Early-Career Job Instability and Life-Cycle Income Dynamics

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Motivation

▶ Labor markets: more unstable for young workers in the last decades
  ▸ Era of "job for life" era replaced by era of the gig economy

▶ **What are the life-cycle consequences of early-career job instability?**
  ▸ We know: instability in early years → lower *levels* of future earnings (von Wachter '20).
  ▸ Open question: Whether and how it affects the life-cycle of earnings *uncertainty*

▶ Important as earnings uncertainty can affect other *macro outcomes*
  ↪ consumption patterns (Meghir and Pistaferri, 2011; De Nardi et al., 2019), timing of fertility (Sommer, 2016; Guner et al., 2021), housing (Paz-Pardo, 2022)

▶ This paper: how early instability in the labor market shape the size and nature of earnings uncertainty & life-cycle profile

Bridge two literatures

- Lit. on earnings uncertainty & macro outcomes → ignore initial career
  - Meghir and Pistaferri, 2011, Karahan and Ozkan, 2013

- Lit. on early career *scarring* → focus on long-run averages of income levels
  - (ENTER IN RECESSION) Kahn, 2010, Oreopoulos et al. 2012; Oyer, 2006; (FIRM SIZE) Arellano-Bover, 2019; (TEMPORARY CONTRACTS) García-Pérez et al. 2019; Hospido et al. 2018
  - BEYOND LEVELS, variance and income risk: Cappellari and Leonardi, 2016 & Arellano et al., 2021

- This paper: early career & earnings uncertainty (size+nature) & life-cycle
  - Important: While the literature finds that earning levels stabilize after 10-15 years, it's not the case for income uncertainty

Outline of Talk

Measuring Early-Career Job Instability

Estimating Life-Cycle Earnings Dynamics

Sources of Earnings Variance over the Life-Cycle

Conclusion

Measuring Early-Career Job Instability

Goal: Identify workers disproportionately exposed to job instability

- ▸ Exploit rigid *dual* structure of Spanish labor market
  - ▸ measure instability over longer periods of times
  - ▸ above and beyond macro shocks and trends
    - – c.f. graduating in a recession, cohort

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- Focus on male college graduates
  - Minimize other forms of heterogeneity.
  - Moreover, our methods allows for ex-ante heterogeneity.

Data: Spanish Continuous Sample of Working Histories

4% rep. random sample of all workers affiliated to the SSA / year

- ► Panel: selected workers are kept for subsequent years

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Social Security records

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- ▸ Daily info on all contracts, full-time/part-time indicator
- ▸ Top-coded

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Tax records

- ► Yearly info on all taxable labor income sources
- ► Non top-coded

Characterizing Early-Career Job Instability

Early Career

LM Entry (22)   30   Retirement (60)

Characterizing Early-Career Job Instability

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- Three job states:
  - Employed on an open-ended contract (Permanent)
  - Employed on an fixed-term contract (Temporary)
  - Unemployed

- For all workers with labor market attachment during Early Career
  - If days worked as temp during Early Career > days worked as perm → Job-Unstable
  - Otherwise → Job-Stable

Characterizing Early-Career Job Instability

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50% Threshold not binding
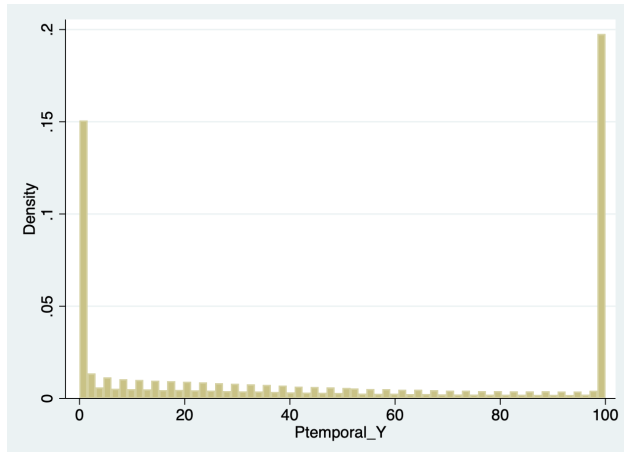
Figure: Share of Days Worked in a Temporary Contract by 30

Outline of Talk

Life-Cycle Earnings Dynamics

Explore Dynamics

22   30   60

Life-Cycle Earnings Dynamics

Explore Dynamics

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22          30                          60
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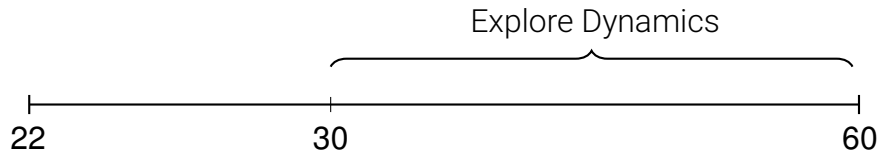
Let the log earnings of a worker i of age a be:

$$\log Y_{ia} = \underbrace{g(a, X_{ia})}_{\text{observed}} + \underbrace{\alpha_i + \gamma_i a}_{\text{unobserved}} + \underbrace{u_{ia}}_{\text{transitory}} + \underbrace{z_{ia}}_{\text{persistent}}, \tag{1}$$

with "ex-ante heterogeneity" bracketing $g(a, X_{ia}) + \alpha_i + \gamma_i a$ and "ex-post uncertainty" bracketing $u_{ia} + z_{ia}$.

Ex-Ante *Unobserved* Heterogeneity

α : Unobserved Heterogeneity: $\alpha_i \sim N(0, \sigma_\alpha^2)$

  ▸ Age-indpendent, captures initial conditions as of graduation

  ▸ E.g. wage differences b/c major choice, diligence,...

γ : Heterogeneity in income profiles: $\gamma_i \sim N(0, \sigma_\gamma^2)$

  ▸ Proportional to age, captures different expected income growth due to initial conditions

  ▸ E.g. job-ladder differences b/c major choice

Ex-Post Uncertainty (*Luck*)

z : Persistent: $z_{ia} = \rho_a z_{i,a-1} + \eta_{ia}$, with shock $\eta_{ia} \sim N(0, \sigma^2_{\eta,a})$

- ▸ Age-specific, captures shocks that have long-run consequences
- ▸ E.g. big layoff

u : Transitory: $u_{ia} = \varepsilon_{ia} + \theta\varepsilon_{i,a-1}$, with shock $\varepsilon_{ia} \sim N(0, \sigma^2_{\varepsilon,a})$

- ▸ Age-specific, captures shocks that are perceived as short lived
- ▸ E.g. temporary wage cut or freeze

Estimation

- ρ, σ_ε, and σ_η are functions of age:

  - σ_ε^2, σ_η^2, and ρ are cubic functions of age
  - θ, σ_α, and σ_γ are time-invariant

- Method: GMM

  - Autocovariance matrix up to 6 lags
  - Efficient weighting matrix
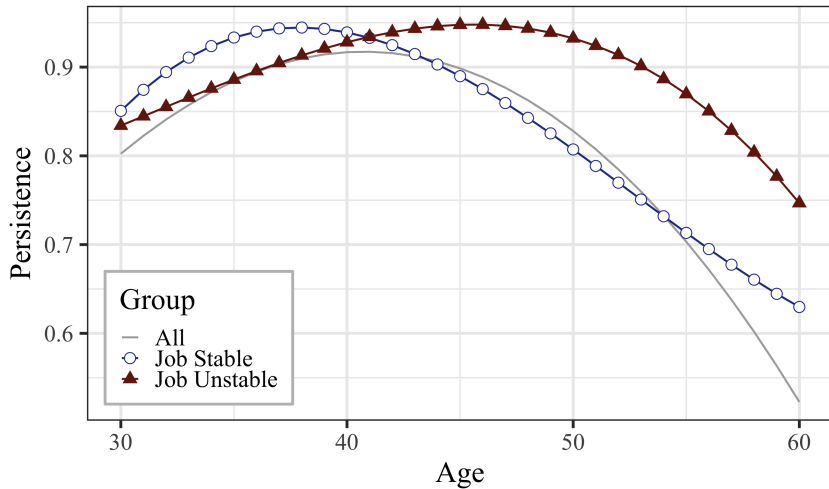
Estimates: Life-Cycle

Figure: Persistence
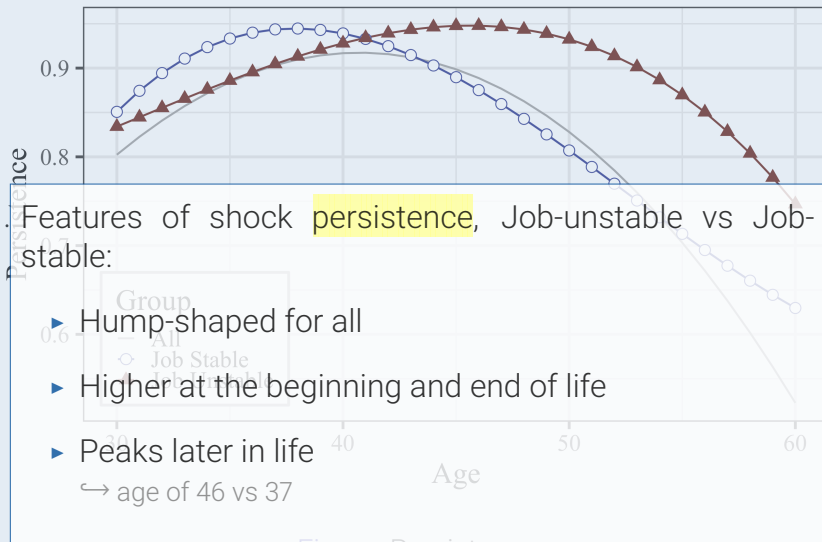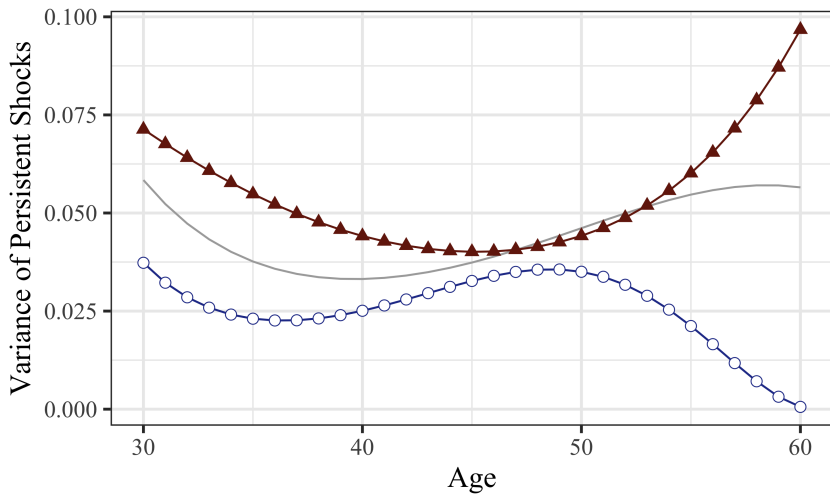
Estimates: Life-Cycle

Features of shock <mark>persistence</mark>, Job-unstable vs Job-stable:

► Hump-shaped for all

► Higher at the beginning and end of life

► Peaks later in life
  ↪ age of 46 vs 37

Figure: Persistence

Estimates: Life-Cycle

Figure: Variance of Persistent Shocks

Estimates: Life-Cycle

Features of <mark>persistent uncertainty</mark>, Job-unstable vs Job-stable:

- Higher

- U-shaped vs. decreasing over the life cycle

  - Big difference at the end of the life-cycle

    ↪ From age 50 on
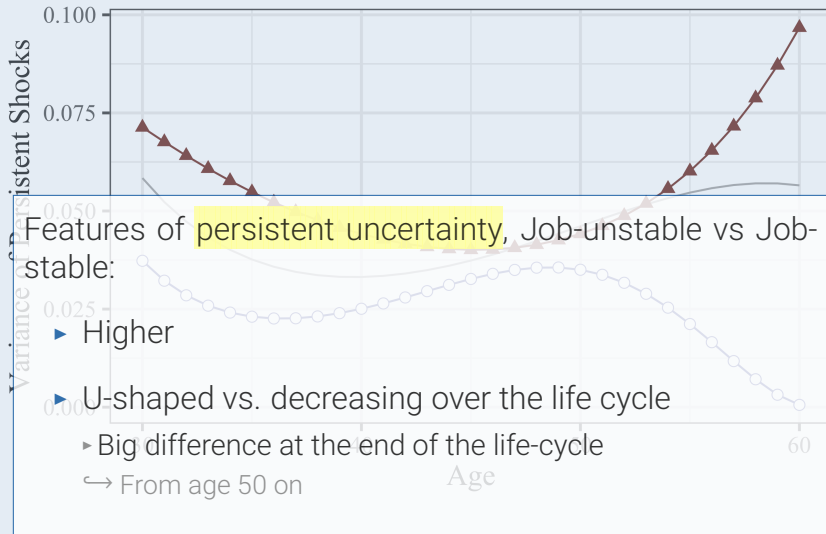
Figure: Variance of Persistent Shocks

Estimates: Life-Cycle
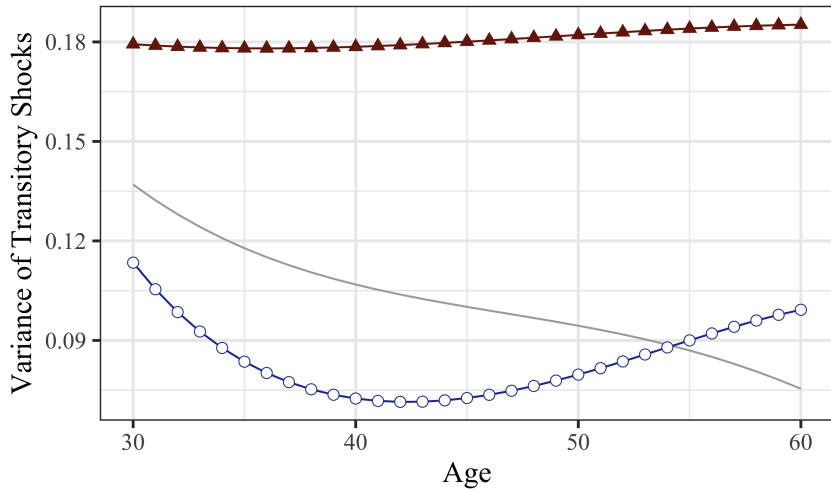
Figure: Variance of Transitory Shocks

Estimates: Life-Cycle

Features of <mark>transitory uncertainty</mark>, Job-unstable vs Job-stable:

- ► Higher

- ► Flat vs decreasing over life
  ↪ Big difference at the end of the life-cycle
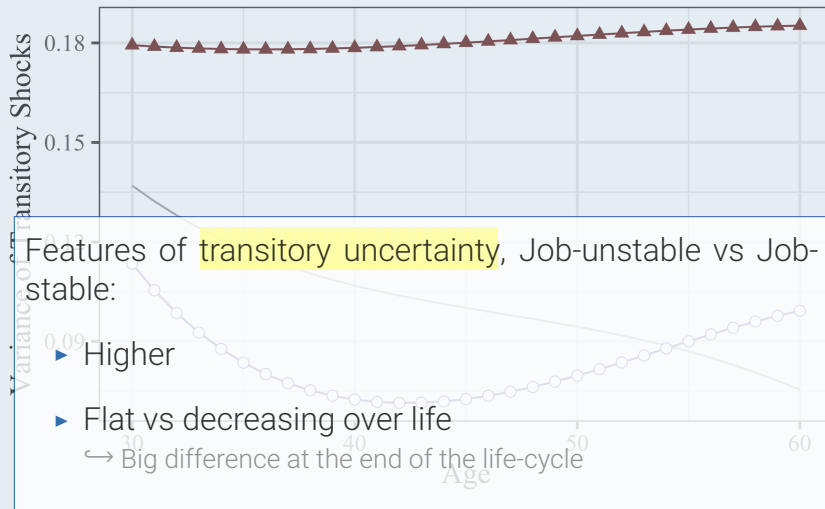
Figure: Variance of Transitory Shocks

Outline of Talk

Decomposing Sources of Earnings Variance

How much of total earnings variance of the life cycle is accounted for by

- Ex-ante heterogeneity

    - Cumulative effect of initial heterogeneity

- Ex-post uncertainty (luck)

    - transitory

    - persistent: Combination of behavior of persistence (ρ) and variance of persistent shocks (σ_η^2)

Decomposing Sources of Earnings Heterogeneity

Job-Stable
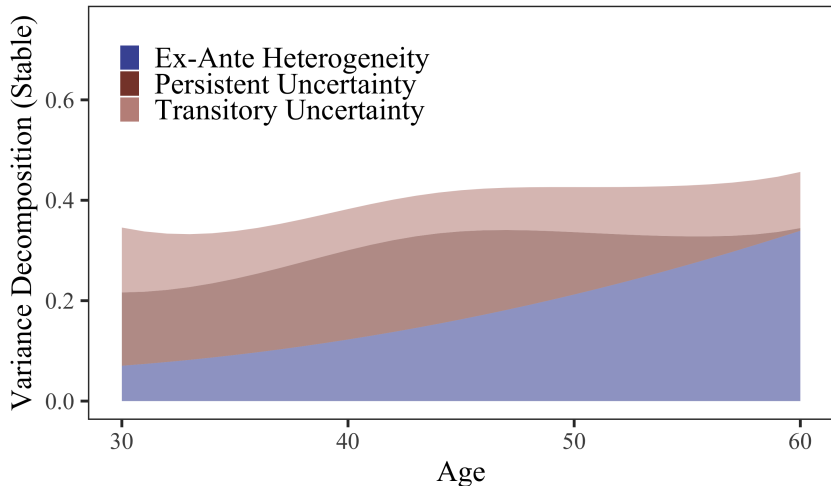
Decomposing Sources of Earnings Heterogeneity
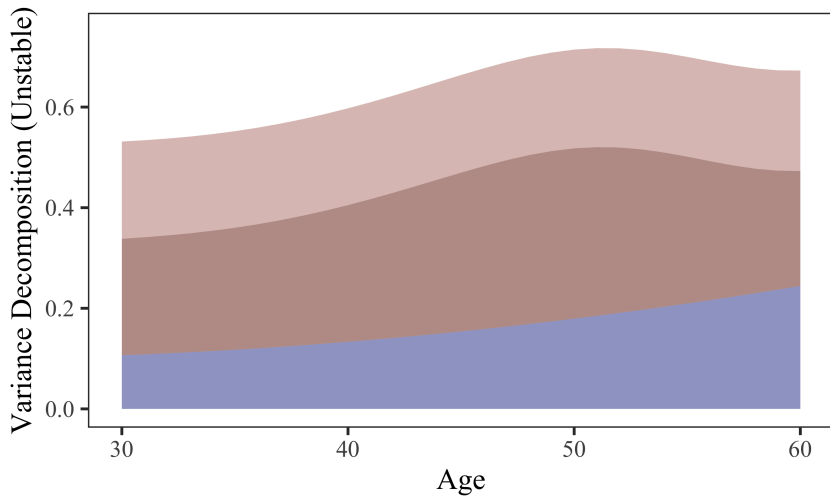
Job-Unstable

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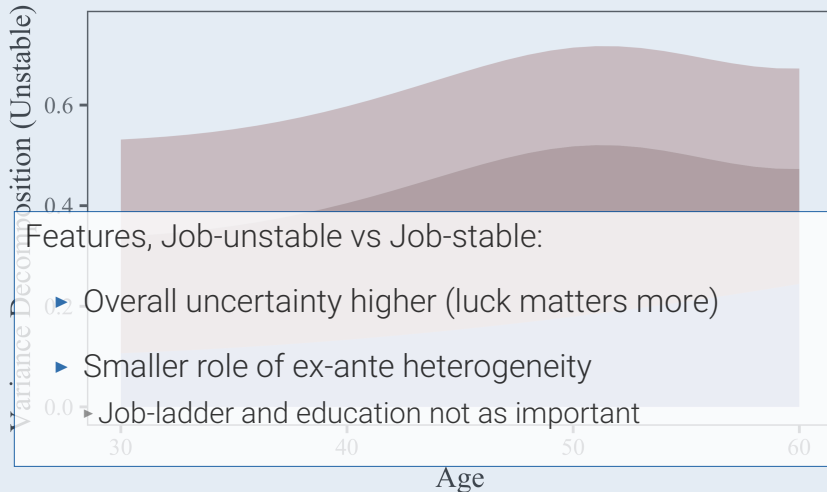
Job-Unstable

Features, Job-unstable vs Job-stable:

- ► Overall uncertainty higher (luck matters more)
- ► Smaller role of ex-ante heterogeneity
- ► Job-ladder and education not as important

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Conclusions

- ▸ Workers exposed to job instability during early-career years face higher uncertainty throughout the life-cycle
  - ▸ They experience higher volatility in their income shocks
  - ▸ Shocks are increasingly persistent until later in life, compared to job-stable

- ▸ Decomposing the sources of increasing uncertainty shows that
  - ▸ Variance of earnings shocks does not fade out with age, as opposed to job-stable
  - ▸ Risk play less of a role for the job-stable than job-unstable. Persistent component of uncertainty plays a bigger role for the job-unstable, especially later on in the life-cycle.
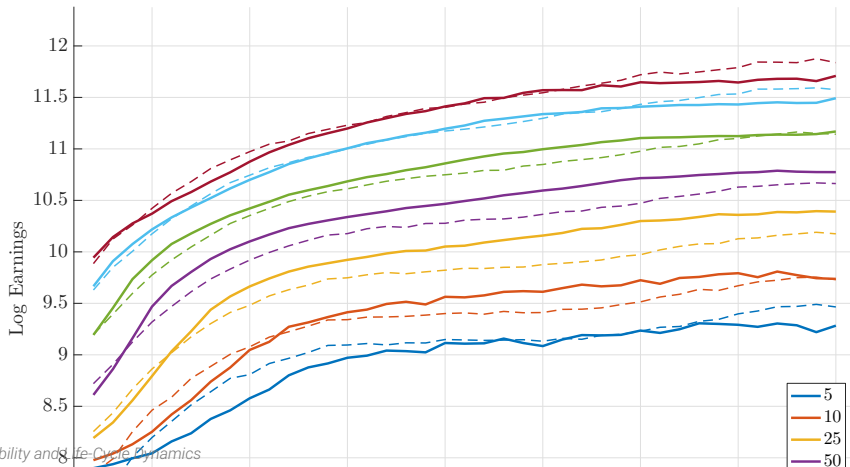
APPENDIX

Autocovariance Fit
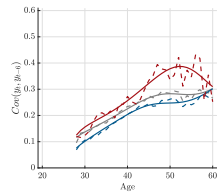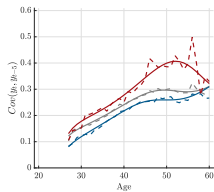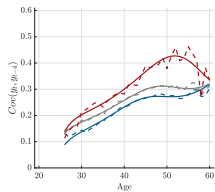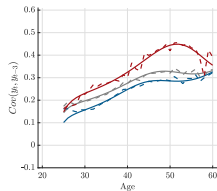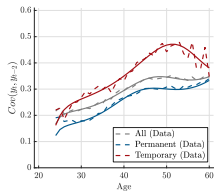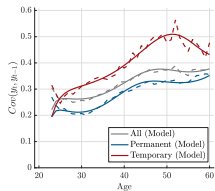
Simulation Fit

*Estimated earnings within a model of job transitions, from CGMV 2018.

Figure: Quantiles of Log earnings: Data (solid) vs. Simulation (dashed)

Sample Selection

Table: Number of observations kept at each step

Sel. Criteria	Remaining Obs
Begin with	10.88M
Age missing	10.87M
Contract missing	10.87M
Education missing	10.14M
Age 22-60	6.42M
Drop duplicate spells	5.41M
Total	5.41M
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Men	2.95M
Women	2.46M

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	.	College
Men	2.95M	418K
Women	2.46M	571K