

# SmartTest

Many patients - one test





## **Who is the client?**

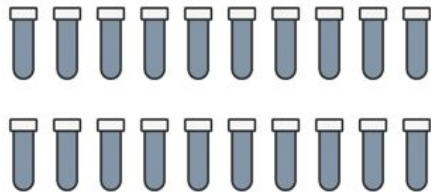
Laboratories that test people for COVID-19

## **How does it work?**

It optimises the distribution of tests among patients with different infection risk, so we can test 2.5x more people with the same amount of tests by grouping multiple samples.



## NOW

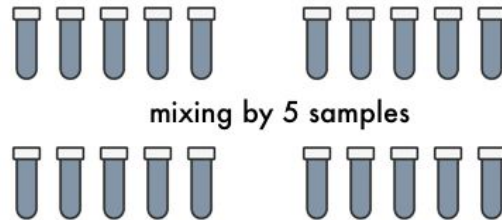


20 tests

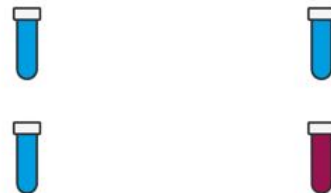


overall 20 tests

## POOL TESTING



4 tests

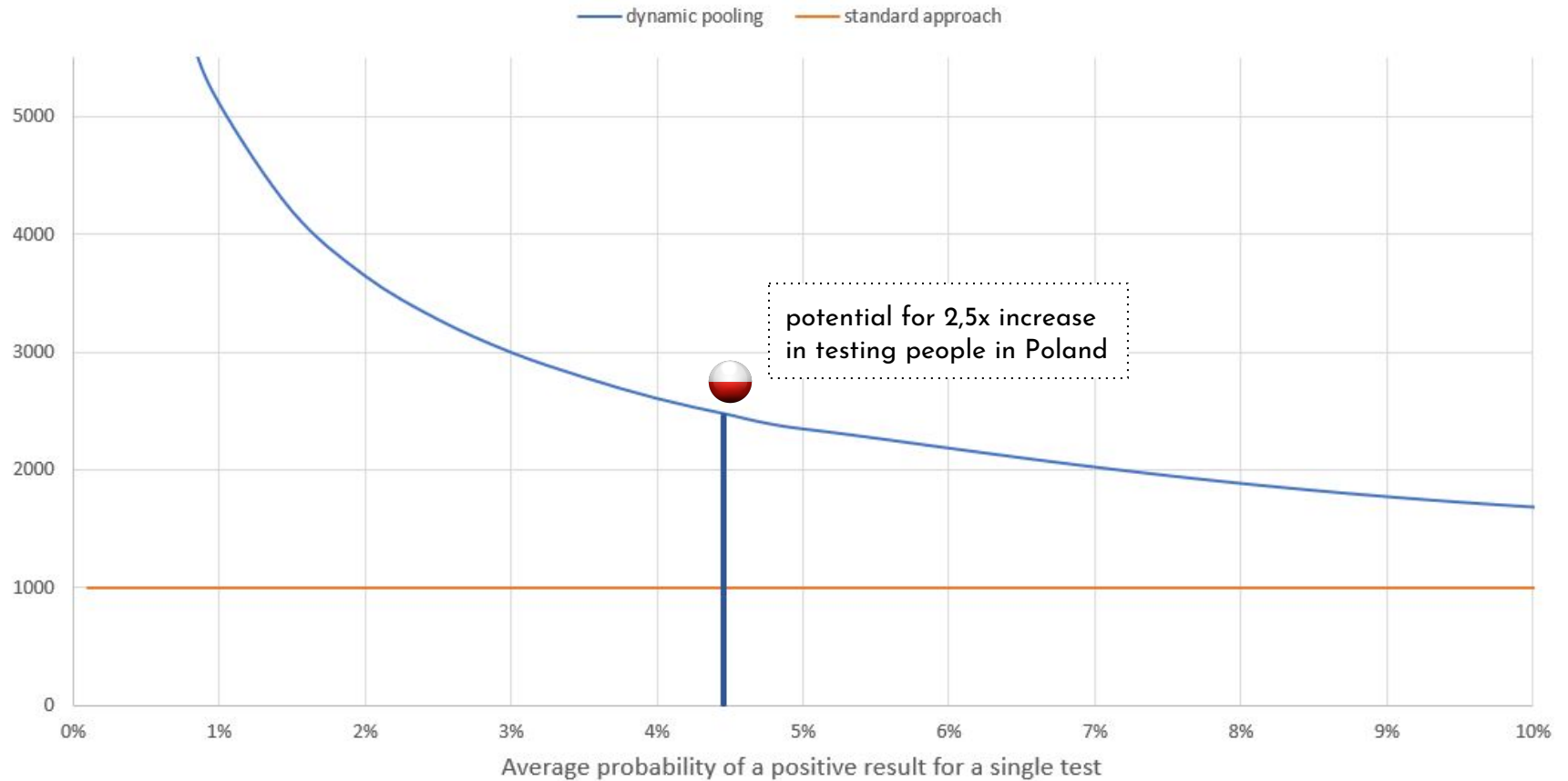


5 tests



overall 9 tests

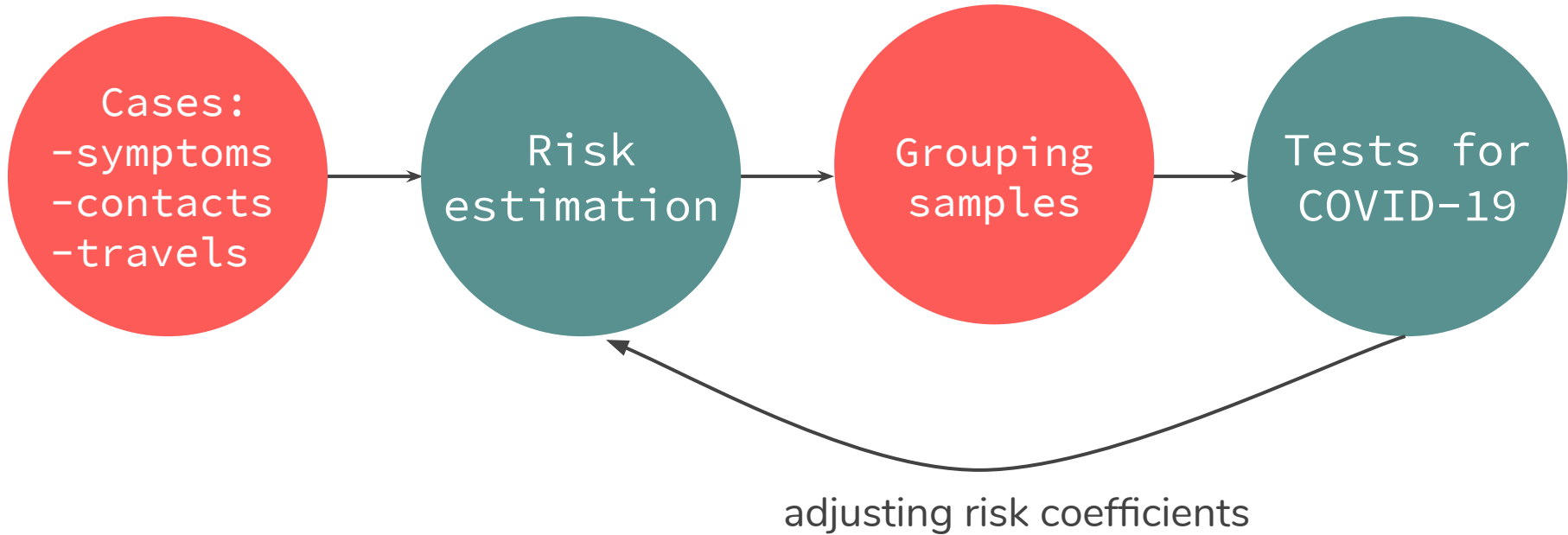
## Number of people tested per 1000 tests



Currently Poland tests 5500 people daily. With dynamic pooling it would be 13750 people with the same amount of tests.



# Processing





# Step 1 - fill in the questionnaire

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[LOAD EXAMPLE CASES](#) [+ ADD FIRST CASE](#)

Create new case

id\*

Fever

Cough

Difficulty with breathing

Close contact with infected person

Return from Abroad

[CLOSE](#)  Create next case [CREATE](#)



# Step 2 - create all samples and calculate buckets

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id	Fever	Cough	Difficulty with breathing	Close contact with infected person	Return from Abroad	Probability	Action
1	⊗	⊗	⊗	⊗	⊗	2.00%	🗑️
2	⊗	✅	⊗	⊗	⊗	5.00%	🗑️
3	✅	⊗	✅	⊗	⊗	9.00%	🗑️
4	⊗	⊗	⊗	✅	✅	19.00%	🗑️
5	⊗	✅	⊗	⊗	✅	12.00%	🗑️
6	⊗	✅	⊗	⊗	✅	15.00%	🗑️
7	⊗	⊗	⊗	⊗	⊗	2.00%	🗑️
8	⊗	⊗	⊗	⊗	⊗	2.00%	🗑️

**CALCULATE BUCKETS**

+

The probability of positive result is calculated automatically based on the questionnaire

# Step 3 - combine tests into buckets

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Estimated number of tests: 8  
Total remained samples: 19

#1	#2	#3	#4
10 Probability: 29.00%	5 Probability: 12.00%	18 Probability: 5.00%	11 Probability: 2.00%
4 Probability: 19.00%	3 Probability: 9.00%	1 Probability: 2.00%	12 Probability: 2.00%
6 Probability: 15.00%	2 Probability: 5.00%	7 Probability: 2.00%	13 Probability: 2.00%
<input type="radio"/> NO VIRUS <input checked="" type="radio"/> VIRUS FOUND <input type="radio"/> NOT TESTED	17 Probability: 5.00%	8 Probability: 2.00%	14 Probability: 2.00%
	<input type="radio"/> NO VIRUS <input checked="" type="radio"/> VIRUS FOUND <input type="radio"/> NOT TESTED	9 Probability: 2.00%	15 Probability: 2.00%
		<input checked="" type="radio"/> NO VIRUS <input type="radio"/> VIRUS FOUND <input type="radio"/> NOT TESTED	16 Probability: 2.00%
			19 Probability: 2.00%
			<input checked="" type="radio"/> NO VIRUS <input type="radio"/> VIRUS FOUND <input type="radio"/> NOT TESTED

PROCEED

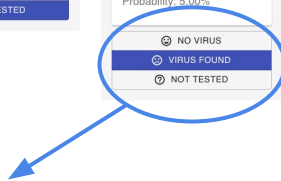
High risk cases - mix 3 samples into one test



Low risk cases - mix 7 samples into one test



Click the result of test



Once known results are marked, proceed with further testing









## Further ideas

1. Apply machine learning to cross-reference positive cases with the questionnaire answers to provide even better results
2. Recursive testing of batches for improved performance
3. Trend analysis
4. Develop the questionnaire with more symptoms, country of arrival, age and other information about patient
5. Uploading a csv or other input formats with cases database
6. Design improvement!