The basetable timeline

INTERMEDIATE PREDICTIVE ANALYTICS IN PYTHON

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datacamp

The predictive modeling process

Foundations of predictive analytics I:

- Build predictive models
- Evaluate predictive models
- Present predictive models to business stakeholders

Foundations of predictive analytics II:

- Construct the basetable

The basetable (1)

The basetable (2)

The basetable (3)

Candidate predictors

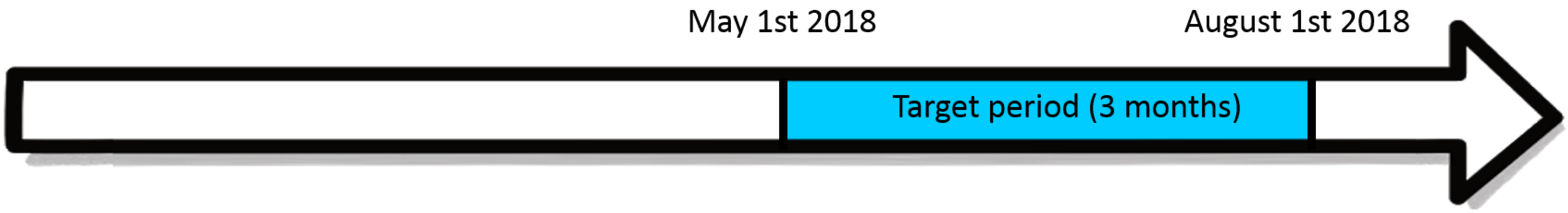
	Age	Gender	Previous gifts	
Population	25	F	12	
	60	M	5	
	45	F	9	

The basetable (4)

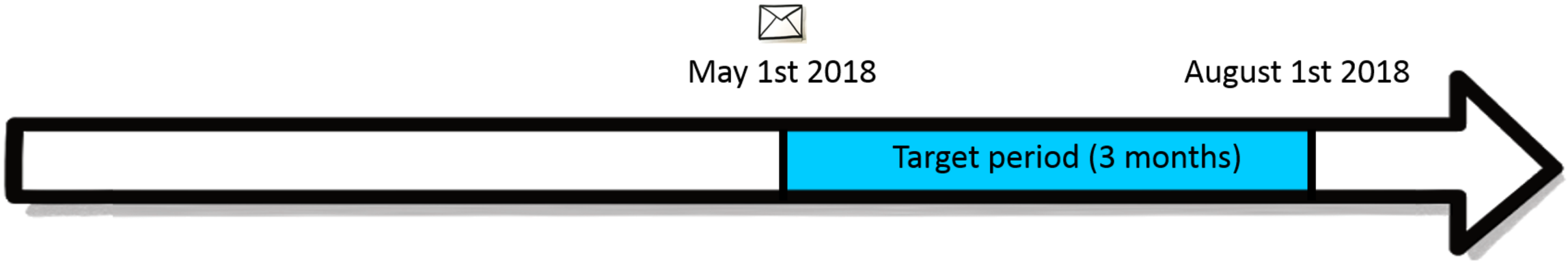
	Candidate predictors			Target
	Age	Gender	Previous gifts	Donate
Population	25	F	12	0
	60	M	5	1
	45	F	9	0

The timeline (1)

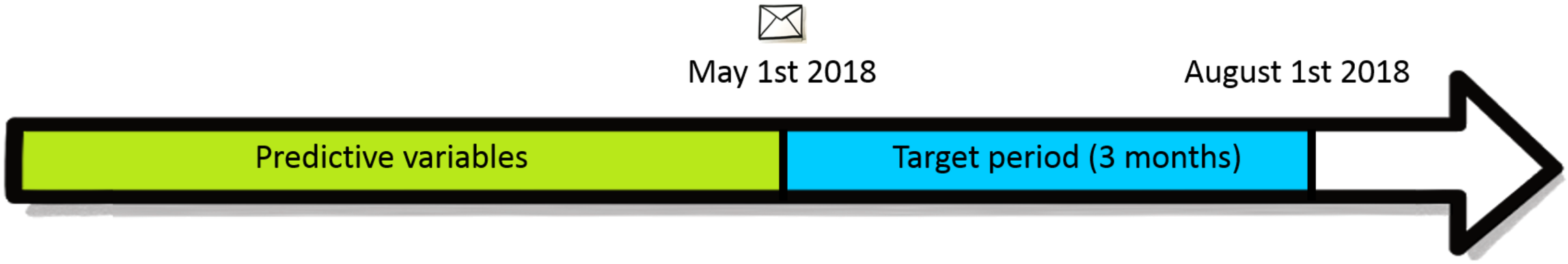
The timeline (2)



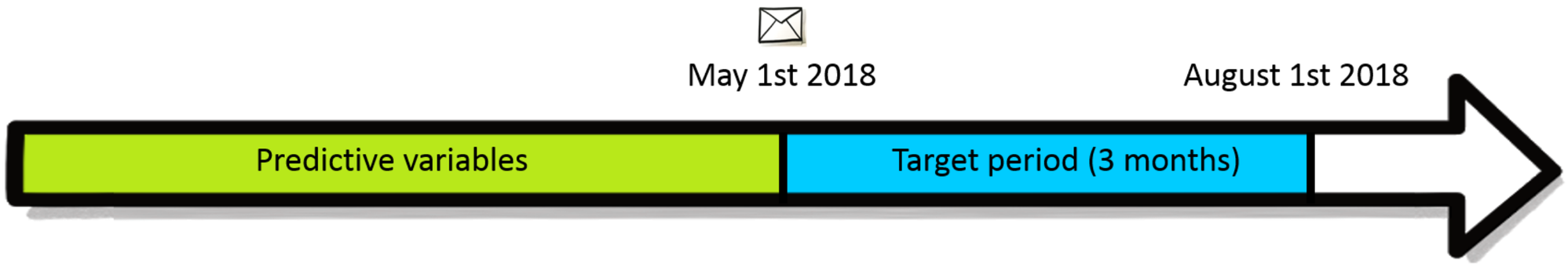
The timeline (3)



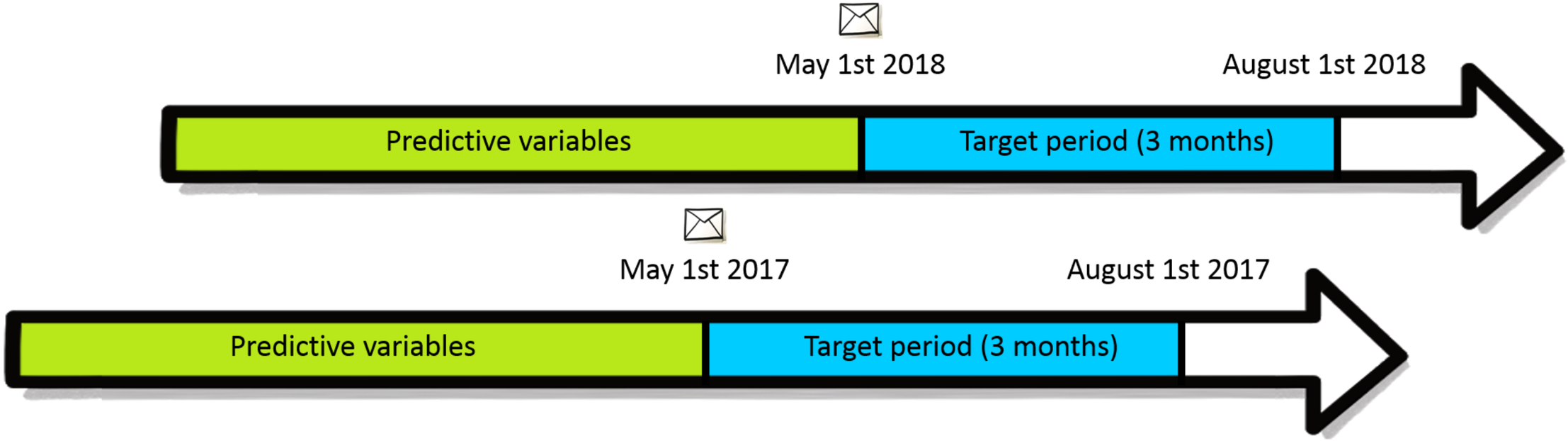
The timeline (4)



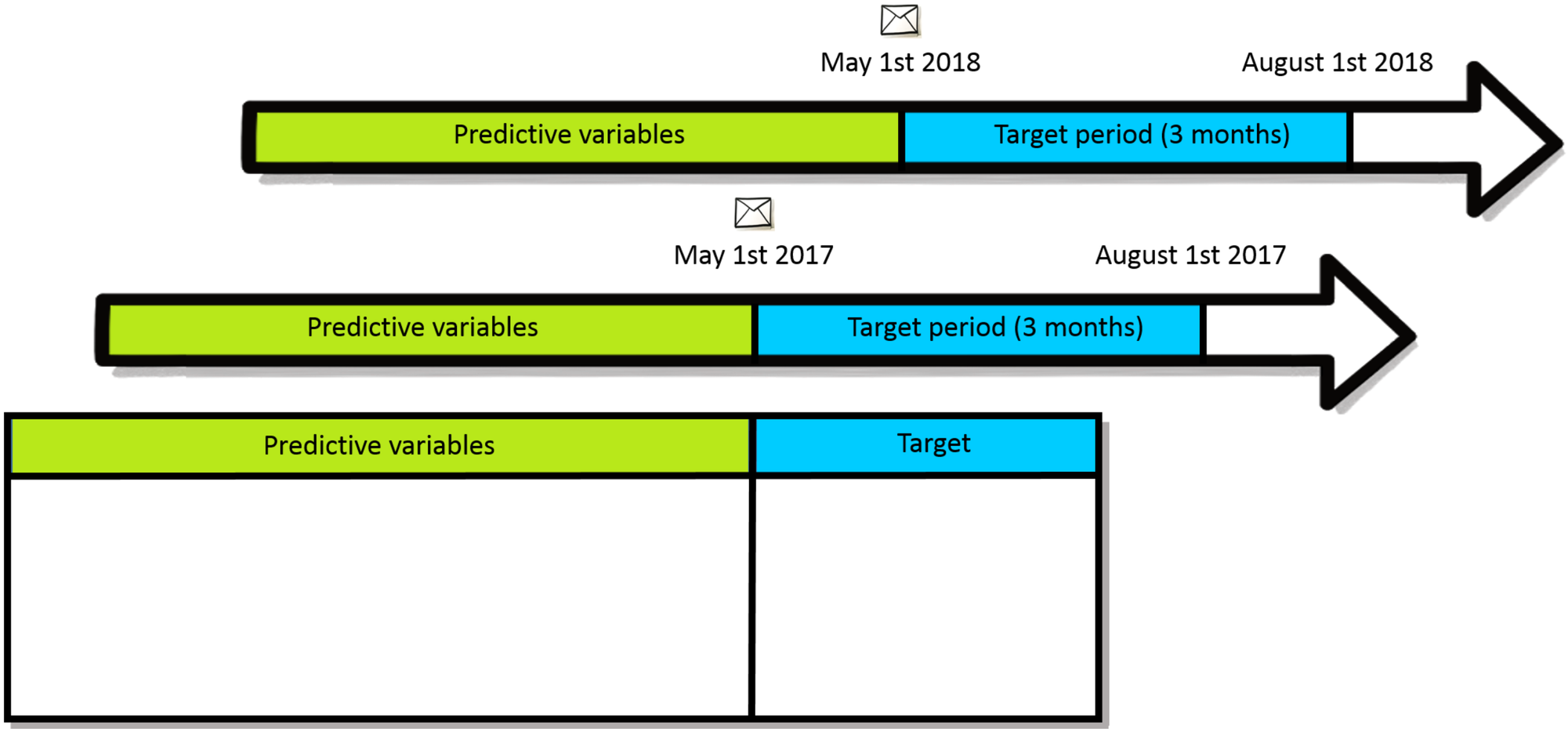
Reconstructing history (1)



Reconstructing history (2)



Reconstructing history (3)



Selecting relevant data in Python

```
import pandas as pd
gifts = pd.read_csv("gifts.csv")
gifts["date"] = pd.to_datetime(gifts["date"])
print(gifts.head())
```

```
   id       date  amount
0   1 2015-10-16    75.0
1   1 2014-02-11   111.0
2   1 2012-03-28    93.0
3   1 2013-12-13   113.0
4   1 2012-01-10    93.0
```

```
start_target = datetime(year = 2018, month = 5, day = 1)
end_target = datetime(year = 2018, month = 8, day = 1)
gifts_target = gifts[(gifts["date"]>=start_target) & (gifts["date"]<end_target)]
gifts_pred_variables = gifts[(gifts["date"]<start_target]
```

Let's practice!

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The population

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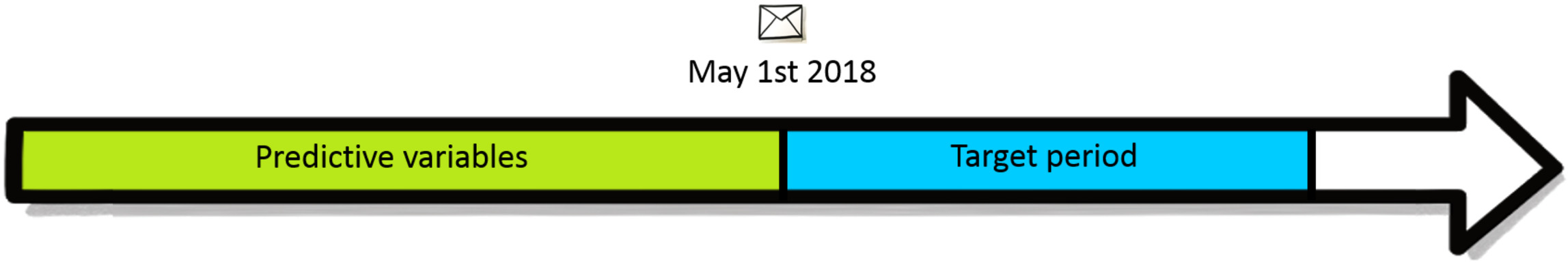
Population requirements

	Candidate predictors			Target
	Age	Gender	Previous gifts	Donate
Population	25	F	12	0
	60	M	5	1
	45	F	9	0

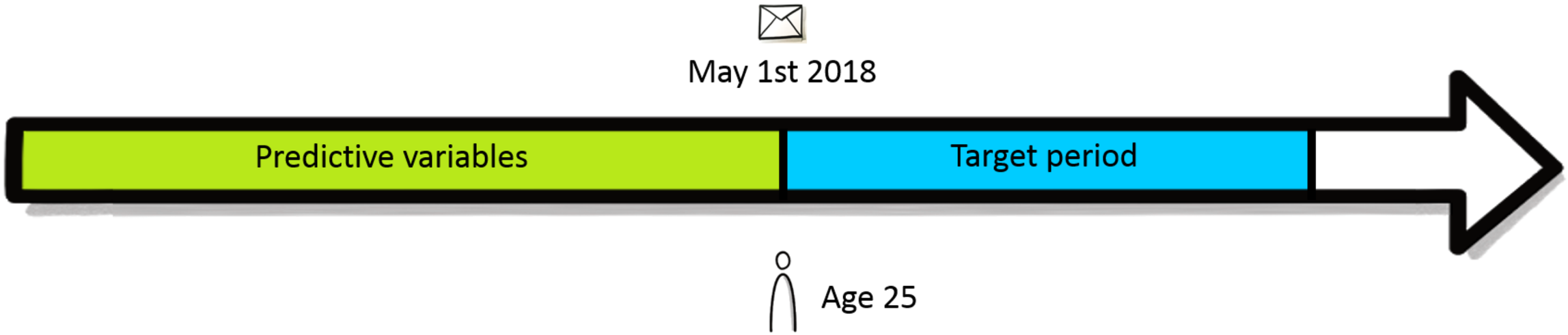
Population should be eligible for being target:

- Address available
- Privacy settings
- ...

Timeline compliant population: age (1)



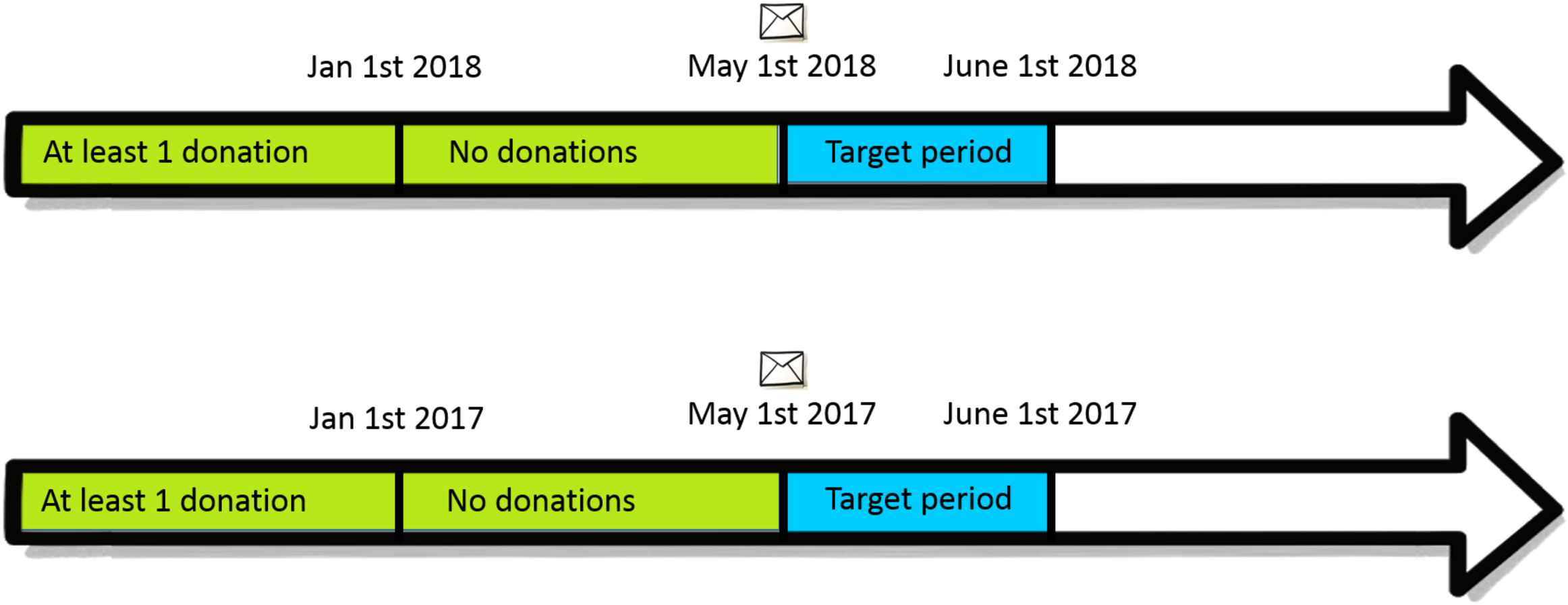
Timeline compliant population: age (2)



Timeline compliant population: donations (1)

Timeline compliant population: donations (2)

Timeline compliant population: donations (3)



Population in python

```
donations_2016 = gifts[gifts["date"].dt.year==2016]
donors_include = set(donations_2016["id"])
print(donors_include)
```

```
{1002,3043,4934, ...}
```

```
donations_2017 = gifts[(gifts["date"].dt.year==2017)
                       & (gifts["date"].dt.month<5)]
donors_exclude = set(donations_2017["id"])
print(donors_exclude)
```

```
{2451,3047,4474, ...}
```

```
population = donors_include.difference(donors_exclude)
```

Let's practice!

INTERMEDIATE PREDICTIVE ANALYTICS IN PYTHON

The target

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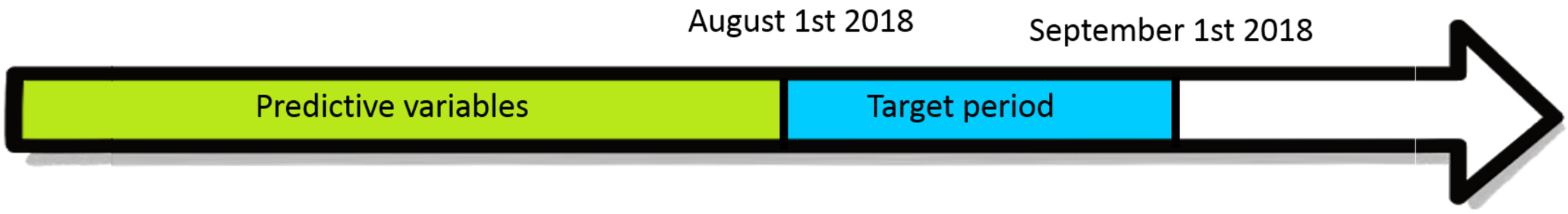
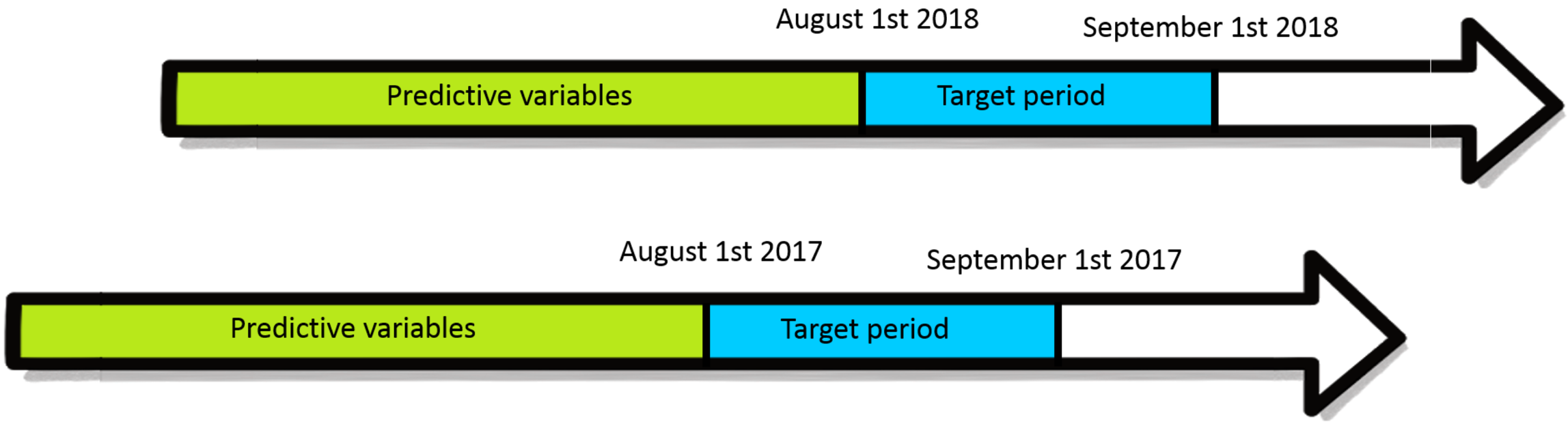
Target definition

	Candidate predictors			Target
	Age	Gender	Previous gifts	Donate
Population	25	F	12	0
	60	M	5	1
	45	F	9	0

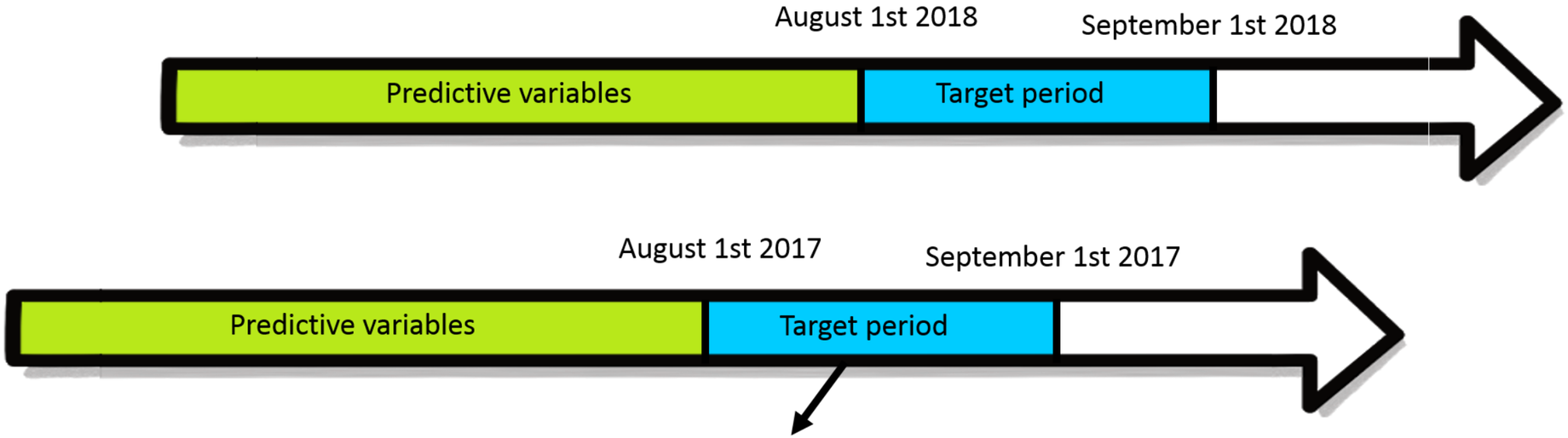
Target timeline (1)



Target timeline (2)



Target timeline (3)



	Candidate predictors			Target
	Age	Gender	Previous gifts	Donate
Population	25	F	12	0
	60	M	5	1
	45	F	9	0

Defining the target in Python

```
unsubscribe_2017[:5]
[90112, 65537, 24577, 8196, 73737]
baseteable.head()
```

```
   donor_id
0     65537
1     65538
2         4
3     98328
4     65564
```

```
basetable["target"] = pd.Series([1 if donor_id in unsubscribe_2017 else 0 \
for donor_id in basetable["donor_id"]])
```

Defining an aggregated target in Python

```
print(gifts.head(2))
```

```
   donor_id
0     65537
1     65538
```

```
# Target period
start_target = datetime(year = 2017, month = 1, day = 1)
end_target = datetime(year = 2018, month = 1, day = 1)
# Select target period donations
gifts_target = gifts[(gifts["date"]>=start_target) & (gifts["date"]<end_target)]
# Group and sum donations by donor
gifts_target_byid = gifts_target.groupby("id")["amount"].sum().reset_index()
# Derive targets and add to basetable
targets = list(gifts_target_byid["id"][gifts_target_byid["amount"]>500])
basetable["target"] = pd.Series([1 if donor_id in targets else 0 for donor_id in basetable["donor_id"]])
```

The basetable

```
print(basetable.head())
```

```
   donor_id  target
0     65537  0
1     65538  1
2     65539  0
3     65540  1
4     65541  0
```

Let's practice

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