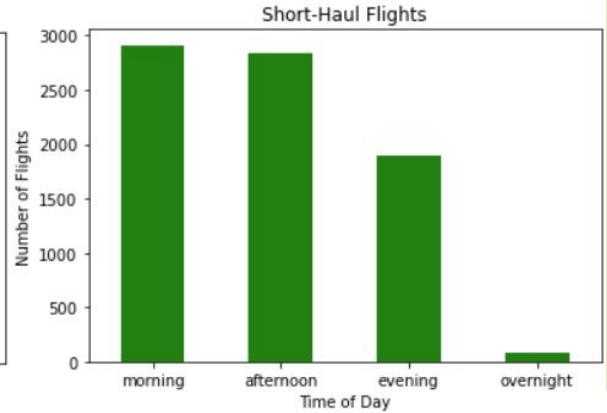
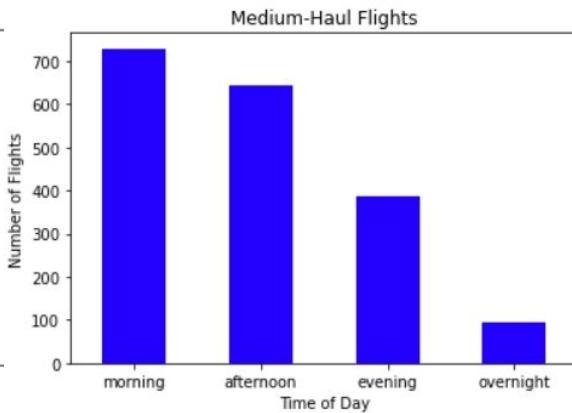
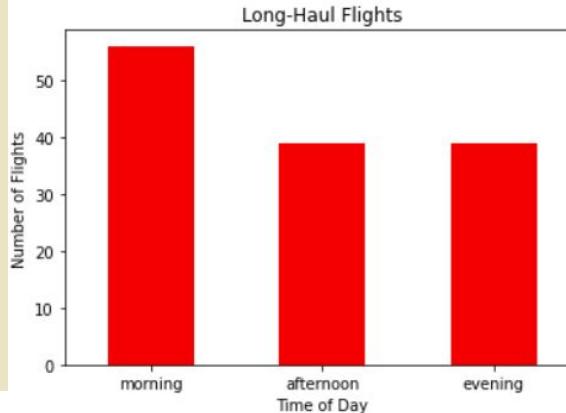
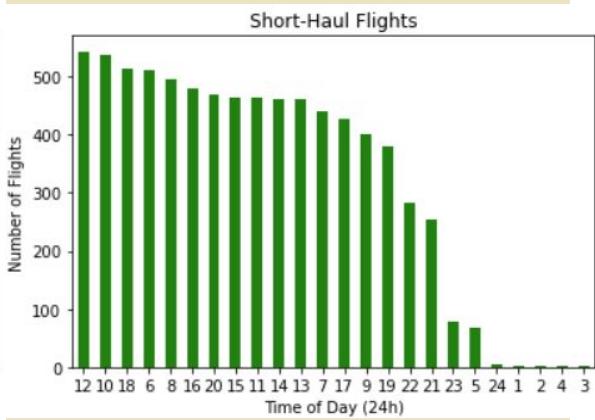
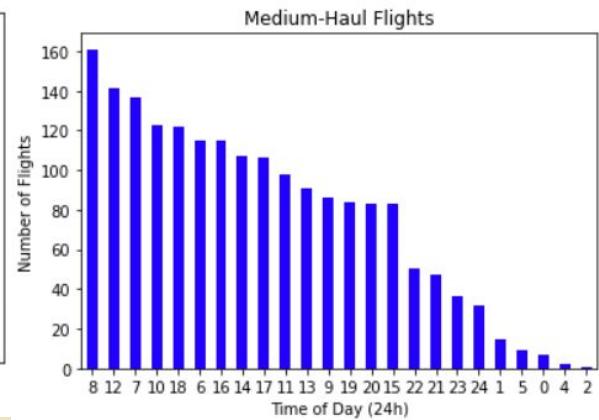
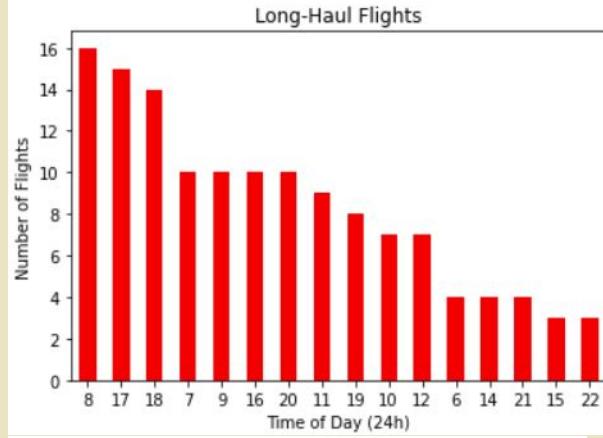
Understanding Flight Delays

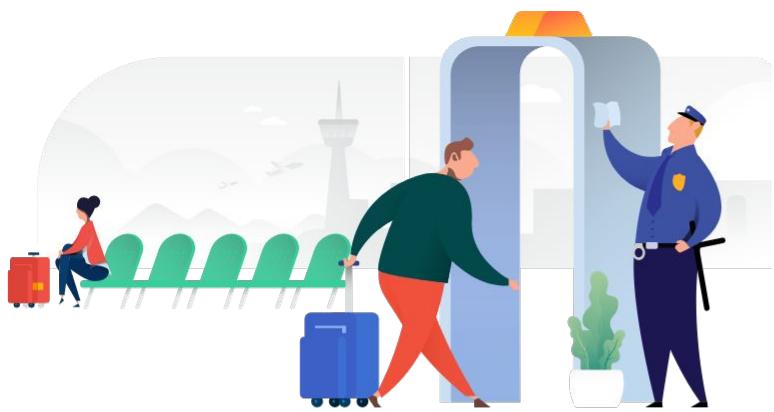
01. DATA EXPLORATION

02. FEATURE SELECTION

03. MODELING

Length of Flight & Departure Time







Rural Holidays Agency

Here's where your
presentation begins



Contents of this template

Here's what you'll find in this **Slidesgo** template:

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 3. More **infographic resources**, whose size and color can be edited.
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You can delete this slide when you're done editing the presentation.

Table of contents

ABOUT US

01



Here you could describe the topic of the section

SERVICES

02



Here you could describe the topic of the section

CLIENTS

03



Here you could describe the topic of the section

OUR TEAM

04

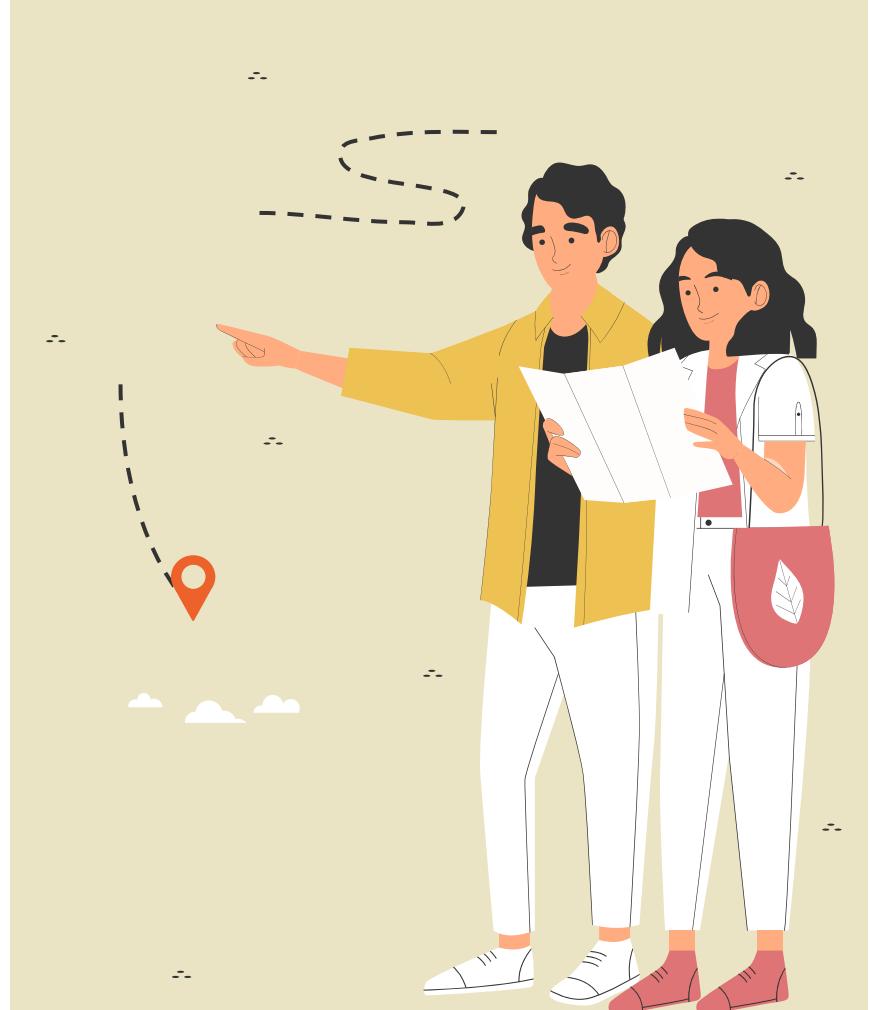


Here you could describe the topic of the section



About us

This could be the part of the presentation where you can introduce your company or agency



Our evolution

DAY 1

Mars is a cold place

DAY 2

Jupiter is a gas giant

DAY 4

Venus has a nice name

DAY 3

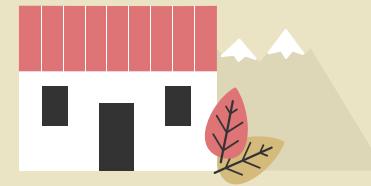
Saturn is the ringed one



What do we do?

SATURN

Saturn is ringed
and a gas giant



MARS

Mars is red and a
very cold place



VENUS

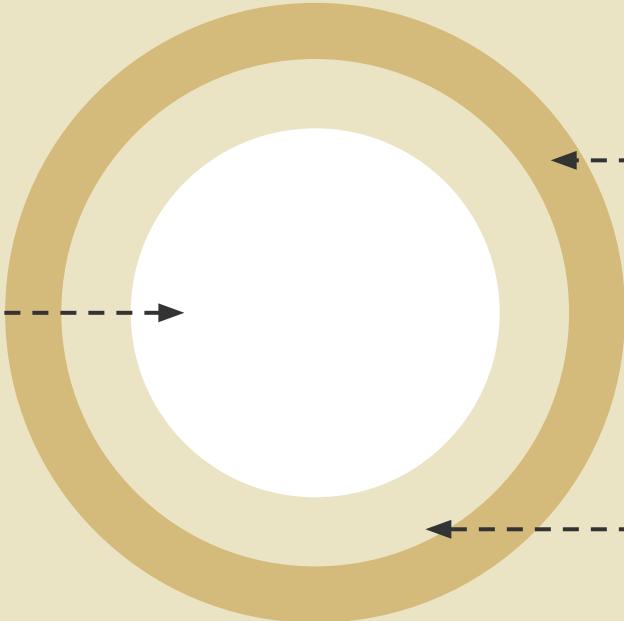
Venus has a
beautiful name

How do we do it?



MARS

Mars is a very cold place



JUPITER

Jupiter is also a gas giant



VENUS

Venus has a nice name

What sets us apart?



MARS

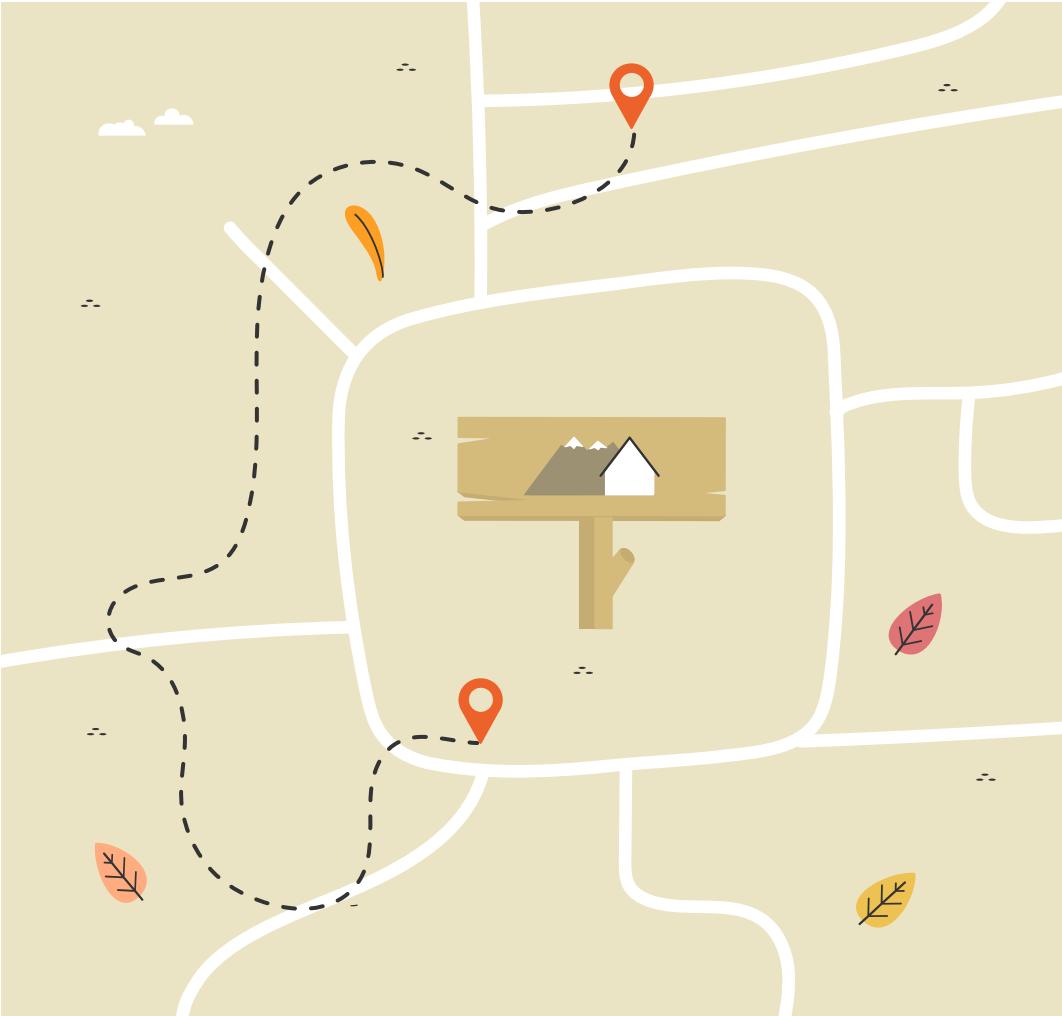
Despite being red,
Mars is actually a
cold place



VENUS

Venus has a nice
name, but it is a
terribly hot planet





01

WINTER SEASON

You could enter a subtitle
here if you need it

What do we offer?



PREPARE

Mercury is the smallest planet



TRAVEL

Neptune is the farthest planet



ADVENTURE

Venus has a nice name, but it's hot



EXPLORE

Mars is actually a cold place



RELAX

Jupiter is the biggest planet



DISCOVER

Saturn is ringed and a gas giant



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

—SOMEONE FAMOUS

Case studies

01



MARS

Mars is actually a cold place

02



VENUS

Venus has a beautiful name

03



SATURN

Saturn is the ringed one

Our clients

To modify this graph, click on it, follow the link, change the data and paste the new graph here, replacing this one



MARS

It's cold

JUPITER

It's big

VENUS

It's hot

This is a table

	 Mass (earths)	 Diameter (earths)	 Surface gravity (earths)
Mercury	0.06	0.38	0.38
Mars	0.11	0.53	0.38
Saturn	1.16	9.4	1.16

Awards & recognition

Lists help you make your point clearer because:

- They're simple
- You can organize your ideas
- You can be more specific



This is a map

Mars

It's a very
cold place

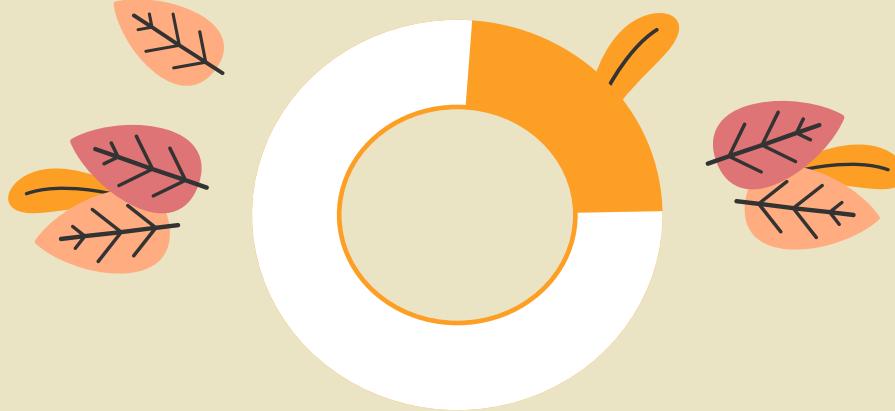
Saturn

Saturn is the
ringed one

Venus

Venus has a
nice name

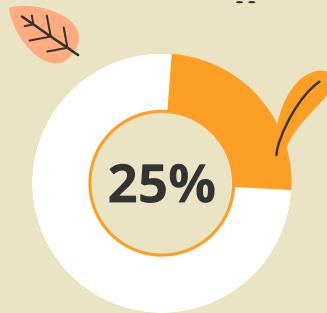




74%

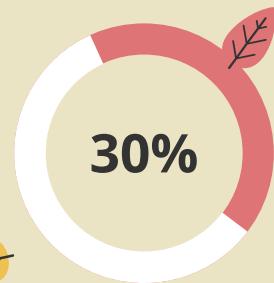
Of delays occur at the **origin**

What they say about us



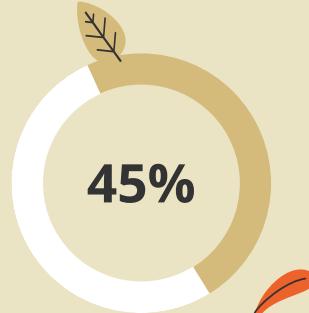
VENUS

Venus has a beautiful name, but it's hot



NEPTUNE

Neptune is actually the farthest planet

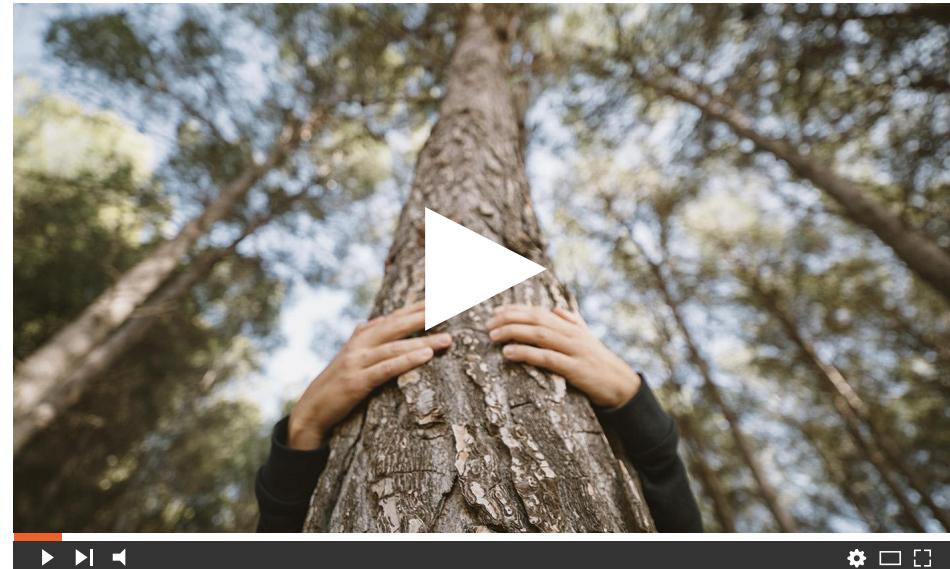


MERCURY

Mercury was named after a Roman god

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Meet the team



**RICHARD
ROE**

Here you can talk a bit about this person



**CHRISTINE
DOE**

Here you can talk a bit about this person



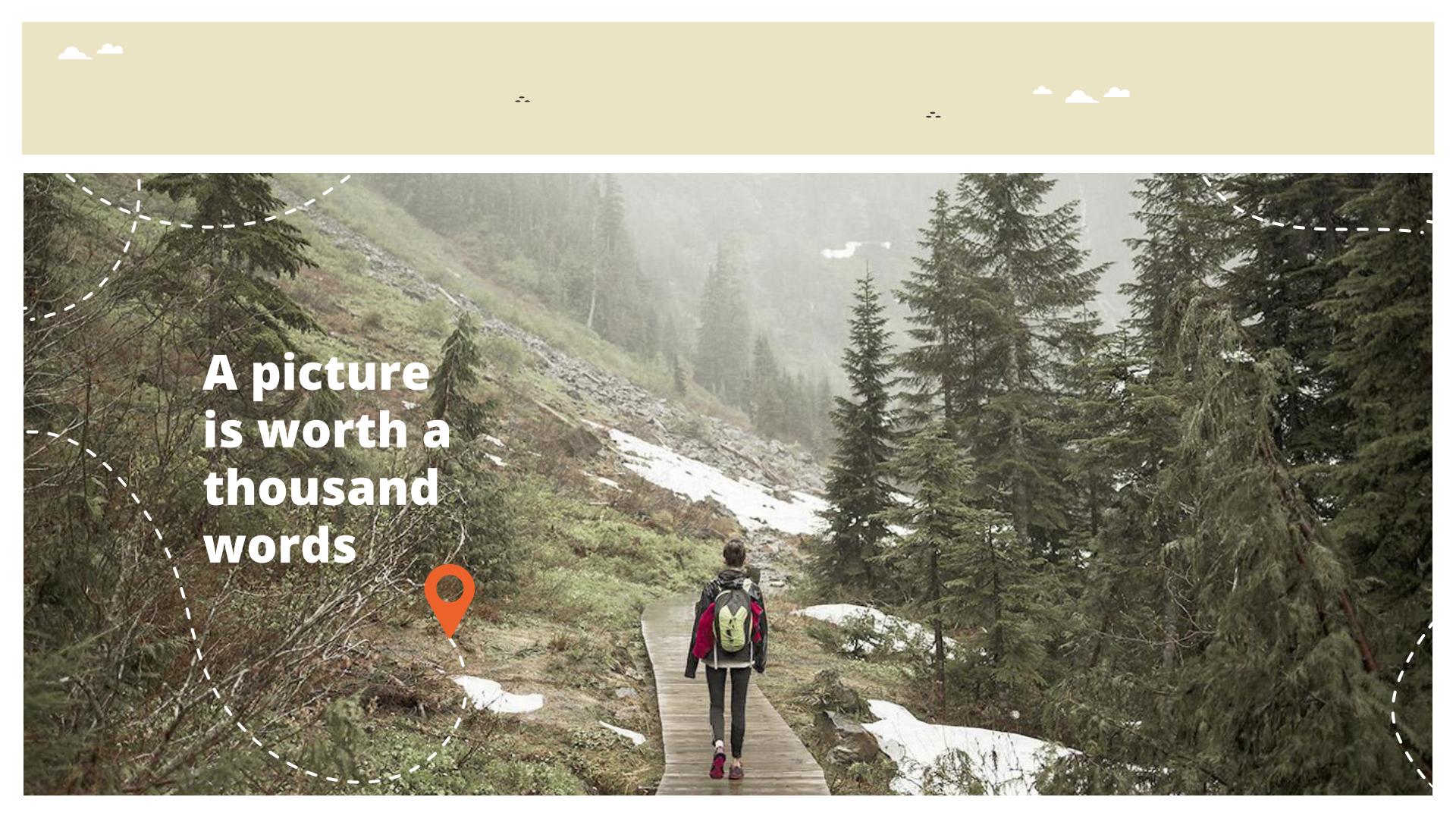
**HELENA
PATTERSON**

Here you can talk a bit about this person



**TIMOTHY
SMITH**

Here you can talk a bit about this person



A picture
is worth a
thousand
words



Thanks!

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Resources

VECTORS

- Flat design hello autumn background
- Three fantastic banners of forest adventure
- Local tourism landing page
- Local tourism theme
- Local tourism concept
- Divorce lawyer service landing page
- People avatar concept for illustration
- Winter houses collection
- Summer camp background with wooden house
- Flat travel background
- Family traveling background
- Flat design youth day concept
- People camping in the nature

PHOTOS

- Rear view of woman walking on boardwalk over the mountain
- Unrecognizable person hugging tree
- Videogame youtube thumbnail for travelers

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Amico



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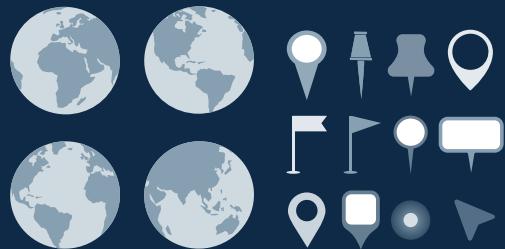
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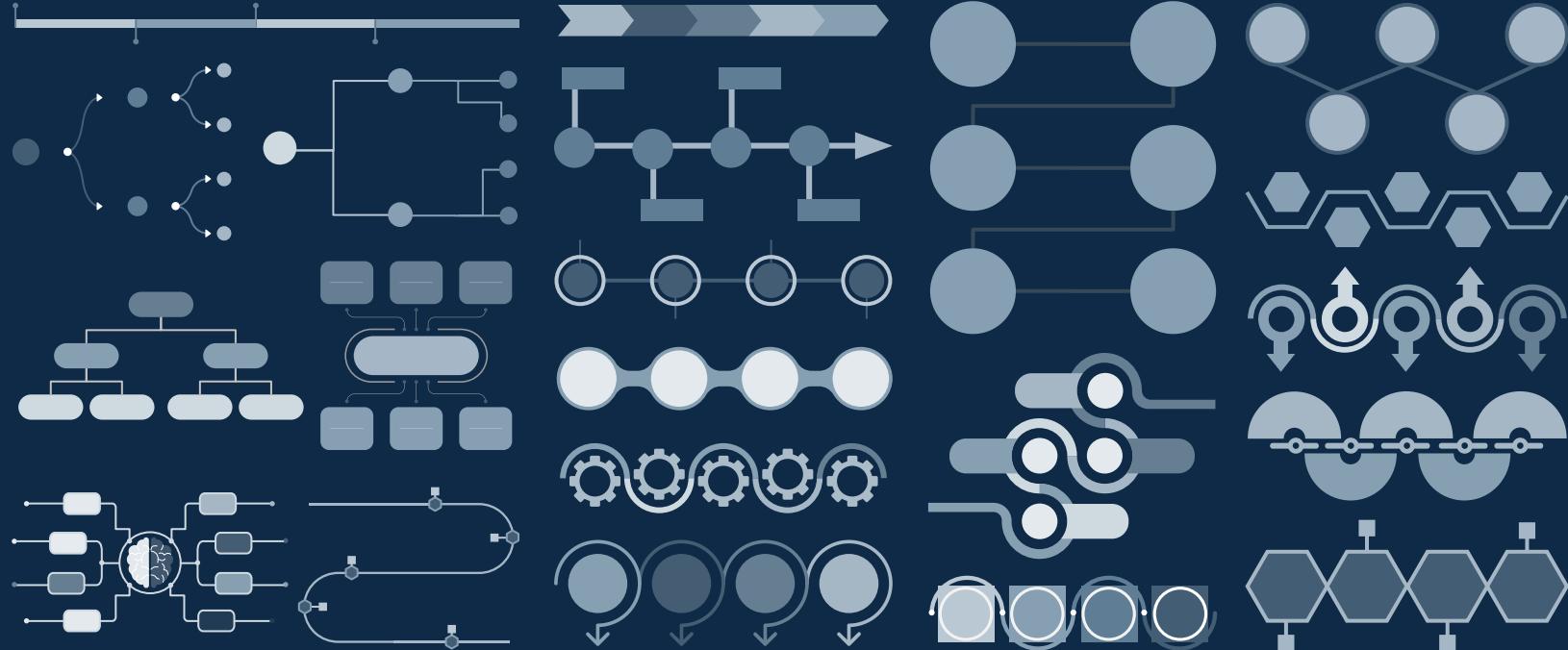
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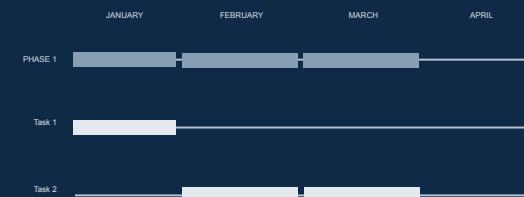
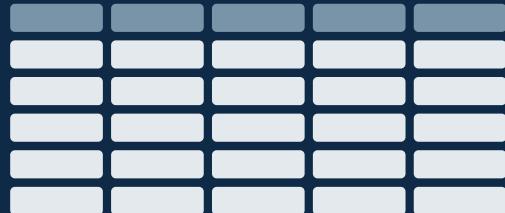
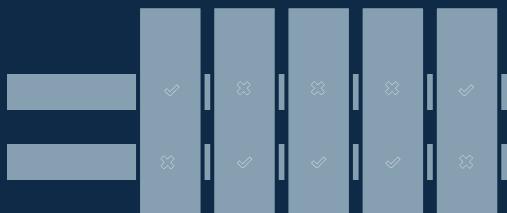
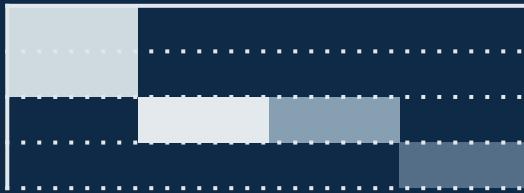
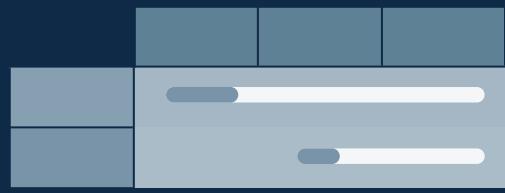
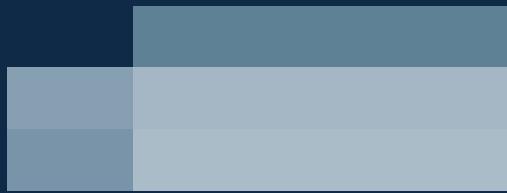
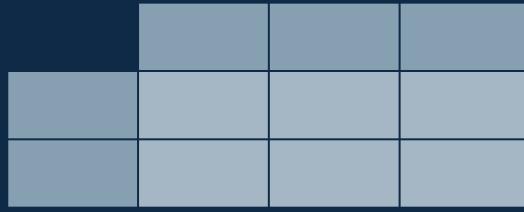
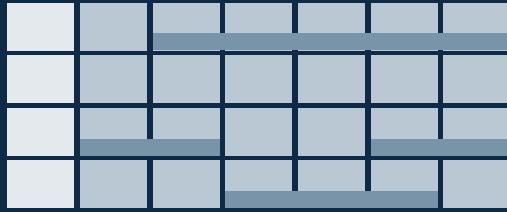
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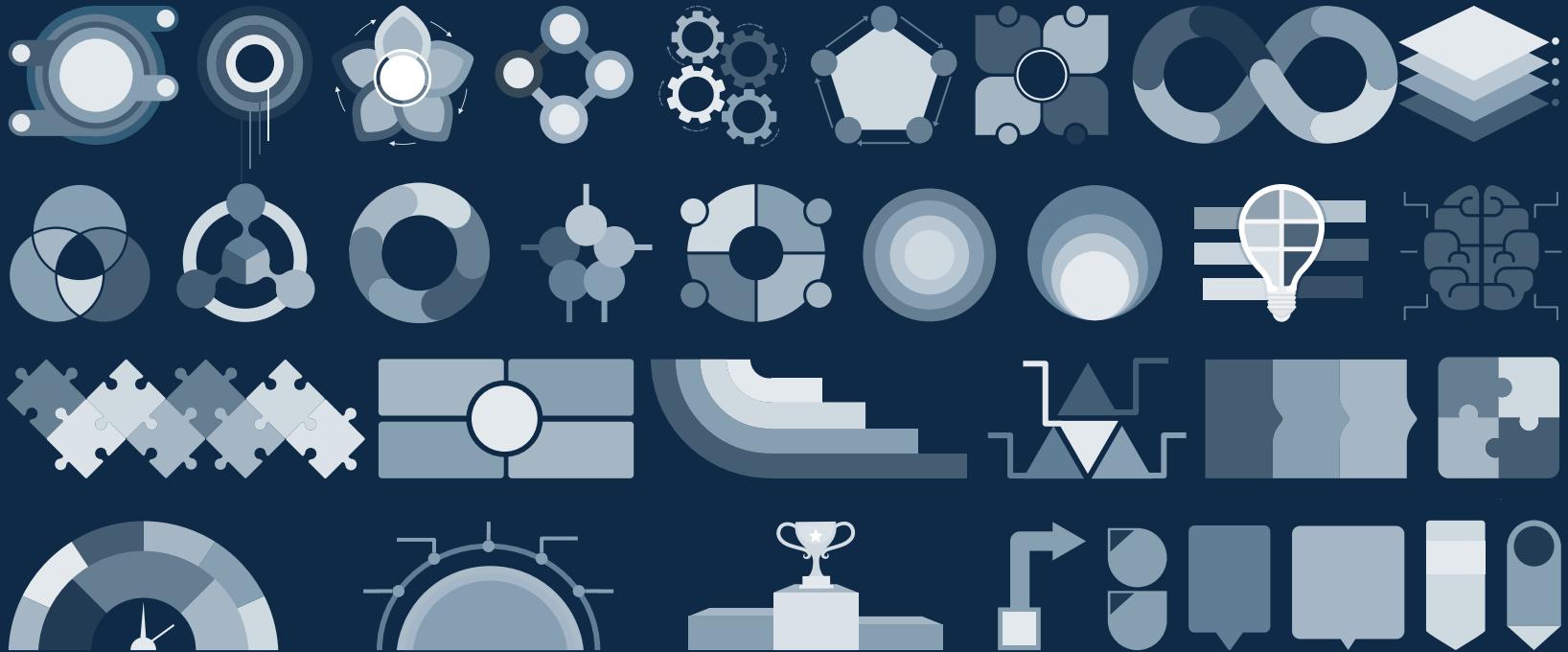
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Medical Icons



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Avatar Icons



Creative Process Icons



Performing Arts Icons



Nature Icons



SEO & Marketing Icons



