The Mental Health Atlas Project:

A context analysis using a systems thinking approach

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“NOBODY KNEW THAT HEALTH CARE COULD BE SO COMPLICATED.”

—PRESIDENT DONALD TRUMP
Complex-Systems Dynamics Approach

Evidence-Informed Policies about Health systems

Bosch-Capblanch PLOS Med 9 (3), 2012
Perspectives on context
A selection of essays considering the role of context in successful quality improvement

Context Analysis

Evidence

Context  Implementation

Expert Knowledge

HEALTH SERVICES AND DELIVERY RESEARCH
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Challenges, solutions and future directions in the evaluation of service innovations in health care and public health

DOI 10.3319/hed10160

National Institute for Health Research
Context

Context refers to the totality of circumstances that comprise the milieu of a given phenomenon.

- In health care it includes all sources of evidence of the local system: geography, social and demographic factors, other environmental factors, service availability, capacity, use and costs. It also includes legislation and expertise on the milieu (e.g., the historical account current state of the art).
HEALTH ECOSYSTEMS
(Nimo et al, Cascadia, 2016)
Complex health systems: TOOLS & ANALYTICAL TECH.
Complex health systems: DECISION SUPPORT SYSTEMS

**Context Analysis**
- MACRO
- MESO
- MICRO

**LOCAL ATLAS OF CARE**
- Jurisdictions
- Context analysis
- GIS
- Availability
- Capacity
- Use

**DSS**
- Logic models
- Conceptual maps
- Financial Flows

**Interventions**
- Packages
- Social Networks

**CONCEPTUAL MAPS**
- Social Network Analysis

**SOCIAL NETWORK ANALYSIS**
- Neuronal Network Analysis
- Cluster based on Rules

**New Procedures**
- Knowledge Discovery from Data (KDD)
- Expert-based Collaborative Analysis (EbCA)

**New Tools**
- Visualisation
- Simulation Modelling
- Data mining
- Social Network Analysis
- Neuronal Network Analysis
- Cluster based on Rules
- Monte Carlo DEA

**Framing Scientific Knowledge (experts)**
- Health ontology
- Research Synthesis
- Conceptual analysis
EPCAT- MHEEN — DESDE-LTC — REFINEMENT


EPCAT BATTERY
- ESDS: Sociodemographics
- ESMS: Service delivery
- ICMHC: Interventions

MHEEN
- Financing
- Service delivery

REFINEMENT
- REMAST: Mapping delivery
- FINCENTO: Financing
- REPATO: Pathways of care
- REQUALIT: Quality of care
Main Problems when Assessing Services

- **Commensurability:** Diff. units of analysis, lack of comparison like with like.
  We cannot merge:
  - Service Providers
  - Clinical teams
  - Interventions
  - Activities

**MH Atlas Solutions**

1st We identify the minimal unit of production or care (Basic Stable inputs of Care-BSIC) or TEAMS

Transferability and terminological variability:

- Names of the services do not always reflect their main activity (Hospital – Outreach services- Crisis houses-medical homes)
- Names of same services vary across jurisdictions (Day care)

2nd We label them according to their Main Type of Care (MTC) they provide
ESMS/DESDE Main Type of Care: Tree Taxonomy

INFORMATION: guidance/assessment/information without direct care (e.g. information about availability of services)

ACCESSIBILITY: access to care WITHOUT direct provision of care related to needs (e.g. access to employment)

OUTPATIENT: contact with the person in a limited period of time (eg. visit with the GP).

DAY CARE: the person spends the day at the facility (e.g. day hospital or social club)

RESIDENTIAL: the person sleeps at the facility (eg. acute unit -hostel)

SELF CARE/VOLUNTARY: non-paid staff (e.g. Alcoholic anonymous)

105 different codes
How to read an integrated mental health atlas

LOCAL ATLAS OF MENTAL HEALTH CARE

RESULTS: Tables and spider graphs with information on: KEY SOCIAL AND DEMOGRAPHIC INDICATORS, MAPS, CARE AVAILABILITY, BALANCE OF CARE, PLACEMENT CAPACITY, WORKFORCE CAPACITY by target population and care subsystems (General MH, (Child and Adolescent), Older adults, (Drug & Alcohol), Transition, etc.

<table>
<thead>
<tr>
<th>Provider</th>
<th>Name</th>
<th>Main Desde Code</th>
<th>FT E</th>
<th>Town / Suburb</th>
<th>Area of Coverage</th>
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<td>Woden</td>
<td>Woden area</td>
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</table>
Use of an integrated Atlas of Mental Health Care for evidence informed policy in Catalonia (Spain)

A. Fernandez1,2, J. A. Salinas-Perez2, M. R. Gutierrez-Colosio4, B. Prat-Pubill2, A. Serrano-Blanco2, C. Molina2, E. Jorda2, C. R. Garcia-Alonso1 and L. Salvador-Camilla1*, on behalf of the GEOCAT-SM group
Psychological distress: age standardized ratio of people with high or very high levels of psychological distress according to the Kessler psychological distress scale (K10) - prior four weeks - in PHA areas (PHIDU database)

Social Fragmentation Index: an index of social fragmentation developed using principal component analysis technique at statistical area level 1 (SA1) for whole Australia. This index include: percentage of lone people, home ownership, non-family household and school age children in each SA1.
## Partners in Recovery

### Semantic variability

<table>
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<tr>
<th>Provider</th>
<th>Name</th>
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<td><em>Total</em></td>
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<td><em>5</em></td>
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<td>Rate per 100,000 residents (&gt;17 years old)</td>
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<td></td>
<td><strong>1.8</strong></td>
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**Locations**

- **CHN-ACT**
- **CANBERRA**
- **CESPHN NSW**
- **SYDNEY**

*Note: The table includes information on providers and their corresponding FTE values for different regions.*

*Image credits:*
- EDESDE-LTC logo
- Partners in Recovery logo
- Semantic variability logo

*Source: eDESDE-LTC Partners in Recovery dataset*
MENTAL HEALTH CARE

Comparison of local MH systems

- Availability
- Places
- Workforce
MENTAL HEALTH CARE

Comparisons with other Care systems
- Social care
- Drug and Alcohol
- Chronic care
Pattern of availability of MTCs for adults >17 years with lived experience of mental illness. Comparison between Canberra and Helsinki and Uusimaa.
MENTAL HEALTH CARE

INTERNATIONAL COMPARISON ACROSS METROPOLITAN AREAS

Global Urban MH Planning
MENTAL HEALTH CARE

COMPARISON ACROSS RURAL AND REMOTE AREAS

Global Rural MH Planning

(Patterns of Rural Mental Health Care in Australia: Western NSW & Country Western Australia)

(Main Types of Care per 100,000)
NEEDS ASSESSMENT IN SMI IN SYDNEY
CANSAS Needs profile of WSPIR participants

Integrated Atlas of local Mental Health

Classification of ALL Services

Integrated Atlas of MH

Mapping services related to indicators

 CONTEXT ANALYSIS

Gaps, duplications, and potential barriers

NEED ANALYSIS
(made by PIR WS)

Unmet Needs

We detected

compared with...
HEALTH ECOSYSTEM ANALYSIS: Atlas of MH for DSS


3. Cost of Illness - Salvador-Carulla et al, 2011

4. Financing (Financing of Illness) - Salvador -Carulla et al, 2010

5. Spatial analysis (hot and cold-spots) - Rodero-Cosano ML et al, 2016


DESDE-LTC (Tool for Coding and Mapping): http://www.edesdeproject.eu/
MAPPING OF SERVICES IN EUROPE: http://www.refinementproject.eu/
ATLASES OF MH Care in Catalonia and Bizkaia
Epidemiology and Psychiatric Sciences
http://journals.cambridge.org/PS

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Use of an integrated Atlas of Mental Health Care for evidence informed policy in Catalonia (Spain)


Contents lists available at ScienceDirect

European Journal of Operational Research
journal homepage: www.elsevier.com/locate/ejor

Decision Support
Evaluation of system efficiency using the Monte Carlo DEA: The case of small health areas

Mercedes Torres-Jiménez a,⁎, Carlos R. García-Alonso b, Luis Salvador-Carulla c, Vicente Fernández-Rodríguez d

**Residential Care**
- **Availability**
- \( \text{Hospital R2, R4-R6, R2*} \)
- \( \text{Non Hospital R11-R13} \)

**Day Care**
- **Availability**
- \( \text{Acute Health D1, D4.1, D3.2, D2.2, Social D4.3, Acute Health D1*} \)

**Outpatient Care**
- **Availability**
- \( \text{Hospital 08-010, 08-010*} \)
- **Allocative Capacity**
- \( \text{Use of outpatient care**, Visit rate per (1,000), Attended Prevalence (per 1,000)} \)
- \( \text{2002, 2006, 2010} \)
Spatial analysis of hot spots and cold spots of administrative prevalence of mental disorders in the Barcelona metropolitan area
A) MH Impact of the financial crisis in Portugal and in Spain

Universidade de Coimbra
Universidade Nova de Lisboa

SMAILE
MH Crisis Impact

B) LOCAL CARE NAVIGATION CHART
- Users
- Professionals (case managers)

SOCIAL CARE MAPPING IN ANDALUSIA (DESDE-AND)
System thinking and context analysis in MH Planning

SMART DECISION SUPPORT SYSTEMS

Financing

Big data

Intelligent indicators

Pathways - Interventions

Local Atlas of care

Social Network Analysis

Logic model/Cptual map

SPATIAL & EFFICIENCY ANALYSIS

Knowledge Guided Policy