Global Mental Health Impact of the COVID-19 Pandemic

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Outline

- Acknowledgements
- Project overview
- Data corpus
- Core scientific questions
- Preliminary work
- Conclusion
Project Overview

- The COVID-19 pandemic has brought an unprecedented set of challenges impacting the mental health of populations around the world.
- The IHCC COVID-19 Mental Health & Behavioral Impact Scientific Working Group is leveraging the unique platform of the IHCC consortium to address pressing questions related to COVID-19 and mental health.
- Harnessing the power of 12+ (others pending) cohorts (n= ~14m) this three site project aims to:
  - Catalogue and categorise all cohorts according to purpose
  - Harmonise a set of domains and variables for cross-cohort investigations
  - Conduct analyses to address core scientific questions
## Data Corpus

<table>
<thead>
<tr>
<th>Approved data access</th>
<th>Country</th>
<th>Sample size</th>
<th>Waves</th>
<th>Mean age (range)</th>
<th>Total available variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of Us</td>
<td>USA</td>
<td>316,760</td>
<td>*</td>
<td>53</td>
<td>94,375</td>
</tr>
<tr>
<td>Brazilian High Risk Cohort</td>
<td>Brazil</td>
<td>tbc</td>
<td>tbc</td>
<td>tbc</td>
<td>tbc</td>
</tr>
<tr>
<td>ELSA Brazil</td>
<td>Brazil</td>
<td>2,007</td>
<td>3</td>
<td>62</td>
<td>~1,200</td>
</tr>
<tr>
<td>ELSA UK</td>
<td>UK</td>
<td>12,099</td>
<td>9</td>
<td>(50-53)</td>
<td>~7,200</td>
</tr>
<tr>
<td>FinnGen</td>
<td>Finland</td>
<td>321,300</td>
<td>*</td>
<td>*</td>
<td>2,803</td>
</tr>
<tr>
<td>Generation Scotland</td>
<td>UK</td>
<td>20,128</td>
<td>1</td>
<td>(18-98)</td>
<td>1,292</td>
</tr>
<tr>
<td>Health and Retirement Study (HRS)</td>
<td>USA</td>
<td>12,652</td>
<td>16</td>
<td>(51-61)</td>
<td>~400</td>
</tr>
<tr>
<td>MGB Biobank</td>
<td>USA</td>
<td>130,000</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>OxWell School Survey</td>
<td>UK</td>
<td>19,039</td>
<td>1</td>
<td>(8-18)</td>
<td>~800</td>
</tr>
<tr>
<td>PsycheMERGE</td>
<td>USA</td>
<td>tbc</td>
<td>*</td>
<td>*</td>
<td>tbc</td>
</tr>
<tr>
<td>SAPRIN</td>
<td>South Africa</td>
<td>13,117,161</td>
<td>3</td>
<td>*</td>
<td>56</td>
</tr>
<tr>
<td>UK Biobank</td>
<td>UK</td>
<td>502,491</td>
<td>3</td>
<td>56</td>
<td>17,098</td>
</tr>
</tbody>
</table>

Note:*For EHR cohorts timing and frequency of measures are uniquely determined by participant; tbc=awaiting confirmation
Variables of interest

- Outcomes
  - Depression, anxiety, stress, well-being, cognition
- Demographics
  - Gender (identity & biological), education, ethnicity, SES
- External health factors
  - Housing, job, marital status, pregnancy
- Social distancing
  - Degree, interaction, risk
- Lifestyle
  - Loneliness, activity, diet, substance use, alcohol
- Social Support
  - Instrumental, information, emotional, appraisal
- Resilience
  - Coping behaviours, religion
- Discrimination
  - Racial, sexual, age, occupation
- Psycho/medical
  - Pre-existing psychiatric & medical conditions
- Healthcare access
  - Use of mental healthcare, treatment modality
Core Questions

- Mental health trajectories pre- and post pandemic
- Sociodemographic determinants of mental health outcomes of COVID-19
- Neuropsychobiological manifestations of COVID-19
- COVID-19, mental health and cognitive resilience
- Global mental health impact of lockdown and regional restrictions
Preliminary work: Mental health trajectories São Paulo (Fatori & Brunoni)

- **Cohort:** ELSA Brazil
- **Objectives:** To identify groups of depression trajectories during the COVID-19 pandemic in different cohorts;
- **Statistical approach:** Group-based trajectory modelling (GBTM)
- **Predictors:** Pre-pandemic: Presence of mental disorder, Exposure to violence, History of trauma, loneliness/isolation; COVID diagnosis/symptoms
- **Outcomes:** Depression continuous scores measured by PHQ-9, PHQ-2, DASS-21 or an equivalent scale.
- **Covariates:** Age, sex, educational level.
ELSA-Brasil COVID-19 Mental Health Cohort (n=2,010)
Depression and Anxiety Trajectories from May 2020 to December 2020 (3 time-points)

Group-based trajectory modelling (Nagin, 2010)

(Fatori & Brunoni, 2021)
Coefficient plot

Logistic regression model
Trajectory 1 x 4

Risk factors measured during the pandemic

(Fatori & Brunoni, 2021)
Preliminary work: Early adversity & long-term effect mediated by COVID-19
Oxford (Gheorghe & Bauermeister)

- **Cohorts:** UK Biobank; ELSA UK; ELSA Brazil;
- **Objectives:** To assess the associations between early adversity and later life biopsychosocial outcomes, cognition and dementia
- **Statistical approach:** Structural Equation Modelling
- **Predictors:** Early childhood adversity (abuse and deprivation)
- **Outcomes:** longitudinal biopsychosocial outcomes
- **Mediator:** COVID-19
- **Covariates:** sociodemographics
UK Biobank = 479,739

ELSA UK n = 12,651

Chi² p < .000
RMSEA .017
CFI .945
TLI .914

Adversity → Medications .31
Adversity → BMI .26
Adversity → Depression .41
Adversity → Happiness -.20
Adversity → Cognition -.18
Adversity → Cognition-memory .03
Adversity → Smoking -.15
Adversity → Alcohol .19

Standardised B coefficients:
***All p values = < .000

(Gheorghe, Gallacher, Bauermeister, 2021)
Analytical plans
Early Adversity and COVID-19

UK Biobank; ELSA UK & Brazil

- Smoking
- Alcohol
- Physical activity
- Sleeping
- Eating
- Anxiety
- Depression
- Cognition
- Socioeconomics
- COVID-19 outcomes
Preliminary work: Associations of Early Adversity, brain structure & COVID-19 outcomes
Oxford (Gheorghe & Bauermeister)

- **Cohort:** UK Biobank
- **Objectives:** To assess the associations between early adversity and later life biopsychosocial outcomes, cognition, cortical atrophy and COVID-19
- **Statistical approach:** MANOVA, independent t-tests and imaging
- **Predictors:** Early childhood adversity
- **Outcomes:** Cortical atrophy, mental health
- **Mediator:** COVID-19
- **Covariates:** demographics, psychopathology, body size, head size and scanning position

Associations of perceived adverse lifetime experiences with brain structure in UK Biobank participants [https://doi.org/10.1111/jcpp.18298](https://doi.org/10.1111/jcpp.18298)
Childhood adversity experienced before the age of 16 years

GAD-7 and PHQ-9 percentages of above moderate severity identified for scores > 10

Retrospective reports related to emotional abuse are associated with small reductions in the cerebellum and ventral striatum.

Here, we repeat our work investigating those who have experienced COVID-19 and investigate mortality and repeat imaging and assessment when available.
Conclusion

- Our project has now completed cohort confirmation and cataloguing variables of interest.
- The focus is now on the harmonisation and merging of appropriate datasets for select questions and scientific output.
- The project is ambitious and as we continue to be challenged during these times we are optimistic that our project will contribute towards understanding the global mental health impact of the COVID-19 pandemic.