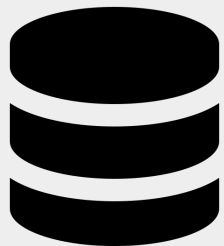




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The  
Strategy  
Unit.

# How big should hospitals of the future be?



140 million  
rows  
HES data

Population growth

Tackling waiting lists



Rising patient expectations

Hospitals to community

Prevention

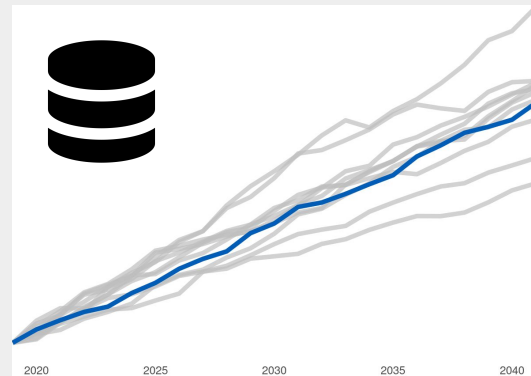


Shortening hospital stays

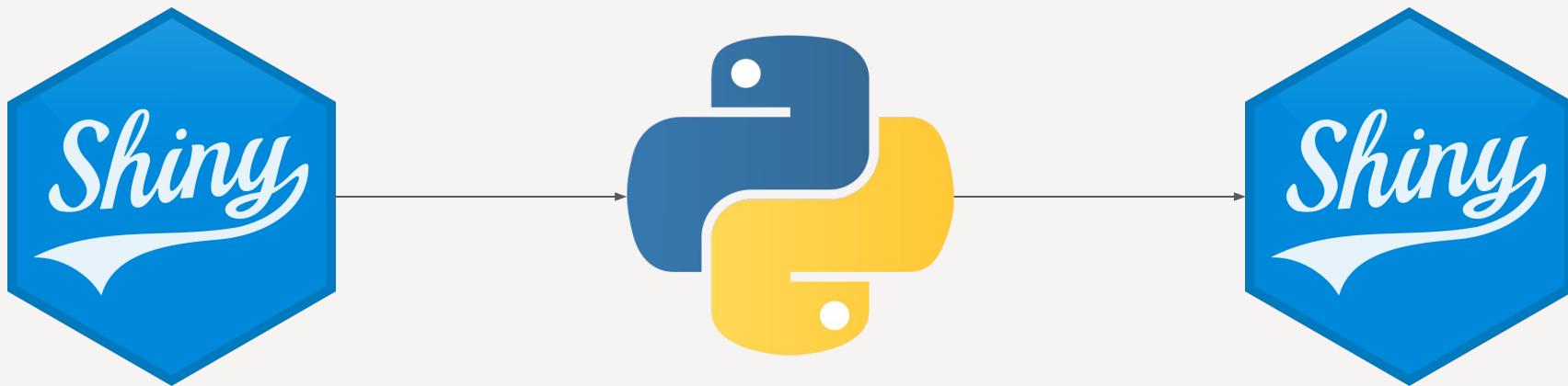
Set hundreds of  
parameters  
as *ranges*



256 model  
simulations



256 possible futures  
(admissions & beddays)



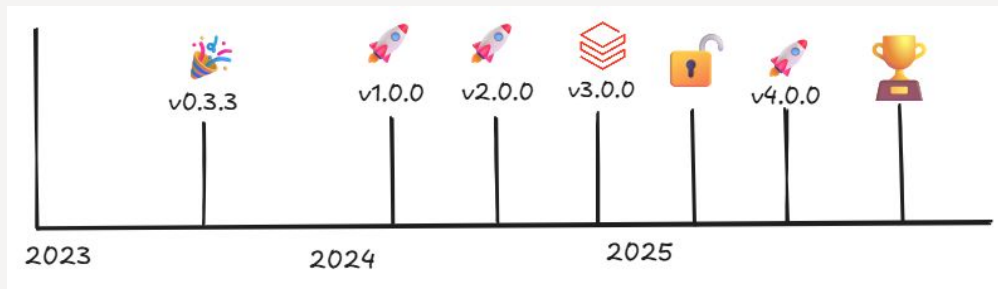
# Two years ago...



## v0.3.3



# Now



We didn't **plan** to get  
here

# Tom had a baby



\*Not Tom's actual baby



# We got **users**



\*Actual photo of us getting pelted with requests

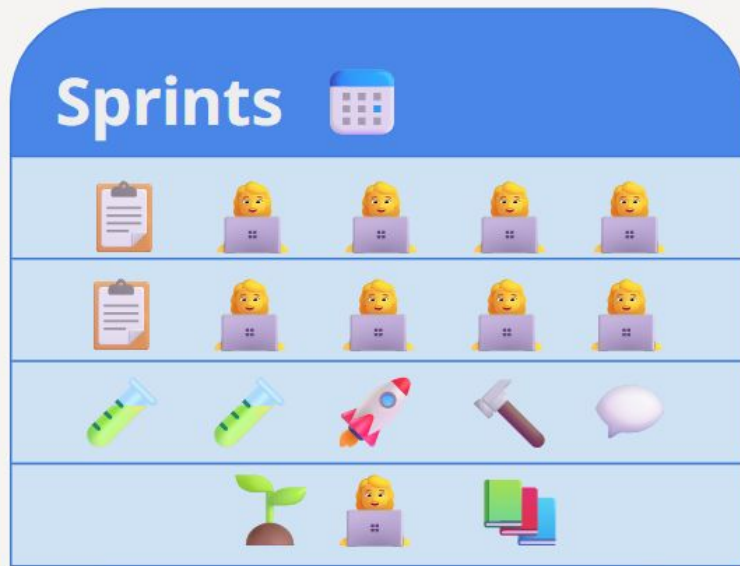
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Strategy  
Unit.



Model is being **developed**  
whilst **in production**

# Treat our **model** like **software**



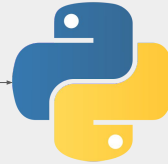
Use sprints to  
**manage**  
**expectations**



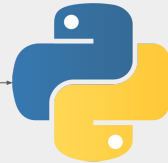


# Single version for the whole ecosystem

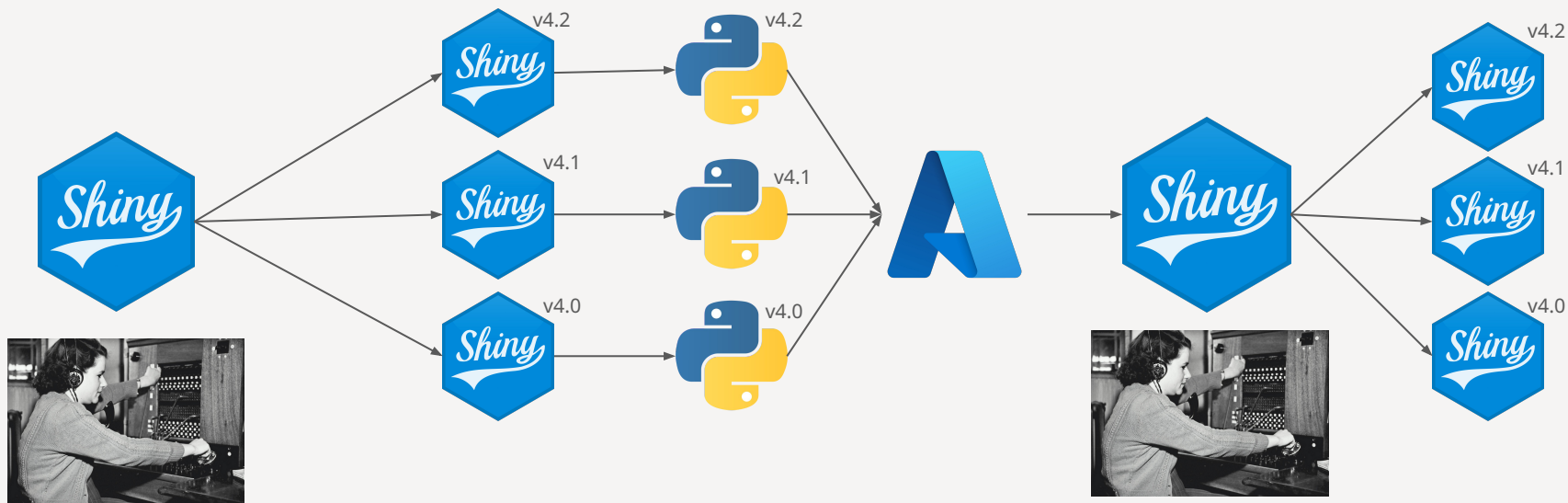
v4.2



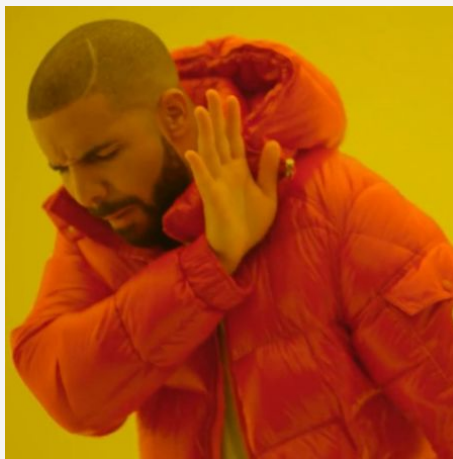
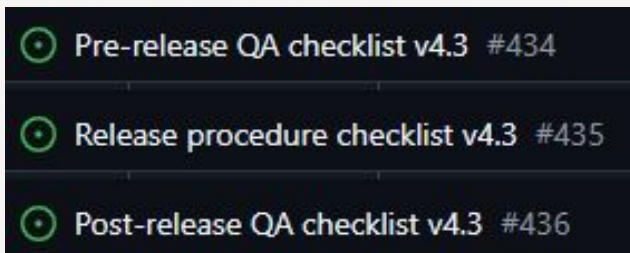
v4.1



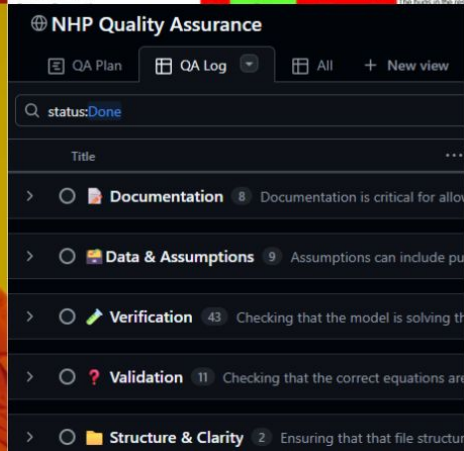
# Shiny switchboard for version management



# Made QA work for us



QA Status Report Excel Template						
Project's Name		Chassis SAP Implementation				
PM Name		Ahmed Riza				
Project Number		AA1085-S21.YY				
Testing Tolerance:		0%	2.5%	8%	8%	
Tested Component		Testing Criteria				
		Scope	Response Time	Testing Script	UAT	
FUT: Functional Unit Testing		Pass	Pass	Pass	Pass	N/A (All testing criteria was uploaded sheets)
CSD: Configuration Specification Document		Pass	Pass	Pass	Pass	
FDS: Functional Design Specification		Pass	Pass	Pass	Pass	
TDS: Technical Design Specification		Fail	Pass	Fail	Fail	
Cycle 1		Fail	Pass	Fail	Fail	The uploaded scope
Cycle 2		Pass	Pass	Pass	Pass	N/A (All testing criteria was uploaded sheets)
IT: Interface Integration Testing		Pass	Pass	Fail	Fail	The GUI (Graphics) in the script, minor fields
EZE DR: End to End Dry-Run		Fail	Fail	Fail	Fail	
Business Process #1 (Ship to Client)		Pass	Pass	Fail	Fail	The testing script is updated and released. The bugs in the script (the tolerance is 5%)
Business Process #2 (New Vendor)		Pass	Pass	Pass	Fail	
Business Process #3 (Quarterly Finance Report)		Fail	Fail	Fail	Fail	The uploaded scope
Business Process #4 (Available Materials Report)		Fail	Fail	Fail	Fail	Not started, due to business process
FTT: Functional Technical Testing		Pass	Pass	Pass	Pass	
CSD		Pass	Pass	Pass	Pass	N/A (All testing criteria was uploaded sheets)
FDS		Pass	Pass	Pass	Pass	
EZE: End to End		Fail	Fail	Fail	Fail	N/A (All testing criteria was uploaded sheets)
Business Process #1		Fail	Pass	Fail	Fail	The uploaded scope
Business Process #2		Pass	Fail	Pass	Fail	The response time of 0.8 second
Business Process #3		Fail	Fail	Pass	Pass	The uploaded scope
Business Process #4		Fail	Pass	Fail	Fail	The uploaded scope
UAT: User Acceptance Testing		Fail	Pass	Fail	Fail	
Business Process #1		Pass	Pass	Pass	Pass	N/A (All testing criteria was uploaded sheets)



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# Document everything

**v4.2.0** Latest



tomjemmett released this 5 days ago · 9 commits to main since this release · v4.2.0 · 4f50474

### What's Changed

- tidy up project by [@tomjemmett](#) in [#483](#)
- clean up pyproject toml by [@tomjemmett](#) in [#489](#)
- Update inequalities functionality by [@yiwen-h](#) in [#491](#)
- fix bug in inequalities for PBM notebook by [@yiwen-h](#) in [#495](#)
- adds codecov config by [@tomjemmett](#) in [#496](#)
- alter way inequalities factors are loaded by [@tomjemmett](#) in [#497](#)

**Full Changelog:** [v4.1.0...v4.2.0](#)

### Contributors



tomjemmett and yiwen-h

## NHP model project information

Project overview

User guide

Modelling methodology

Overview of methodology

Demand-supply imbalances

Double counting

Modelling uncertainty

Non-Demographic Growth

Activity mitigators

Data quality

Demographic modelling

Data extraction

Quality assurance

Contact us

Modelling methodology > Overview of methodology

### Overview of methodology

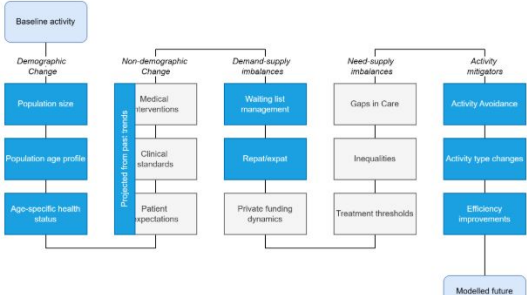
#### Assumptions and design

The design of the modelling methodology was carried out after extensive review of best practice, and in particular this [review of models to project healthcare demand](#) published by the University of York.

The model uses pseudonymised event-level data that describes activity for a specific hospital or catchment population in an agreed baseline period and performs a set of transformations on it to reflect anticipated changes in activity and resource levels that might occur between the baseline year and some future year, the model time horizon. The nature of the transformations that can be applied are fixed in any model release, but the extent of each adjustment is determined by the model user via the parameters. The model output represents a description of hospital activity in the future. The process of anticipating and specifying changes in hospital activity and resource use is not straightforward and may be subject to uncertainty. The user can reflect this uncertainty in the model parameters, by supplying them as prediction intervals. The model will incorporate this uncertainty as it performs its transformations and compiles its outputs.

#### The model engine

The diagram below sets out the transformations applied by the model. Whilst some of these transformations are available in the current model release, others will be built into future model releases. Please note that although the transformations appear sequential, in reality they are all applied simultaneously.



```
graph TD; BA[Baseline activity] --> DC[Demographic Change]; BA --> ND[Non-demographic Change]; BA --> DS[Demand-supply imbalances]; BA --> NS[Need-supply imbalances]; BA --> AM[Activity mitigators]; DC --> PS[Population size]; DC --> PA[Population age profile]; DC --> AS[Age-specific health status]; ND --> MT[Medical interventions]; ND --> CS[Clinical standards]; ND --> PE[Patient expectations]; DS --> WM[Waiting list management]; DS --> RE[Repeat/urgent]; DS --> PF[Private funding dynamics]; NS --> GC[Gaps in Care]; NS --> IN[Inequalities]; NS --> TT[Treatment thresholds]; AM --> AV[Activity Avoidance]; AM --> ATC[Activity type changes]; AM --> EI[Efficiency improvements]; PS --> MF[Modelled future]; PA --> MF; AS --> MF; MT --> MF; CS --> MF; PE --> MF; WM --> MF; RE --> MF; PF --> MF; GC --> MF; IN --> MF; TT --> MF; AV --> MF; ATC --> MF; EI --> MF;
```

On this page

Assumptions and design

The model engine

Edit this page

Report an issue



We started coding a  
**model...**

and accidentally grew a  
**tech ecosystem**



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