



Health Services Directories, Estonia

The Australian Story, free flow of data and interoperability across jurisdictional borders

(Using Health Services Directories and Visual Data Analytics Tools using Google Maps)

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Across the world as countries struggle to balance rising consumer expectations, escalating demands on health systems, an ageing population, rising rates of chronic disease and increasing costs, there is a need to consider the foundation blocks of Digital Health, which can act as catalyst for other innovations to build on, such as Secure Messaging, Telehealth and tools such as Data Analytics.

In Australia, one concept which has been adopted nationally is the National Health Services Directory (NHSD). This is a repository of health and social care services which combines both operational data for Health & Human Services and Provider data for transactional information to provide continuity of care for health consumers throughout their life.

At present, many hospitals, aged care, community care, and primary care settings independently maintain address books of local clinicians. These are used daily by doctors, nurses and allied health professionals to aid the transfer and management of care. They range from simple lists to relatively sophisticated databases separate to or embedded within other systems. Few of these, however, are linked to a capacity for eHealth communication.

For example, when a GP or hospital-based doctor is planning further care for a patient such as a renal patient with diabetes, they need to be able to:

- access high-quality information about various service providers in the patient's town or suburb
- find a podiatrist, physiotherapist, dietician, pharmacist, etc.;
- assure themselves of the identity, provider status, address, etc. of those providers; and
- access electronic address information easily available to refer the patient for further care.

Australia built a National Service Directory combining service and provider directories across state jurisdictions. It was in response to an increasing frustration initially from health professionals about the overlapping nature of finding information and inconsistent type and quality. The shift toward eHealth and healthcare reform meant the greater integration of systems and a consumer group that expects greater access to information.

Service and provider information must be available quickly, easily and with the highest possible degree of accuracy and reliability alongside the emerging identification, authentication and messaging regimes if we are to use electronic communications effectively to support health services.

For Australia, a population of 24 million people, the NHSD:-

- **covers the breadth and depth of "Health and Social Care Services across Australia (8 State and Territory governments and a Federal government)**
- **is the single 'source of truth' for E-Health from the "Cloud"**
- **handles over 9.5 million transactions/month (and growing as more national and state e-health initiatives start to use the national messaging facilities)**

The NHSD is now the:

- **National Services Directory (400,000+ Services)**
- **National Provider Directory (300,000+ [Accredited Health Practitioners](#))**
- **National Telehealth Directory**

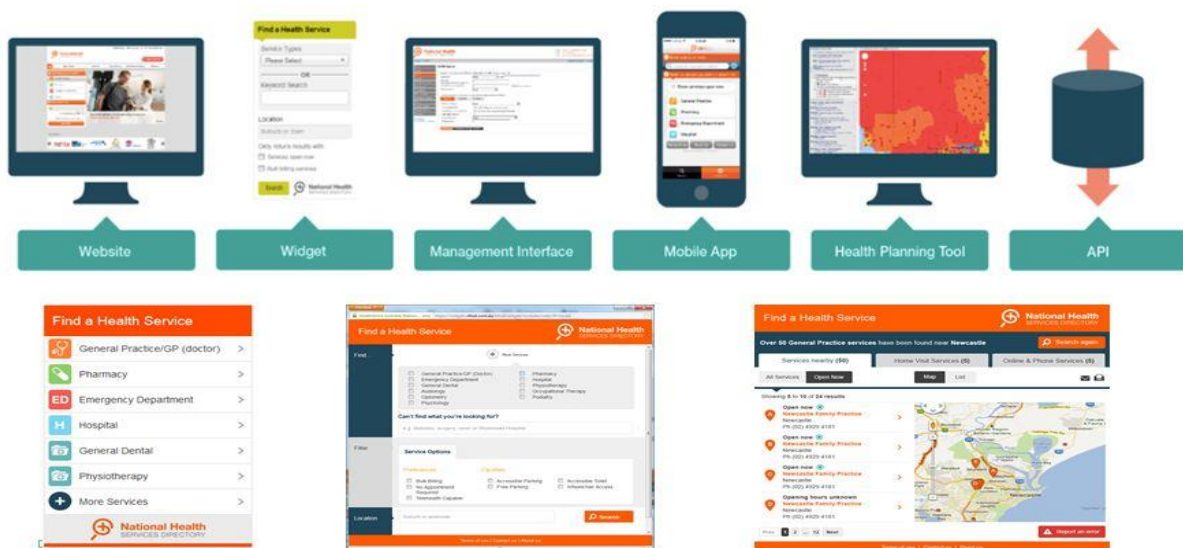
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And stores national health identifiers and secure messaging:

- [Health Provider Identifiers - Individual \(HPI-I's\)](#)
- [Health Provider Identifiers - Organisational \(HPI-O's\)](#)
- [Secure Messaging EndPointer Location Service \(ELS\)](#)

It also underpins many Federal, State and local health initiatives such as the *National Nurse on Call* and the *GP after Hours* programs

The NHSD is a shared piece of national infrastructure and allows many stakeholders to have varying degrees of control and opening the NHSD infrastructure to be ubiquitously available, has built a community of positive support because of its utility and ease of availability. The NHSD is currently accessible via websites, mobile apps and APIs, integrated into an increasing range of software products.

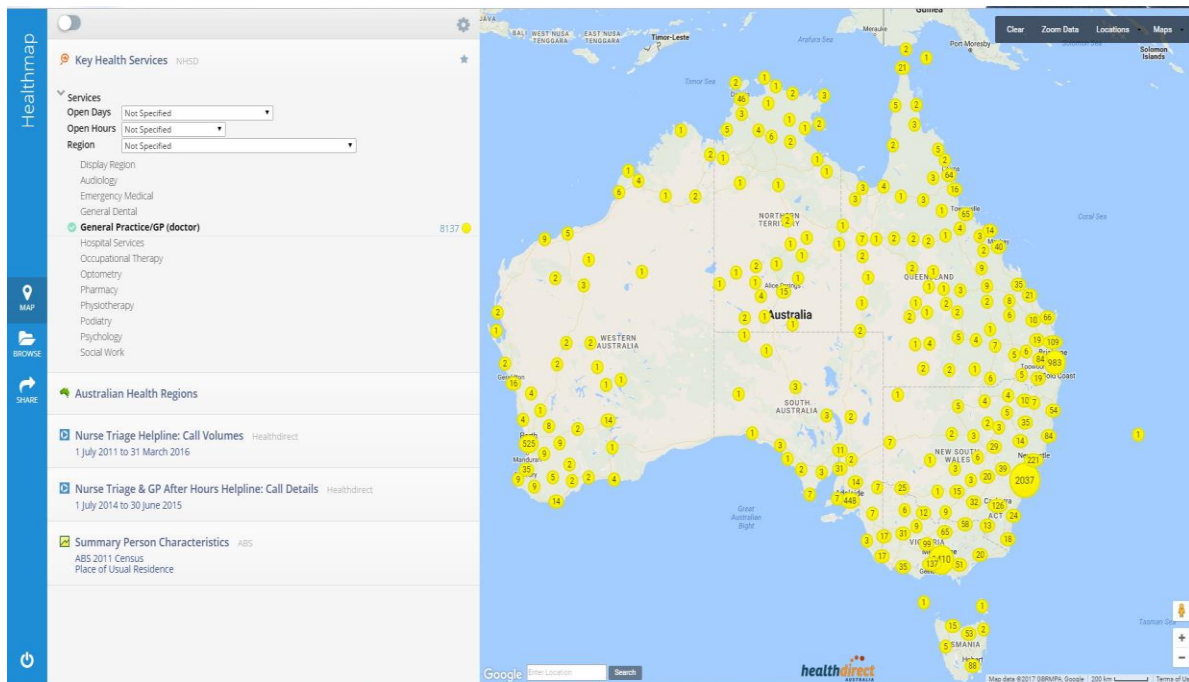


With increasing demands on national and international health services, we urgently need to shift from Primary and Acute Care to include “Social care” (or Community Care), which has been a missing link in the context of “patients” healthcare throughout their lifetime, so we can build healthy communities through knowledge-based environmental preventative strategies and sustainable active living principles. This can be done here and now by making data readily available in a more effective context to policy makers, health planners and researchers

An example of a software product integrating the NHSD is the [national Healthmap data platform](#). This platform aims to help overcome the “islands of Data” held across the health sector by combining the NHSD with a range of relevant health data sets, such as census demographics, disease prevalence, and health outcomes.

The Healthmap demonstrates how the NHSD can be extended from its primary role as a foundation for national E-Health initiatives to a health data tool to support policymakers, health planners, and researchers in their broader roles of improving population health outcomes through evidence-based decision making.

Physical Location of GP's across Australia (which can be filtered by opening day, hours and Region)



Visualization of data is extremely effective in allowing complex datasets to be brought together to convey information in a simple Geo-Spatial (Google Maps) format. The National Healthmap uses data from the NHSD, from which we can introduce a wide range of national datasets (e.g. census) and local health datasets to support a greater focus on evidence-based planning and decision making.

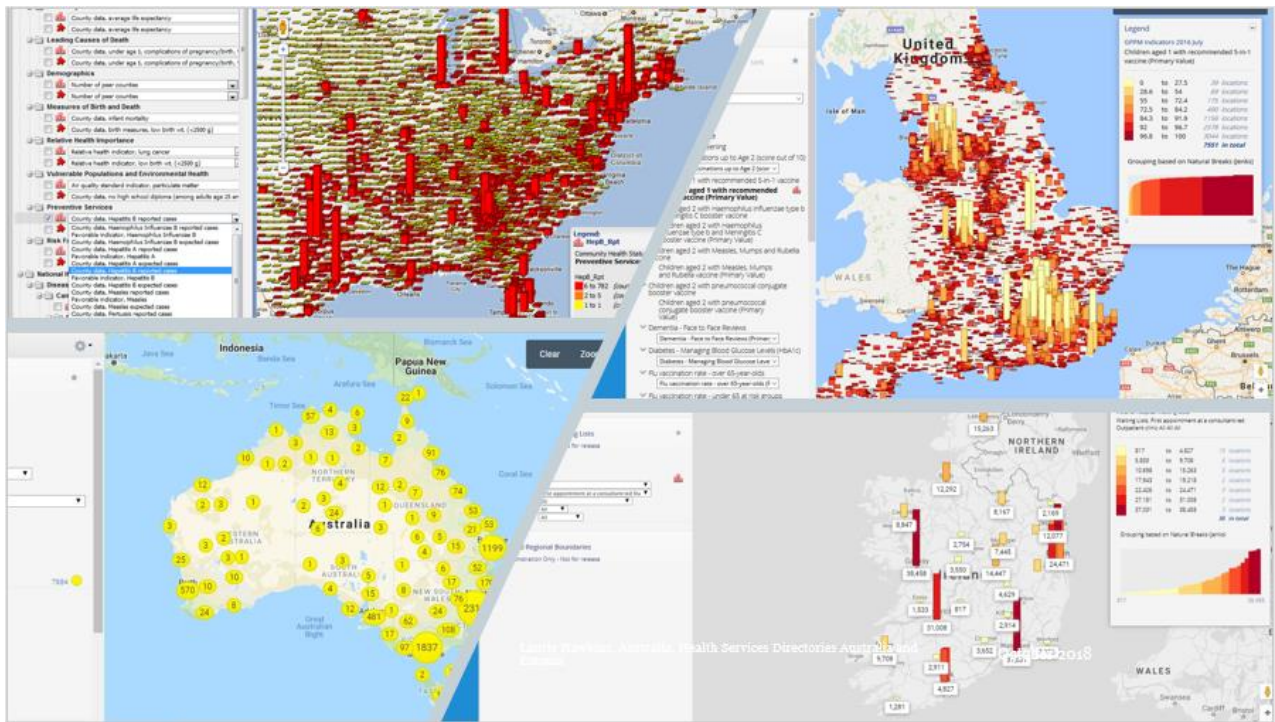
Visual Data Analytics functionality, Google Maps, at the local, national and international context

Data Visualisations

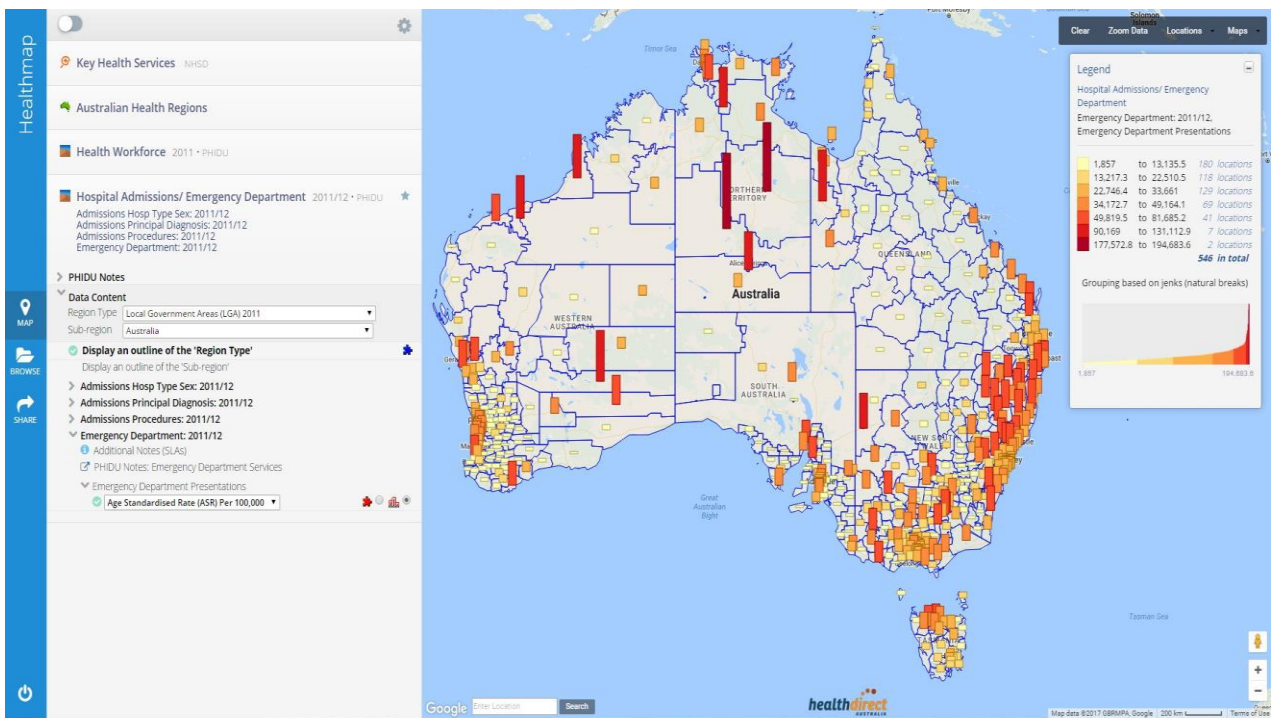


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Data from Australia, Ireland, the UK, and the USA viewed all from the same platform



Emergency Department presentations in Australia



Now that key service information can be sourced (from an authoritative resource) and a greater focus on data governance rather than fragmented silos, data quality issues are reduced, and we are opening more data possibilities to the greater community as it allows greater/more widespread use of data.

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Service Data can now be viewed by **Health Focus Areas** for example by Cancer, [Aged Care](#), , or “Categories” or by “Programs by Organisations” such as - Access To Allied Psychological Services Program (**ATAPS**).

Other examples of the Healthmap include these below, note “**Enter as a Guest**”

- [General Medical Practitioners Rate per 100,000 people](#)
- [Avoidable mortality with Geographic Bar charts and Confidence Intervals](#)
- [National Nurse on Call, Call Volumes](#)
- [Health Service Proximity of Influence regions for Remote Australia](#)
- [Districts of Workforce Shortage Storyboard](#)

The NHSD can be replicated anywhere around the world. For example, National Human Services Directories linked together across the European Union (EU) to provide health consumers, health planners, research groups with a significant database of health and human services.

This could empower citizens when they travel, for example, they can see where Doctor (General Practitioner) services are available after hours on the user’s smartphone, ***an excellent example of providing the right data at the right time at the right place***

Barriers such as cost, technology, and data quality are common ones that have arisen. However, by demonstrating what is possible with the vast knowledge of health data coming from the “Cloud”, and how effective it can be in health planning, evidence-based policy-making and empowering health consumers, the barriers are more readily overcome. Data quality is improved as we can now have national and international data standards quickly and easily, as one has one an easy to use platform in a “Google Maps” front end.

The National Health Services Directory (NHSD) acts as a catalyst for e-health delivering greater access to relevant health sector data, provides a wealth of information resources to the health sector and consumers.

Store data once, use it many ways