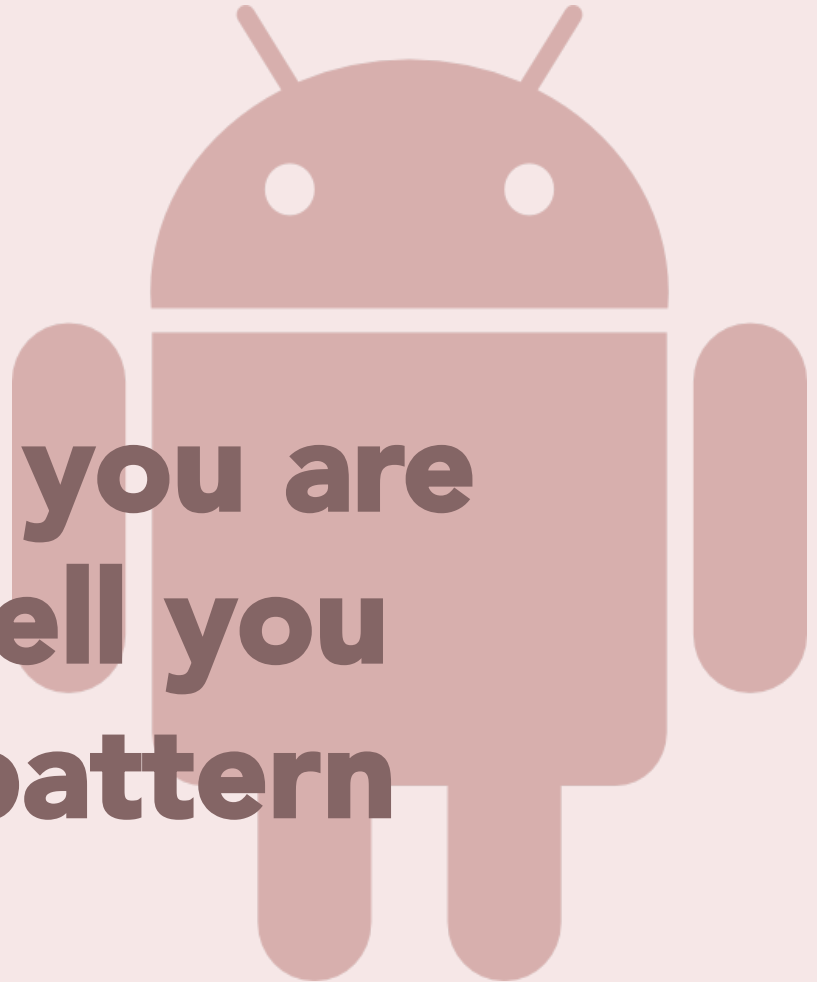


**Tell me who you are
and I will tell you
your lock pattern**



itera

Marte Løge

23 years, Norway

MSc. Computer Science @NUTS

Developer @Itera



Humans are...



...predictable!

Enter Passcode



Emergency

Cancel

Emergency

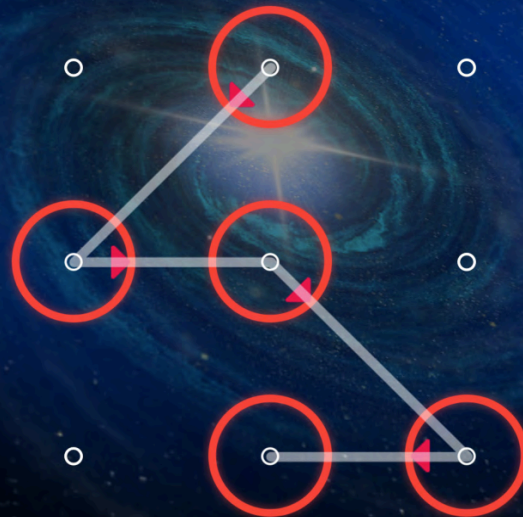
Enter Passcode



22:45

Wednesday, 14 March Thu 07:20

Sorry, try again



T-Mobile

Emergency call



**How Many
Combinations does
the Android Lock
Pattern Have?**

389,112

| Length | #Combinations |
|---------------|----------------------|
|---------------|----------------------|

| | |
|---|------|
| 4 | 1624 |
|---|------|

| | |
|---|------|
| 5 | 7152 |
|---|------|

| | |
|---|--------|
| 6 | 26,016 |
|---|--------|

| | |
|---|--------|
| 7 | 72,912 |
|---|--------|

| | |
|---|---------|
| 8 | 140,704 |
|---|---------|

| | |
|---|---------|
| 9 | 140,704 |
|---|---------|

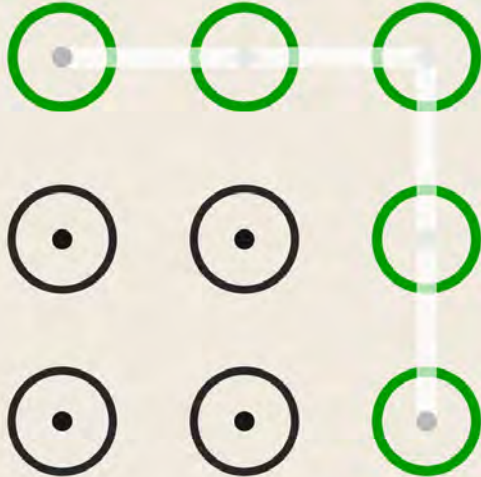
| | |
|--------------|----------------|
| Total | 389,112 |
|--------------|----------------|

The Survey



Create a pattern for your smartphone

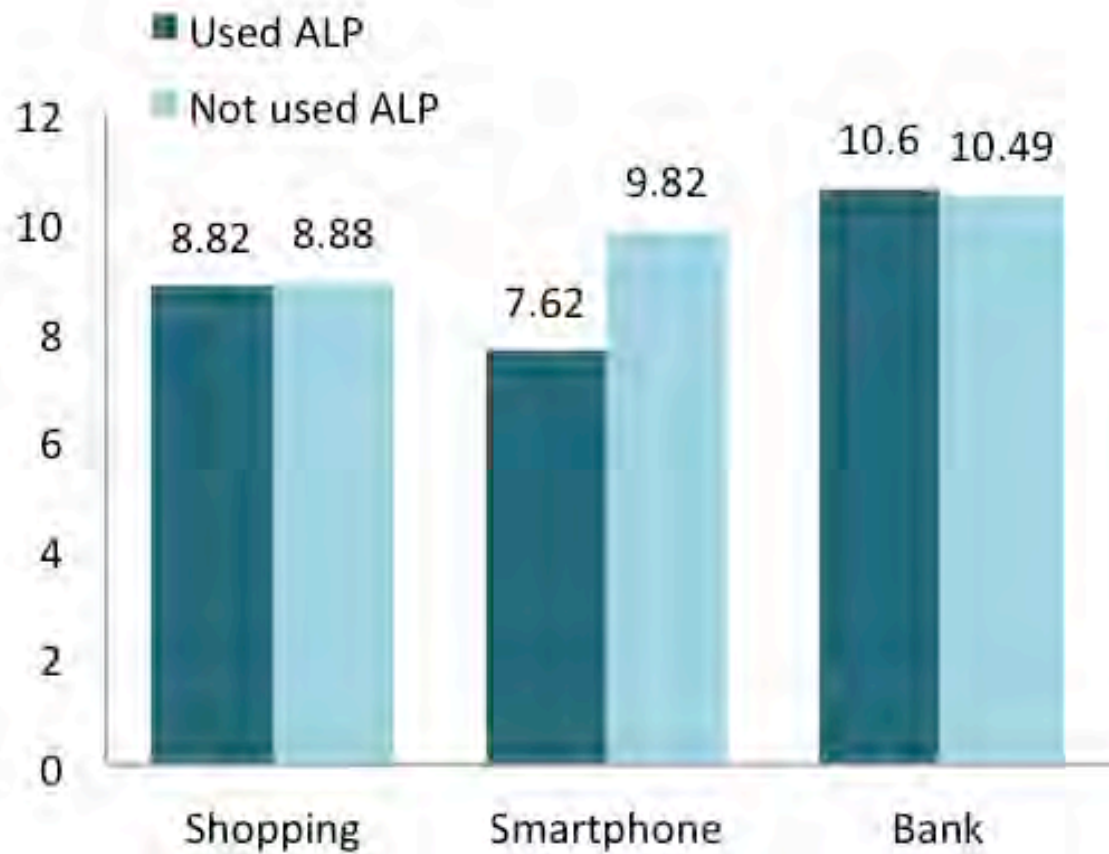
Pattern recorded

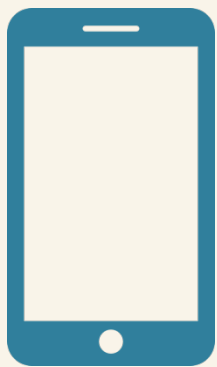


Retry

Continue



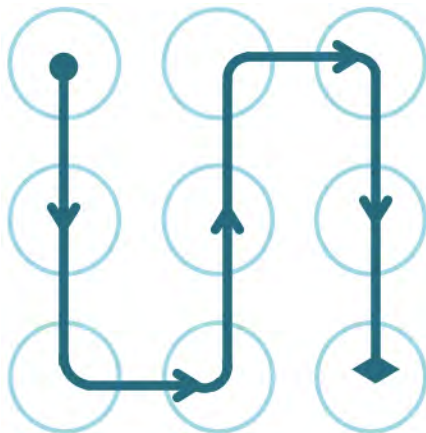




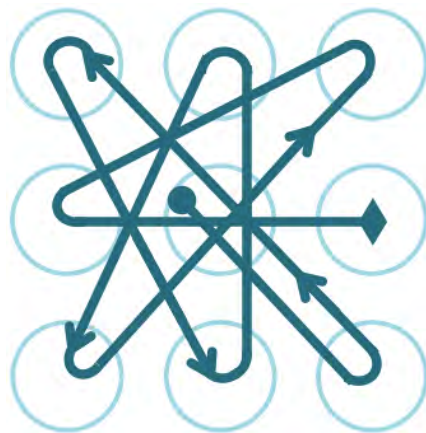
Visual Complexity

Complexity:

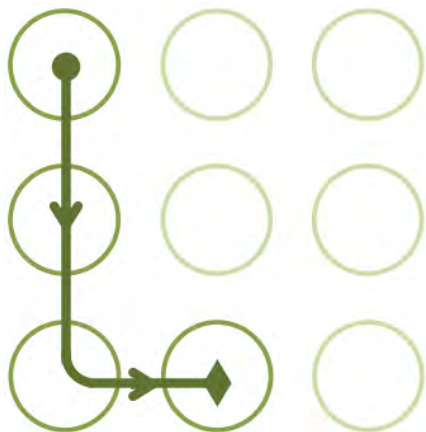
[6.3, 46.8]



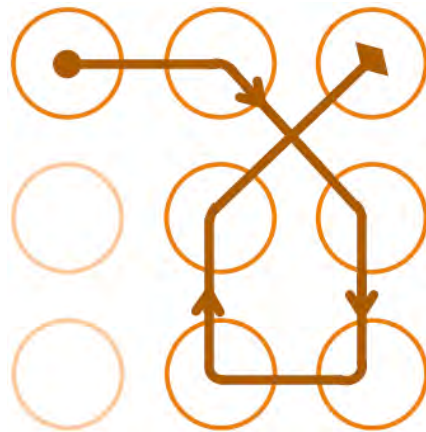
27.0



46.8



6.34



20.78

All patterns:

13.6

Highest score:

44.4

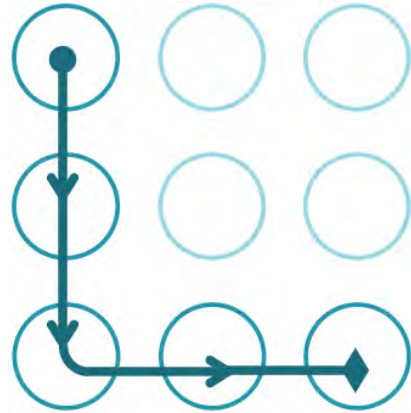
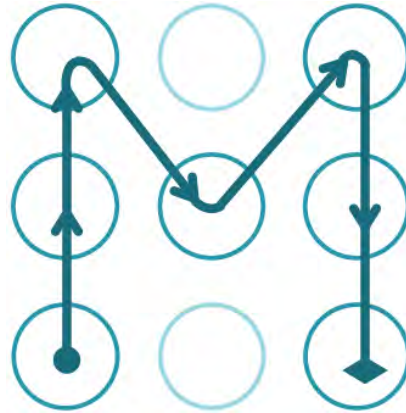
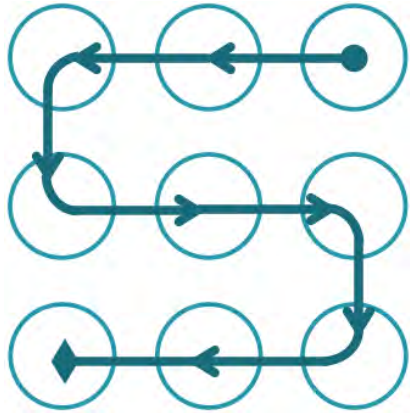
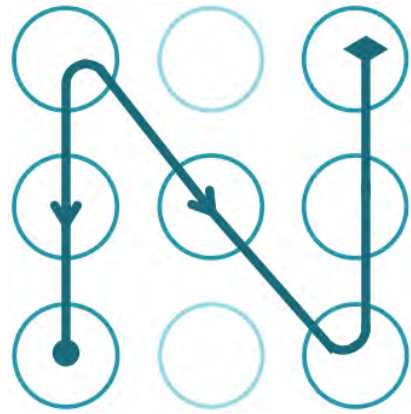
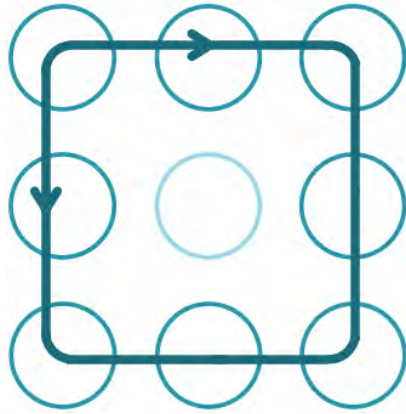
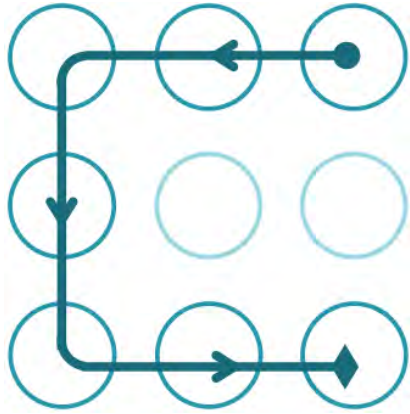
Smartphones:

12.8

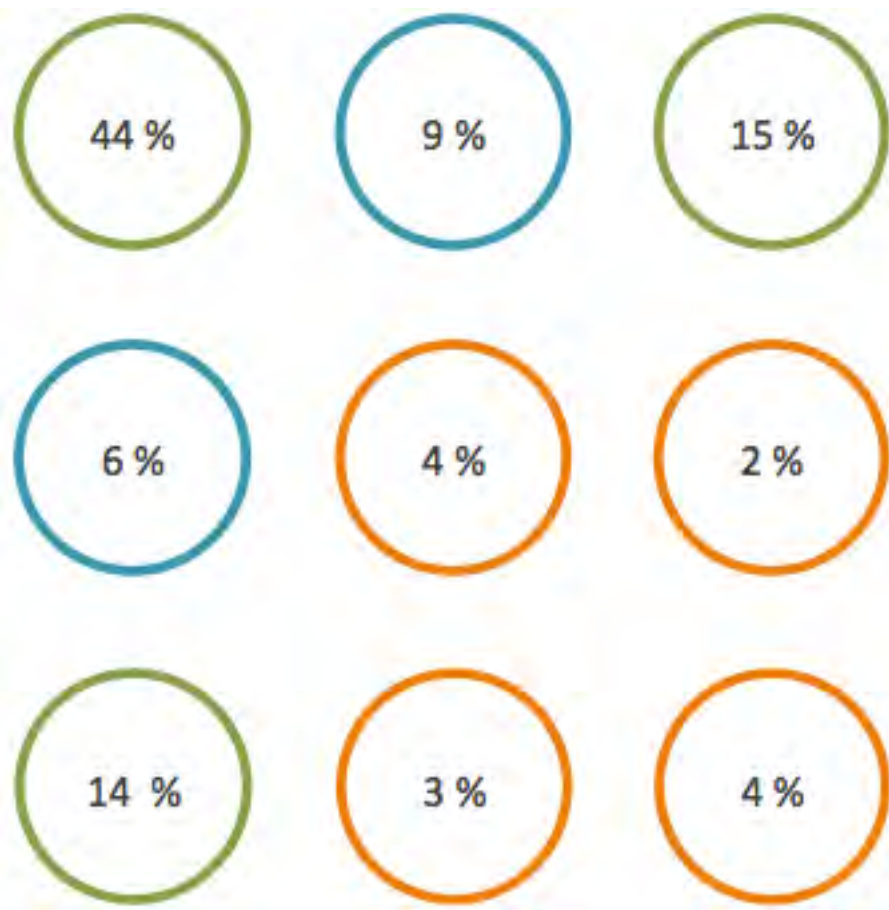
Max score:

46.8

Associations Elements



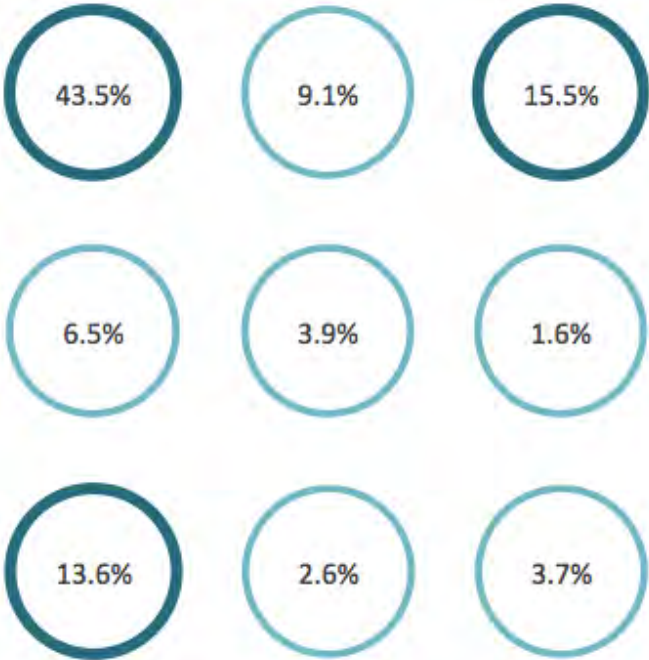
Start node



Handedness



Right-handed

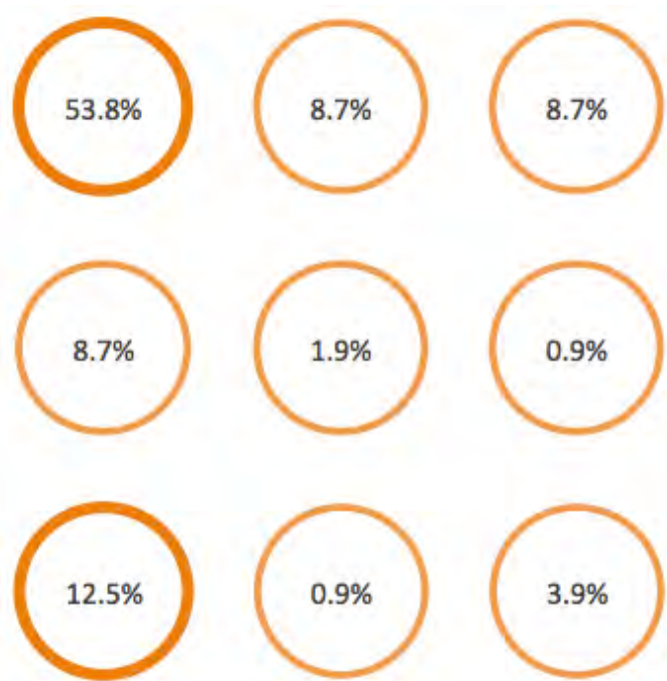


(1)



(2)

Left-handed

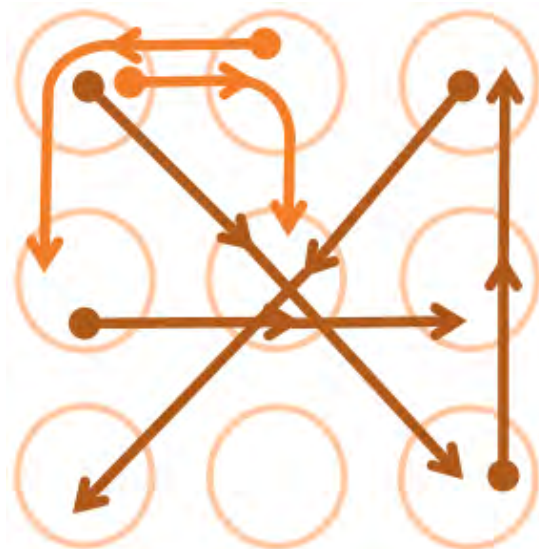
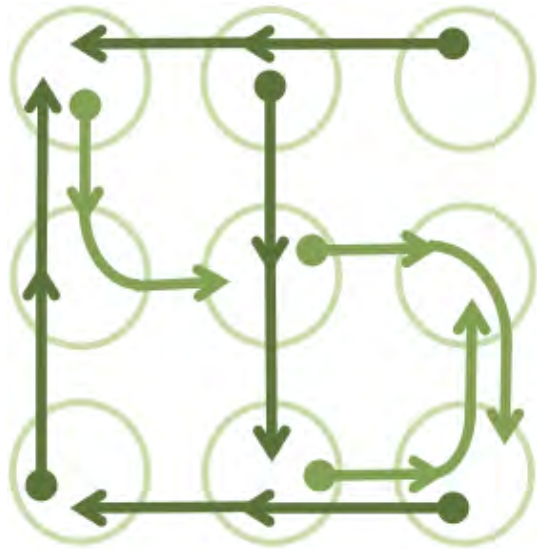
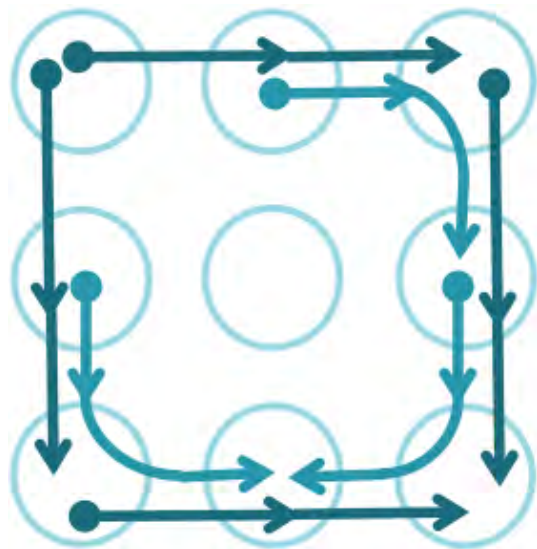


(1)

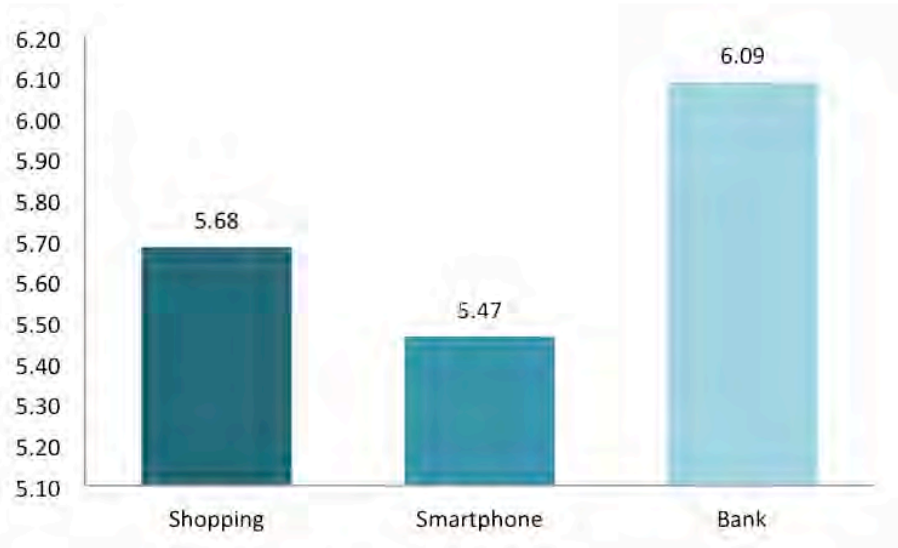


(2)

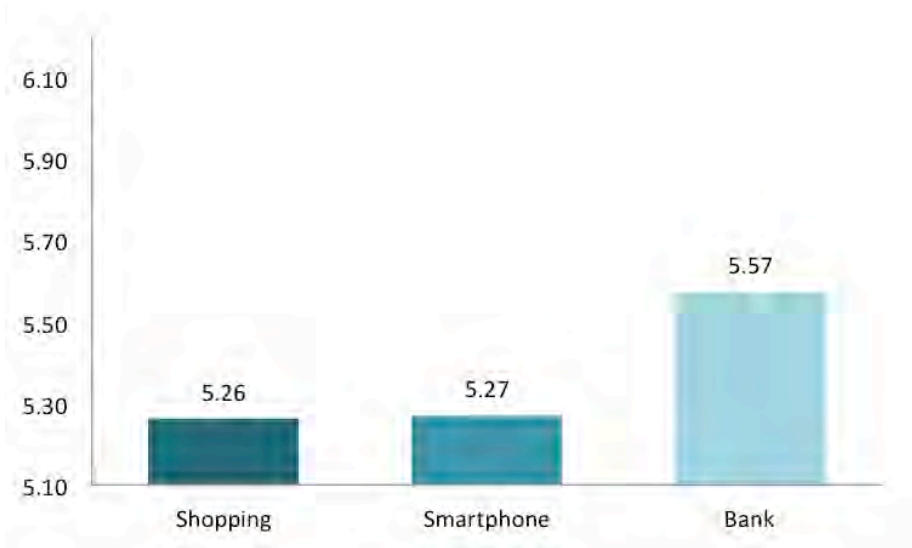
3-gram Sequences



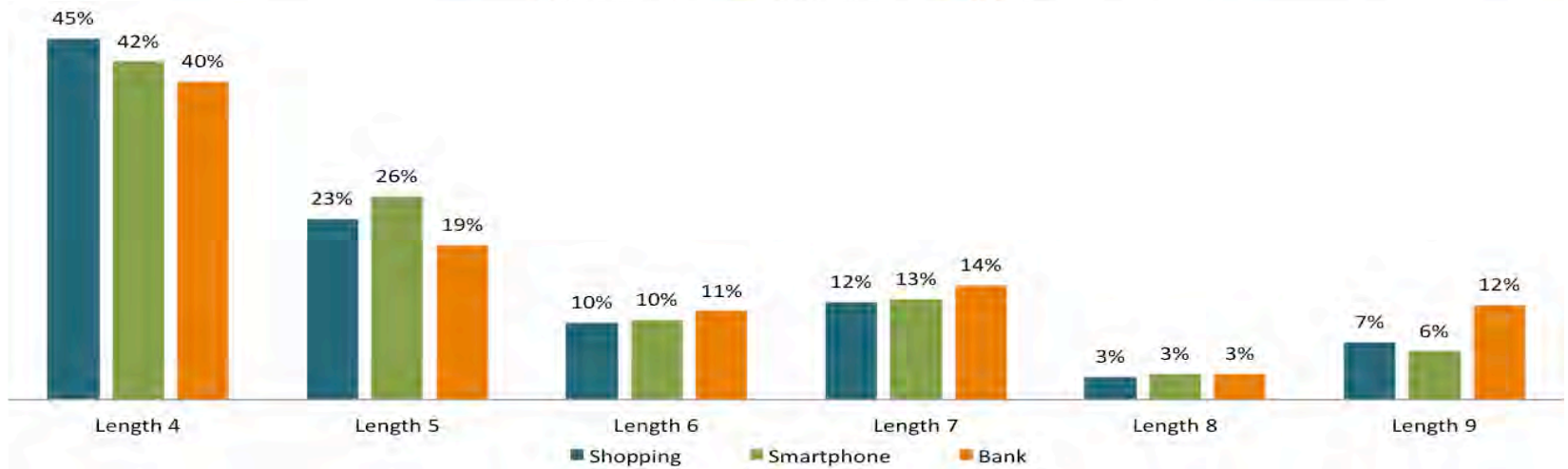
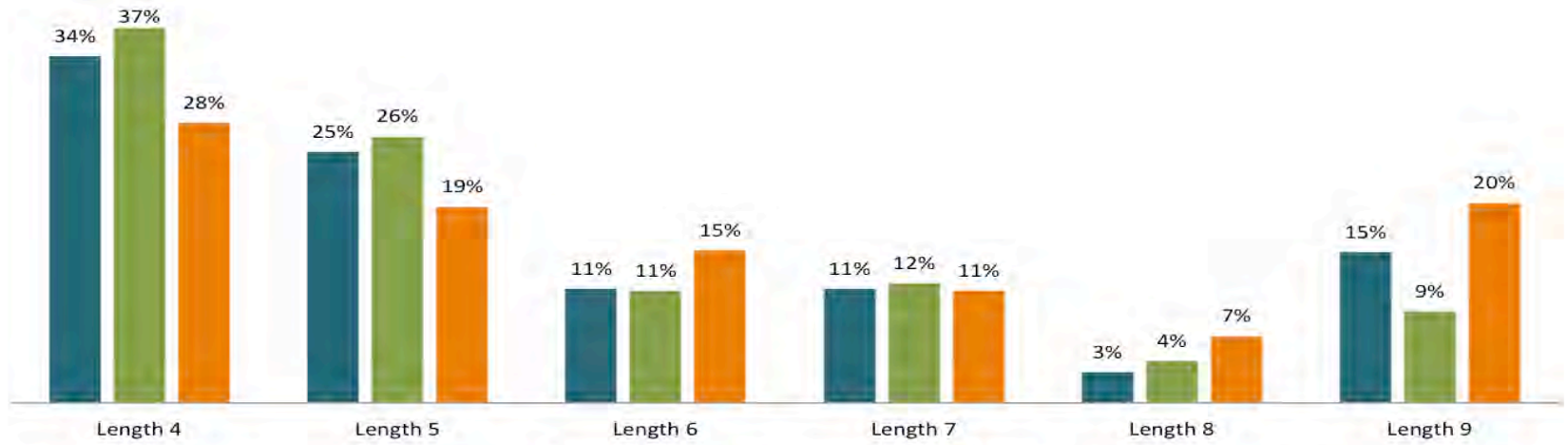
Average Pattern Length

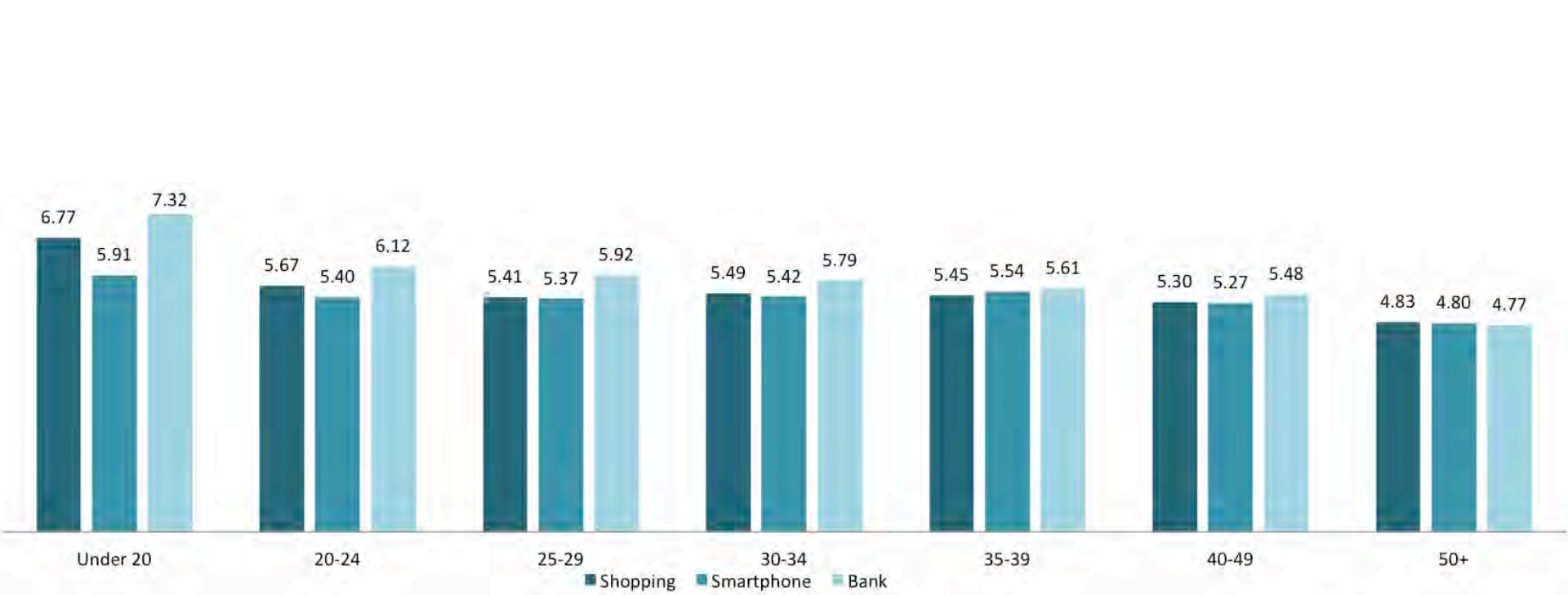


Men



Women







Questions?

Marte Løge

@marteloge

marteloge@itera.no