



Future of Work

National Trends and Megatrends

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CSIRO Future of Work Research



TOMORROW'S DIGITALLY ENABLED WORKFORCE

Megatrends and scenarios for jobs and employment
in Australia over the coming twenty years

Stefan Hajkowitz, Andrew Reeson, Lachlan Rudd, Alexandra Bratanova,
Leonie Rodgers, Claire Mason, Naomi Boughen
January 2016

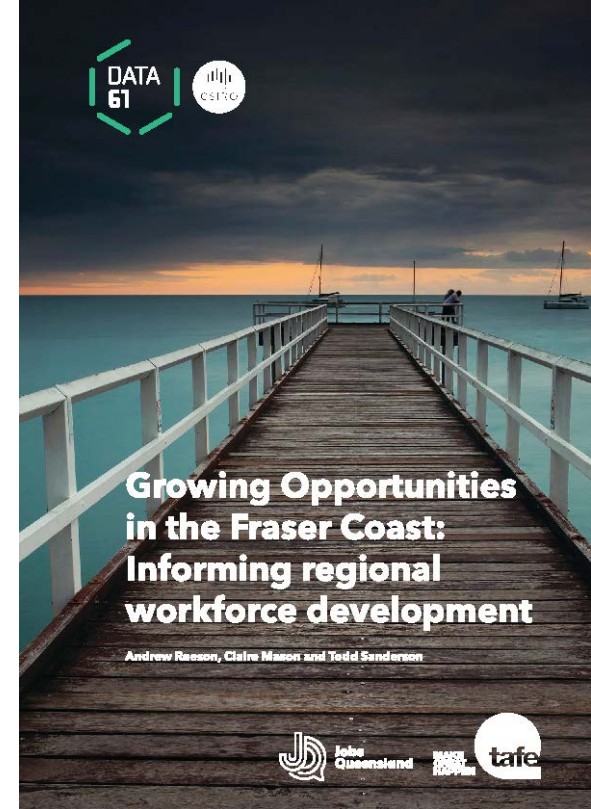


THE VET ERA

Equipping Australia's workforce
for the future digital economy

Andrew Reeson, Claire Mason, Todd Sanderson,
Alexandra Bratanova and Stefan Hajkowitz

Report for TAFE Queensland
June 2016



My plan...

- The megatrends
- The data
- The future



Technology

Rapid advances in robotics and artificial intelligence



Images: Phasmatisnox, IBM , Microsoft

Technology vs jobs?

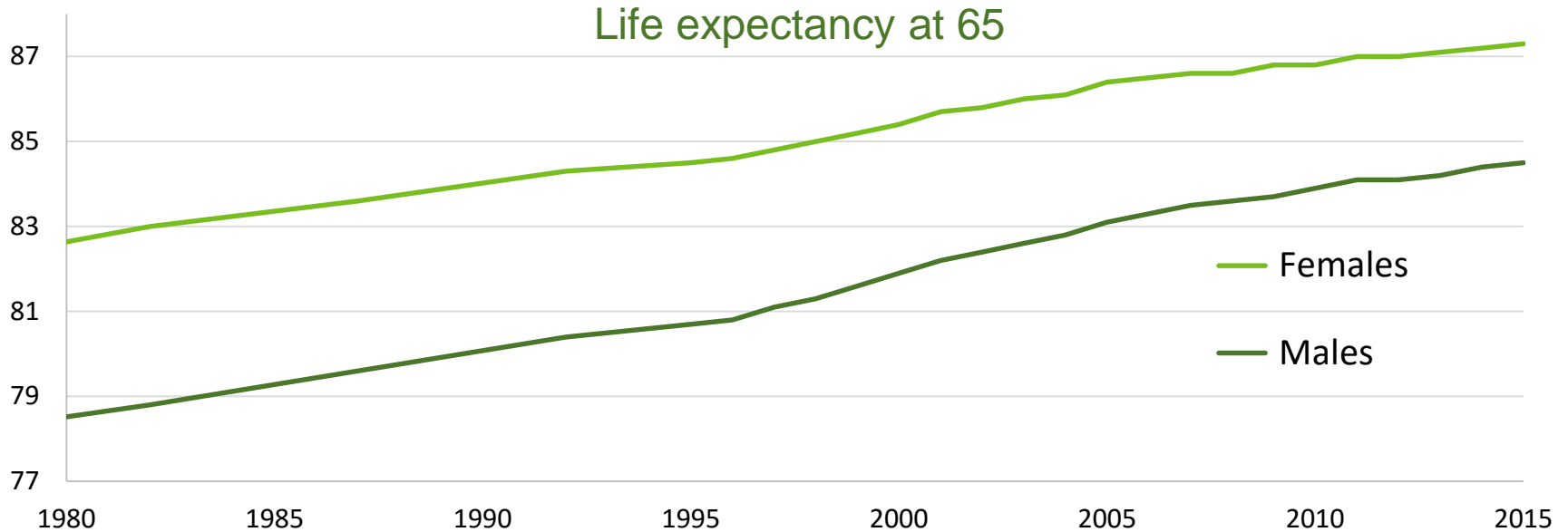


- While digital technology is new, worries about technology displacing workers is not
- Many jobs are susceptible to computerisation
 - 47% of jobs in USA, 44% in Australia said to be at high risk
 - But these analyses focus on existing jobs
- Innovation (and economic growth) also create jobs
 - Complementarity rather than substitution
- BUT many individual workers will be displaced in the meantime
 - AND there will be distributional consequences

Workforce demographics

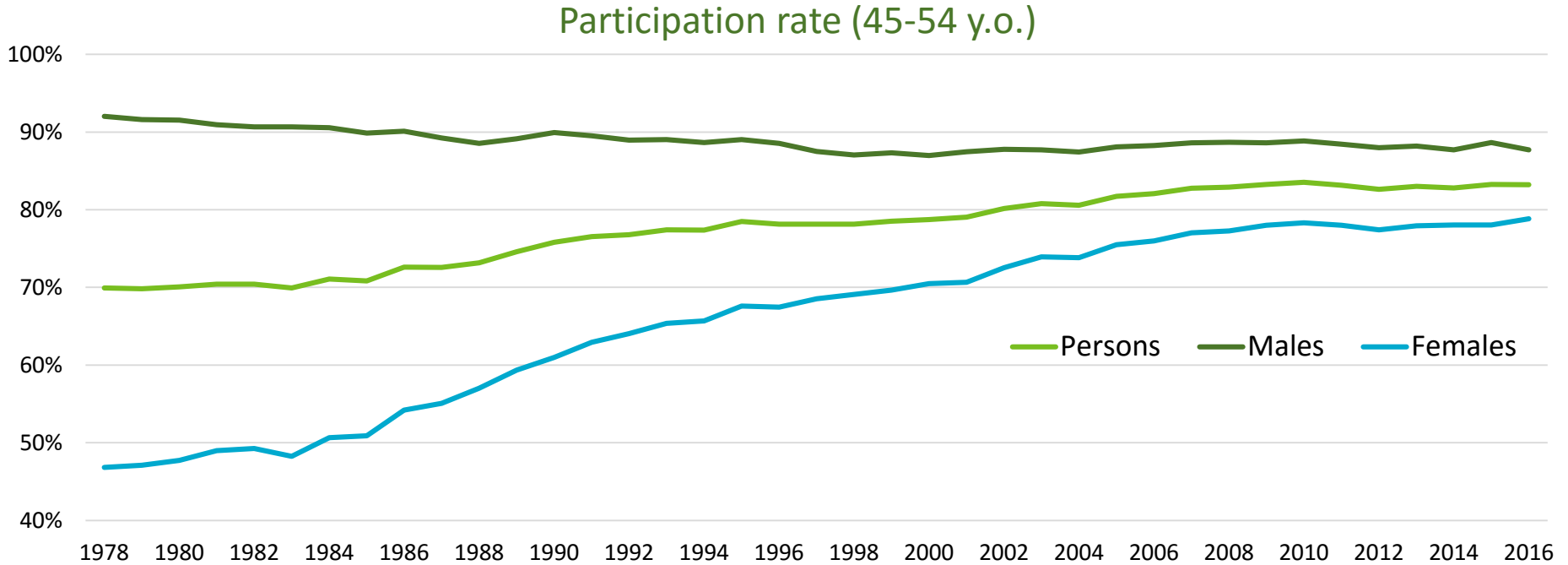
Australians are living for longer

- And will work for longer, and need more care

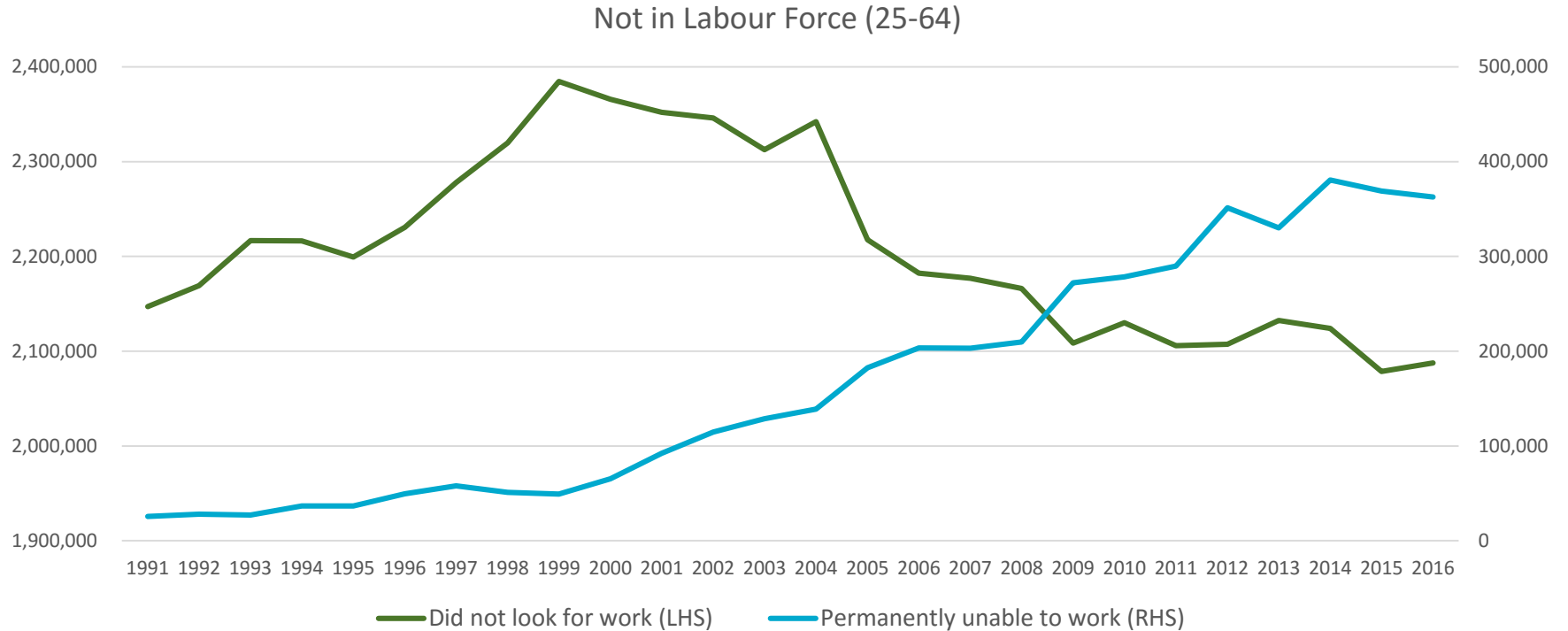


Workforce demographics

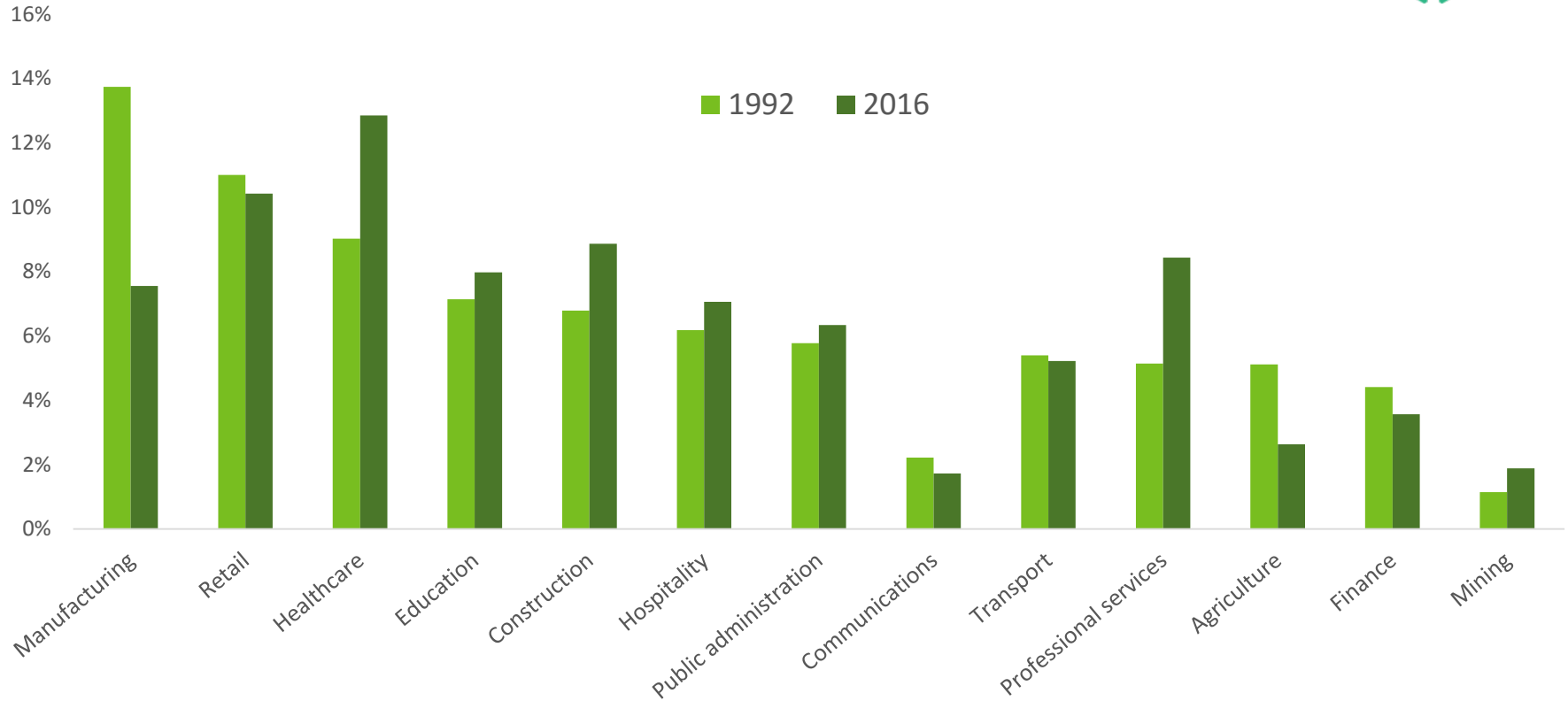
- More people working, and more unable to work



Disability a growing issue

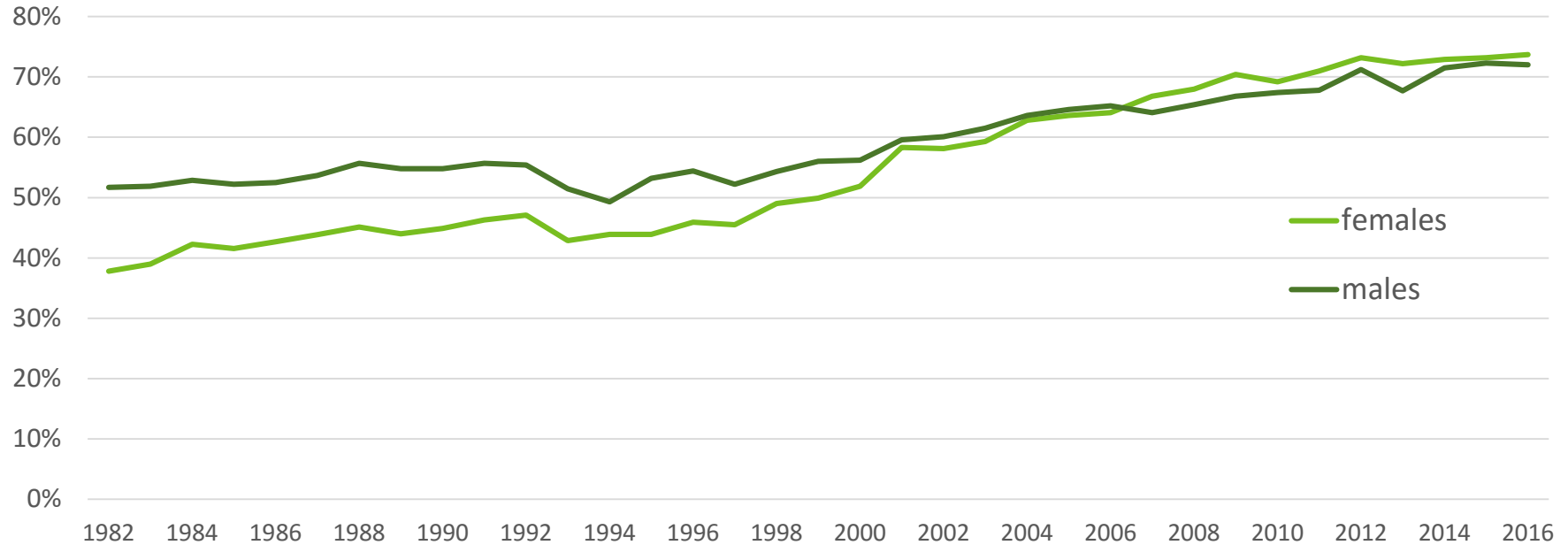


The rise of the service sector

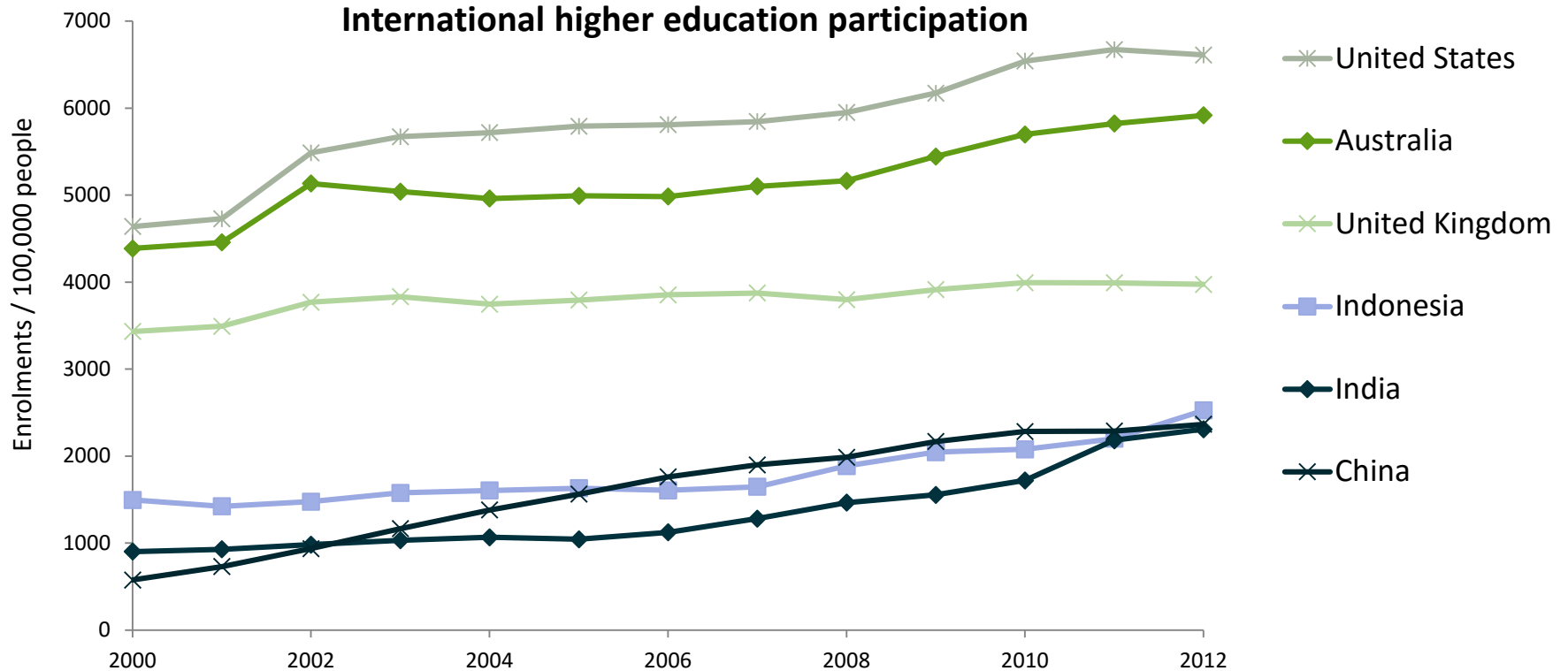


Rising bar for education

Young adults (25-34) with non-school qualifications



Rising bar for education



The era of the entrepreneur?

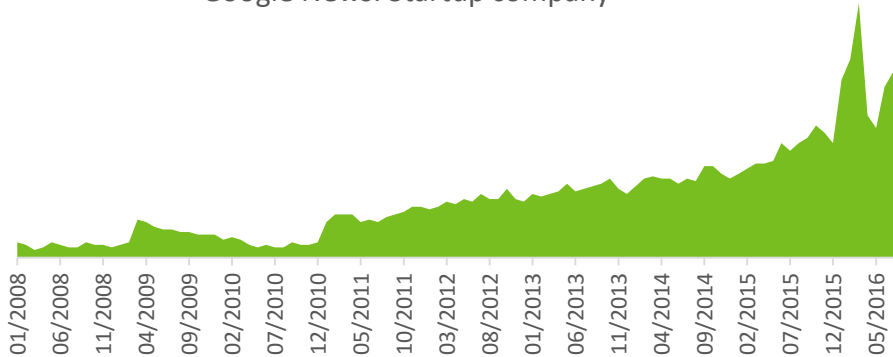


Digitally enabled start-ups

- Low cost
- Potential to scale rapidly
- But non-digital start-up rate falling



Google News: Startup company

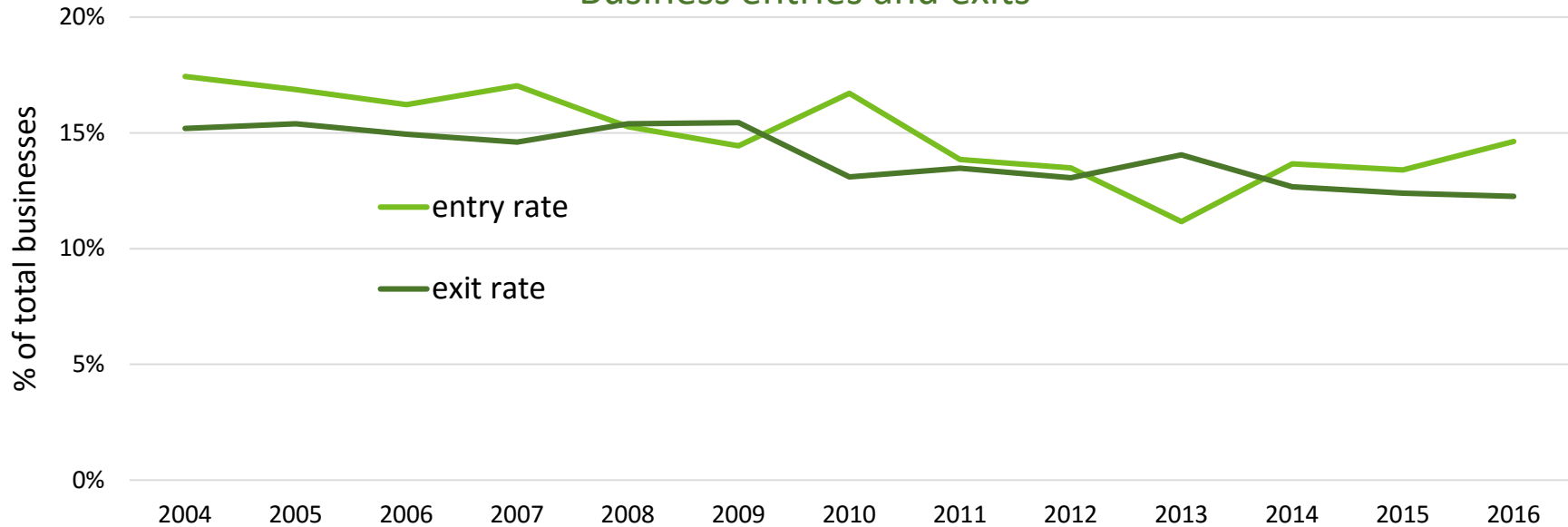


The era of the entrepreneur?



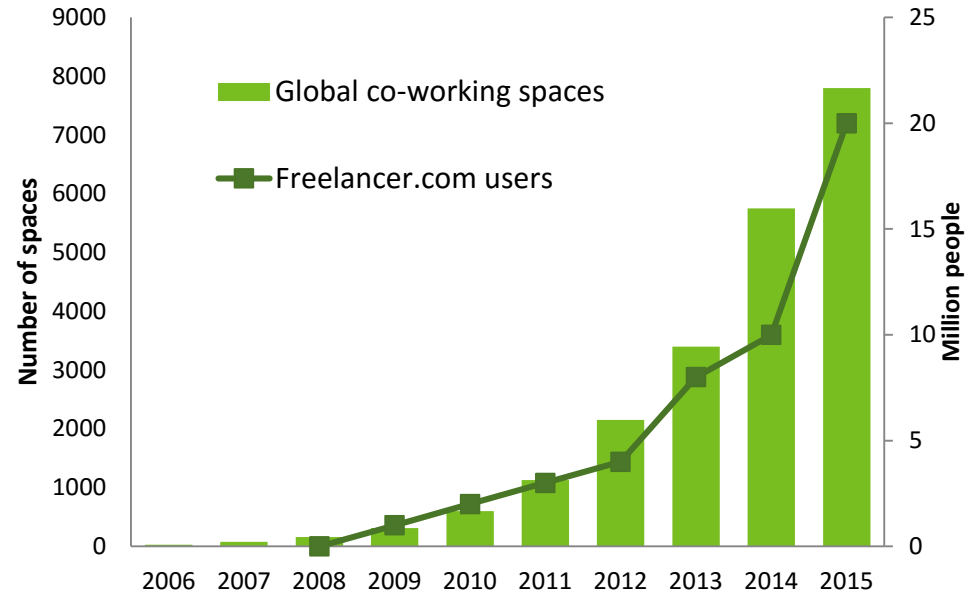
Overall start-up rate declining...

Business entries and exits

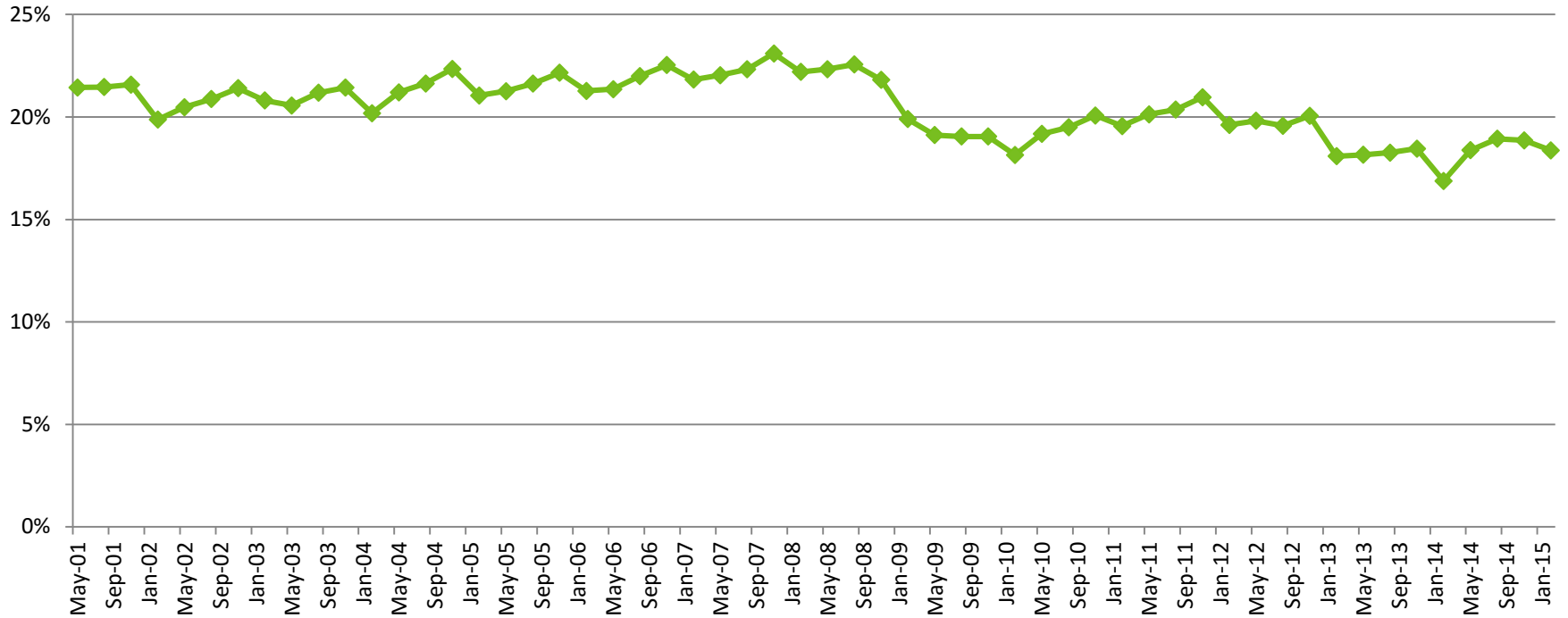


Porous boundaries

- New ways of working
 - Work anywhere
- Freelancing
 - Facilitated by digital platforms
- Portfolio work
 - Diversify your career
 - Flexible participation



Workers changing jobs



Business model disruption



- Why do firms exist?
 - Internalising relationships reduces transaction costs (Coase)
 - And overcomes information asymmetries (Williamson)
- Technology may change the nature of the firm
- Changing economies of scale
 - Digital products scale quickly and cheaply
 - Networks confer reputation
- Industries may atomise, or consolidate!

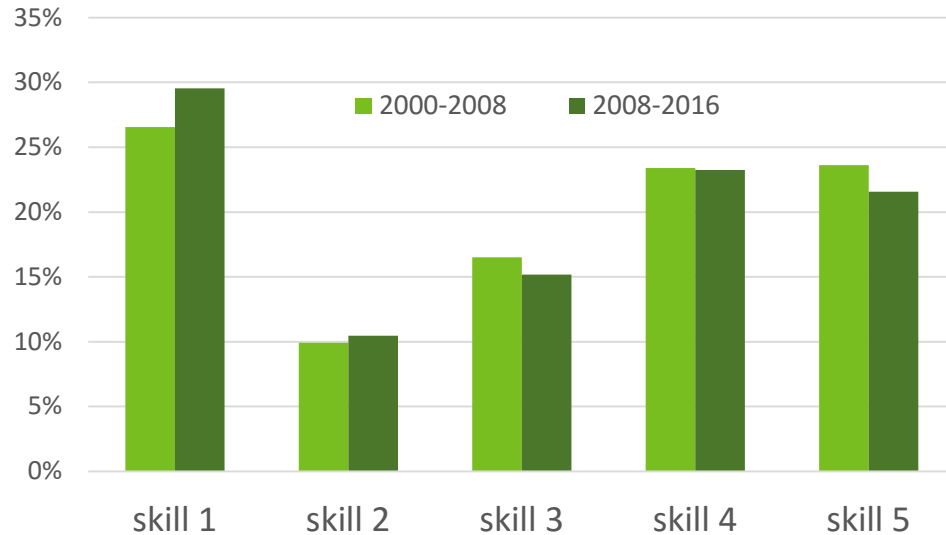
Business model disruption



- What for universities?
 - Online material has high fixed course and low marginal costs
→ significant potential for disruption
- Tyranny of distance may be overcome
 - But local teaching, mentoring and peer support more vital than ever

Employment change by skill level

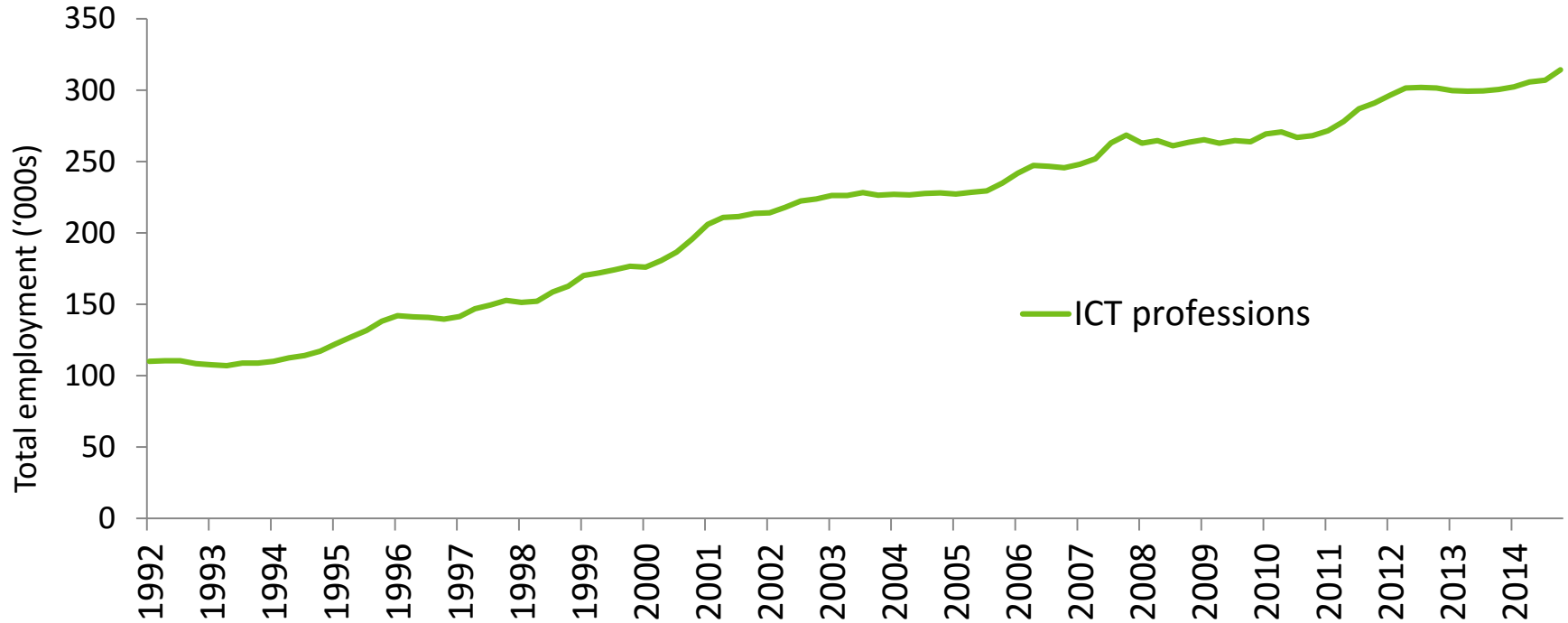
Workforce by skill level



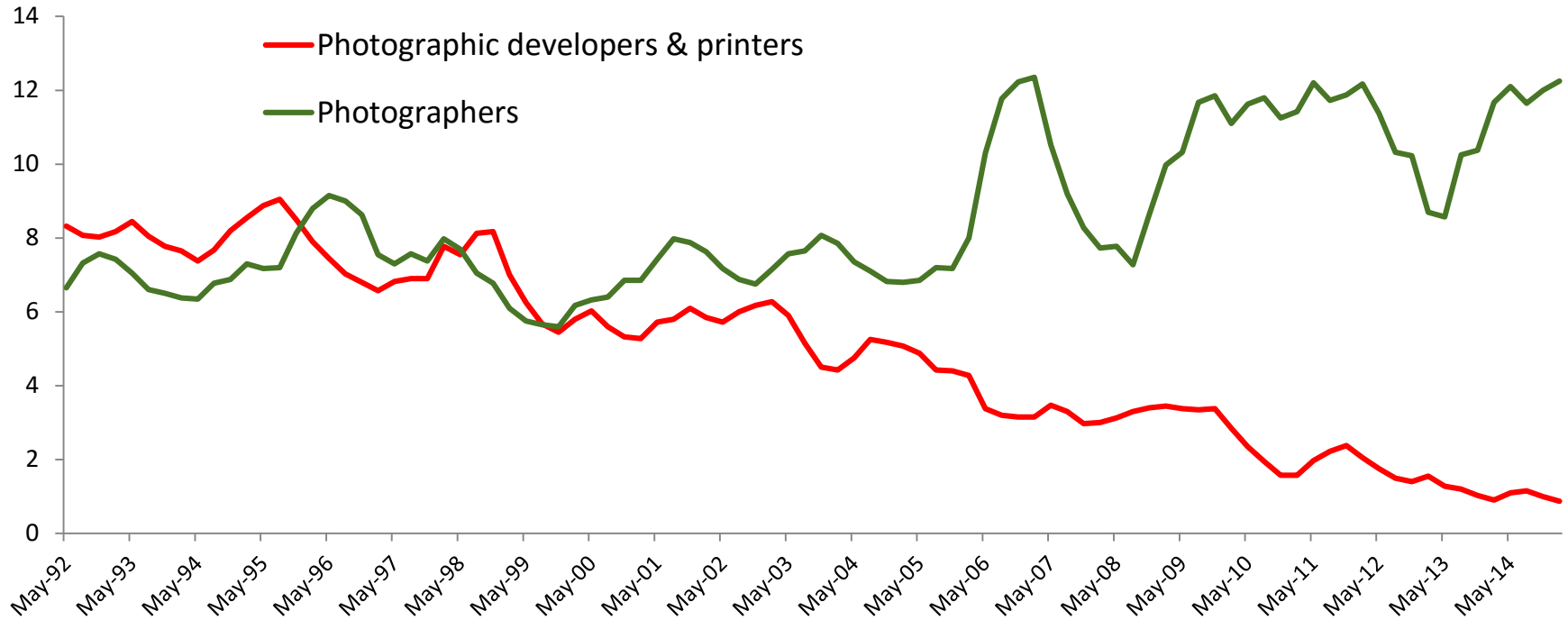
Proportion (% change)



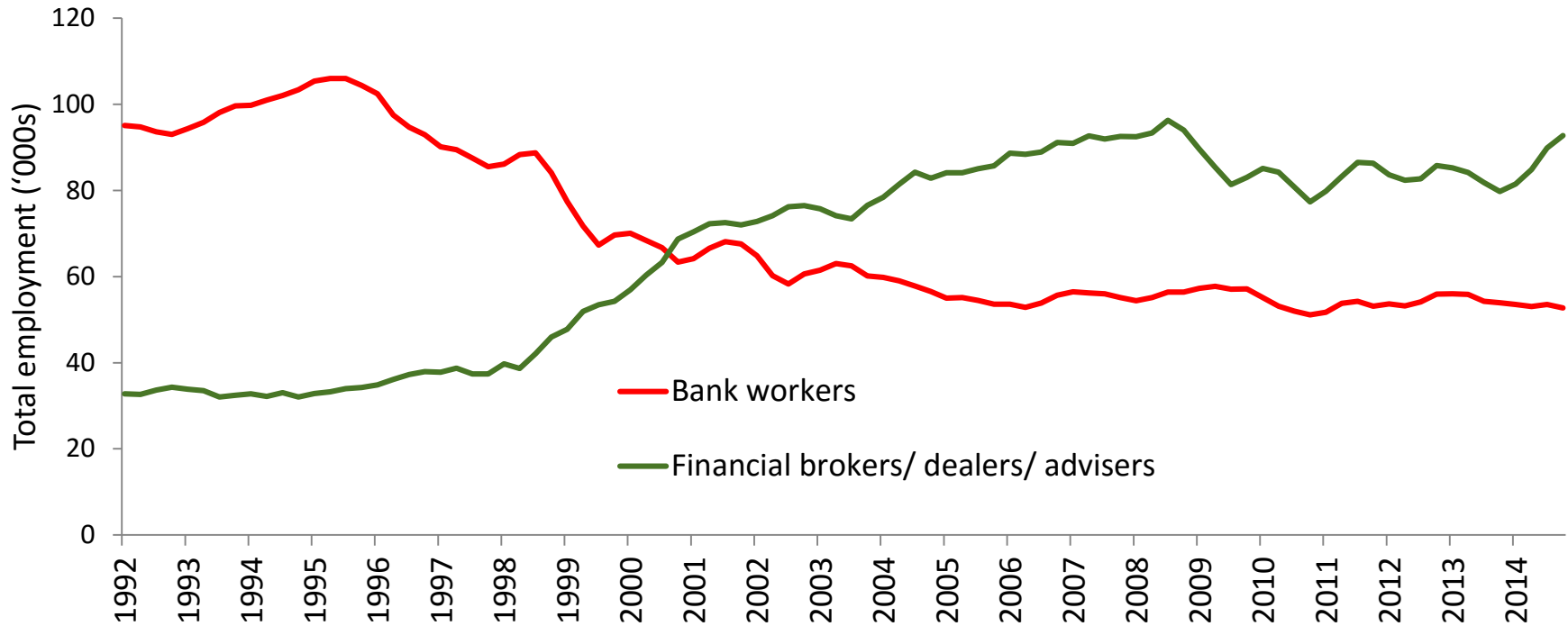
Computerisation and employment



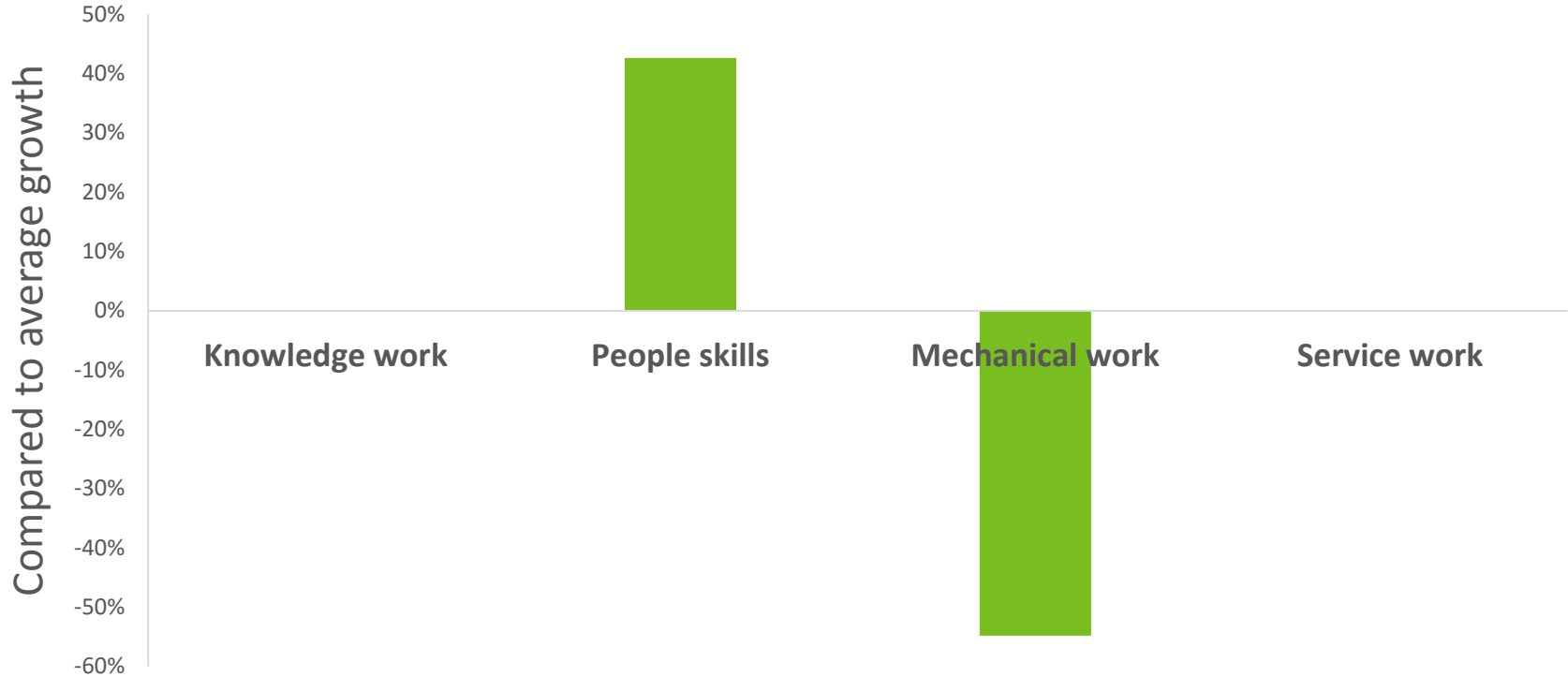
New jobs for old



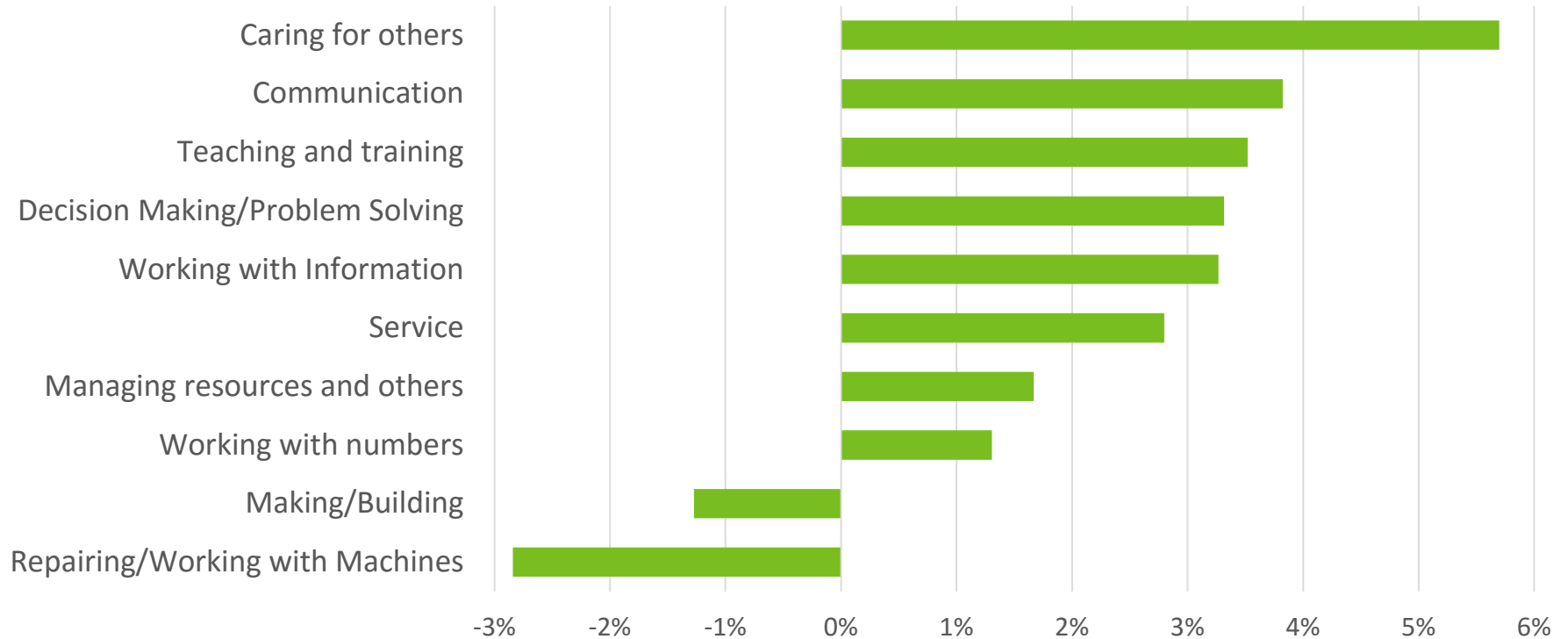
Upskilling



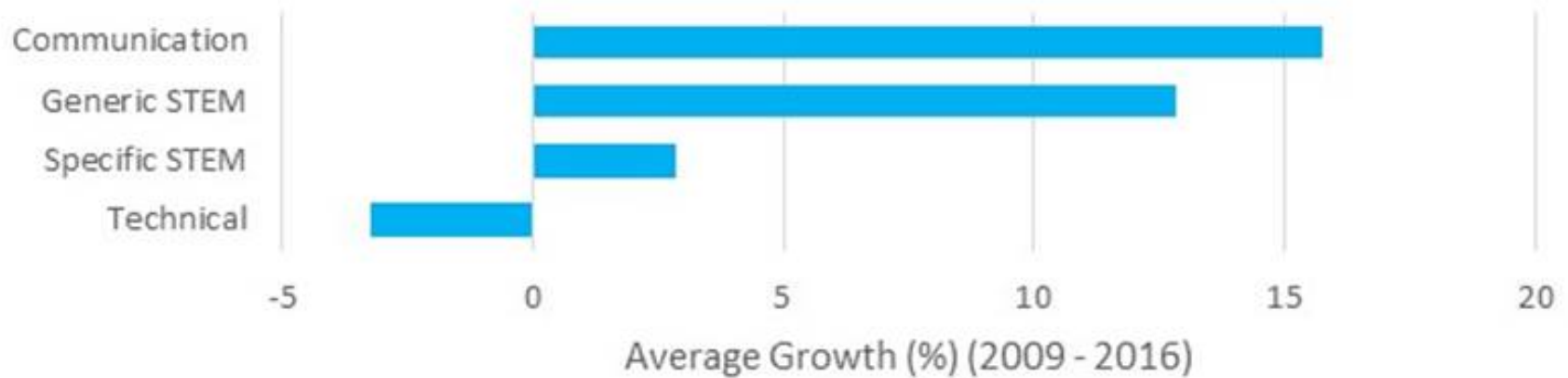
Drivers of employment growth (20 yrs)



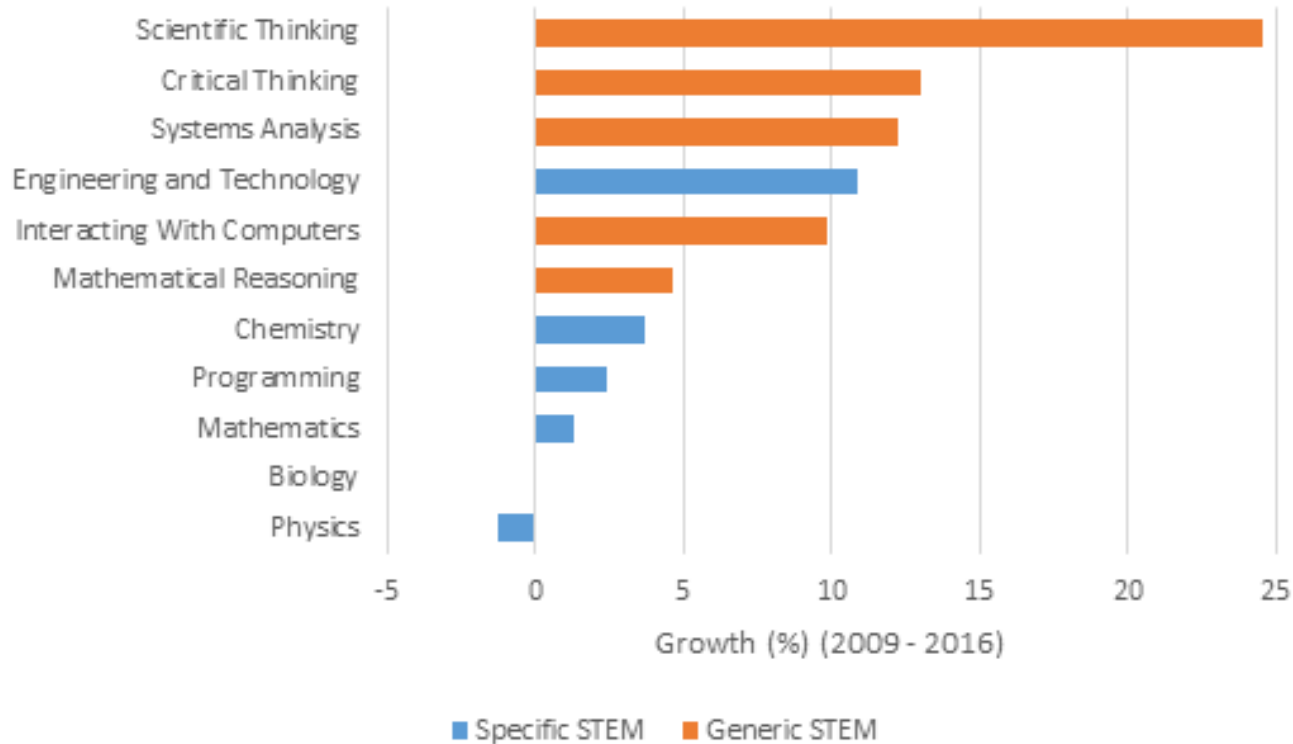
Changing skills demand (8 yrs)



Changing skills demand (8 yrs)



Changing skills demand (8 yrs)



Jobs of the future



- STEM skills clearly important
 - But only in a small number of disciplines
 - And need to be doing skilled, not routine, work
 - The vast majority of us will not need to be computer programmers!
- Working WITH technology essential
 - Key to greater productivity

Jobs of the future



- Generic cognitive skills most valued
 - Technology is increasingly collaborative
 - Need to combine technical and interpersonal skills
- Need of innovation and entrepreneurship
 - Distinctive skills and mindsets
- Lifelong learning increasingly important
 - Modular qualifications?
 - Subscriptions?

Jobs of the future



- People skills becoming more important
 - Our comparative advantage is humanity
 - Growing opportunities to use technology to help people...
- Medium and lower-skilled work increasingly service-oriented
 - More shift work
 - More gender disparity?
- Transitions will be painful...

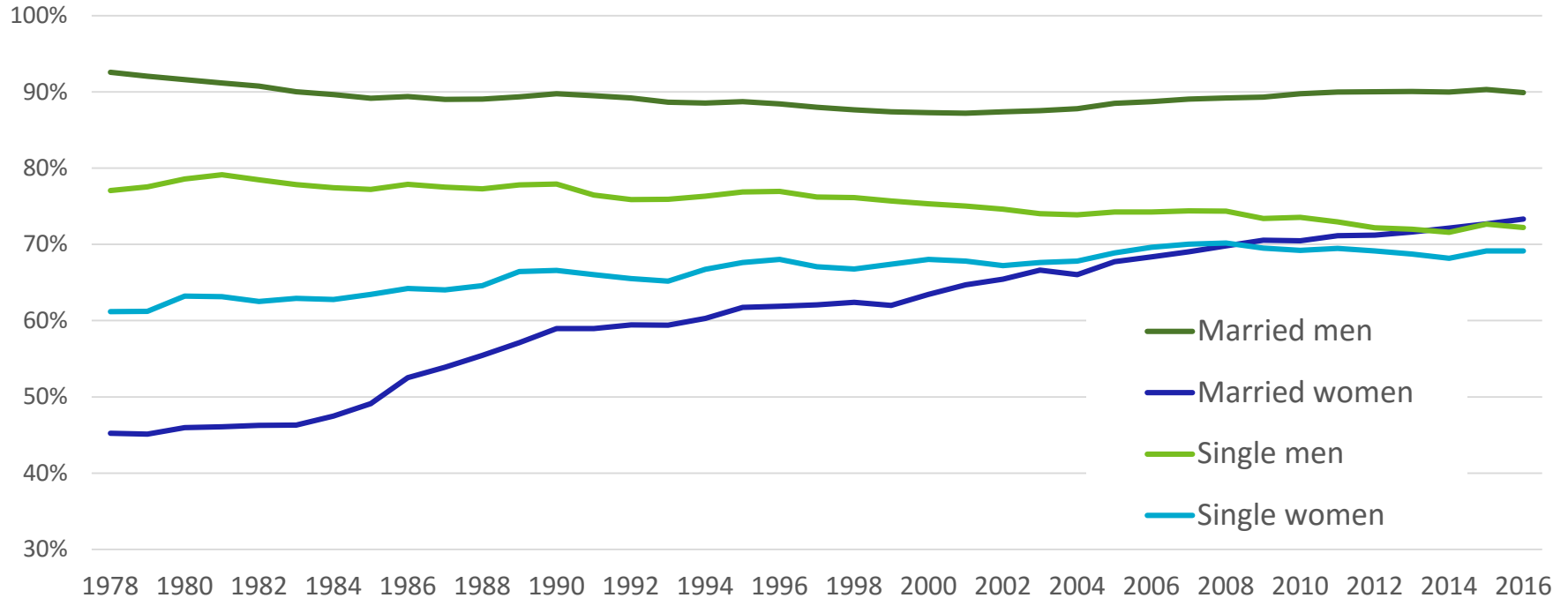
Is this time different?



Data from Clark (2005)

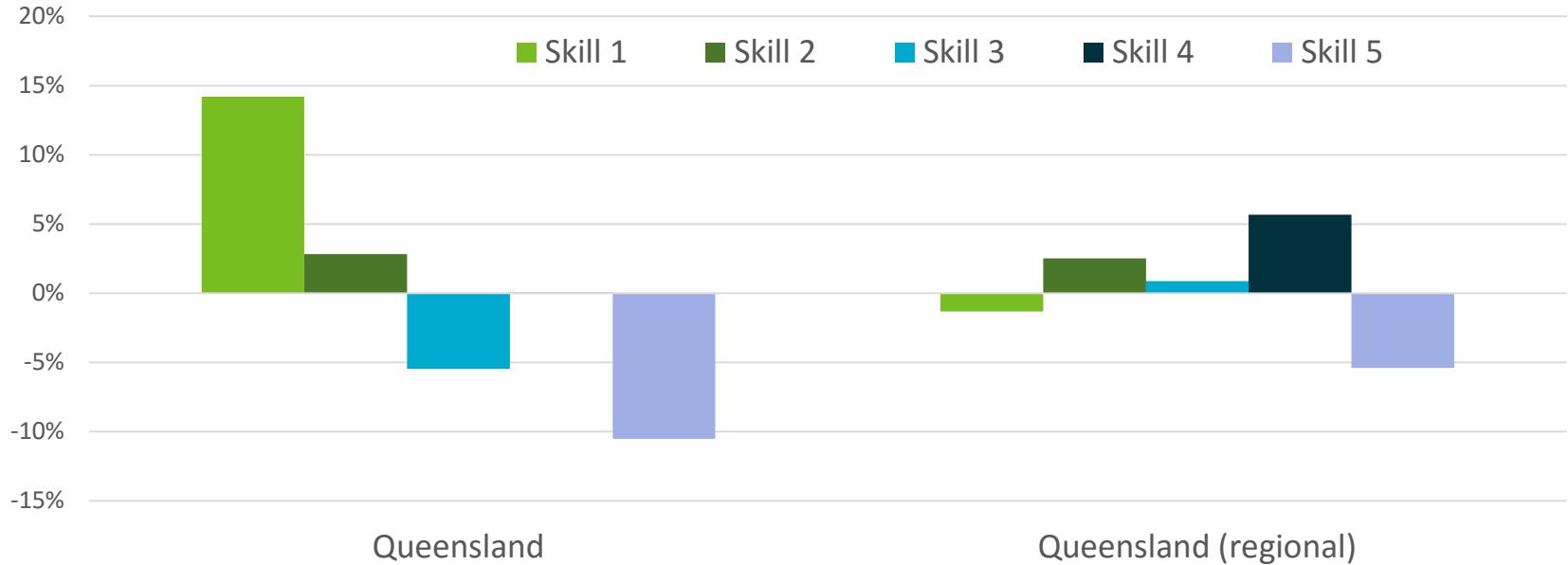
Dropping out

Labour Force Participation (15-64 y.o.)



Regional divergence

Changes in skill mix (2009/16 vs 200/08)





Thank you

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