

The Long Shadow of Distress:

Scarring effects of mental health episodes on Australian labour market trajectories,
2001 to 2023

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What we count, and what we miss

AU\$200 to AU\$220 billion

The annual cost of mental ill health and suicide in Australia. Of that, AU\$40 to AU\$70 billion is the direct economic cost (Productivity Commission, 2020).

- Every one of these figures prices the year a person is unwell.
- None of them price the years after.
- **Our question: how much of the labour market cost of psychological distress outlives the distress itself?**

The answer changes where the money goes

- The Productivity Commission built its reform package around early help.
- Its benefit case puts a value on people's added capacity to work and earn.
- That value depends on whether an episode leaves anything behind.

If nothing is left behind

Treating the episode now and preventing a first episode buy much the same thing. The age at which the money is spent hardly matters.

If a scar is left behind

A dollar spent on a nineteen-year-old buys something a dollar spent on a fifty-year-old cannot. Age at spending becomes the whole point.

THE PROBLEM

Three stories behind the same pattern

1

Contemporaneous

Being unwell now lowers work now.

2

State dependence

Working less last year lowers work this year. The employment record carries itself forward.

3

True scarring

The past episode itself changes what a person can do later, after they have recovered.

The evidence stops at the current episode

Work to mental health

Past unemployment scars later wellbeing. Early exposure does the most lasting damage.

Clark et al. (2001); Daly and Delaney (2013); Strandh et al. (2014)

Mental health to work

Large effects on employment, measured in the same year or the next one. None follows a person past recovery.

Ettner et al. (1997); Olesen et al. (2013); Frijters et al. (2014); Bubonya et al. (2019)

- The closest answer comes from Denmark. Biasi et al. (2021) matched psychiatric registry records to earnings and found penalties of 34% for depression and 38% for bipolar disorder.
- A registry sample sits in the tail of the distress distribution. Australian early intervention services are built for a different group, younger and mostly undiagnosed.
- **No study has separated the lasting part of the cost from the current part.**

What this paper adds

Measurement

1

We run the decomposition on a continuous screening scale, not a clinical diagnosis. That reaches the sub-clinical majority a registry cannot see.

Coverage

2

First Australian estimate of the lasting component, held apart from the contemporaneous effect that Frijters et al. (2014) established.

Targeting

3

We test whether the association is larger when the first observed episode comes early. The signal is a lead for future work, not a settled basis for targeting.

DATA

HILDA waves 1 to 23, 2001 to 2023

- We keep respondents aged 25 to 64.
- We drop person-waves with a missing MHI-5 score.
- We keep only people observed in five or more waves. A scar cannot be measured in someone seen once.

14,728

people

189,626

person-waves

12.9

mean waves each

35.3%

seen in 15+ waves

- **The panel is now long enough to look five to ten years past recovery. That is what makes the question answerable.**

Defining an episode, and a distress history

Episode = MHI-5 score at or below 52 in that wave

The MHI-5 is a five-item screener from the SF-36. HILDA collects it every wave, which is what makes episode dating possible. Scores run 0 to 100, and higher is better.

Four history variables, all excluding the current wave

CumPast	Count of earlier waves below the threshold
YearsSince	Waves since the most recent earlier episode
Recurrent	Two or more distinct past spells
EarlyOnset	Earliest episode we observe came before age 30

- 52 is a convention, not a validated cut-point. Validated values sit between 60 and 76. We report thresholds of 60 and 70 as well.

Research Questions

RQ1 Past episodes leave a scar

Once current and last-wave distress are held constant, more past episodes go with fewer hours, lower employment and lower income.

RQ2 The scar fades with time

The link between a past episode and hours today grows weaker as the years since that episode go by.

RQ3 Earlier onset scars more

The scar is larger when the first observed episode comes before age 30.

RQ4 The pattern matters, not just the count

Recurrent spells add to the scar, and the scar is smaller when the last episode was longer ago.

Empirical Strategy

$$Y_{it} = \alpha_i + \gamma_t + \beta_1 \text{Episode}_{it} + \beta_2 \text{Episode}_{i,t-1} + \delta_1 \text{CumPast}_{it} + \delta_2 (\text{CumPast}_{it} \times \text{YouthOnset}_i) + \delta_3 \text{Recurrent}_{it} + \delta_4 \text{YearsSince}_{it} + X_{it}'\theta + \varepsilon_{it} \quad (1)$$

Y_{it} is one of three outcomes, each estimated separately:

- **Weekly hours worked** (primary)
- **Employed** (1 = yes, 0 = no).
- **Log annual wage and salary income**, for people with positive income.

β_1	The cost of being unwell now
β_2	The cost of the wave just past, which captures short-run carry-over
δ_1	The scar, once the first two are held constant. This is RQ1
δ_2	The extra scar for people whose first observed episode came early. This is RQ3
δ_3, δ_4	Does the shape of the history add anything to the count. This is RQ4

- Main estimates: two-way fixed effects with individual and wave effects. We also fit a Mundlak and Chamberlain correlated random effects version, which keeps the between-person variation that fixed effects throw away.

Does the association fade with time?

$$Hours_{it} = \alpha_i + \gamma_t + \sum_{j=1}^3 \psi_j Episode_{i,t+j} + \beta_0 Episode_{it} + \sum_{k=1}^{10} \phi_k Episode_{i,t-k} + X'_{it}\theta + \varepsilon_{it} \quad (2)$$

ψ_j

Leads. An episode j years in the future. They should be zero if nothing is moving before the episode.

β_0

The episode wave.

ϕ_k

An episode k years ago. RQ2 asks whether ϕ_k shrinks towards zero as k rises.

How this differs from equation 1

- Ten annual lags replace the cumulative count.
- Episodes can repeat, so several lags can be on at once. It is a distributed lag model with leads.
- Two-way fixed effects, standard errors clustered on the individual. Fitted for hours only.
- Each person needs ten past and three future waves: 25,556 person-waves from 3,885 long-tenure respondents.

Four threats, and what we did about each

Physical illness Controls for long-term condition and the SF-36 physical score, plus an interaction check.

Time-varying unobservables Three anticipation leads added to the lag model. They are jointly zero, $F(3, 3884) = 1.60$, $p = 0.188$.

Reverse causality inside the wave Next wave's MHI-5 added as a placebo. No association on any outcome.

Selective attrition An episode raises the chance of leaving within three waves by 1.1 points. We reweight by the inverse probability of staying.

We report associations. We do not claim a causal effect.

The episode, and the wave after it

-2.73 hours

per week, summed across the episode wave and the next one. That is about 9% of mean weekly hours of 29.5.

-6.2 points

fall in the probability of employment, summed across the same two waves.

Fixed effects	Weekly hours	Employment	Log income
Episode this wave	-1.432 (0.147)	-0.036 (0.003)	-0.010 (0.008)
Episode last wave	-1.294 (0.150)	-0.026 (0.003)	-0.044 (0.009)

- The lagged term is almost as large as the current one. The cost does not stop when the episode does.

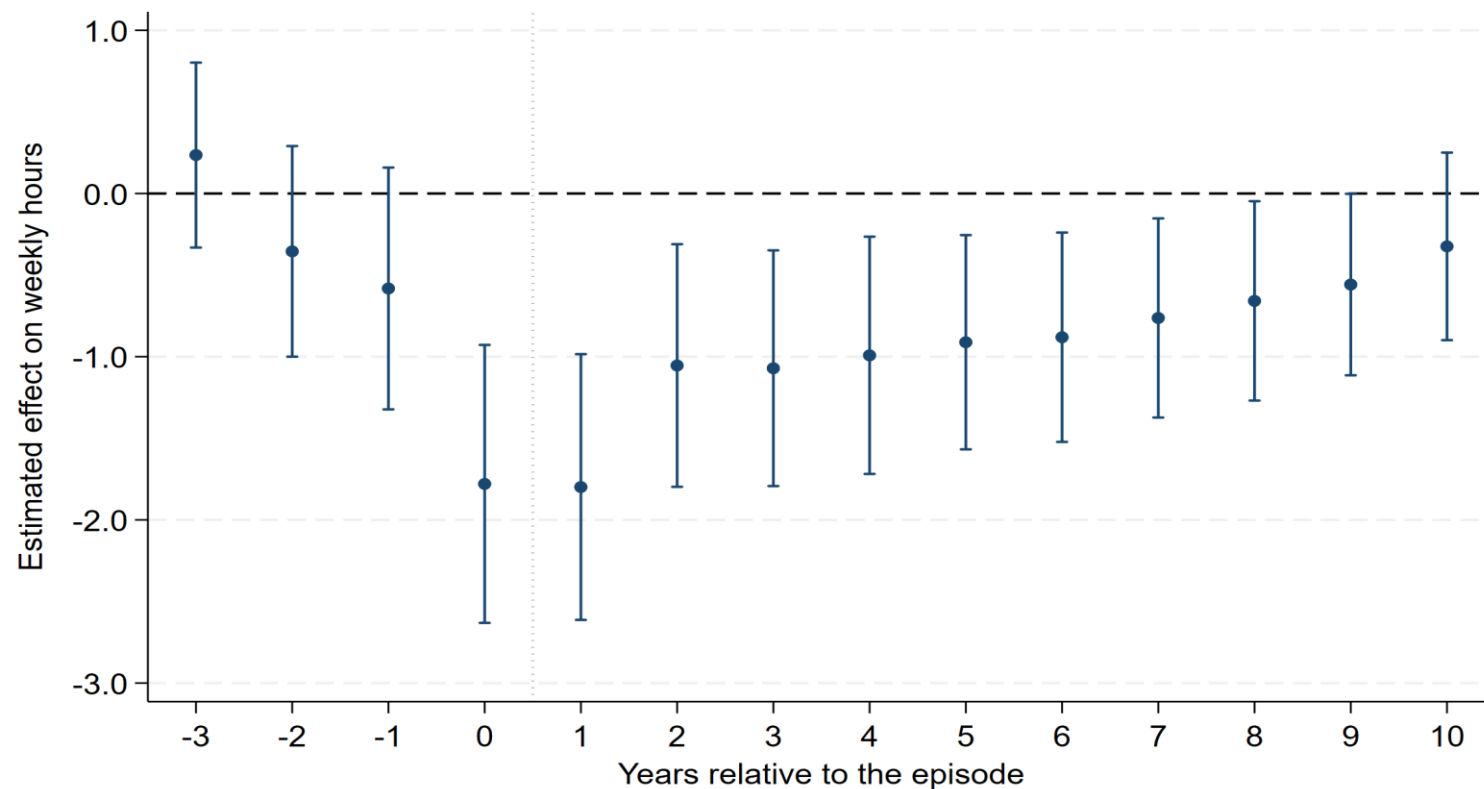
Beyond that, the count of past episodes adds almost nothing

Cumulative past episodes, weekly hours: 0.023 (SE 0.078)

95% confidence interval: -0.130 to 0.176 hours per episode

- The null is not a weakness of the data. It is precise.
- We can rule out a per-episode loss larger than 0.13 hours a week, about 8 minutes.
- On employment the cumulative coefficient is small and not significant.
- No scar at thresholds of 60 or 70.
- **The answer to RQ1 is no for the sample as a whole.**

A single episode fades, but slowly



- The three leads are jointly zero ($p = 0.188$). No sign of movement before the episode.
- The lag profile stays negative for years rather than decaying in a straight line.
- A single episode is still associated with about 0.56 fewer hours at nine years.
- Those later lags rest on 25,556 person-waves from 3,885 long-tenure respondents, so they are estimated on a smaller and selected group.

A possible exception is earlier onset

-0.550 hours

fewer hours per week, per past episode (SE 0.132)

-1.1 points

extra fall in employment probability, per past episode (SE 0.003)

- Anyone entering HILDA after 30 is coded as later onset, whatever their true history. That censoring pushes the interaction toward zero, so 1.1 points is more likely a floor than a ceiling.
- The between-person term runs the other way. Early-onset people with long histories are not less likely to be employed than anyone else. What is associated with lower employment is a given person adding another episode.
- The check on people first seen before age 30 does not reproduce it. We treat this result as suggestive.

The burden is uneven across jobs

-5.3 points

employment effect of a current episode, for people whose first observed job was lower skill

-2.4 points

the same effect, for people whose first observed job was higher skill

- The gap is large and survives the panel-tenure check.
- Men lose more hours than women in the episode wave (2.3 vs 0.8 hours).
- Any cumulative exposure measure grows with time in the panel. Adding a panel-tenure trend removes the apparent sex and skill differences in the cumulative term.

What these estimates cannot do

- 1 These are associations. We cannot rule out time-varying unobservables, although the leads test finds nothing moving before the episode.
- 2 The threshold of 52 is a convention. Misclassification at the margin pushes every past-episode coefficient toward zero.
- 3 Early onset is left-censored, and in practice it means age 25 to 29.
- 4 Hours are self-reported and set to zero for the non-employed, so the primary outcome mixes the intensive and extensive margins.
- 5 Australia has universal health cover and subsidised psychological care. Where losing a job also means losing health cover, the scar could be larger.

Three things follow for policy

Fund the year, not the history

- 1 The cost sits in the episode and the wave after it. Support that shortens an episode and keeps a person in work while it lasts is where the return is highest. The group is large. Just under half of our sample records at least one episode over two decades.

Earlier onset may carry a labour market cost

- 2 Services for people in their twenties carry a labour market term that later-onset services do not. It is associational, censored and not reproduced in the early-entrant check, so it is a lead for future work rather than a number for a benefit case yet.

Keep people in work, not just in treatment

- 3 The earlier-onset association runs through both hours and employment. Individual placement and support more than doubles competitive employment for severe mental illness (Modini et al., 2016). Whether an adapted version helps people with sub-clinical distress is still open.

Conclusion

- Psychological distress costs the Australian labour market while it lasts, and for at least a year afterwards. After that a single episode fades slowly over about a decade.
- Beyond that, for most working-age people, the count of past episodes carries no detectable penalty in hours or employment.
- The tentative exception is earlier onset. There, each episode adds roughly a percentage point to the chance of being out of work, and the true figure is probably larger than we can measure.

Two questions follow

- Why does the association sit in the recent past instead of accumulating? Linking HILDA to administrative treatment records would let episodes be dated against care received, not against a survey wave.
- Is age at first episode doing the work, or something correlated with it? That needs a cohort first observed before age 18.

Thank you

Questions/Comments are welcome

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