# MOD300 Anvendt Python programmering og modellering

Enrico Riccardi[1]

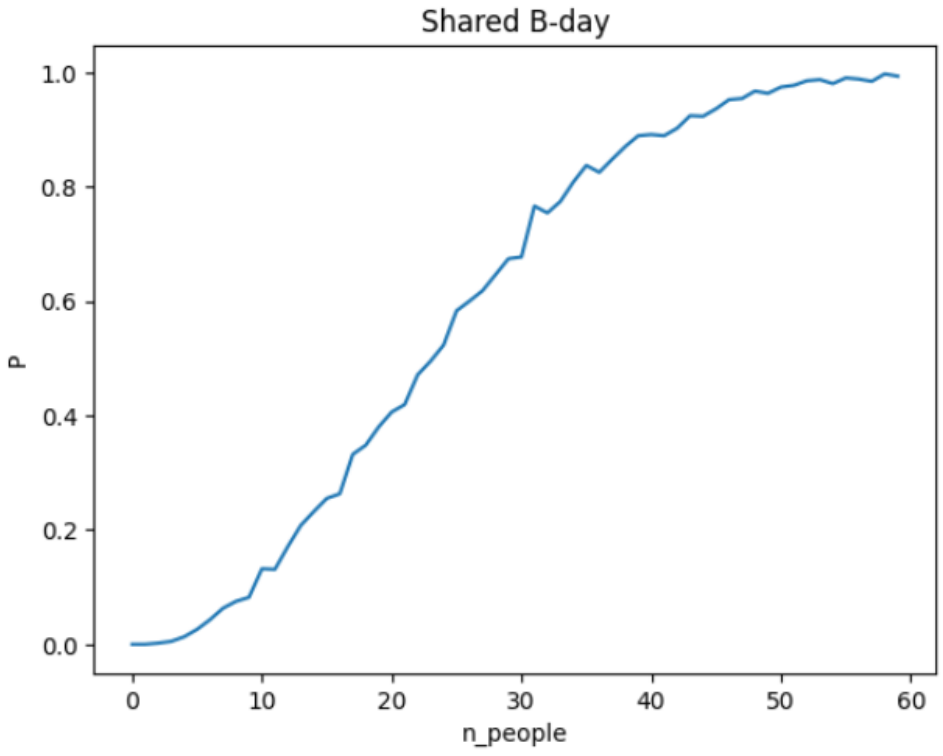
Department of Mathematics and Physics, University of Stavanger (UiS).[1]

13.10.2025


© 2025, Enrico Riccardi. Released under CC Attribution 4.0 license

# B-day paradox

How many people there should be in a room to have 50% chances of having at least two person with the same b-day?

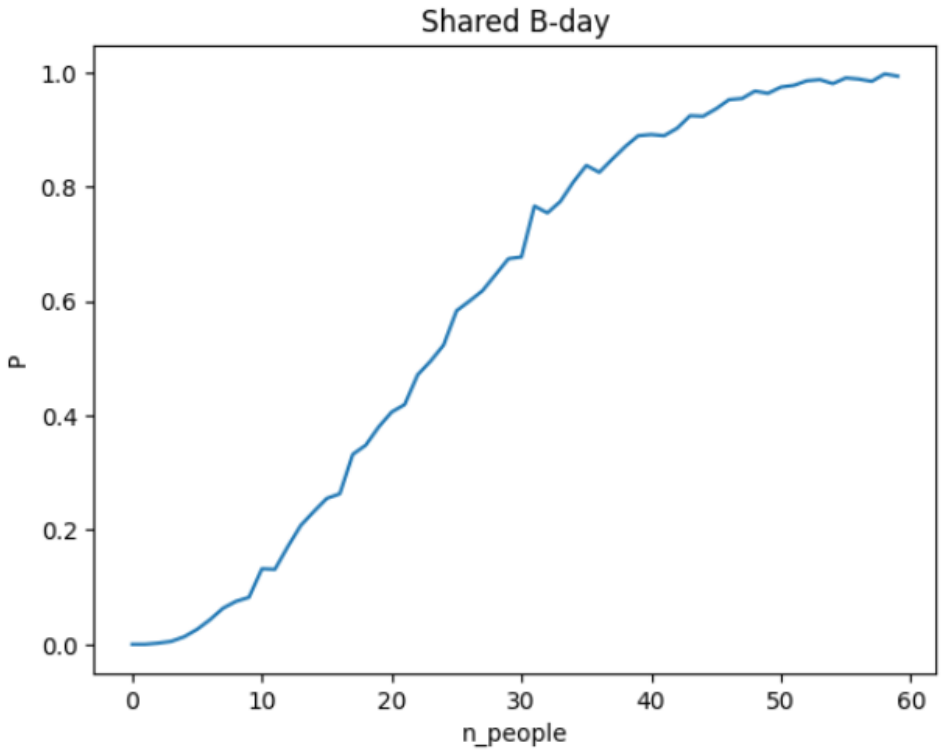



```
for i, j in enumerate(counter):
    if j > 0.5:
        break
print(i)
```

```
24
```

# B-day paradox

How many people there should be in a room to have 50% chances of having at least two person with the same b-day?




```
for i, j in enumerate(counter):
    if j > 0.5:
        break
print(i)
```

```
24
```

# Central Limit Theorem

The average of an independent random variable follows a normal distribution.

Everyday life?

What is the P distribution of the sum of two random number from a flat distribution?

What is the P distribution of the sum of three random number from a flat distribution?

Now you can win at Risk.

# Central Limit Theorem

The average of an independent random variable follows a normal distribution.

Everyday life?

What is the P distribution of the sum of two random number from a flat distribution?

What is the P distribution of the sum of three random number from a flat distribution?

Now you can win at Risk.

# Central Limit Theorem

The average of an independent random variable follows a normal distribution.

Everyday life?

What is the P distribution of the sum of two random number from a flat distribution?

What is the P distribution of the sum of three random number from a flat distribution?

Now you can win at Risk.

# Central Limit Theorem

The average of an independent random variable follows a normal distribution.

Everyday life?

What is the P distribution of the sum of two random number from a flat distribution?

What is the P distribution of the sum of three random number from a flat distribution?

Now you can win at Risk.

# Random Walk

Random number are a powerful tool

1D Walk randomly right or left.

2D Walk randomly right or left, front or back.

3D Walk randomly right or left, front or back, top or bottom.

# Random walk build up

Code to go fast: $2d_fast.py$

Code for multiple: $2rnd_walkers.py$

Code for pbc conditions: $pbc_rnd_walk.py$

Code for wall boundary conditions: $walls_rnd_walk.py$