National

MHSPF

Mental Health Service Planning Framework

Introduction to the NMHSPF

June 2023 - V4 .3

Population Based Planning for Mental Health

Acknowledgment

This document builds on earlier NMHSPF model development and documentation commissioned by the Australian Government Department of Health and developed by New South Wales Ministry of Health (Phase 1, 2011-2013) and The University of Queensland (Phase 2, 2016; Phase 3, 2018-2021).

Suggested citation

Diminic, S., Gossip, K., Page, I., & Comben, C. 2023. Introduction to the National Mental Health Service Planning Framework – Commissioned by the Australian Government Department of Health and Aged Care. Version AUS V4.3. The University of Queensland, Brisbane.

Table of Contents

List of figures 4
List of tables 4
BACKGROUND 5
Overview 5
THE NMHSPF MODEL: KEY CONCEPTS 10
Epidemiology 11
Taxonomy 15
Modelling parameters 17
Funder label 19
Care profiles 21
Mental health promotion and mental illness prevention 24
Resource outputs 25
IMPORTANT ASSUMPTIONS OF THE NMHSPF MODEL 29
An integrated mental health service system 29
Focus on mental health care 29
A national average service model 29
Sufficient population size 30
Efficient service operation 30
APPLICATION OF THE NMHSPF 31

List of figures

Figure 1: Timeline of NMHSPF development....6
Figure 2: The NMHSPF model....10
Figure 3: The NMHSPF epidemiology....11
Figure 4: Conceptual representation of a NMHSPF epidemiology flow chart....14
Figure 5: Conceptual representation of the NMHSPF taxonomy structure....15
Figure 6: NMHSPF taxonomy....16
Figure 7: Funder labels in the NMHSPF....19
Figure 8: NMHSPF care profiles....21
Figure 9: Example of a NMHSPF care profile....22
Figure 10: Using the NMHSPF-PST....25
Figure 11: How the NMHSPF model uses ABS population estimates to generate resource estimates for a given catchment....27
Figure 12: Example of a standard report in the NMHSPF-PST....28

List of tables

Table 1: Example disorders generally considered in and out of scope for the NMHSPF....12
Table 2: Workforce categories and types in the NMHSPF....18
Table 3: Default funder labels used in the NMHSPF....20
Table 4: Type of concordance file used for crossover selections in the NMHSPF-PST....26

BACKGROUND

Overview

The National Mental Health Service Planning Framework (NMHSPF) provides a comprehensive model of the mental health care required to meet population needs, and is designed to help plan, coordinate and resource mental health services (see **Appendix 1** NMHSPF brief for planners). It is an evidence-based framework providing national average estimates for optimal service delivery across the full spectrum of mental health services in Australia. It provides an agreed national language for mental health services, with a detailed taxonomy and definitions of service types accompanied by national average modelling parameters and salaries. The associated NMHSPF Planning Support Tool (NMHSPF-PST) allows users to estimate need and expected demand for mental health care and the level and mix of mental health services required for a given population. The NMHSPF builds on state and territory expertise in population-based mental health service planning and has collated expert input from around 250 service managers and planners, public and private sector clinicians, community sector professionals, consumers, carers, technical experts and academics (see **Appendix 2** for a list of project contributors).

The current NMHSPF package includes:

a) Public documentation

- This *Introduction to the NMHSPF* outlining key information on the model;
- The *Technical Appendices for the NMHSPF* that describes the epidemiology, modelling, service taxonomy and other aspects of the methodology underpinning the work in more detail;
- The *NMHSPF Taxonomy*;
- The *NMHSPF Service Element and Activity Descriptions*;
- The *NMHSPF Care Profiles* covering all age groups;
- The *NMHSPF Epidemiology Flowcharts*.

b) Additional materials for licensed users

- The *NMHSPF-PST*, hosted by the Australian Institute of Health and Welfare (AIHW);
- The *NMHSPF-PST User Guide*;
- The *NMHSPF Service Element and Activity Modelling Parameters* attached to each service and workforce type to produce resource outputs;
- Supporting resources such as guidance documents and case studies.

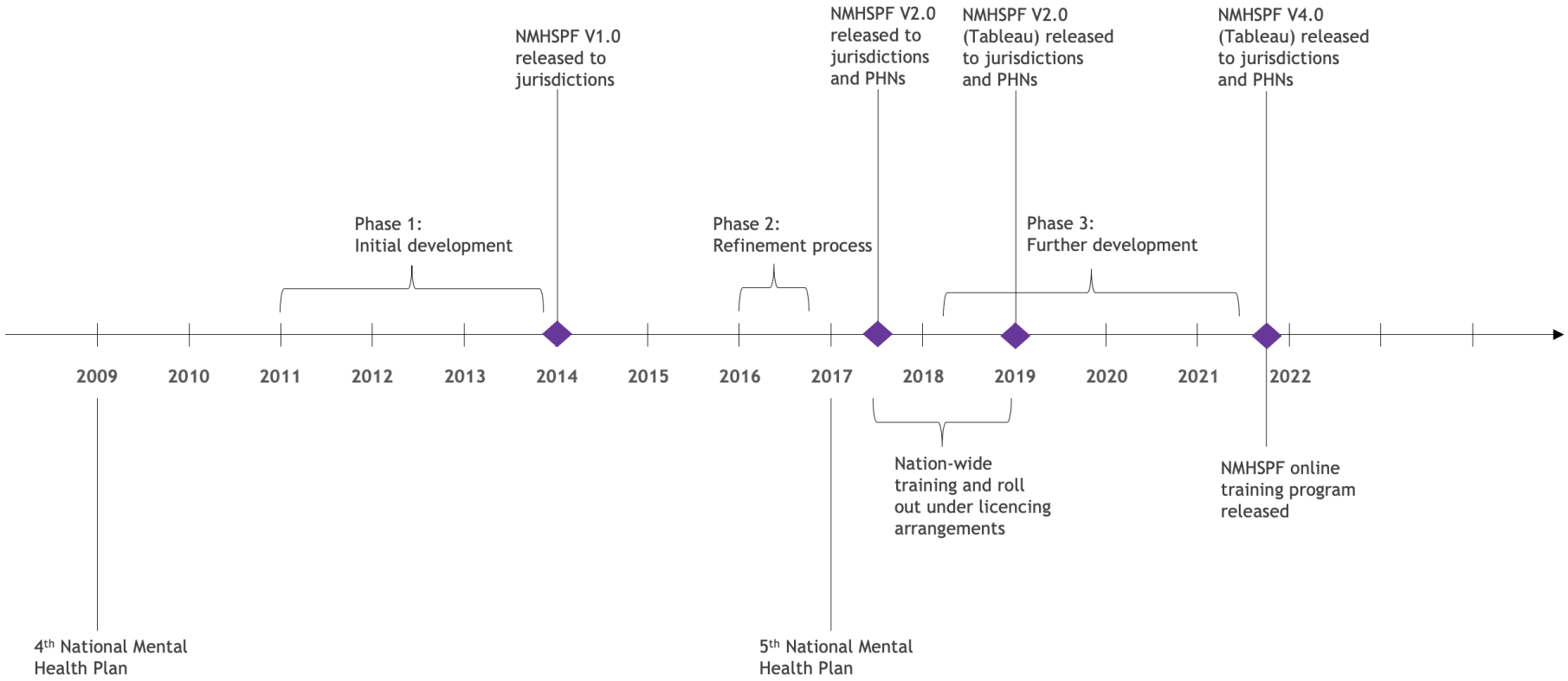

Figure 1: Timeline of NMHSPF development

History of NMHSPF development

Figure 1 shows the timeline of NMHSPF development.

Phase 1 - Initial development: 2011 – 2013

Development of the NMHSPF was a national project undertaken between 2011 and 2013 to progress a commitment under the Fourth National Mental Health Plan to *"develop a national service planning framework that establishes targets for the mix and level of the full range of mental health services, backed by innovative funding models"*.[1] Overall steerage of the project was managed under the auspice of the AHMAC Mental Health Drug and Alcohol Principal Committee (MHDAPC) and funded by the Australian Government Department of Health and Ageing.

The project was jointly led by the New South Wales Ministry of Health and Queensland Health. Over 100 stakeholders from around Australia were involved in the initial development of the NMHSPF. The Expert Working Groups consisted of a broad range of stakeholders including representatives from medical, nursing and allied health fields, consumers and carers, representatives from the non-government (NGO) sector, peak bodies and research organisations.

Phase 1 of the NMHSPF project successfully developed a first generation version of the NMHSPF (AUS V1.0), an evidence-based framework that could be used to plan, coordinate and resource mental health services to meet population needs. It was envisaged that the NMHSPF would continue to be refined based on user experience, emerging evidence and clinical advances.

Version 1 release to jurisdictions: 2014 –2015

Over a two-year period, jurisdictions were given the opportunity to test the NMHSPF (AUS V1.0) in mental health service planning. Western Australia and Queensland applied the NMHSPF to the development of detailed service plans while other jurisdictions tested the NMHSPF on smaller-scale planning activities. This testing period identified a few issues that needed to be refined and corrected to improve the usefulness and accuracy of the NMHSPF.

Phase 2 - Refinement process: 2016

In 2016, the Australian Government Department of Health funded The University of Queensland (UQ) to undertake a project designed to examine identified issues and implement priority fixes and enhancements to AUS V1.0. An Expert Panel consisting of representatives from medical, nursing and allied health fields, consumer and carers, representatives from the NGO sector, peak bodies and research organisations was convened to provide advice on identified areas of the original service modelling contained within the NMHSPF. A Jurisdictional Panel was also established to provide feedback on problems and desired refinements to the NMHSPF based on field-testing experiences in the preceding years. The Jurisdictional Panel also provided relevant services and service utilisation data to complement the work of the Expert Panel, and provided advice on future training and support needs for using the NMHSPF.

Phase 2 resulted in NMHSPF AUS V2.0 which was deemed suitable for use by jurisdictional (state and territory) and sub-jurisdictional (Local Hospital Network (LHN) and Primary Health Network (PHN))

[1] Department of Health. (2009) Fourth National Mental Health Plan: An agenda for collaborative government action in mental health 2009–2014. Canberra: Commonwealth of Australia.

health planners.

Fifth National Mental Health and Suicide Prevention Plan: 2017 - 2022

The Fifth National Mental Health and Suicide Prevention Plan (2017) endorsed the continuing development of the NMHSPF and the release of NMHSPF planning tools to support integrated mental health service planning and the development of joint regional mental health and suicide prevention plans.

Version 2 release to jurisdictions and PHNs accompanied by initial training program roll-out: 2017 – 2018

In 2017 the Australian Government Department of Health commenced licensing and roll out of the NMHSPF AUS V2.0. The UQ team was commissioned to design and deliver a face-to-face NMHSPF training program to jurisdictions, PHNs and LHNs.

The NMHSPF is a sophisticated model and the NMHSPF-PST is a complex tool which provides multiple options to tailor output predictions to meet the needs of local mental health planners. Successful application requires a sound understanding of its structure, underlying assumptions and limitations, as well as the development of appropriate skills in using the NMHSPF-PST. To limit the risk of unskilled and inappropriate use of the NMHSPF, in 2017 the Australian Government Department of Health restricted access to the NMHSPF materials and NMHSPF-PST to employees of PHNs, LHNs and jurisdictions whose organisation has entered into a licence agreement and who have completed the required training. As of 2019 over 200 users had completed the training program and registered as licensed users of the NMHSPF.

Phase 3 - Further development: 2018 – 2021

In response to identified user priorities and the need to maintain currency, in 2018 the Australian Government Department of Health in conjunction with all state and territory health departments commissioned UQ to undertake a program of work spanning three years to further develop and refine aspects of the NMHSPF to better support regional mental health planning. Priorities for development addressed during this research program included:

- Revision of the epidemiology to incorporate current evidence and provide a clearer and more streamlined structure for future updating.
- Development of specific service modelling to better account for the needs of:
    - Aboriginal and Torres Strait Islander peoples;
    - People living in rural areas; and
    - Young adults.
- A feasibility assessment to determine how forensic mental health service needs could be modelled in the NMHSPF and provisional development of some of the required inputs to build such a model.
- Consolidation and streamlining of need groups and care profiles across the model to incorporate specific clinical advances, reduce model complexity and support future updates.
- Refinement of consultation and modelling methods to reduce burden on expert panel members, encourage broad consultation and enhance sustainability and ease of future updating.

- Incremental enhancements of the model, Excel-based NMHSPF-PST and user documentation, including development and release of public documentation and review of specific modelling assumptions such as achievable readmission rates to bed-based services.
- Support for the Australian Institute of Health and Welfare (AIHW) to transition the NMHSPF-PST to a new platform and advice on implementation of model updates into the new platform.

Release of web-based NMHSPF-PST: 2019

In 2018 the AIHW was engaged to transition the NMHSPF-PST from an increasingly complex and unstable Excel base to a web-based model and user interface. The web-based Tableau version of the NMHSPF-PST was made available to licensed users in 2019 and improved the reliability and accessibility of the planning tool.

Version 4 release to jurisdictions and PHNs accompanied by the launch of the online training program: 2021

At the end of 2021 NMHSPF AUS V4.0 was released. This version incorporated the development work that had been undertaken during 'phase 3 – 2018-2021'. An online training program that replicated the face-to-face training that had been delivered during 2017-2018 was also launched and made available to existing licensed users and prospective users.

Minor updates to NMHSPF V4 have since been released to users at approximately 6-monthly intervals.

THE NMHSPF MODEL: KEY CONCEPTS

The NMHSPF model (**Figure 2**) combines the best available evidence and expert opinion on the prevalence of mental illness and need for mental health services, the types and levels of mental health care required for different need groups, and efficient standards of mental health service operation to deliver this care. These inputs allow calculation of the resources required to deliver adequate mental health services to a nominal population of 100,000 people in each age group or a selected population region such as Australia, a state or territory, LHN or PHN. **Appendix 3** provides further background on the development of the model. The NMHSPF model:

1. Estimates the number of people in a defined population with mental health problems in a year, by age and levels of severity, and sets service demand targets for those who will require intervention (**epidemiology**);
2. Describes the full spectrum of interventions from self-help, digital and low intensity interventions to primary and specialist clinical treatment, to mental health community support services (**taxonomy** and **modelling parameters**);
3. Describes service needs within age and severity target groups, including types of intervention, intensity, provider and current funder (**care profiles** and **funder type**); and
4. Drawing on all of the above, produces **resource estimates** to deliver those interventions over a 12-month period.

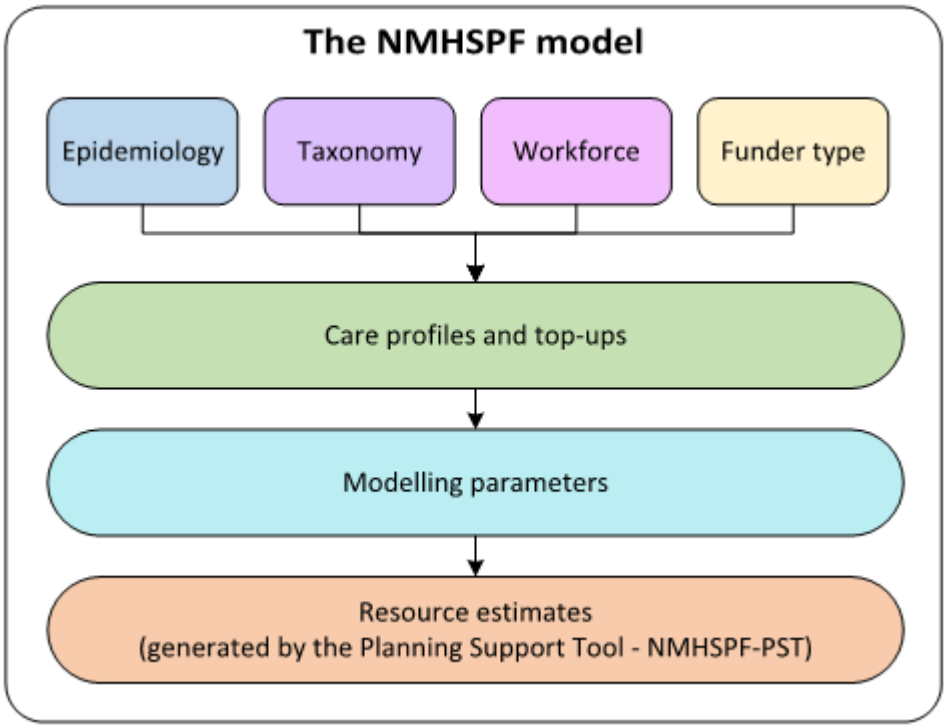

Figure 2: The NMHSPF model

Epidemiology

The NMHSPF starts with the Australian average population and stratifies it into 'need groups' based on severity of mental health diagnosis or other identified mental health need, and functioning. NMHSPF estimates of the prevalence of mental illness in the Australian community are primarily drawn from burden of disease studies, supplemented by other national and international survey data where necessary. This allows consistent coverage of the full range of mental illness, including diagnoses like the psychoses, eating disorders and personality disorders which are not normally covered by national household surveys. The collated data are used to quantify the 12-month prevalence of mental illness in Australia by age group and apportion this prevalence across three levels of severity (MILD, MODERATE, SEVERE) (**Figure 3**).

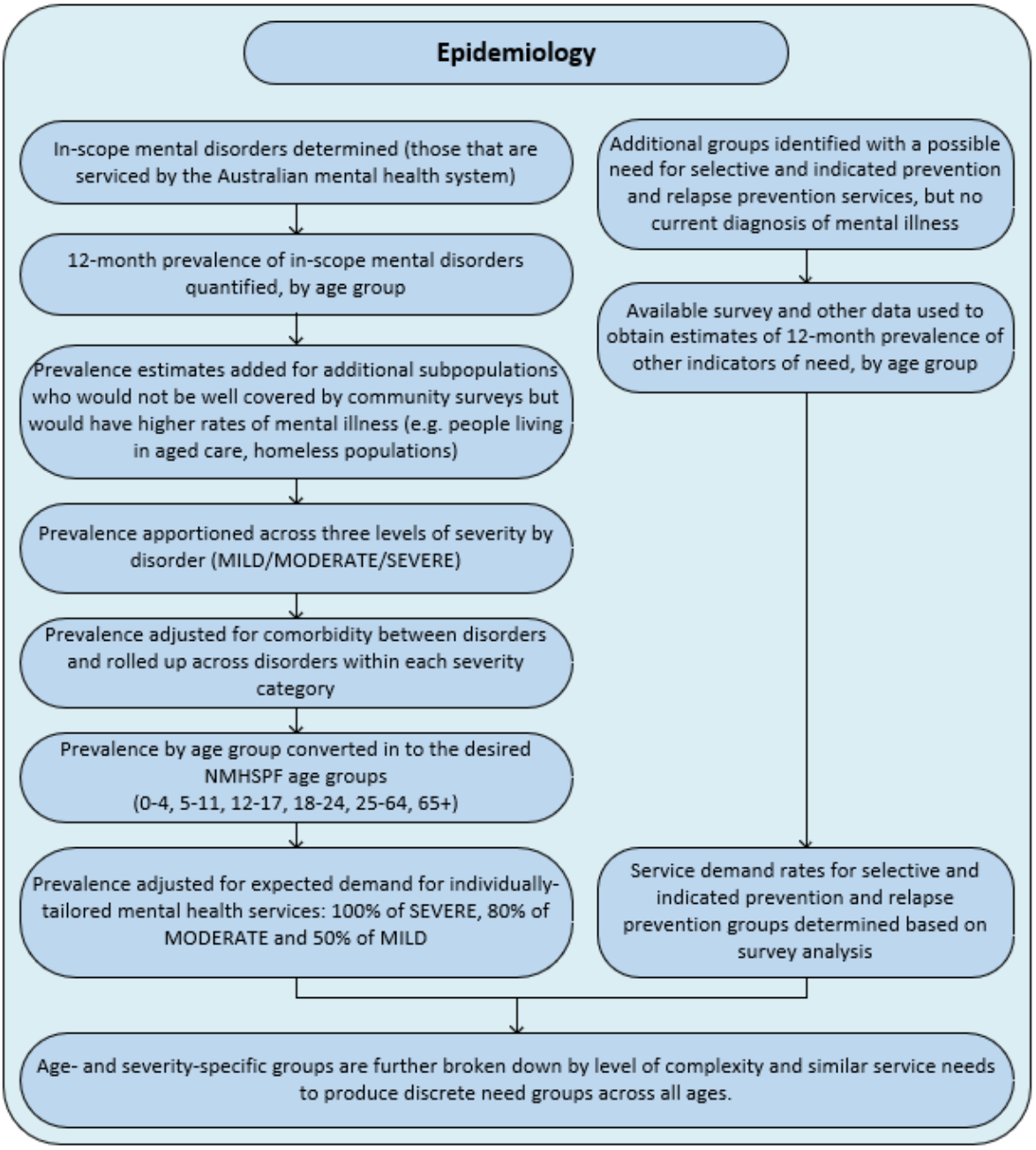

Figure 3: The NMHSPF epidemiology

The NMHSPF has a specific way of defining severity which may differ from other sources. In the NMHSPF, SEVERE, MODERATE and MILD refer to the intensity of mental health service needs for people with a formally diagnosed mental illness, which is more closely related to role impacts and impairment in psychosocial functioning than clinical symptoms. SEVERE mental illness relates to individuals with significant days out of role, distress or impairment who would require support from specialised mental health services, while MODERATE and MILD mental illnesses are expected to be able to be largely managed in a primary care setting with limited specialist input.

In addition to the severity groups above there are also other groups modelled in the NMHSPF who have a possible need for services. Indicated prevention includes people experiencing symptoms of mental illness or indicators of distress which do not meet threshold for a formal mental illness diagnosis, but who may require intervention to prevent progression to a formal diagnosis and to manage distress. Relapse prevention includes people who have a lifetime history of mental illness but do not currently have a 12-month diagnosis of mental illness who may require ongoing treatment and support to remain well. Selective prevention groups in the NMHSPF currently include children living with parents with moderate to severe mental illness, who are at risk of poor outcomes and may require support at specific time periods. A smaller proportion of each of these groups has an expected demand for individually tailored mental health services. Evidence based universal mental health promotion and indicated mental illness prevention services are also included at a population level.

Prevalence estimates are determined for the age groups: 0-4, 5-11, 12-17, 18-24, 25-64 and 65+. These six age groups form the basis of all modelling of service needs and resource requirements within the NMHSPF-PST. The model is limited to diagnoses of disorders likely to be core business for the mental health system (see **Table 1**). However, it also includes adjustments to factor in populations (such as homeless and residential aged care populations, people with intellectual disability or dementia) that would not be well captured in household surveys but would have higher rates of mental illness than the general community and require a mental health service intervention. Resource estimates for one of these groups, those aged 65+ with behavioural and psychological symptoms of dementia (BPSD), are reported separately from people aged 65+ years with other mental health needs.

Beyond the epidemiology, the model also includes resourcing for most activity expected from specialised mental health services, which may include assessing and responding to mental and behavioural impacts of out-of-scope disorders.

Table 1: Example disorders generally considered in and out of scope for the NMHSPF

In-scope disorders	Out-of-scope disorders
Psychosis	Substance use disorders
Mood disorders	Autism spectrum disorders
Anxiety disorders	Dementia
Personality disorders	Intellectual disability
Eating disorders	
Behavioural disorders	

As not all prevalent cases will require treatment, a modifier is included to adjust for expected demand for mental health services. The NMHSPF models contact with services for 100% of SEVERE, 80% of MODERATE and 50% of MILD cases of mental illness, as well as smaller proportions of the selective prevention, indicated prevention and relapse prevention groups (varying percentages modelled based on available data). It is expected that those with a mental illness who do not have a demand for individually tailored mental health services may be accessing other forms of help. This may include self-help materials such as books and websites (which do not require clinician input) or seeking support from family and friends. Alternatively, these individuals may choose not to access treatment as their illness may spontaneously remit and they may not be experiencing any significant disability from their illness, despite meeting the threshold for a diagnosis. Further information on the development of the population epidemiology can be found in **Appendix 4**.

For each age group, the prevalence and demand rates are used to model the populations expected to require services across the levels of severity. At each level of severity, the target group is then further subdivided into need groups according to identifiable differences in their service needs, such as their level of complexity and functional disability. Using available evidence on service requirements, data on patterns of service utilisation and expert consensus, multiple need groups have been defined for each age group (**Figure 4**). Across the six age groups, the NMHSPF defines a total of 116 need groups. Further information on the development of the need groups can be found in **Appendix 5 and 6**.

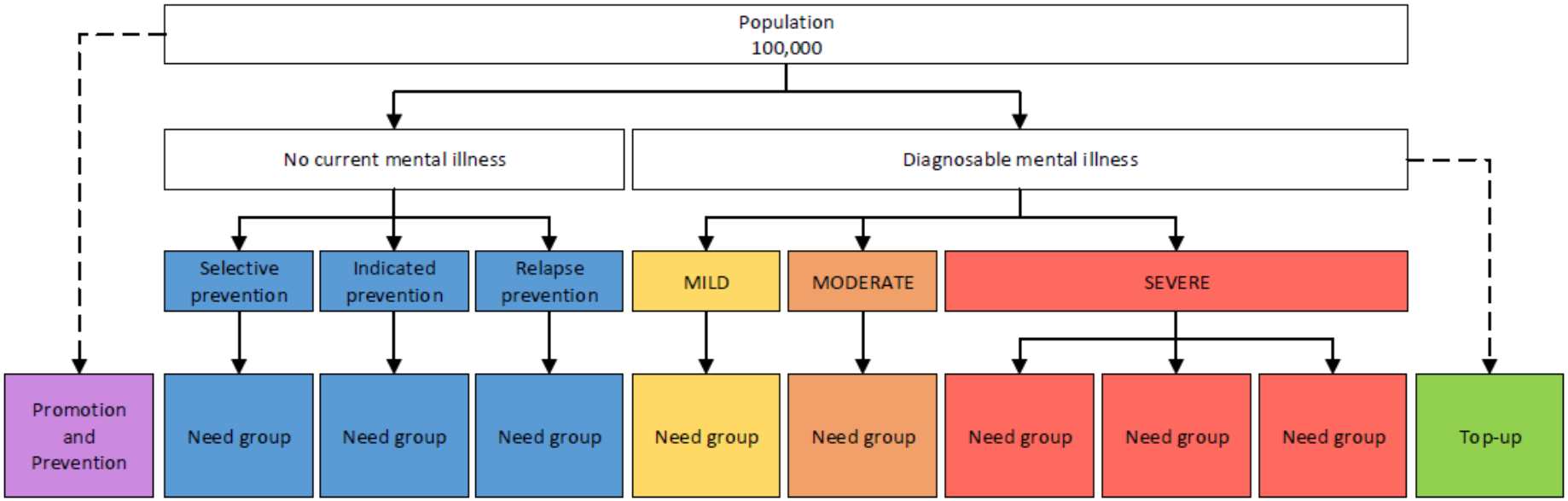

Figure 4: Conceptual representation of a NMHSPF epidemiology flow chart

Taxonomy

The NMHSPF describes the range of services required within a comprehensive mental health system, using an agreed national taxonomy of mental health services across the spectrum of service delivery, within six key streams: mental health promotion, mental illness prevention, primary and specialised clinical ambulatory mental health services, specialised mental health community support services, specialised bed-based mental health care services, and medications and procedures (**Figure 5**). Given that each state and territory structures mental health services differently, the taxonomy provides a common language and clear definitions of core mental health service components and functions. Each stream is further subdivided into service categories, service elements and activities. The complete taxonomy is shown in **Figure 6** (see **Appendix 7** for further information about the development of the taxonomy).

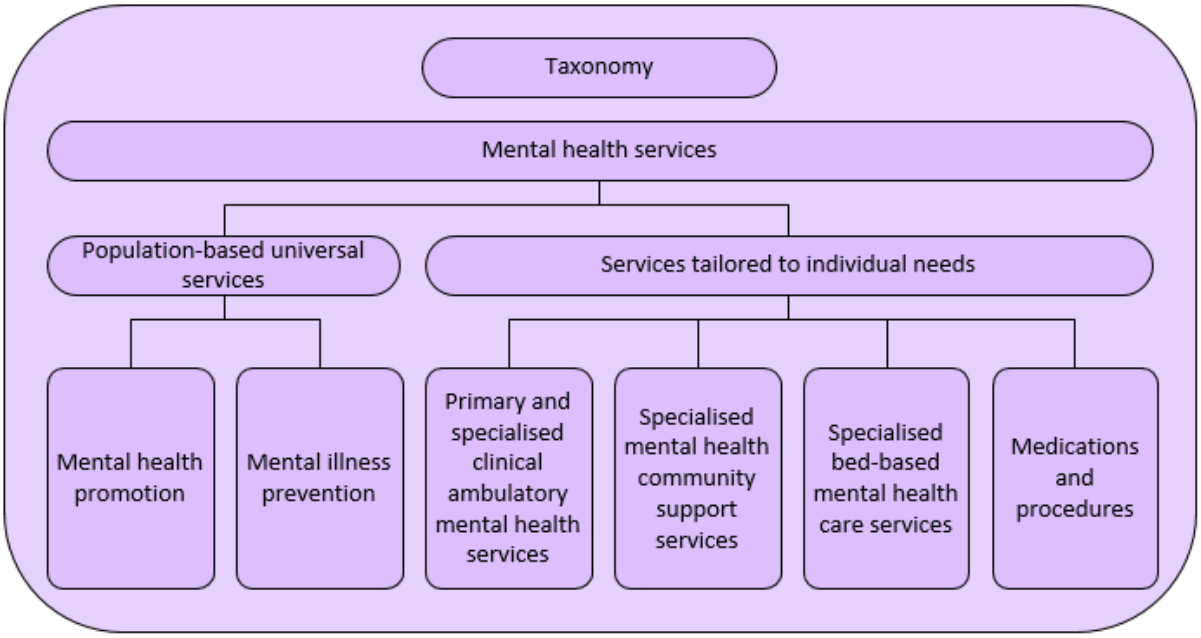

Figure 5: Conceptual representation of the NMHSPF taxonomy structure

The building blocks of the taxonomy and care profiles are service categories, service elements and service activities; each of these relates to a specific aspect of mental health care, e.g. an acute inpatient service or mental health assessment. Each item in the taxonomy is accompanied by a detailed description of the service including activities that may be provided (see the *NMHSPF Service Element and Activity Descriptions* document).

- **Mental Health Services**
  - **Population-based Universal Services**
    - **Mental Health Promotion**
      - **Promoting Help Seeking Behaviours**
        - Mass Promotion – Behaviours
      - **Promoting Help Seeking Attitudes**
        - Mass Promotion – Attitudes
        - Structured Psycho Education
          - *Structured Psycho Education – In person*
          - *Structured Psycho Education – Online*
      - **Enhancing Community Attitudes and Stigma Reduction**
        - Contact with People with Mental Illness
        - Intensive Educational Interventions
        - Mass Promotion/Advertising Campaigns
        - Enhancing First Aid Behaviours
      - **Promoting Mental Wellbeing**
        - Social and Emotional Learning
        - Positive Psychology
      - **Reduction of Bullying and Cyber Bullying**
        - Whole of School Approach
    - **Mental Illness Prevention**
      - **Prevention of Suicide, Suicide Ideation and Behaviour**
        - Restriction to Means
        - Gate Keeper Training (Professional)
          - *Gatekeeper Training (Non-medical professionals*
        - Responsible Reporting in Media
          - *Responsible Reporting in the Media about Suicide – Effect on Media Reporting*
          - *Responsible Reporting in the Media about Suicide – Effect on Imitative Suicide Rates*
        - Web Based Programs for Preventing Suicide Ideation
          - *Cognitive Behavioural Therapy – All ages*
        - Crisis Intervention (Telephone and Internet Helplines)
          - *Community Crisis Intervention Telephone Helplines*
      - **Prevention of Depression and Anxiety**
        - Indicated Prevention (Screening and Intervention)
          - *School-based-Anxiety (7-17 years)*
          - *School-based Depression (5-18 years)*
          - *Parent Training and Family Strengthening (pre-school)*
          - *General Adults – Cognitive Behavioural Therapy (Group, individual) - Depression*
          - *General Adults – Cognitive Behavioural Therapy (web-based) - Depression*
        - Universal Prevention
          - *School-based Cognitive Behavioural Therapy Anxiety (7-13 years)*
          - *School-based Cognitive Behavioural Therapy Depression (5-19 years)*
          - *School-based Cognitive Behavioural Therapy Anxiety (12-17 years)*
          - *School-based Cognitive Behavioural Therapy Depression (5-19 years)*
          - *School-based Cognitive Behavioural Therapy Anxiety (12-17 years)*
      - **Prevention of Externalising Problems**
        - Multi-level Behavioural Parent Training
          - *Parent Management Training*
          - *Multidimensional Treatment Foster Care*
        - School-based Intervention Programs (Universal)
        - School-based Intervention Programs (Indicated)
      - **Prevention of Eating Disorders and Body Image Problems**
        - School-based Programs
        - University-based Programs
        - Community-based Programs
      - **Prevention of PTSD**
        - Prevention of post-event pathology from post-event intervention for those who demonstrate vulnerability
  - **Services Tailored to Individual Needs**
    - **Primary and Specialised Clinical Ambulatory Mental Health Care Services**
      - **Assessment**
        - Brief Mental Health Assessment
        - Comprehensive Mental Health Assessment
        - Brief Physical Health Assessment
        - Comprehensive Physical Health Assessment
      - **Acute Care Services**
        - Acute Care Team
      - **Consultation Liaison**
        - Consultation Liaison - General (Hospital)
        - Consultation Liaison - Emergency Department (Hospital)
        - Consultation Liaison – Rural Hospital and Emergency Department
        - Consultation Liaison – Specialist Rural Outreach
          - *Consultation Liaison – Specialist Rural Outreach – Child and Youth (0-24 years)*
          - *Consultation Liaison – Specialist Rural Outreach – Adult (25-64 years)*
          - *Consultation Liaison – Specialist Rural Outreach – Older Adult (65+ years)*
        - Indigenous Cultural Consultation
      - **Clinical Community Treatment Team**
        - Clinical Community Treatment Team – Child (0-11 years)
        - Clinical Community Treatment Team – Youth (12-24 years)
        - Clinical Community Treatment Team – Adult (25-64 years)
        - Clinical Community Treatment Team – Older Adult (65+ years)
        - Clinical Community Treatment Team - Rural
        - Clinical Community Treatment Team - Indigenous
      - **Primary Care Team**
        - Primary Care Team - Indigenous
      - **Day Program**
        - Day Program Team – Child and Youth (0-24 years)
        - Day Program Team – Adult (25-64 years)
      - **Review +/- Ongoing Management**
        - Centre Based Review +/- Ongoing Management
        - Home Based Review +/- Ongoing Management
        - General Physical Health Review +/- Ongoing Management
      - **Care Coordination and Liaison Services**
        - Care Coordination and Liaison
          - *Rural Therapy Liaison*
        - Medico Legal Coordination and Liaison
      - **Structured Psychological Therapies (SPT)**
        - SPT – Brief Intervention
        - SPT Low Intensity Intervention
        - SPT – Individual
        - SPT – Family
        - SPT – Group
        - Clinician Moderated Web-based Psychological Interventions
      - **Other Structured Interventions**
        - Lifestyle Interventions – Individual
        - Lifestyle Interventions - Group
        - Other Evidence-based Physical Therapies
      - **Pharmacotherapy**
        - Pharmacotherapy Prescription
        - Pharmacotherapy Review
    - **Specialised Mental Health Community Support Services**
      - **Group Support and Rehabilitation Services**
        - Group Support and Rehabilitation
          - *Group Support and Rehab linked to accessing and maintaining safe and secure housing*
          - *Group Support and Rehab linked to early childhood, education and/or employment*
          - *Group Support and Rehab linked to enhanced relationships and social participation*
          - *Group Support and Rehab linked to navigating the primary and mental health care systems*
          - *Group Support and Rehab linked to community aged care*
        - Group Based Peer Work
          - *Group Based Consumer Peer Support*
          - *Group Based Carer Peer Support*
      - **Individual Support and Rehabilitation Services**
        - Individual Support and Rehabilitation
          - *Individual Support and Rehab linked to accessing and maintaining safe and secure housing*
          - *Individual Support and Rehab linked to early childhood, education and/or employment*
          - *Individual Support and Rehab linked to enhanced relationships and social participation*
          - *Individual Support and Rehab linked to navigating the primary and mental health care systems*
          - *Individual Support and Rehab linked to youth development*
          - *Flexible Funding Pool – Consumer*
        - Individual Peer Work
          - *Individual Peer Support*
          - *Individual Carer Peer Support*
      - **Other Residential Services**
        - Residential Crisis and Respite Services
      - **Family and Carer Support**
        - Flexible Respite
        - Day Respite
        - Family Support Services
        - Group Carer Support Services
          - *Group Carer Support linked to accessing and maintaining safe and secure housing*
          - *Group Carer Support linked to education and/or employment*
          - *Group Carer Support linked to enhanced relationships and social participation*
          - *Group Carer Support linked to navigating the primary and mental health care systems*
        - Individual Carer Support Services
          - *Individual Carer Support linked to accessing and maintaining safe and secure housing*
          - *Individual Carer Support linked to education and employment*
          - *Individual Carer Support linked to enhanced relationships and social participation*
          - *Individual Carer Support linked to navigating the primary health care systems (health management)*
          - *Flexible Funding Pool - Carer*
    - ***Specialised Bed-Based Mental Health Care Services***
      - **Acute Inpatient Services (Hospital)**
        - Acute – Perinatal and Infant Mental Health (Hospital)
        - Acute – Child (0-11 years) (Hospital)
        - **Acute – Youth (12-24 years) (Hospital)**
        - Acute – Adult (25-64 years) (Hospital)
        - Acute – Older Adult (65+ years BPSD) (Hospital)
        - Acute – Older Adult (65+ years) (Hospital)
        - Acute – Intensive Care Service (Hospital)
        - **Acute – Eating Disorders - Adult (18-64 years) (Hospital)**
        - Acute – Rural (Hospital)
      - **Sub-Acute Services (Residential, Hospital or Nursing Home)**
        - Step Up/Step Down – Youth (12-24 years) (Residential)
        - Step Up/Step Down – Adult and Older Adult (25+ years) (Residential)
        - Sub-Acute Rehabilitation – Youth (18-24 years) (Residential)
        - Sub-Acute Rehabilitation – Adult and Older Adult (25+ years) (Residential)
        - Sub-Acute Rehabilitation – Rural (Residential or Hospital)
        - Sub-Acute – Intensive Care Service (Hospital)
        - **Sub-Acute – Older Adult (65+ years) (Hospital)**
      - **Non-Acute Extended Treatment Services (Residential, Hospital or Nursing Home)**
        - Non-Acute – Youth (18-24 years) (Residential)
        - Non-Acute – Adult and Older Adult (25+ years) (Residential)
        - Non-Acute – Older Adult (65+ years) (Hospital/Nursing Home Based)
        - Non-Acute – Intensive Care Service (Hospital)
        - Non-Acute – Intensive Care - Older Adult (65+ years) (Hospital)
      - **Specialised Bed Based Non-Mental Health Care Services**
        - Acute – Medical/Surgical Bed (Hospital, non-MH)
        - Acute – Paediatric Bed (Hospital, non-MH)
        - Non-Acute – Adult (<24 hour support) (Residential, non-MH)
      - **Hospital Add-ons**
        - Indigenous Hospital Add-on
    - **Medications and Procedures**
      - **Medications**
        - Antidepressants
        - Anxiolytics
        - Sedatives
        - ADHD medications
        - Antipsychotics
      - **Procedures**
        - Electroconvulsive Therapy
        - Transcranial Magnetic Stimulation

Figure 6: NMHSPF taxonomy

Modelling parameters

Within the NMHSPF model, resource estimates such as number of required beds, workforce hours, workforce full-time-equivalent (FTE) and estimated costs are calculated using a range of parameters associated with each taxonomy item and workforce type. This includes the workforce mix for team-based services (see **Table 2** for NMHSPF workforce categories and types) and modelled operational parameters such as occupancy and annual readmission rates for bed-based services, workforce hours, salary oncosts and overhead costs (see *NMHSPF Service Element and Activity Modelling Parameters* document). NMHSPF parameters for each service element are modelled at desirable, efficient operational rates. Outputs are based on averaged national staffing profiles and salaries.

Further details on the workforce categories and types can be found in **Appendix 8** and for the formulas used to calculate the resource estimates see **Appendix 9**.

Each workforce category and type is associated with an estimated base salary or final all-inclusive cost for one of two settings: team/bed-based services and individual (private) provider. The NMHSPF-PST includes notional workforce prices for the year 2021 based on average national pricing data (further information on cost modelling is included in **Appendix 10**). These salaries can be customised by users of the NMHSPF-PST and/or inflated to prices for subsequent years.

Table 2: Workforce categories and types in the NMHSPF

Workforce category	Description	Workforce type
Medical	Medically trained professionals providing mental health care. Registrars and junior medical officers are included only in the context of team-based staffing profiles.	General Practitioner
		Psychiatrist
		Junior Medical Officer
		Registrar
		Other Medical Specialist
Tertiary Qualified	University trained (or equivalent) with a minimum three-year Bachelor degree in a discipline related to mental health care. 'Other' includes other professionals such as physiotherapists, exercise physiologists, dieticians, speech therapists, pharmacists, and tertiary qualified program managers/supervisors employed in the community support sector.	Nurse Practitioner
		Registered Nurse
		Psychologist
		Occupational Therapist
		Social Worker
		Other TQ (e.g. Pharmacist)
		Indigenous Mental Health Clinician
Vocationally Qualified	Primarily a non-clinical workforce (i.e., not a university trained clinician) with a TAFE level qualification up to Advanced Diploma level in mental health or a related area. Includes technicians or coaches trained to deliver low-intensity psychological interventions (who may possess, but do not require, a tertiary qualification).	Enrolled Nurse
		VQMH Worker
		VQ Other
		Indigenous Mental Health Worker
		Low Intensity Worker
Peer Worker	Roles that must be performed by someone with lived experience as a mental health service consumer or carer of an individual(s) with mental illness.	Consumer Peer Worker
		Carer Peer Worker
		Indigenous Peer Worker

Funder label

The NMHSPF model was built on the principle of considering the service functions required to meet the needs of people with mental illness, rather than the location, format or provider of that service. To aid planners to identify their likely areas of responsibility within the modelled estimates, the NMHSPF-PST generates resource estimates by funder by drawing on default funder labels which have been applied to each service element in the care profiles (**Figure 7** and **Table 3**). These funder types represent a national average of the current mix of services rather than an optimal model, and designate the entity deemed primarily responsible for funding and administrative oversight of each aspect of the NMHSPF model (see **Appendix 11** for more information on the application of the default funder labels).

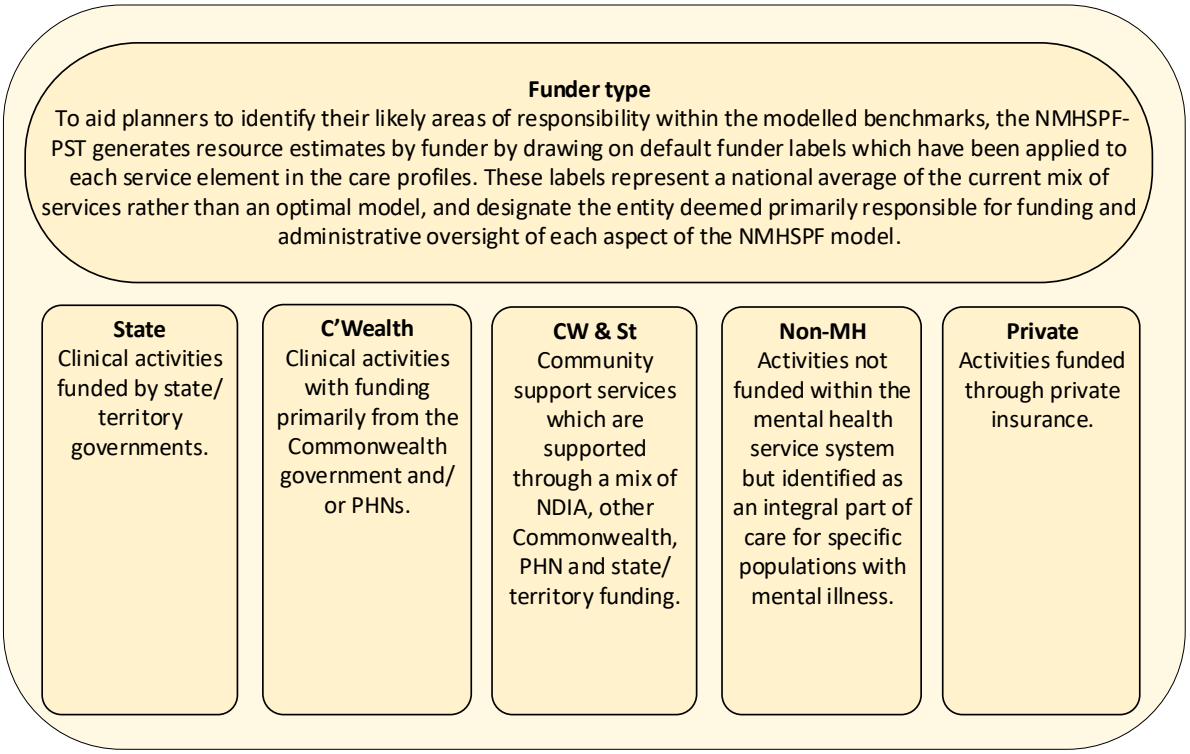

Figure 7: Funder labels in the NMHSPF

Table 3: Default funder labels used in the NMHSPF

Funder label	Examples of services that may be funded by different funder labels
C'Wealth	Structured psychological therapies delivered by programs such as Better Access, psychological therapy services for hard to reach groups (formerly ATAPS) and low intensity interventions such as *beyondblue*'s NewAccess program; clinician-moderated web-based therapies; mental health services subsidised by the Medicare Benefits Schedule (MBS); medicines funded by the Pharmaceutical Benefits Scheme (PBS); and mental health nurses working in primary care and private psychiatry settings. Also includes similar types of services funded through private payment or via insurance.
State	Public sector specialised bed-based mental health services, as well as other clinical services provided by the state mental health system, e.g. acute care services and community mental health teams.
CW & St	Community psychosocial support services usually delivered in the non-government sector, such as individual support and rehabilitation, peer work, and carer support.
Private insurer	Mental health services provided in private hospitals.
Non-MH	Physical health care provided by general practitioners, services provided by paediatricians or geriatricians, general hospital beds, family support services for 0-17 year olds that would be provided by child protection or other agencies. Note that this category does not comprehensively cover all of the non-mental health care that would be required by people with mental illness.

Care profiles

There are 116 care profiles and top-ups which describe the average type and quantity of mental health care needed to meet the mental health service requirements for individuals in a need group during a 12-month period (**Figure 8**). Care profiles draw on service elements and activities from the taxonomy and their associated workforce categories and modelling parameters to describe the services needed. For each service element, the care profile specifies the percentage of the need group likely to require that service, the average number of occasions on which this service will be required, and the average duration of each service occasion, along with the workforce and funder label. Service elements and activities delivered by an individual provider do not have a fixed workforce type or mix but are directly allocated a provider type in the care profile based on the minimum qualifications appropriate to deliver that service.

These detailed inputs form the basis for calculating the resources required to meet the service requirements of the need group. An example care profile is shown in **Figure 9**.

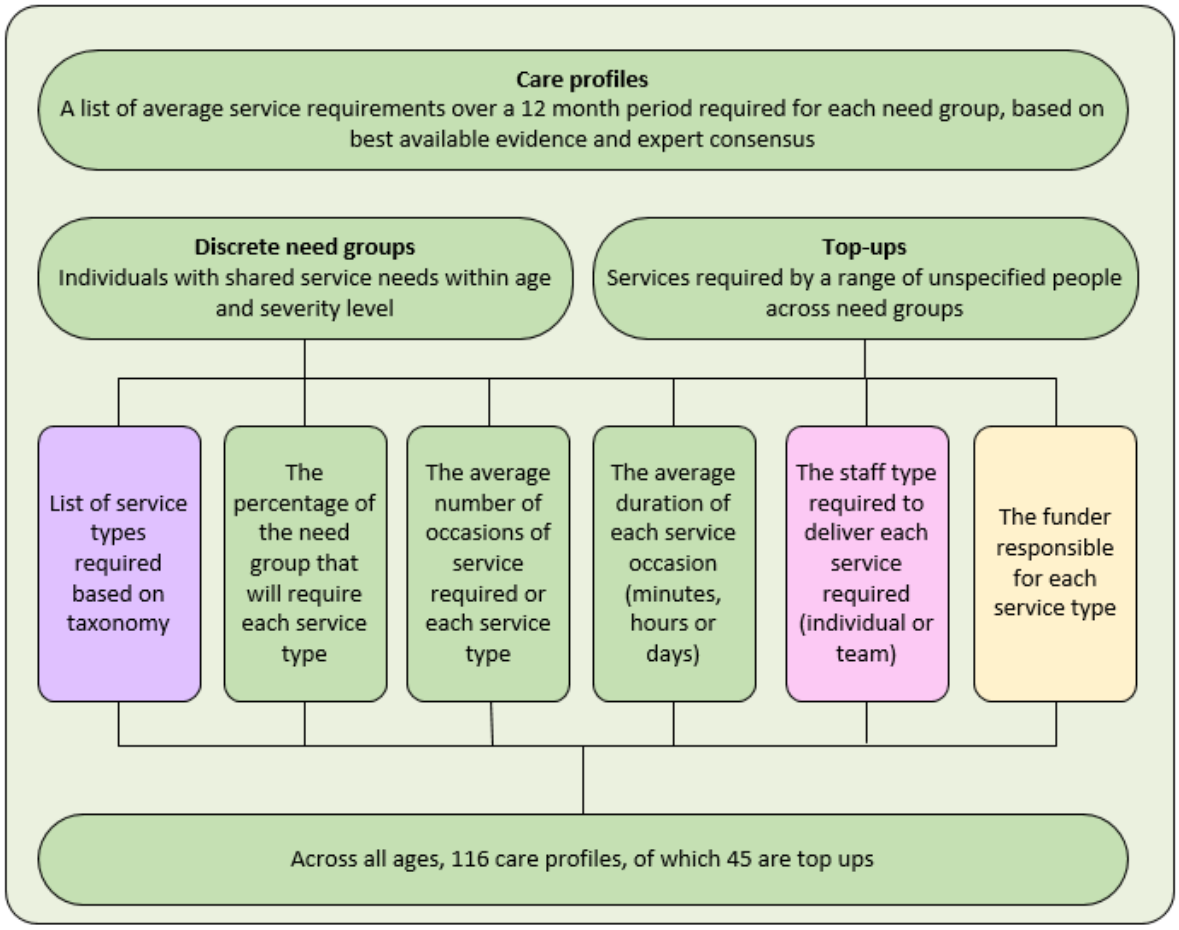

Figure 8: NMHSPF care profiles

Filters	
Population	urban_non-Indigenous
Age	25-64
Severity	Moderate
Care profile code	25MMOD_Moderate

NOTE: Please select all four filters to ensure the relevant care profile will be presented

Care profile title
Moderate
Rate of demand per 100K (age specific)

Non-Indigenous	Indigenous
5411	10876

Description of epidemiology
The NMHSPF epidemiology for the 25-64 years age group has been estimated using 2019 GBD diagnostic prevalence data for Australia and modified using additional assumptions to account for missing disorders and populations. The NMHSPF severity splits were applied at the disorder level, comorbidity adjustments were made, and estimates were summed across the moderate severity level to estimate the number of people in the moderate care profile.
Description of group
This need group includes individuals who have a diagnosed mental illness that has moderate impact on their day-to-day lives. They may experience problems in psychosocial functioning (e.g. in the workplace, education, household or social settings) resulting in reduced productivity, performance and engagement. Many of these individuals are likely to experience multiple mental and/or physical illnesses and may also have risk factors such as extensive social and environmental stressors. This group of individuals require regular contact with mental health services and would benefit from holistic and multidisciplinary interventions to address symptoms and associated functional impairment.

Activity	% pop applicable	No. of occasions of service	Activity duration	Activity measure	Workforce	Team	Funder	Staff ratio	Notes
Brief Mental Health Assessment	20%	1	15	min	General Practitioner	n/a	C'Wealth	1	n/a
Comprehensive Mental Health Assessment	30%	1	45	min	Psychiatrist	n/a	C'Wealth	1	n/a
Comprehensive Mental Health Assessment	85%	1	30	min	General Practitioner	n/a	C'Wealth	1	n/a
Comprehensive Physical Health Assessment	85%	1	30	min	General Practitioner	n/a	Non-MH	1	n/a
General Physical Health Review +/- Ongoing Management	85%	3	15	min	General Practitioner	n/a	Non-MH	1	n/a
Pharmacotherapy Prescription	60%	1	15	min	General Practitioner	n/a	C'Wealth	1	n/a
Pharmacotherapy Prescription	5%	1	15	min	Psychiatrist	n/a	C'Wealth	1	n/a
Pharmacotherapy Review	5%	3	15	min	Psychiatrist	n/a	C'Wealth	1	n/a
Pharmacotherapy Review	60%	3	15	min	General Practitioner	n/a	C'Wealth	1	n/a
Structured Psychological Therapies	25%	10	40	min	General Practitioner	n/a	C'Wealth	1	The UOS represents an average number of sessions delivered across a 12 month period. Some individuals
Structured Psychological Therapies	55%	10	60	min	TQ unspecified	n/a	C'Wealth	1	The UOS represents an average number of sessions delivered across a 12 month period. Some individuals
Structured Psychological Therapies	5%	12	45	min	Psychiatrist	n/a	C'Wealth	1	The UOS represents an average number of sessions delivered across a 12 month period. Some individuals
Clinician Moderated Web-Based Psychological Interventi	20%	1	25	min	TQ unspecified	n/a	C'Wealth	1	Assessment prior to entering a web-based program
Clinician Moderated Web-Based Psychological Interventi	20%	10	10	min	TQ unspecified	n/a	C'Wealth	1	Treatment UOS and duration based on MindSpot data. 5% also get face-to-face treatment
Lifestyle Interventions - Individual	30%	6	30	min	Team	Lifestyle Interventions - Individ	C'Wealth	1	E.g. Exercise, diet, sleep hygiene etc.
Lifestyle Interventions - Group	20%	6	45	min	Team	Lifestyle Interventions - Group	C'Wealth	0.2	E.g. Exercise, diet, sleep hygiene etc.
Group Based Consumer Peer Support	20%	6	60	min	Team	Group Based Consumer Peer Su	CW & St	0.166666667	n/a

Figure 9: Example of a NMHSPF care profile

The level of care specified in a care profile is deemed adequate to meet the service requirements of the need group, on average; anything less is considered unsatisfactory. The quantity of care required has been determined by combining information from research, various administrative and survey data sources, and expert consensus. As the care requirements are presented as an average across the whole population need group, actual service utilisation and needs are expected to vary across individuals within that group. The NMHSPF is modelled from a system-level perspective in order to calculate estimates of the overall resources required to meet the needs of a population group and does not provide individualised care pathways. **Appendix 12** includes modelling details for selected care profiles. **Appendices 13-15** include details on the adjustments made to care profiles, service models and staffing for Indigenous and rural populations.

At the lower end of need, the NMHPSF enumerates the number of people in the selective prevention, indicated prevention, relapse prevention and MILD mental illness populations who require individually-tailored mental health services. The care profiles for these groups describe a range of interventions, which may include assessment, self-help and watchful waiting from a general practitioner, clinician moderated web-based psychological interventions, low intensity structured psychological therapies (SPT) delivered by vocationally qualified low intensity workers and SPT delivered by tertiary qualified and medical workforce categories within primary care.

For people with a MODERATE mental illness, the NMHSPF care profiles describe interventions such as clinician moderated web-based psychological interventions for less complex cases, SPT delivered by the tertiary qualified and medical categories within primary care, assessment and treatment from private psychiatrists (particularly for those with more complex disorders), individual and group-based lifestyle interventions, and vocational support services delivered by suitably qualified workforce.

At the higher end of need, the NMHSPF identifies a number of different need groups for people with SEVERE mental illness, with interventions delivered by a mix of Commonwealth-funded or subsidised and state-/territory-funded clinical services as well as mental health community support services. For those with less complex SEVERE disorders, the NMHSPF care profiles include services such as SPT delivered by tertiary qualified and medical categories within primary care, assessment and treatment from private psychiatrists, monitoring and ongoing management from mental health nurses working in primary care settings, individual and group-based lifestyle interventions, vocational support services, community support and rehabilitation, and access to mental health acute inpatient care when required. At the more complex end of SEVERE, a range of specialised community and bed-based mental health services are required, traditionally delivered through the state-funded public mental health sector.

While some care profiles correspond to a discrete subgroup of individuals (a need group), others describe service requirements which cannot be limited to a specific group of individuals or person counts. These are called top-ups, and are standalone resource estimates that sit alongside the other care profiles. For example, people in various need groups or levels of severity may require access to emergency department services, but cannot be separately identified from those who require other types of mental health service interventions. As a result, emergency department users cannot be

modelled as a discrete subgroup, but the resources required to deliver these services need to be included in the modelling; a top-up is therefore used. Other items modelled as top-ups include: triage and assessment conducted by the public sector; consultation and liaison services to general hospital wards and emergency departments; inpatient admissions for children and adolescents (0-17 years); additional medical and specialist care required for people with SEVERE eating disorders; additional care coordination and support required for parents with a SEVERE mental illness; additional monitoring requirements for certain psychotropic medications; high intensity packages of individual support and rehabilitation; Indigenous cultural consultation; respite care; neurostimulation therapies; and PBS/RPBS-subsidised medication costs. **Appendix 6** includes detail on the modelling of the top-ups.

Mental health promotion and mental illness prevention

In the NMHSPF, the resources required to deliver mental health promotion and mental illness prevention activities at the community and population level are modelled based on estimated 2011 national expenditure in the absence of available estimates on the specific numbers of people requiring each intervention. A 2011-13 expert working group provided detailed advice about the interventions in this sector with the most supporting evidence at the time, and recommended that future program development focus on those evidence-based interventions.

Resource outputs

Using the inputs described in previous sections, the NMHSPF-PST can report on a range of estimates useful for mental health service planning for user-selected populations (such as a PHN or LHN) (**Figure 10** and **Figure 11**). These outputs include the estimated numbers of people requiring services, number of occasions and hours of service delivery, workforce FTEs, beds and prices. Occasions of service are measured as the number of contacts or visits with a service provider, of varying duration. Hours of service delivery can be presented from the consumer perspective (i.e. hours of care received) or from the provider perspective (i.e. hours of workforce time), which differ for activities involving workforce teams or consumer groups.

The NMHSPF-PST includes forward population projections by age group for Statistical Areas Level 3 (SA3s), Local Government Areas (LGAs), LHNs, PHNs, states, territories and Australia. Users can select their preferred region for reporting. A standard suite of semi-customisable reports is provided with the NMHSPF-PST (**Figure 12**), and users can create personalised reports to answer specific planning questions.

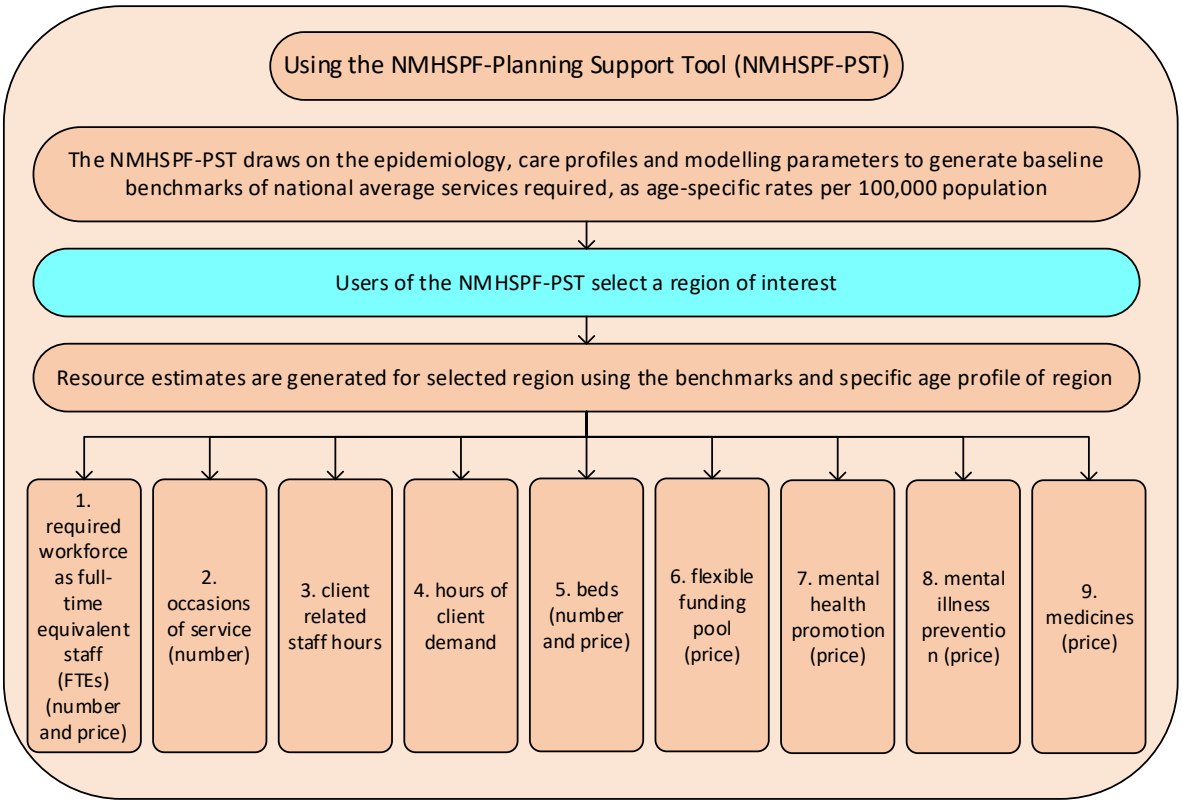

Figure 10: Using the NMHSPF-PST

Figure 11 shows how the NMHSPF model generates overall resource estimates for any given catchment. The population inputs were modelled by the AIHW using population estimates and projections (series B) based on 2016 census data stratified by NMHSPF age groups, Indigenous status and rurality from the ABS. These data were separately extracted for SA3, LGA and PHN estimates using the 2016 Australian Statistical Geography Standard (ASGS) edition of geographies. As LHN estimates are not available through the ABS, these were derived using SA2 level population data and the SA2-LHN concordance files provided by each jurisdiction (excluding Victoria, for which LHN concordance files were not provided to the AIHW).

For crossover selections, populations of sub-regions that spread across multiple higher-level regions are split by concordance files. That is, the four categories of population (i.e., urban_non-Indigenous/ urban_Indigenous/ rural_non-Indigenous/ rural_Indigenous) in each sub-region are each apportioned equally by the proportion of the sub-region that falls within the higher-level region(s). For example, if 20% of an SA3 falls in PHN-A and 80% of the same SA3 falls in PHN-B, then 20% of the SA3 population will be allocated to PHN-A, while 80% of its population will be allocated to PHN-B. Where available, population-based concordance files have been used. When these were not available, geographical concordance files were used. Using geographical concordance to determine sub-region splits may result in incorrect estimates of the population split (particularly for regions where there is high population density in a small part of the whole region). It is recommended that users always check the population estimates in Report 0 to see whether they align with what they would expect. Table 4 shows which concordance files have been used for each type of sub-region. Since LHN concordances are based on geography, where an LHN area lines up with its respective PHN, it may be preferable for users to use the sub-region crossovers to the PHN, which are based on population concordance.

Table 4: Type of concordance file used for crossover selections in the NMHSPF-PST

Region	Sub-region	Concordance file used
PHN	SA3	Population
PHN	LGA	Population
PHN	LHN	Geographical
LHN	SA3	Geographical
LHN	LGA	Geographical

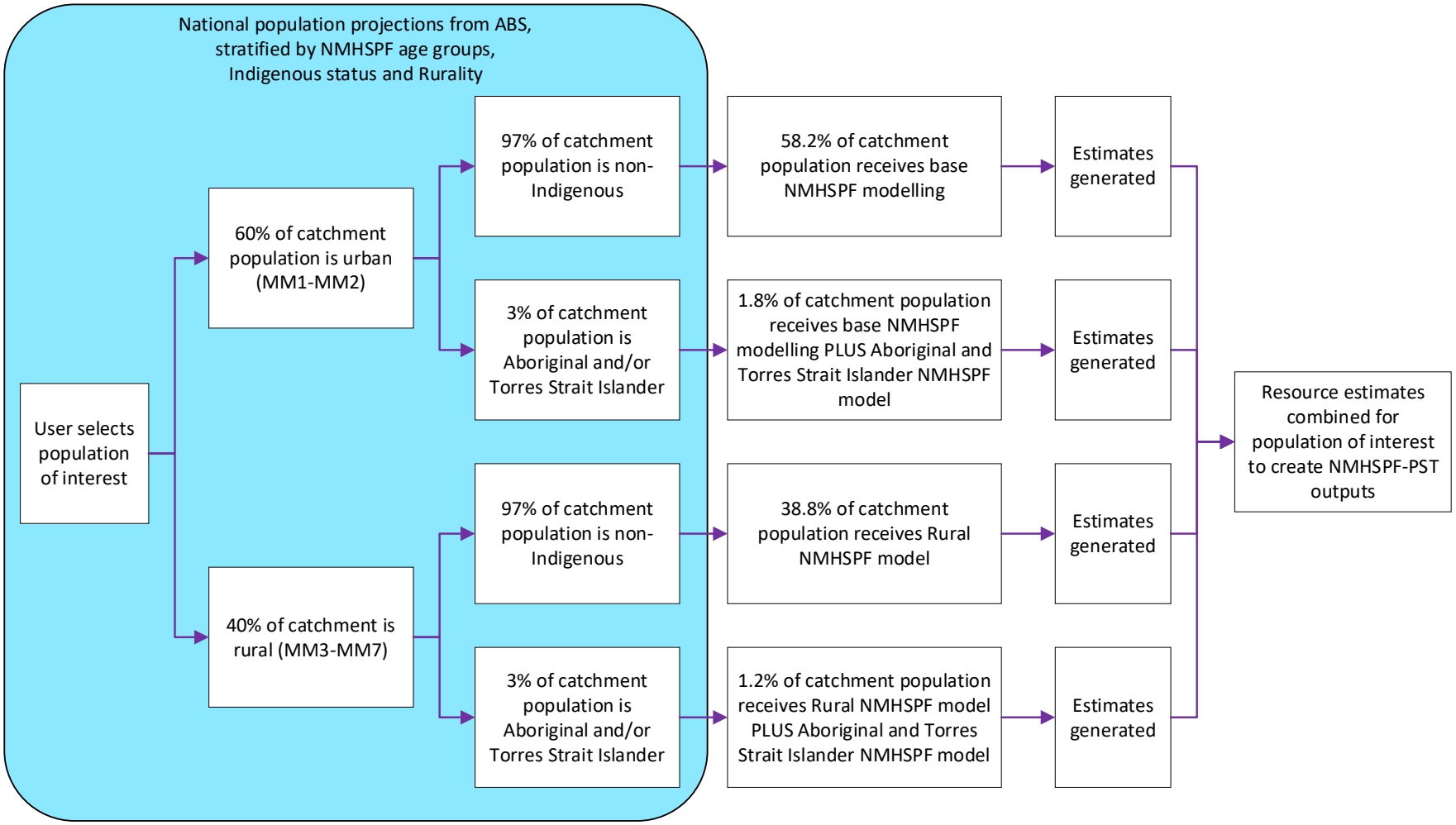

Figure 11: How the NMHSPF model uses ABS population estimates to generate resource estimates for a given catchment

NMHSPF - Report 1: Population with Demand for Mental Health Services

Report 1 Notes | Report 1 Table

Finyear	State	Combined Popname	Indigenous Status	Age Group	Severity Scale: Selective prevention	Indicated prevention	Relapse prevention	Mild	Moderate	Severe	Grand Total
2020–21	Australia	- Total: Australia	Non-Indigenous	0–4	67,365			49,205	33,718	22,087	**172,376**
				5–11	67,188	65,502	54,060	114,002	53,188	26,166	**380,106**
				12–17	63,591	79,609	82,035	139,949	92,014	41,444	**498,642**
				18–24		30,820	31,723	220,441	138,553	67,604	**489,141**
				25–64		185,236	339,390	1,154,271	723,087	355,504	**2,757,488**
				65+		24,074	43,080	252,776	157,681	66,749	**544,361**
				65+BPSD				19,647	18,293	17,739	**55,679**
				Total	**198,145**	**385,241**	**550,288**	**1,950,291**	**1,216,535**	**597,293**	**4,897,793**
			Indigenous	0–4	4,264			4,639	3,179	4,165	**16,248**
				5–11	4,073	5,032	3,254	10,294	4,803	4,725	**32,183**
				12–17	3,964	7,178	5,077	17,323	11,390	6,413	**51,345**
				18–24		6,005	1,561	21,799	13,701	9,978	**53,044**
				25–64		18,164	9,658	66,022	41,359	39,454	**174,657**
				65+		1,071	489	5,507	3,435	1,288	**11,790**
				65+BPSD				1,312	1,222	1,185	**3,718**
				Total	**12,301**	**37,451**	**20,039**	**126,897**	**79,089**	**67,207**	**342,984**
			Total		**210,446**	**422,691**	**570,327**	**2,077,188**	**1,295,624**	**664,500**	**5,240,777**

Pop Category: (All)

Age Group: (All)

Figure 12: Example of a standard report in the NMHSPF-PST

IMPORTANT ASSUMPTIONS OF THE NMHSPF MODEL

It is important to be aware of key underlying principles and assumptions of the NMHSPF when interpreting outputs from the NMHSPF-PST, and the limitations of the NMHSPF in application to unique circumstances.

An integrated mental health service system

The NMHSPF assumes that all elements of the mental health and other health and social service systems are operating in an adequate manner to support people with mental illness. The modelled estimates can only be achieved with a balanced investment across all service sectors, which may involve significant scaling up or reorientation of services relative to current practice. Therefore, individual outputs should not be considered in isolation. Estimates for each part of the mental health service system are dependent on the other aspects also being in place, and gaps in one area may have flow on effects for the resources required in other sectors.

Focus on mental health care

The scope of the NMHSPF is limited to services for people with mental illness, which address that illness. It does not include drug and alcohol services or general physical health care required by a person with mental illness. Non-health services such as public housing, income support and criminal justice are also not detailed in the care profiles. However, these complementary services are likely to be required by some people with mental illness to adequately meet their other health and social care needs. As per above, the NMHSPF model assumes these other services are in place and accessible to people with mental illness.

A national average service model

The NMHSPF provides national average estimates of required resources for mental health service delivery, based on the national average prevalence of mental illness. Outputs from the NMHSPF-PST are based on average national workforce and modelling parameters and salary rates and do not account for regional variations in unit design, workforce salaries and workforce characteristics. Tailoring of the NMHSPF-PST standard output reports to a particular region only adjusts for the population size, rurality, Indigeneity and age distribution of the selected population.

The NMHSPF does consider the specific mental health needs of rural populations and Aboriginal and Torres Strait Islander peoples. However, it does not take into account variations from the national average likely to arise from factors such as socio-demographic variability across regions, and clustering of higher needs groups within particular regions, such as people with severe and complex mental illness in boarding houses. It also does not consider the specific mental health needs of particular populations such as culturally diverse populations. All of these factors may affect the relative demand for mental health services, the relative cost of delivering the same quality of service, and/or the types of service models implemented, in turn affecting the resources required for service delivery.

Outputs from the NMHSPF-PST may need to be adjusted for the needs of specific populations within certain areas. Adjustments to address these factors need to occur as a second stage of planning, based on local knowledge of the catchment population and service context.

Sufficient population size

While the NMHSPF modelling is attributed to a nominal age specific population of 100,000 people, the outputs of the model for specialised bed- or team-based mental health services will only approach viability for planning with total populations of all ages of at least 250,000 people. These specialist services support relatively small proportions of those with mental disorders in the general population and require sufficient population density to support efficient units and teams. In planning for smaller regions, it should therefore be noted that the model still assesses average service demand, but creative solutions may be required for how the need is resourced, such as through use of local service 'spokes' supported by regional 'hubs' for more specialised care (see **Appendix 14** for detail on the rural service models applied to the NMHSPF model).

Efficient service operation

Within the NMHSPF model, estimates of required beds, workforce FTEs, costs and activity are modelled at desirable, efficient operational rates which may not reflect current service delivery. National Australian average/estimated bed occupancy and readmission rates have been applied to the NMHSPF modelling of the number of beds required for each target population (see **Appendix 9**). Likewise, the NMHSPF makes assumptions about optimal proportions of workforce time dedicated to consumer service delivery time versus staff meetings, training and supervision, research, and travel (generally 67% consumer-directed time for public sector clinicians, 85% for private sector clinicians, and around 70% for community support services). More information on consumer service delivery time is included in **Appendix 9**. As these modelled rates may not be consistent with current practice, interpretation of outputs from the NMHSPF-PST requires an awareness of the underlying assumptions.

APPLICATION OF THE NMHSPF

The NMHSPF provides a strong foundation for integrated regional planning across the primary health, specialised mental health and non-government sectors through its modelling of the full spectrum of needs and establishment of a consistent taxonomy and definitions of required service types. It provides guidance about the right mix and level of services and the workforce required to deliver those services currently, and into the future. The NMHSPF suite of documents offers a nationally consistent language to describe mental health services in a given region.

At the local level, the NMHSPF provides nationally endorsed estimates for services, against which available service capacity can be compared to inform identification of priorities for planning and service development. Sound knowledge of the available service system and patterns of use is required to complete this process. It is important that planners recognize this need for interpretation and application of the NMHSPF outputs to the local context and have access to appropriate knowledge and information about the target population and service system to undertake this process.

Estimates for mental health service delivery from the NMHSPF can be used to help inform the development of mental health plans. These estimates are most useful if they can be combined with information about current service delivery within each region, aggregated into a similar format for comparison. The NMHSPF models the service requirements for an optimally functioning mental health system, including significant expansion of services and workforce capacity in several areas. These estimates are expected to be long-term goals for the service system and will require scaling up and adjustment over time.

The most useful application of the NMHSPF estimates when undertaking a comparative analysis with current service provision is not to focus on the magnitude of gaps, but to identify areas of relative underinvestment and priority areas for development that should be considered in planning for future mental health service delivery. Regional adjustment or interpretation of outputs from the NMHSPF will also need to be considered where the national average model is not a good fit to local circumstances, such as in areas with small, dispersed and/or culturally and linguistically diverse populations.

When considering the NMHSPF estimates, integrated planning with other partners in mental health service delivery is essential to ensure that all parts of the system are in place and to negotiate innovative solutions to address any identified priority areas. These partners may include, for example, PHNs, LHNs, state/territory mental health planning branches, government agencies involved in local service delivery such as the Australian Government Department of Health and Aged Care, Department of Social Services and National Disability Insurance Agency, local service delivery organisations, and agencies involved in planning for related sectors such as drug and alcohol services, physical health care and social services. Resource estimates from the model for each service sector or type rely on other parts of the model also being in place.

Although the NMHSPF model identifies a funder responsible for each service element in the care

profiles, this allocation is based on the current system and is not intended to be prescriptive. Roles and responsibilities in addressing the mental health service needs identified in the NMHSPF are expected to be flexible to encompass current and preferred future service configurations in each region.

Finally, the NMHSPF provides care profiles and resource estimates for different age groups, severity levels, service types and sectors of the mental health system, and descriptions of efficient service operation. It does not provide information about how to implement this system. There are important additional considerations, such as the need for seamless service transitions between different ages, consideration of pathways through the mental health system, and integration between different mental health services, between mental health and other health care services, and between the mental health system and other sectors such as social services and criminal justice.

Other areas beyond the scope of the NMHSPF model include capital costs of new mental health infrastructure and the resources required for workforce development. Therefore, mental health planners may find the NMHSPF and its outputs to be one helpful tool within their broader planning processes.