March 2017

Understanding the unpaid economy

Why is it that a mother caring for her children produces no 'measured' economic value, but the same mother hiring others to look after her children does? The answer stems from our narrow measurements of 'economic activity', which currently only captures activities for which people are paid. Unpaid work is excluded but we intuitively know that this work generates great value to society: from the raising of children, caring for the sick or elderly through to volunteering.

We have generated a more holistic and contemporary understanding of the Australian economy by measuring all productive activity, both paid and unpaid. We have done this from the ground up, estimating the value of unpaid activities across 2,214 locations to understand where Australia's largest unpaid economies are located and the factors that shape them.

Key findings

- *If the total economy includes a conservative estimate of the value of unpaid work then it is a third bigger than formal measurements.*
- *The value of unpaid childcare makes it Australia's largest industry, larger than any in the formal economy.*
- *Women are significantly over-represented in the unpaid economy, accounting for almost three quarters of all unpaid work.*

Implications

- *It is important to begin to measure this unpaid work and highlight its importance.*
- *In particular, it is important to understand the gender split of unpaid work and how it is impacting on female workforce participation.*
- *Once we understand the unpaid economy, we can give it appropriate weight in policy and investment decisions, outside of the traditional understanding of maximising economic returns.*

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PwC Economics and Policy

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Australia's $2.2 trillion economy

Using a conservative (market replacement) approach to place a value on unpaid work and include it in the total economy reveals that the economy is actually a third bigger than the economy formally reported in the national accounts. This value is shown below in Figure 1, split by the type of unpaid work: volunteering, domestic household tasks (such as cooking and cleaning), care of adults (the elderly or people with disability, both within and outside of immediate family) and childcare.

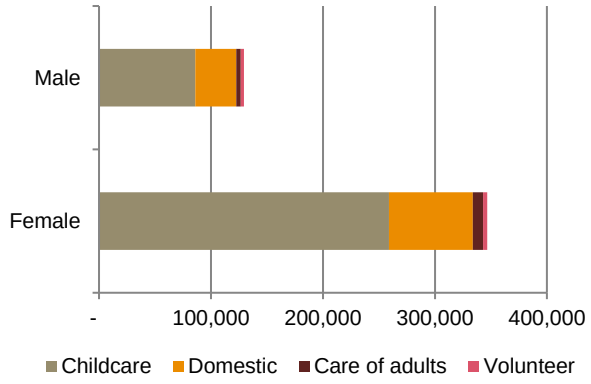
Figure 1: Amount and value of unpaid work (2016 terms)

Type of unpaid work	Market replacement value ($ million)	Market replacement value as % of formal GDP
Volunteer	7,887	0.5%
Domestic	132,702	8.0%
Care of adults	15,404	0.9%
Childcare	409,531	24.6%
Total	565,524	33.9%

Source: ABS; PwC analysis.

The total value of all this unpaid work is displayed in Figure 2, which shows that the bulk of the value of unpaid work in the economy is unpaid childcare. It also shows that 72% of unpaid work is conducted by females.

Figure 2: Total unpaid work, by gender (millions $, 2011 terms)



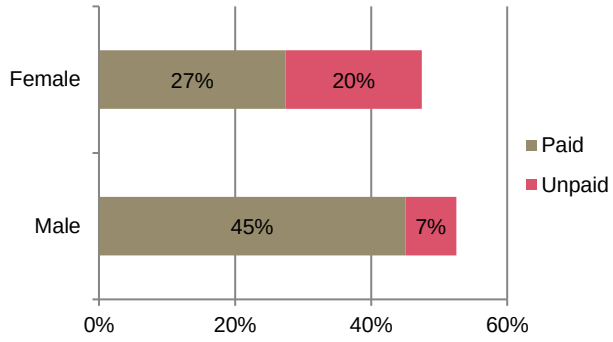
Source: ABS, PwC analysis.

In total, women conduct 76% of childcare, 67% of domestic work, 69% of care of adults and 57% of volunteering. The percentage of unpaid work which is done by females is not affected at all by the average income, education or relative advantage of the location in which the work is occurring, showing that regardless of personal circumstances, men are conducting less unpaid work.

This is likely reflective of mothers across all socio-economic status being more prone to taking time away from paid employment to perform unpaid childcare. However, it is also probably indicative of social norms that regardless of household situation, women are more likely to undertake domestic or caring tasks. It also shows that although as more advantaged areas may substitute unpaid work for paid domestic help (discussed more below), the remainder that is unpaid is still distributed at the same portion between men and women. An indicative illustration of this would be if a household usually has 20 hours of unpaid work a week, a woman would conduct 15 hours of it and a man five hours. However, if they pay someone to take ten hours of that household work, although the woman would halve her unpaid hours to 7.5, the man would also reduce his to 2.5 hours.

Figure 3 shows that whilst male formal employment accounts for the largest percentage of the total economy (formal and unpaid), the large female contribution to unpaid work almost makes total contribution even between both genders.

Figure 3: Total economy including paid and unpaid work, by gender



Source: ABS, PwC analysis.

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Unpaid childcare: Australia's largest industry

Capturing the nature and value of unpaid activities alongside our formal industries (e.g. mining, construction, manufacturing, financial services, health care, education, etc) indicates that childcare should be regarded as Australia's largest industry. Quantifying and valuing the time spent by on unpaid childcare implies that it is a $345 billion sector (in 2011 terms), almost three times the financial and insurance services industry, the largest industry in the formal economy. This is shown in Figure 4.

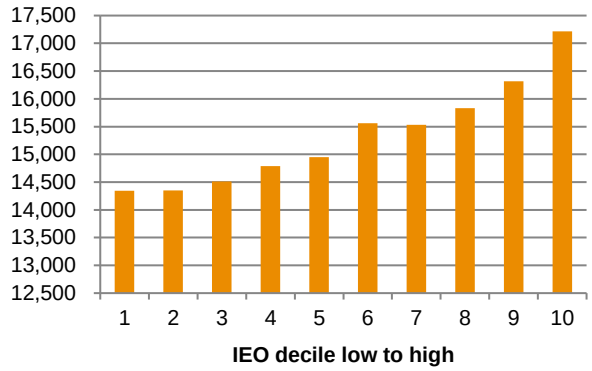
Figure 4: Industries as percentage of total economy (formal and unpaid)

Industry	% of total
Unpaid childcare	19.9%
All non-childcare unpaid work	7.6%
Financial and insurance services	7.0%
Construction	6.5%
Manufacturing	6.2%
Mining	6.1%
Professional, scientific and technical services	5.5%
Health care and social assistance	5.3%
Public administration and safety	4.5%
Transport, postal and warehousing	4.1%
Education and training	4.1%
Retail trade	3.8%
Wholesale trade	3.5%
Electricity, gas, water and waste services	2.5%
Information media and telecommunications	2.5%
Administrative and support services	2.4%
Accommodation and food services	2.1%
Rental, hiring and real estate services	2.1%
Agriculture, forestry and fishing	2.1%
Other services	1.6%
Arts and recreation services	0.7%
Total	100.0%

Note: Total economy in 2011 terms. Source: ABS; PwC analysis

Figure 5 shows the per capita unpaid childcare in locations organised by decile of index of education and occupation (IEO).

Figure 5: Average per capita unpaid childcare by decile of IEO ($ 2011 terms)



Source: ABS, PwC analysis.

Figure 5 shows that people in locations with higher education levels are more likely to spend more time per capita on unpaid childcare. This is assumedly linked to household earning capacity and ability for a mother to take time away from paid work and for the household to live off one income. However, despite the per capita amount of unpaid childcare going up are education increases, the percentage of that childcare that is conducted by females barely changes across all levels of education (averages at 75% of total unpaid childcare). This is true for all measures of socio-economic disadvantage examined. This is likely reflective of mothers across all socio-economic status being more prone to taking time away from paid employment to perform unpaid childcare and therefore will contribute more of the childcare than a male. However, it also shows that there is no situation that makes men, on average, substitute their unpaid work for female unpaid work. This appears to be down to social norms that childcare (along with all other types of unpaid work which are dominated by females and do not change across measures of disadvantage) will be undertaken by females.

"Girls today will spend hundreds of thousands more hours than boys doing unpaid work simply because society assumes it's their responsibility" – Melinda Gates

As a comparator, Figure 6, shows per capita unpaid childcare by decile of index of relative socio-economic advantage and disadvantage (IRSEAD). As a more comprehensive measure of comparative advantage, this shows a more complex relationship.

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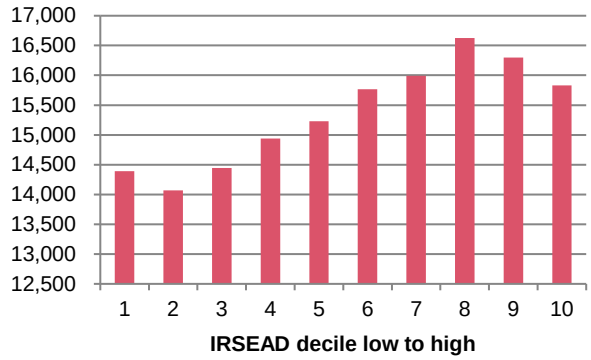
Figure 6: Average per capita unpaid childcare by decile of IRSEAD ($ 2011 terms)



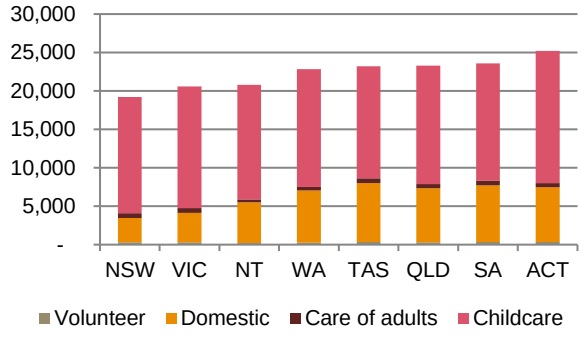
Source: ABS, PwC analysis.

This shows a story of choice, with people in more advantaged situations having more options around unpaid work. In the least advantaged locations, people appear to have no option to take on a lot of unpaid childcare, likely due to the need to be in paid employment. As advantage increases, it can be seen that people can choose to substitute in to unpaid work. At the highest end of advantage, there appears to be the most choice, where people can start substituting back in to paid work as the costs of paying for childcare start being outweighed by potential income from paid work.

Spatial characteristics of unpaid work

Examining unpaid work on a state-by-state basis shows those with the largest unpaid work contribution are the smaller or less prosperous states. Figure 7 shows that the larger economies of New South Wales and Victoria have less unpaid work per capita. This is particularly noticeable in the small amount of unpaid domestic work. This is possibly substituted for paid work in exchange for paying someone to take on this work in the more prosperous states.

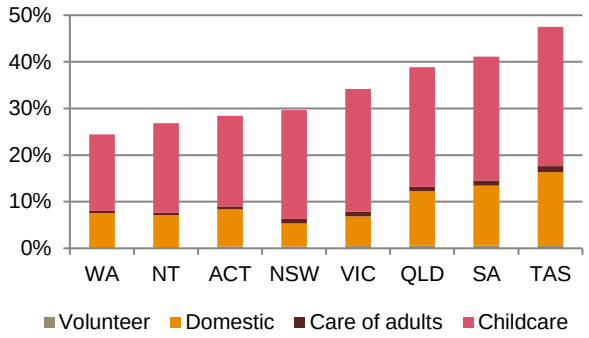
Figure 7: Unpaid work per capita by state ($ 2011 terms)



Source: ABS, PwC analysis.

Figure 8 shows that the difference between states, in terms of unpaid work as a percentage of GSP, is mostly driven by larger amounts of domestic work in Queensland, South Australia and Tasmania (and, to a lesser extent, amount of childcare).

Figure 8: Unpaid work as percentage of GSP, by state ($ 2011 terms)



Source: ABS, PwC analysis.

Canberra clearly dominates per capita amounts of unpaid work. It is the highest state average, and also has six of the top ten individual locations for per capita childcare (Acton, Bonner, Civic, Crace, Namadgi and Phillip). All these locations are in the top three deciles of median incomes and with the exception of Namadgi, are also locations with high education (IEO) and socio-economic advantage (IRSEAD). This shows that mothers especially have a wider range of choices to undertake unpaid childcare, which is also indicated that all these locations have an above average percentage of unpaid childcare that is conducted by females.

Looking at the large cities and examining only high density population locations (with at least 10,000 residents), Melbourne plainly leads in unpaid work. Of the top ten per capita value of childcare locations with dense populations, Melbourne has eight (Brunswick, Carlton, Elwood, Kensington, Melbourne CBD, Southbank, St Kilda and St Kilda East) with only two going to Sydney and none of the other capital cities represented. Again, these are all highly educated and socio-economically advantaged locations.

In pure size of value of unpaid work (not per capita), Victoria is also strongly represented with six of the top ten locations. However, these locations with absolute largest value of unpaid work are not highly advantaged city suburbs that are represented the highest in per capita unpaid work. There are much more likely to be regional and are much more spread out in socio-economic advantage, education and income. The top ten largest unpaid work locations include Werribee, Mildura, and Craigieburn-Mickleham.

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The drivers of this Melbourne and Victorian bias are not known but may be due to lack of availability of paid childcare options, cultural attitudes or favourable leave conditions.

Point Cook, Australia's largest unpaid economy, has had rapid population growth in recent years as a 'masterplanned community'. Similar growth patterns in areas with large recent residential developments can be seen in other top 20 unpaid work locations include Craigieburn-Mickleham, Werribee, Caroline Springs, Forest Lake – Doonlandella. It is not known that if these types of areas are the cause of more unpaid work, whether in substitution for paid work or not, or if they attract households that are more likely to spend time on unpaid work (i.e. are more affordable to young families who would like to substitute paid work for unpaid work).

Policy implications

"If you can not measure it, you can not improve it." - Lord Kelvin

Australia is not currently particularly sophisticated in measuring or monitoring who is doing unpaid work and where. However, quantifying and then discussing these results in important for a number of reasons.

First, to highlight the incredible importance of this work and the pivotal role it plays in society. A role that we believe is not given the same prominence, either in discussion or continual analysis, as paid, formally measured and reported forms of work.

Second, the ongoing discussion around female workforce participation, gender equality and the division of labour within society require a strong evidence base. Strong evidence already exists in some areas. But defining the size of the total economy and articulating the granular nuances of this across Australia provides a unique lens into the locations within our cities.

Third, policy formation and investment decisions rely heavily upon 'seeking to maximise economic returns' and the formal data that is associated with this. For example, transport networks are designed to meet the peak-hour requirements of paid activities. However, the key locations and hence travel needs of the unpaid economy is significantly different. The issue becomes how we ensure that the requirements of the unpaid economy, and the value it generates to society, is given appropriate weight in policy and investment decisions. This may mean less reliance upon the traditional understanding of economic activity and the wealth of data that is associated with paid activities.

This analysis does not claim to solve all of these challenging areas. We simply make the point that it is only by understanding this current state of who, where and why this unpaid work is occurring that we can begin to manipulate it in a way that provides greater choice for all affected and better outcomes for society as a whole. Things we take for granted, such as the size of the economy, are actually quite narrow definitions and have ramifications for the credibility and attention of things existing outside this definition. In an age where access to data is no longer an excuse for ill-informed policy decisions or debate, we hope this work contributes to the evidence base on Australia's unpaid economy.

Methodology

This analysis of the unpaid economy used PwC's Geospatial Economic Modelling (GEM) to examine the value of this work through unique, granular economic modelling of 2,214 locations which make up the Australian economy. More details can be found on the final page.

Specifically, all analysis in this paper is conducted on a market replacement approach. This means that values are assigned to unpaid work according to the price that is would take for the same work to be conducted at labour market rates for that work. This is a conservative estimation as compared to opportunity cost approach, which values unpaid work according to what the person doing it could be earning if they were seeking paid employment for those hours. The difference between the two is essentially if a trained lawyer is taking time away from paid employment to do unpaid childcare, the market replacement approach would value those hours at the cost of a childcare worker, whilst the opportunity cost approach would value them at the costs of a lawyer. In the past the Australian Bureau of Statistics (ABS) has put the costs of the opportunity cost of unpaid work in the economy as up to 59% of GDP in ABS cat no. 5202.0 *Spotlight on National Accounts: Unpaid Work and the Australian Economy, May 2014*.

Specific sources, in addition to the underlying GEM locational analysis, relied upon to conduct this market replacement analysis were: ABS Census 2011; ABS cat. no. 6306.0, *Employee Earnings and Hours, Australia, May 2014;* ABS cat. no. 4441.0, *Voluntary Work, Australia, 2010;* ABS cat. no. 4153.0, *How Australians Use Their Time, 2006*.

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Figure 9: Top 20 locations for unpaid work

Rank	Location	State	Unpaid work value ('000s, 2011 terms)
1	Point Cook	VIC	878,215
2	South Morang	VIC	867,688
3	Craigieburn - Mickleham	VIC	746,555
4	Werribee	VIC	711,916
5	Mildura	VIC	697,130
6	Mount Gambier	SA	672,109
7	Richmond (Vic.)	VIC	671,840
8	Southport	QLD	669,396
9	Perth City	WA	669,102
10	Hornsby - Waitara	NSW	664,613
11	Caroline Springs	VIC	659,740
12	Preston	VIC	658,531
13	Forest Lake - Doolandella	QLD	643,672
14	Auburn	NSW	640,766
15	Kensington - Kingsford	NSW	627,533
16	Croydon	VIC	626,886
17	Maroubra	NSW	625,509
18	Wollongong	NSW	622,729
19	Lidcombe - Regents Park	NSW	622,293
20	Cronulla - Kurnell - Bundeena	NSW	618,429
	Total top 20		13,594,651

Source: ABS; PwC analysis.

Figure 10: Top 20 locations for unpaid work per capita

Rank	Location	State	Unpaid work value per capita (2011 terms)
1	Bonner	ACT	30,403
2	Phillip	ACT	30,314
3	Casey	ACT	30,029
4	Civic	ACT	28,456
5	Turner	ACT	28,452
6	Franklin	ACT	28,397
7	Braddon	ACT	28,307
8	Acton	ACT	27,963
9	Paddington - Milton	QLD	27,934
10	Taringa	QLD	27,893
11	Kelvin Grove - Herston	QLD	27,859
12	Kingston - Barton	ACT	27,855
13	Newstead - Bowen Hills	QLD	27,840
14	Greenway	ACT	27,739
15	Toowong	QLD	27,546
16	Forde	ACT	27,489
17	Watson	ACT	27,458
18	Auchenflower	QLD	27,450
19	Alderley	QLD	27,335
20	Dickson	ACT	27,306

Note: Only locations with 1,000 or more residents included.
Source: ABS; PwC analysis.

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Figure 11: Top 5 locations per state for unpaid work

State	Rank	Top location for total unpaid work	Unpaid work value ('000s, 2011 terms)	Top location for per capita unpaid work	Per capita unpaid work value (2011 terms)
NSW	1	Hornsby - Waitara	664,613	Erskineville - Alexandria	26,428
	2	Auburn	640,766	Newtown – Camperdown – Darlington	25,420
	3	Kensington - Kingsford	627,533	Crows Nest – Waverton	24,154
	4	Maroubra	625,509	St Leonards – Naremburn	23,673
	5	Wollongong	622,729	Pyrmont – Ultimo	23,498
VIC	1	Point Cook	878,215	Point Cook	26,324
	2	South Morang	867,688	Carlton North – Princes Hill	25,592
	3	Craigieburn - Mickleham	746,555	Melbourne	25,492
	4	Werribee	711,916	Southbank	25,449
	5	Mildura	697,130	Brunswick East	25,334
QLD	1	Southport	669,396	Paddington – Milton	27,934
	2	Forest Lake – Doolandella	643,672	Taringa	27,893
	3	Upper Coomera – Willow Vale	595,174	Kelvin Grove – Herston	27,859
	4	Hills District	586,862	Newstead – Bowen Hills	27,840
	5	Dakabin – Kallangur	506,730	Toowong	27,546
SA	1	Mount Gambier	672,109	Nairne	26,403
	2	Plympton	580,176	Edwardstown	25,608
	3	Whyalla	518,696	Adelaide	25,602
	4	Rostrevor – Magill	510,781	Sheidow Park – Trott Park	25,507
	5	Enfield – Blair Athol	510,219	Nailsworth - Broadview	25,505
WA	1	Perth City	669,102	Forrestdale – Harrisdale – Piara Waters	26,715
	2	Ellenbrook	592,563	Bertam – Wellard (West)	25,512
	3	Wanneroo	565,036	Success – Hammond Park	25,500
	4	Thornlie	554,944	Tuart Hill – Joondanna	25,316
	5	Dianella	551,719	Mount Hawthorn - Leederville	25,186
TAS	1	Devonport	325,060	West Hobart	26,060
	2	Sandy Bay	276,913	South Hobart – Fern Tree	25,750
	3	Kingston – Huntingfield	264,280	Mount Nelson – Dynnyrne	25,448
	4	Glenorchy	242,652	Hobart	25,264
	5	Kingston Beach – Blackmans Bay	240,931	Lenah Valley – Mount Stuart	25,120
NT	1	Katherine	208,204	Palmerston – North	24,616
	2	Humpty Doo	187,654	Lyons (NT)	24,552
	3	East Arnhem	173,373	Bakewell	24,507
	4	East Side	127,621	Stuart Park	24,177
	5	Larapinta	117,618	Woolner – Bayview - Weinnellie	24,088
ACT	1	Kambah	389,943	Bonner	30,403
	2	Ngunnawal	246,407	Phillip	30,314
	3	Gordon (ACT)	200,729	Casey	30,029
	4	Wanniassa	194,603	Civic	28,456
	5	Dunlop	189,042	Turner	28,452

Note: Only locations with 1,000 or more residents included.
Source: ABS; PwC analysis.

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About PwC's Geospatial Economic Model

A quick overview on PwCs ground-breaking Geospatial Economic Model (GEM):

- Economic output is calculated for 2,214 locations across Australia. Locations are SA2, as defined by the ABS. Each of these locations contains approximately 10,000 people
- Economic output is calculated using the income method and is consistent and reconcilable with the ABS methodology and ABS produced aggregates
- The economic time series runs from 2000/01 to 2103/14, with projections out to 2030
- Economic output (and projections) can also be broken down into it's components to get a granular view of what is occurring in a location. For example, we can look at the performances of the professional services sector in the CBD, the break this down further to understand what is driving these results: income to employees (COE), income to business (GOSMI) or income to Gov (TS)
- We understand that economic performance is only one dimension that business and government need to understand in order to prosper in our changing economy. That is why we treat the economics as just one 'layer' within the broader GEM. This allows economic performance to be tested and correlated to the other dimensions that matter. These include social and demographic factors (e.g. age, income, education, housing density, etc) access to transport and infrastructure, access to essential services, climatic conditions, customer preference, intention to purchase, crime statistics and more.
- We also realise the importance of incorporating internal business or agency specific data into our analyses. Simply put: your data + our data = unparalleled clarity. In an uncertain and highly competitive environment, this is the type of clarity required to make the right strategic policy and investment decisions.

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