

Integrated Care Systems Population Health Management informed by Population Health Analytics

NHS England and NHS Improvement



DEMOGRAPHICS

LIFESTYLE

WHY?

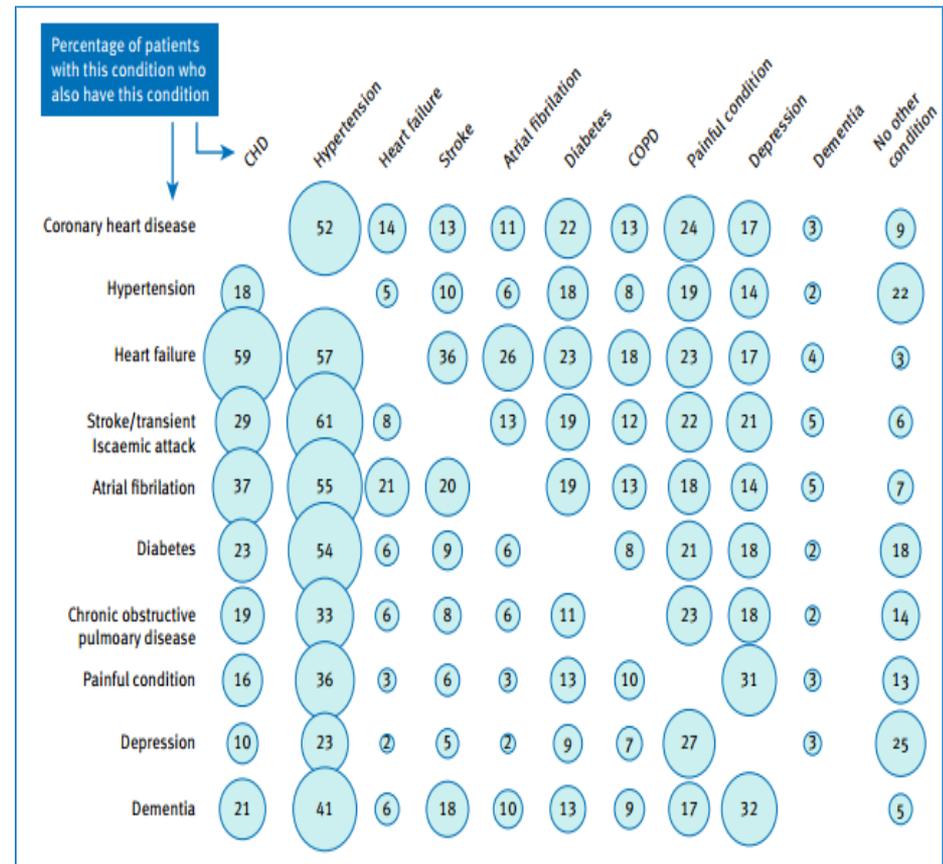
TECHNOLOGY

TREATMENTS

Population Segmentation or Condition Management?

With the growing awareness that the majority of healthcare spend is driven by NCDs the traditional analysis, focus and management of spend purely by single conditions will not address the demand health systems are facing.

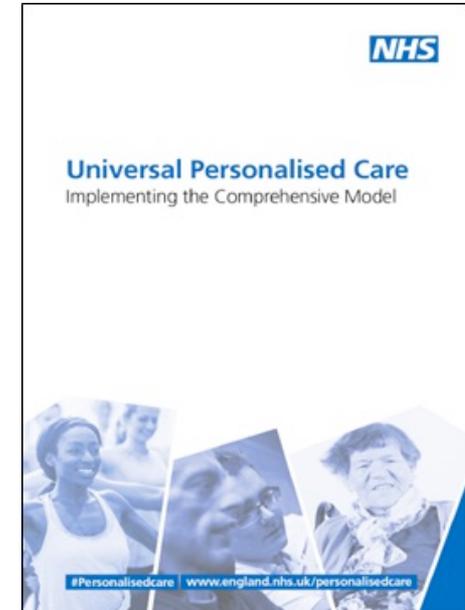
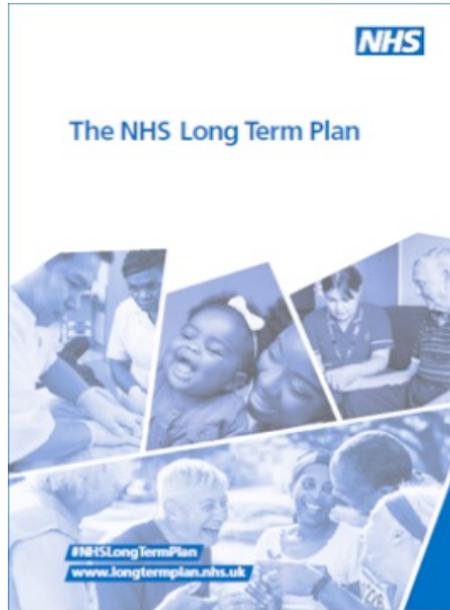
- Multimorbidity prevalence is 23% in the general population
- More than half of patients with a chronic condition have multimorbidity
- In the primary care setting, only 2.8–25.4% patients with a common chronic condition have no other chronic conditions



Exclusion of patients with concomitant chronic conditions in ongoing randomised controlled trials targeting 10 common chronic conditions and registered at ClinicalTrials.gov: a systematic review of registration details
 BMJ Open 2016;6:e012265
<http://bmjopen.bmj.com/content/6/9/e012265.full#ref-5>

Clinical assessment and management of multimorbidity: summary of NICE guidance BMJ 2016;354:i4843

PHM a central tenet of major NHS reforms



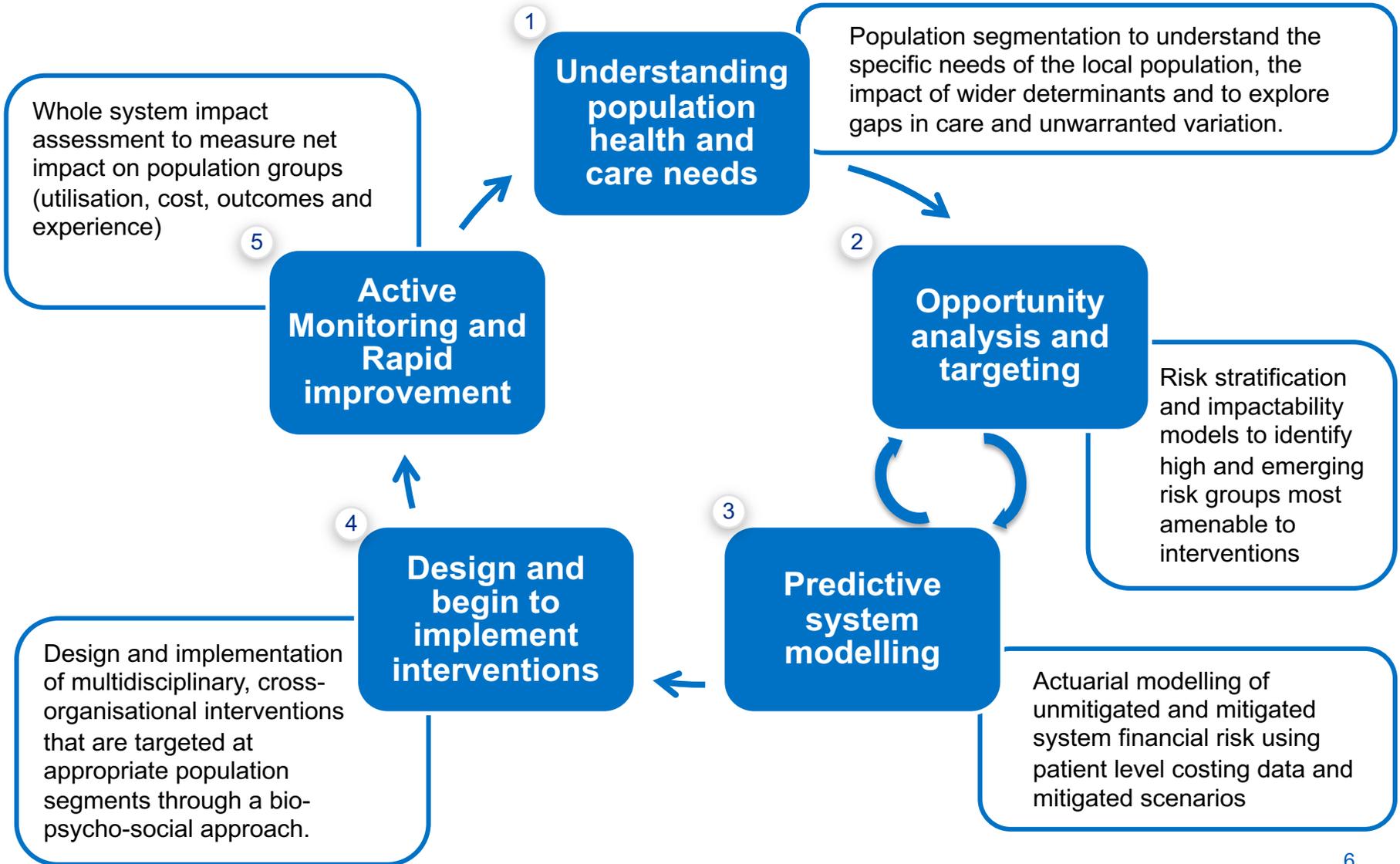
“During 2019, ICSs will deploy population health management solutions to understand the areas of greatest health need and match NHS services to meet them.”

“[PCNs will] identify those groups of people who are most at risk of adverse health outcomes and increasingly predict which individuals are most likely to benefit from different health and care interventions.”

“Whole-population approaches to supporting people of all ages and their carers to manage their physical and mental health and wellbeing, build community resilience, and make informed decisions and choices when their health changes.”

Population Health Management improves population health by **data driven planning and delivery of care to achieve maximum impact**. It includes segmentation, stratification and impactability modelling to identify local 'at risk' cohorts - and, in turn, designing and targeting interventions to prevent ill-health and to improve care and support for people with ongoing health conditions and reducing unwarranted variations in outcomes.

PHM Cycle: Intelligence-led care design



Core PHM capabilities



Infrastructure

What are the basic building blocks that must be in place?

- **Organisational Factors** - defined population, shared leadership & decision making structure
- **Digitalised care providers and common health and care record**
- **Integrated data architecture** and single version of the truth
- **Information Governance** that ensures data is shared safely, securely and legally



Intelligence

Opportunities to improve care quality, efficiency and equity

- **Supporting capabilities** such as advanced analytical tools and software and system wide multi-disciplinary analytical teams, supplemented by specialist skills
- **Analyses** - to understand health and wellbeing needs of the population, opportunities to improve care, and manage risk
- **Interpretation of evidence** to identify targeted, high impact interventions



Interventions

Care models focusing on proactive interventions to prevent illness, reduce the risk of hospitalisation and address inequalities

- **Care model design** - delivery of integrated personalised care and interventions tailored to population needs
- **Community well-being** - asset based approach, social prescribing and social value projects
- **Workforce development** - upskilling teams, realigning and creating new roles

Improving population health by enabling integrated teams at every level to make data-driven decisions



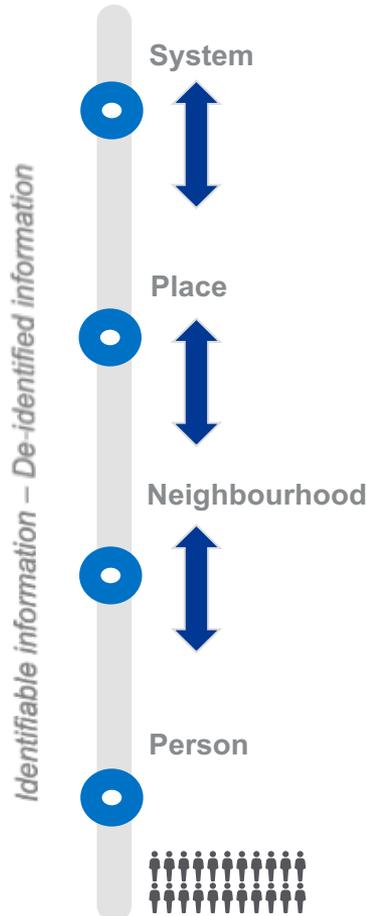
System to person:
person to system



Analytics provided in programme



Example ICS decisions best informed through PHM



Economic modelling & actuarial projections to look at changes in population health and care needs and how to mitigate health and financial risk across care settings

Costed segmentation to identify high and rising risk cohorts. **Benchmarking and variation** across providers and population segments. Predictive modelling on interventions and Return on Investment (ROI)

Drill down into segments through **risk stratification and impactability** modelling to support proactive case finding. Addressing variation by segment

Patient level theographs to support care redesign and personalised care, and analyse individual care pathways

Example system-level decision:
How can we use PHM to decide how best to allocate resources across providers?

Example place-level decision:
Why are we seeing variation between these similar PCNs? What might be the cause?

Example neighbourhood-level decision:
Which priority cohort of people can we make the biggest impact on in the next 6 months?

Example person-level decision:
How can I leverage our collective assets to help this person who is at risk?

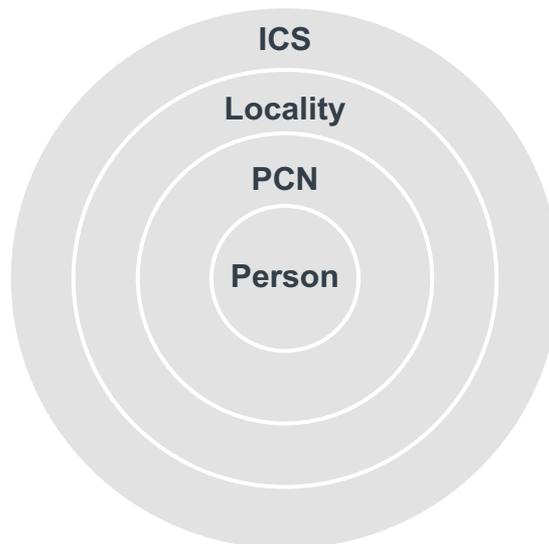
Integrated teams at every level of system asking key questions about where to focus

ICS

- How is the population projected to change across the next 5 years?
- How can we refine the financial forecast and system operating plan using actuarial data?
- What impact will shifts in proactive care have on overall system activity and spend?

Place or Locality

- How can we identify the highest risk cohorts within my population?
- How do we identify wide variations in practice patterns across providers or population segments?
- What disease states or psycho-social determinants are driving the biggest risk in our population?
- How can we incentivise providers to work together to improve care proactively for at-risk cohorts and individuals?



PCN

- What gaps in care drive greatest clinical and resource use impact?
- What common characteristics do people most at risk in my neighbourhood share?
- How can I focus neighbourhood teams on the people where we will have the biggest collective impact?
- How do we measure impact of interventions we implement?

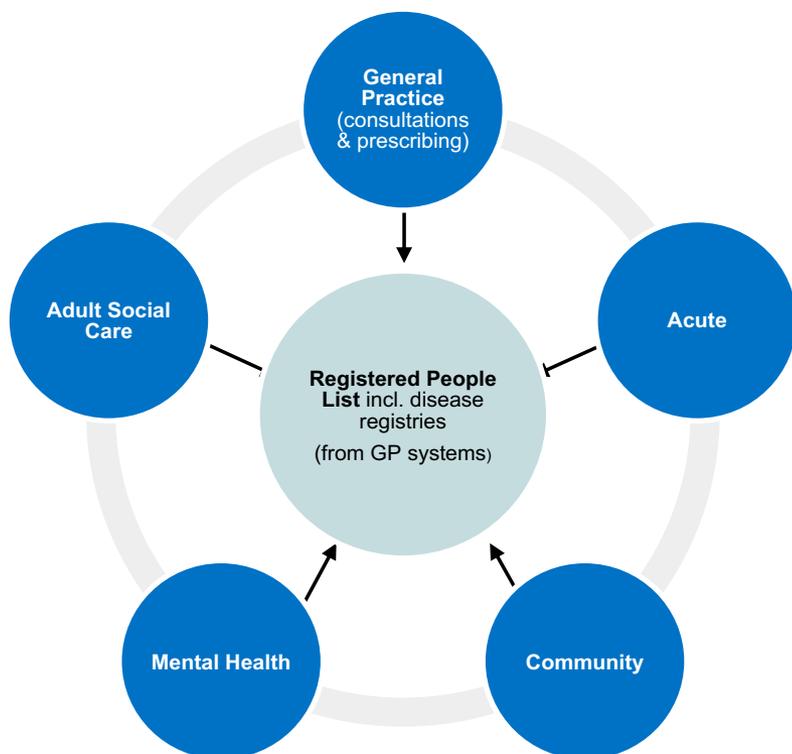
Individual Patient Care

- What is most important to this individual and how can we make an impact on this person's care that is connected to what matters most to them (and their overall health & wellbeing)?
- How can I proactively identify gaps/risks for this individual and avoid deterioration before it becomes too late?
- How can I activate and motivate this person in their care to have a bigger impact on their level of risk?

Linked patient level data enables a 'shared source of truth'

5 years of:

- Linked
- Costed
- Segmented & Stratified data



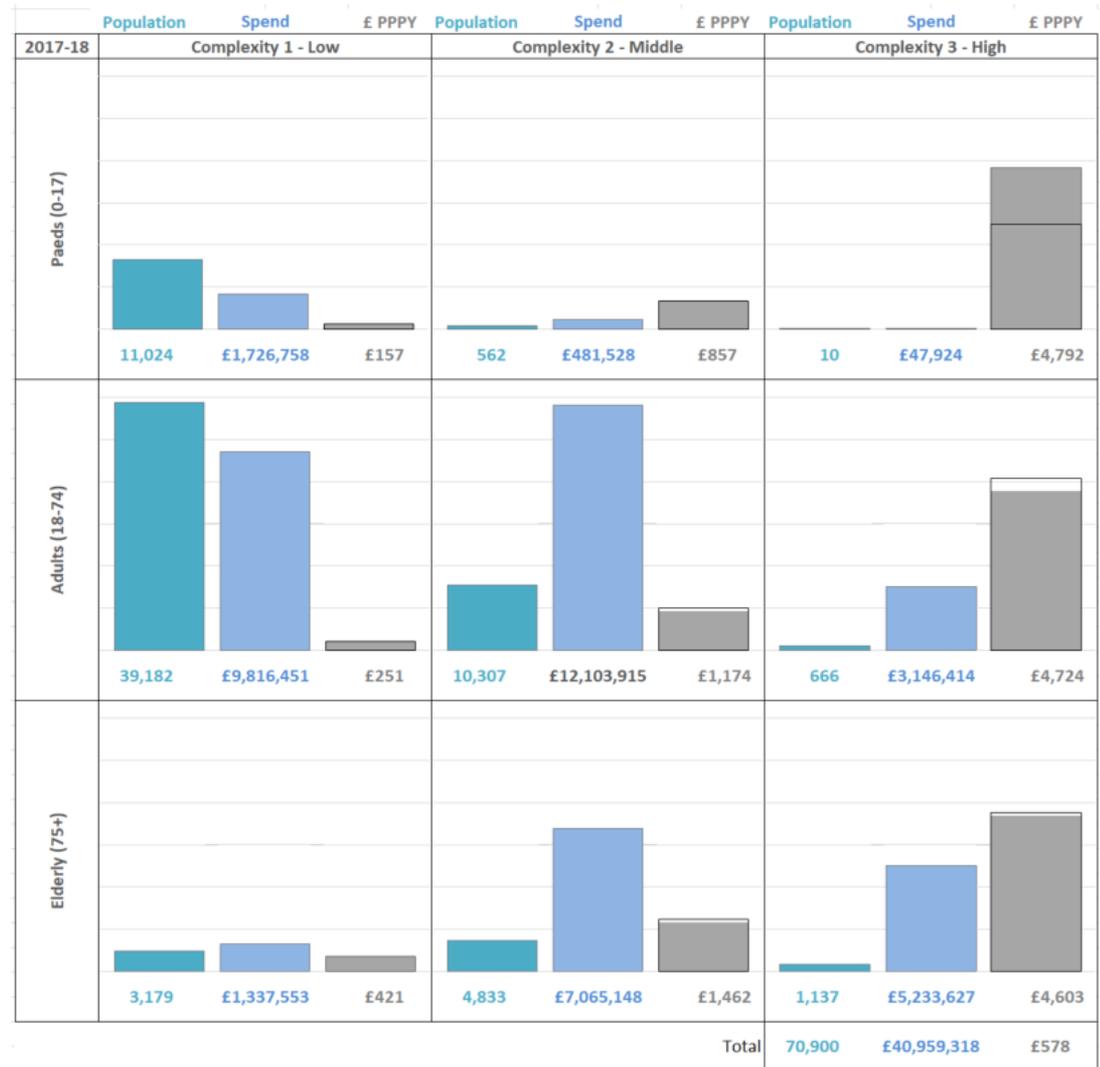
Population Health Analytics Glossary

Analytical Approach	Description
Segmentation	A method of dividing a population into smaller, more coherent pieces, in order to better understand a specific patient cohort. Simple segmentation involves analysis using only a single dimension, but segments can be displayed in a matrix format as well.
Intelligent segmentation	The process of creating segments using statistical models. Unlike simple segmentation, many dimensions, or variables, can be used, and we can assess their validity and predictive power with confidence in their statistical significance.
Risk Stratification	A method of ascribing the likelihood of some adverse event to a patient or group of patients, based on demographic or clinical factors.
Inter-segmental drift	The process whereby patients do not remain in a single segment, but instead move between segments, based on changes in demographic and clinical factors over time, such as growing older, more complex, or developing specific conditions.
Theographs	Cross-sector patient timelines, showing a person's contacts with health and social care over time.

What PHM looks like in practice



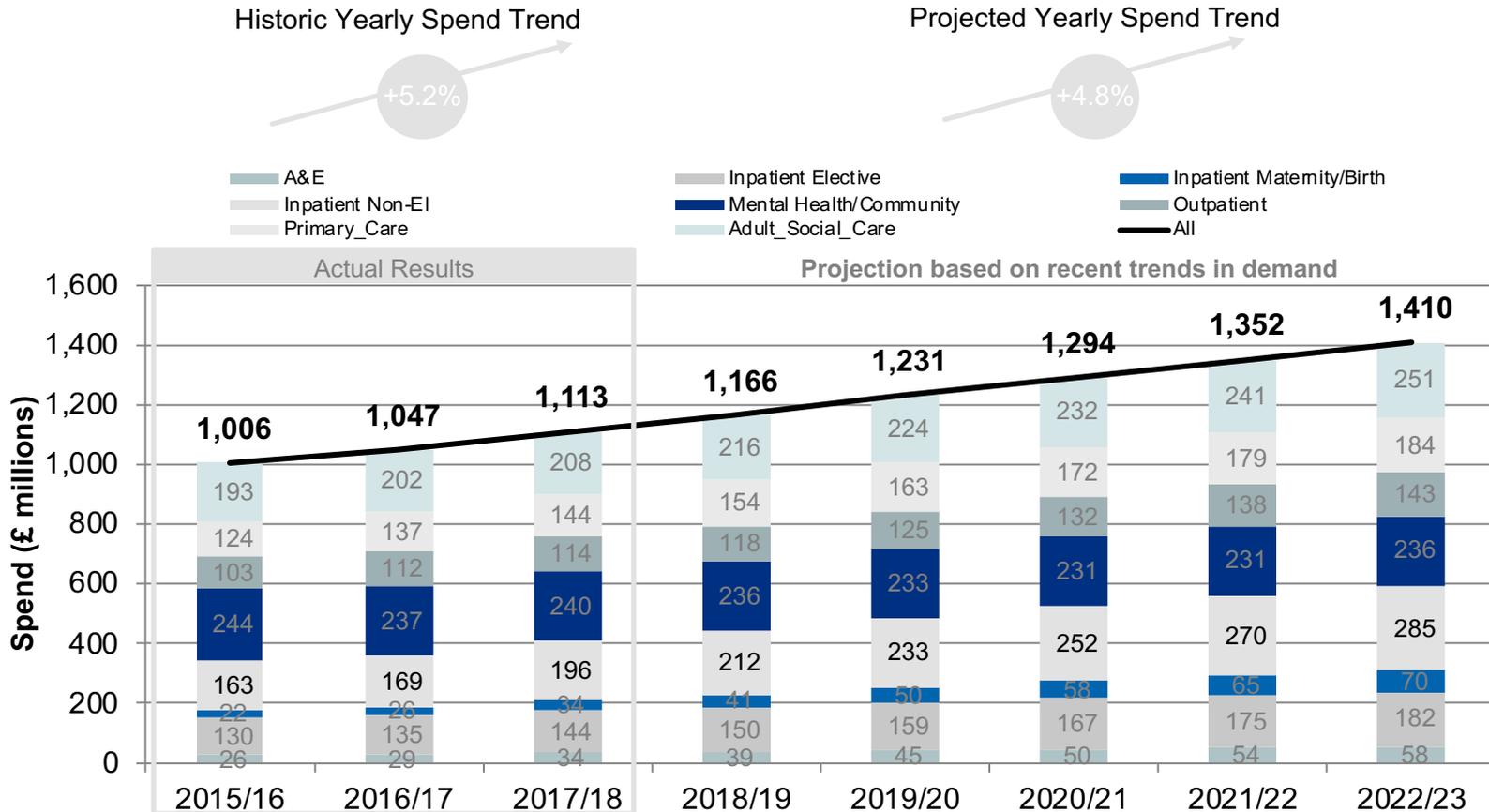
Population	Spend	PPPY
		Vs System



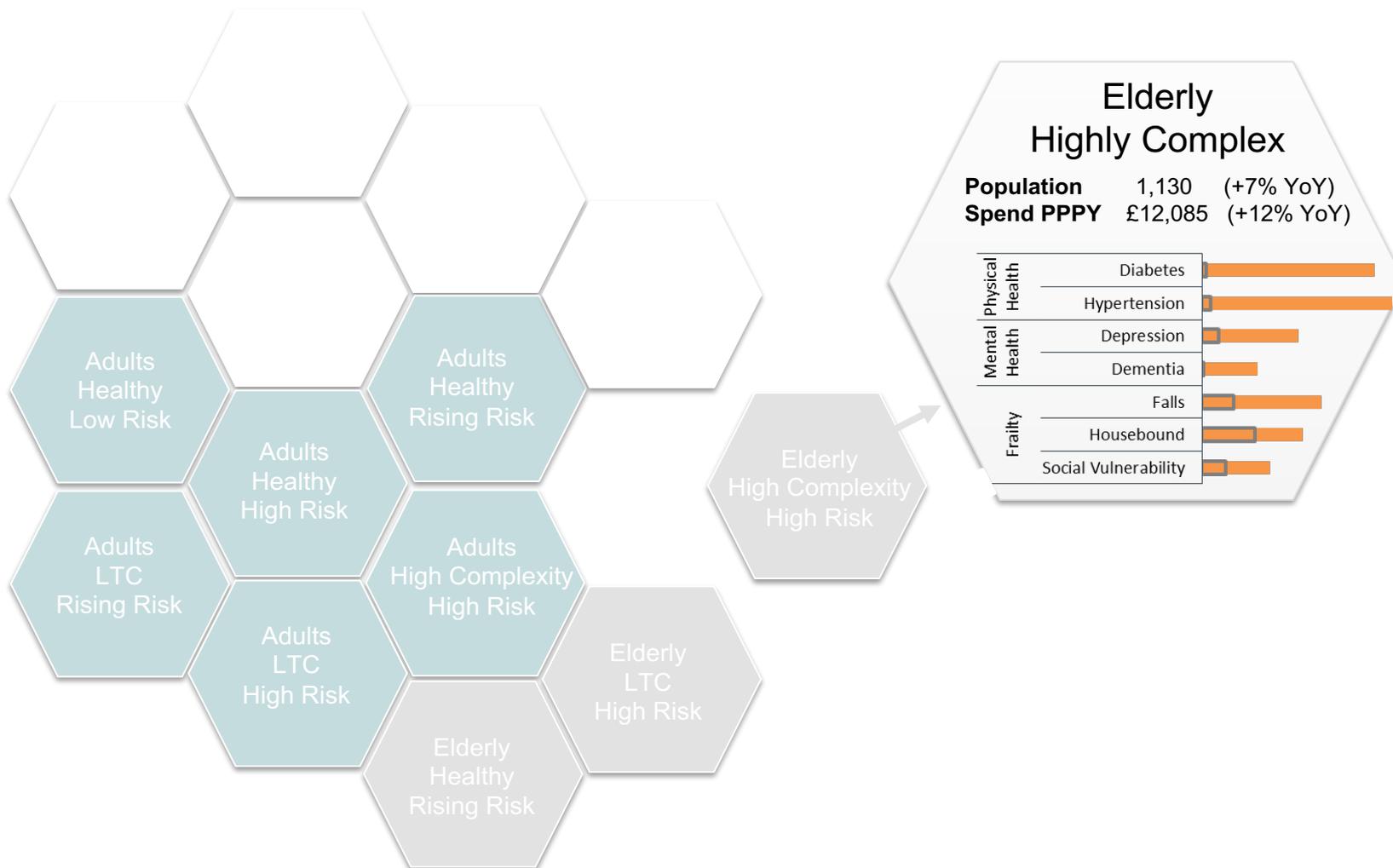
The Unmitigated Spend Projection



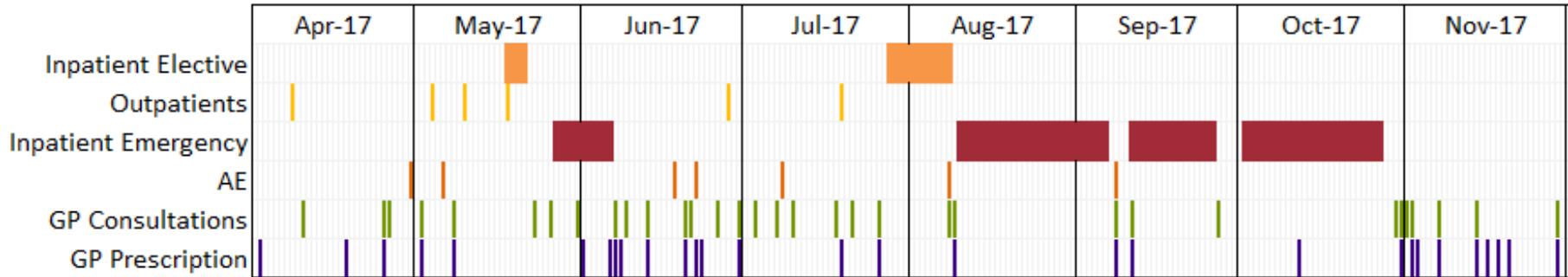
System activity & spend has increased across the last 3 years and are projected to continue.



Principles of Segmentation – Illustrative Example



Person-Level Timeline: Theographs



Patient Detail

Age: 83

Gender: Male

Deprivation Decile: 3rd

ONS Socio-Economic Category: Remote Communities

LTCs: 7

Frailty: Moderate

Disease Casemix: Acute renal failure, cancer, dementia, endocrinology, heart failure, hypertension, urology

Other Cohabiting Factors: Housebound, social vulnerability, visual impairment

Approximate Costs: 16/17 £3,900 | 17/18 £23,600



Provide strategic insight into costs and outcomes and what could be driving them



Provides variation analysis to highlight and prioritise interventions



Link individual data to strategic insight in a professionally relevant way



Supports outcome and value based commissioning



Supports intervention design and inspires clinical change based on evidence



Can be used to track impact and ROI