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HOW THE E61 TAX-TRANSFER CALCULATOR WORKS

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Summary

The e61 Tax and Transfer calculator is a tool for calculating taxes paid, transfer (welfare) payments received, and the effective and average effective marginal tax rates for working-aged Australians (aged 22-54) from 2016 to 2024.[a] It translates information on the demographic and labour market characteristics of Australian workers into output on how their take-home pay will change in response to labour market activity (either due to changes in hours of work or their gross wage rate). In this sense, it is a work disincentive calculator.

This document serves as a technical guide to the construction of the e61 tax and transfer calculator. It explains our understanding of the Australian tax and transfer system, how the calculator is coded to reflect these understandings, and provides evidence of how the calculator performs against other publicly available data.

a We would like to thank staff at the Grattan Institute, DSS, DEWR, Australian Treasury, tax and transfer experts, and internal e61 staff for their help in developing the calculator. Any errors or oversights are our own.

This document serves as a comprehensive guide to the e61 Tax and Transfer Calculator (TTC), outlining our interpretation of the Australian tax-transfer system and detailing how the calculator has been implemented to reflect these rules accurately. The document also explains how the calculator operates technically and provides evidence of its reliability by benchmarking results against other publicly available tax-transfer models.

- Section 1 introduces the purpose of the TTC and outlines the policies currently included.
- Section 2 provides a detailed overview of our interpretation of the Australian tax and transfer system, along with how these interpretations are implemented in the calculator.
- Section 3 explains how the calculator was coded using R and R Shiny.
- Section 4 demonstrates how the TTC's results align with other publicly available tax-transfer models, ensuring reliability and accuracy.

The TTC is continuously maintained and updated by e61, incorporating changes in tax-transfer policies as well as improvements based on user feedback. Users are encouraged to report inaccuracies, ask questions, or provide suggestions to enhance the calculator's functionality and accuracy.[1]

1. Background and Overview

Currently the TTC exists in two forms:

- An R Shiny tool that translates information provided from the user of the calculator on their demographic characteristics and labour market earnings potential, into output on take home pay. In this sense, the TTC serves as a function which takes inputs from the user, and translates these into outputs.
- A back-end tool that e61 has merged with household level data - the Survey of Income and Housing (SIH). Hereafter, this tool will will be referred to as the TTC-SIH. The TTC-SIH allows us to simulate changes to households, or to the Australian tax-transfer system, and observe how this would affect incomes, workforce incentives, poverty, or other variables of interest.

The intention of the calculator is to:

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- Inform the public debate surrounding the labour supply effects of Australia's tax and transfer system.
- Enhance understanding of the relative importance of the components of Australia's tax and transfer system to various demographic groups and cohorts.
- Provide insight of where applied microdata work will be valuable including how government payments and taxes vary over the lifecycle and labour supply effects of high EMTRs (through analysis such as "bunching" (Nolan, 2023)). Additionally, we can microsimulate changes to tax and transfer policies.

1.1 Scope

Given the calculator's focus on work incentives, only policies which we believe are a major determinant of labour market participation are currently coded. Presently, the calculator includes the following policies:

Taxes:

- Income tax (including Tax Offsets such as LITO and LMITO),
- HELP repayments,
- The Medicare Levy.

Transfers:

- Jobseeker Payment ('Newstart' until 2020),
- Parenting Payment,
- Family Tax Benefit A and Family Tax Benefit B,
- Commonwealth Rent Assistance (CRA),
- Supplementary Payments such as the Energy Supplement, and the Pharmaceutical Allowance.

The calculator presently does not include programs which are not utilised by prime working-aged Australians with full work capacity, including:

- The Aged Pension or historic Mature Age Allowance,
- The Disability Support Payment,
- Youth Allowance and AUSTUDY.

The calculator does not currently include payments for young Australians, such as Youth Allowance and AUSTUDY, making it unsuitable for accurately estimating income schedules for those under 22, as they may be eligible for these payments. Similarly, individuals can begin tapering onto the aged pension from 55—such as receiving a higher rate of JobSeeker—so the calculator is not accurate for this group either.

We also exclude the Disability Support Pension, as it applies to individuals with varying work capacities and should be considered separately from workforce incentives. As such, the calculator should only be applied to Australians aged 22-54 who have full work capacity.

Additionally, the calculator does not account for relatively rare payments, including the Double Orphan Payment, Stillborn Baby Payment, or Bereavement Payment, nor does it include certain supplementary payments like the Telephone Allowance, Utilities Allowance, or Remote Area Allowance.

Furthermore, 'in-kind' transfers such as childcare subsidies—and the broader cost of childcare—are excluded. Users interpreting workforce participation incentives for parents should recognise this as a significant missing component.[2] Formalising these costs into the calculator on a comprehensive basis remains in scope for future work.

e61 welcomes feedback on which of the above excluded payments would be the most useful or meaningful to integrate into future updates of the calculator.

2 Although technically these are not part of the transfer system.

1.2 Model Assumptions

Due to the complexity of the Australian tax and transfer system, and the current scope of the model, we make several simplifying assumptions that users should be aware of:

- No assets or wealth tests are applied for government payments in the shiny version of the calculator. In the TTC-SIH we apply these tests based upon the observable characteristics of the individual.
- No deductions are applied against income tax. We also do not model concessionary taxes on non-labour income, for instance the discount applied to capital gains before taxation.[3]
- Emergency or other supplementary assistance is unmodeled due to its ad hoc nature.
- No state-level taxes or transfer payments are included.
- The individual is assumed to be the main carer for dependents[4]: Part of the eligibility test for Parenting Payment, the individual needs to be the main carer to be eligible for the payment. In the TTC-SIH we infer the main carer based upon which parent has lesser labour market engagement.
- 100% take-up assumption. Individuals are automatically eligible and enrolled to receive the maximum amount of government payments. For those earning no or little private income, this means they receive either JobSeeker or Parenting Payment. In practice, there are other eligibility criteria, including residency requirements, mutual obligations, etc. that may prevent the person from accessing the payment. Unemployment spells are also assumed to be measured at one year duration to avoid the implications of the Liquid Assets Waiting Period (Services Australia, 2025b).
- Individuals select their payments that maximise their income. In practice, this means we assume that single individuals with dependent children always receive the Parenting Payment over Jobseeker.

The Australian transfer system operates at the quarter-level, as several Australian Government transfers are indexed to inflation quarterly and others are regularly adjusted on a bi-annual basis. However, for ease of comparison between years, we have coded transfer payments for Q3 (the start of the financial year) from 2016 to 2025, as most major policy reforms come into effect at the start of the financial year. This implies that annualised output will slightly understate total transfers received, as some of these will increase with CPI each quarter over the year.

The period loaded into the Shiny currently is Q3-2025.

1.3 User interactivity

The R Shiny tool requires demographic information from the user to model how their taxes and payments would change in response to the labour market behaviour. These include:

- **Partnered Status (and Partner Earnings)**: This is used to determine eligibility and tapering of taxable benefits (e.g. the JSP and the Parenting Payment) and Family Tax Benefit. Partnered Status is also used to determine the household structure of the individual, which affects the Commonwealth Rent Assistance they are eligible for.
- **Number of Dependents, and Age of Dependents**: This variable is used to determine eligibility of the person to receive Parenting Payment or Family Tax Benefit. The number of children affects the rate of FTB Part A received, and the age of the youngest child affects the amount of FTB Part B received. The number of dependents also affects household structure which affects Commonwealth Rent Assistance payments.
- **Home Ownership (and Rent Paid)**: This is used to determine CRA eligibility, and rent is used to determine the amount received.

The Shiny offers two methods for estimating how labour market outcomes vary in response to changes in labour market engagement:

- **Hours worked basis**: The user provides their hourly wage and the maximum number of hours they would consider working in a week. The calculator estimates private earnings by multiplying the hourly wage by the number of hours worked across the work schedule (from 0 hours to the maximum hours), for 52 weeks in a year.

3 This reflects that the calculator is largely interested in labour market engagement, rather than other forms of income.
4 Throughout this document, for simplicity we refer to the 'main' carer, when in reality this assumption can be more accurately articulated as the child being under the parent's care for more than 65% of the time.

- **Private income basis**: The user inputs the maximum annual gross private earnings they could earn (in thousands of dollars) annually. The calculator estimates net private earnings for each $1,000 increment of gross private earnings between $0 (no labour market engagement) and their maximum annual gross private earnings.[5]

For both of the above approaches, the calculator estimates how the person's earnings would vary based upon the extent of their labour market engagement. The R Shiny presents these using two charts. In both these charts the measurement of labour market engagement (hours or $000s of dollars) is presented on the x-axis:

- **An Earnings Schedule:** This chart displays the user's net private earnings, taxes paid, and transfers received on the y-axis, against their margin of labour market engagement on the x-axis (hours worked or gross private income). It shows how the user's net (take-home) income changes with labour market engagement and identifies the sources of these changes.
- an **Effective Marginal Tax Rate (EMTR) and Average Effective Tax Rate Chart (ATR, or PTR):**[6] This chart plots the EMTR and the average effective tax rate on the y-axis, along with their components.

The Effective Marginal Tax Rate (EMTR) reflects income loss from taxation and benefit withdrawal when earning more. High EMTRs reduce the financial benefit of additional earnings and can discourage work. For example, consider a person that is earning $25/hour, and works an additional hour, but loses $5 in taxes and $7.50 in benefits, keeping $12.50. Their EMTR will be 50% (or .5).

Formally, an EMTR can be defined as:

$$\text{EMTR} = 1 - \frac{\Delta\text{Disposable Income}}{\Delta\text{Gross Earnings}}$$

The Effective Average Tax Rate (EATR), or Participation Tax Rate (PTR), measures the effective tax burden on an individual's decision to participate in the workforce. It reflects the combined impact of taxes and withdrawal of income-tested benefits when an individual moves from not working to earning income. It is calculated as the proportion of additional earnings that is lost due to higher taxes and reduced benefits that occurs from moving from working 0 hours to working that number of hours. It is expressed as:

$$\text{PTR} = 1 - \frac{\Delta\text{Disposable Income}}{\Delta\text{Gross Earnings}}$$

A version of the calculator that allows individuals to also change policies (tax and benefits) is available on request.

2. Summary of the Tax-Transfer System

This section outlines our current understanding of the Australian tax and transfer system, and how various policies are treated in our calculator.

2.1 Taxes

2.1.1 Income Taxes

Income taxes are applied to an individual's "gross earnings," which includes both their private (work) income and their receipt of "taxable benefits." Taxable benefits in the model include JobSeeker and the Parenting Payment.

There is a tax-free threshold in Australia (presently $18,200), below which the individual pays no income taxes. For marginal dollars earned above this threshold, they pay a given tax rate. The top threshold is currently $190,000 per year, with a 45% tax rate (Australian Taxation Office, 2025g). These tax thresholds changed at the start of the 2024 Financial Year with the introduction of the stage three tax cuts.

We currently assume that the individual makes no deductions against their income tax paid (e.g. work related expenses, or donations). Generally, any such deduction could be seen as an equivalent reduction in the gross private income reported

5 The size of the increment used to measure changes in labor market earnings influences the estimated Effective Marginal Tax Rates (EMTRs). For example, setting the increment to $1 would result in significantly higher EMTRs at notches, making much of the calculator's output challenging to interpret. For this reason, we consider increments of 1 hour or $1,000 when changing intensive labour market engagement.

6 Users will note that HECS-HELP repayments appear in both of these variables. We recognise this is not technically accurate in the true sense of what these terms represent (see below for a greater discussion). Users can simply remove these by not selecting the HELP Debt box on the R Shiny.

(i.e. the standard deduction). However, if these deductions increase with hours of work/earnings as they represent variable work-related expenses then effective marginal tax rates would be overstated. If users wish to account for this, they can conceptualise private income in the calculator as net of deductions.

We also include four adjustments to income taxes in the calculator: the Beneficary Tax Offset (BTO), the Low and Middle-Income Tax Offset (LMITO), the Low-Income Tax Offset (LITO), and the Budget Repair Levy (BRL). These policies have been applicable at different points on our time horizon, so are not applied in all years. The four adjustments we include are defined as such:

- **BTO**: Individuals receiving government payments can offset their tax paid through the BTO. At its most extreme, an individual only receiving government payments (no labour income) pays no tax throughout the year (Australian Taxation Office, 2025a).
- **LITO**: Low-income individuals can receive up to a $700 tax offset. This is abated at a rate of 5 cents per dollar earned between $37,500 and $45,000, and 1.5 cents per dollar earned between $45,000 and $66,667. LITO is still active in the most recent financial year (Australian Taxation Office, 2025d).
- **LMITO**: allows the individual to offset a base amount of $225 ($675 in FY 2021) in income tax. The individual's credit increased by 7.5 cents per dollar earned between the first and second thresholds ($37,000 and $48,000) until it maxed out at the second threshold. It remained constant until it began to be abated at the third threshold ($90,000) at a rate of 3 cents per dollar earned. LMITO ran from the 2018-19 to the 2021-22 financial years, so it is turned on for those years but is not active in the most recent financial year (Australian Taxation Office, 2025c).
- **BRL:** The Budget Repair Levy is a an additional tax of 2c per dollar earned over $180,000 for the 2014 to 2016 financial years (Australian Taxation Office, 2025b).

We also include the Seniors and Pensioners Tax Offset (SAPTO), but this only applies for recipients of Parenting Payment Single. These recipients are not eligible for the BTO.

2.1.2 Medicare Levy

The Medicare levy is generally 2% of taxable income, when a person is eligible to pay it. The Medicare levy has two thresholds: the "Low-income threshold" and the "Phase-in limit". Below the Lower income threshold, the individual pays no Medicare levy. Between the Low-Income threshold and the Phase-in Limit, the individual pays 10 cents per dollar earned. Above the Phase-in limit, the Medicare levy functions as a 2% flat tax on the individual's earnings (Australian Taxation Office, 2025e; OECD, 2024).

We also assume the individual has sufficient private health coverage to avoid paying a Medicare Surcharge.

2.1.3 HECS-HELP repayments

The tax calculator allows the individual to include repayments on HECS[7] debt.[8]

Prior to 2025, HECS had a 'lumpy' repayment schedule. Once the individual crosses a threshold of taxable earnings, they begin to pay back their HECs based upon *all* their taxable income (Australian Taxation Office, 2025f). For instance, in 2023 the lowest HECS threshold was $48,631 per year. Above this the individual pays 1% of their taxable income towards their HECS debt. So, an individual earning $48,630 a year pays $0 in HECS, while an individual earning $1 more pays $486.31 in HECS.

The Government has recently legislated a marginal Repayment Schedule, beginning at $67,000. We currently allow users to swap between the two systems in the R Shiny.

7 We refer to 'HECS' debt here and in the calculator, but in theory the debt could be from any of the Australian Governments student loan programs: for instance FEE-HELP (for Higher Education Students without a Commonwealth Supported place) or VET Student Loans (VSL).
8 HECS repayments are not explicitly a tax, as it is a loan repayment with no real interest. Therefore, in theory it should have little effect on workforce participation for individuals who expect to pay off their debt in the future (other than through discounting or intertemporal smoothing). However, there is some evidence of labour supply responses to the HECS repayment thresholds, potentially from people who do not expect to pay off their loan or who are liquidity constrained (de Silva, 2023). We choose to include HECS in the calculator as it does represent a change in take-home income for a financial year due to increased workforce participation.

The calculator requires the total amount of HECS debt for the person. If total repayments for the individual reaches their total HECS debt, the calculator realises that all the debt has been paid off, and then stops calculating further HECS payments for earning additional income.

2.2 Taxable Benefits

The two taxable transfer payments the calculator estimates are the Jobseeker payment and the Parenting Payment.[9] As the Parenting Payment is more generous than the Jobseeker payment, we assume that if the individual is eligible for both payments, they choose to receive the parenting payment.[10] It is unclear the degree to which this occurs in practice and is a question for future work.

To be eligible for the parenting payment, the individual must have a child under the age of six, or be single and have a child under the age of 14.[11] This eligibility criteria broadly means that individuals with young dependents will likely be on Parenting Payment, while those without will be on Jobseeker.

The calculator assumes that if the above conditions are met, the individual receives the Parenting Payment for low levels of income. The contrapositive of this is that if they do not meet the above criteria the calculator assumes the individual will receive JobSeeker.

2.2.1 JobSeeker

The rate of JobSeeker varies depending on whether the individual is single, coupled, or single with dependents. Jobseeker is abated with fortnightly gross private income. Below $150 a fortnight it is not abated. Between $150 and $256, the individual loses 50c for each dollar earned. Above $256, they lose 60c for each dollar earned (Services Australia, 2025a).

Additionally, Jobseeker is abated with partner income. The partner income test and thresholds are the same for both Parenting Payment and Jobseeker, so the model calculates them with adjacent code. For every dollar the partner earns over the "partner income threshold" the individual loses 60c of their JSP. Most recently, this threshold was $1345 a fortnight (Services Australia, 2025a).

We treat the income and partner income tests as additive. That is, we calculate Jobseeker withdrawn due to the income test, and then Jobseeker withdrawn due to partner income test, and subtract both from the estimated payment.[12]

JobSeeker also has several other eligibility criteria, namely the assets test and the liquid assets waiting period (Services Australia, 2025b). Neither of these are coded in the R Shiny version of the tax calculator for simplicity. The Assets Test is coded in the SIH-TTC, using variables on liquid assets, home ownership, and illiquid assets. We bypass assumptions regarding the Liquid Assets Waiting Period by assuming that unemployment spells are for at least a year.

Jobseeker includes several additional components. JSP recipients can receive an additional $20.80 per fortnight by participating in an approved work program for at least 1 day per fortnight (Department of Social Services, 2025; Services Australia, 2025a). This program is named "Work for the Dole". It is unclear how common participation in this program is for JSP recipients. We assume that the individual is not participating in this program by default.

It is also possible to receive a higher rate of JSP payment in some specific circumstances, which the calculator currently does not consider. The first is where the individual is a "principal carer of a dependent child granted an exemption from mutual obligation requirements". The second, is where the individual is over the age of 55 and on JSP for over 9 continuous months (a transition to the age payment) (Services Australia, 2025b). These may be added to future additions of the calculator.

2.2.2 Parenting Payment

The Parenting Payment is for single parents, or coupled parents with young children, with low labour market earnings. The Income Test is more complex than the JSP income test, as it depends on the number of dependents the individual has, and whether the individual is singled or partnered.

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9 These payments are taxable in that they contribute to taxable income, on which income taxation is calculated.
10 This is true for singles. For couples the two payments are equivalent, so the choice of payment a person recieves is irrelevant.
11 Note this was increased from the age of 8 in September 2014. The calculator does not extend this far back, but is currently coded to be able to handle this policy change.
12 If both tests add up greater than 100% the payment is set to 0 (i.e. it cannot be negative).

For singles, the income free area is $214.6 a fortnight, and is increased by $24.6 for each additional child the household has (so two children, the income free area is $329.2). For each dollar above the income free area the household earns, they lose 40c of parenting payment (Department of Social Services, 2025).

For partnered individuals, the income test is identical to Jobseeker, with 50c lost for each dollar earned between $150 and $256, and 60c lost for each dollar above $256. Therefore, we can calculate abatement rates for JSP coupled and PP Coupled Families identically.[13]

2.3 Supplementary Payments

Supplementary Payments refer to income support payments that are paid in addition to the individual's main payment. They are considered supplementary in the sense where the individual can only receive them in addition to their main payment – if they lose their main payment, they lose the supplement. We treat these payments separately in the calculator (that is, we do not "roll them in" to the amount of the main payment received).[14] These payments are not taxable, meaning that they are not included in taxable income when calculating income tax, HECS, or the Medicare payment.[15]

2.3.1 Rent Assistance

Commonwealth Rent Assistance (CRA) is an income support payment to renters receiving a main payment. It is an untied payment, meaning the household has no obligation to spend it on their rent (Department of Social Services, 2025). CRA functions in theory as a copayment, providing payment equal to 75c for each dollar spent on rent between the minimum and maximum rent thresholds. Minimum and maximum rent thresholds vary depending on their household structure (e.g. maximum thresholds are higher for households with dependent children). As rent thresholds have only been indexed to CPI over the past 20 years and rent has increased at a faster rate than CPI, many households have moved from the copayment part of the curve to the maximum rate. For more than 70% of households, CRA is effectively a lump-sum transfer (Productivity Commission, 2025). This means that most households effectively recieve:

$$\text{CRA} = 0.75(\textit{MaximumRentThreshold} - \textit{MinimumRentThreshold})$$

CRA can either be tied to the taxable benefit the person receives, or FTB A. Since FTB A is removed later in the earnings schedule relative to their main income support payment, in practice CRA will be tied to FTB A for people who receive both a taxable benefit and FTB A.

Whether CRA abates with household incomes is unclear in the existing legislation and documentation. It is our current understanding that it does (and does so sequentially after the taxable benefit has abated).

For those who recieve CRA with their taxable benefit, our understanding is that taxable benefits abate first, followed by CRA, followed by other supplementary payments (Department of Social Services (Australia), 2025). The tax calculator is currently coded as such. If CRA is received with FTB A, CRA will be removed when the person begins receiving below the base rate.

2.3.2 Energy Supplement

The Energy Supplement is a small supplementary payment on top of a person's main taxable benefit. Since 2016, the Energy Supplement is no longer paid to FTB recipients, but could still be theoretically received by continuous recipients since then, as the payment was grandfathered (Services Australia, 2025c). The calculator assumes that the person is ineligible for this through FTB.

2.3.3 Pharmaceutical Benefit

Pharmaceutical Allowance is a supplementary payment to assist with the cost of pharmaceutical prescriptions. It is $6.80 a fortnight for singles, and half this for couples. In our current version of the calculator, it is only eligible for Parenting Payment Single recipients.

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13 JSP Coupled and PP Coupled are identical payments, but are coded differently in the model. This is because in an unreleased version of the calculator we allow the user to alter the payment schedule for both of these (so that they can diverge), and also for the possibility that the Government may seperate the policy settings for both of these in the future.

14 In the current version of the calculator, "main payments" are JSP, PP, and FTB A. Some other calculators and models may "roll in" these supplementary payments into the main payment. Meaning that they present the individual as receiving a higher rate of their base payment, but no supplementary payment. For instance, the OECD TaxBEN model includes the Energy Supplement in the Main Payment.

15 It is our understanding that supplementary benefits and FTB are not even recorded on an individual's tax return.

2.3.4 Other

Other supplements include the Telephone Allowance, the Remote Area Allowance, and the Pension Supplement. The current version of the calculator does not include these, as they are small, and would introduce more complexity. We are open to feedback about the significance of including these in subsequent updates.

2.4 Family Tax Benefit

Family Tax Benefit (FTB) is the centrepiece of the Australian transfer system. It targets individuals with dependent children, and usually represents the largest slice of income for low-income families (those earning below $30,000 in private income).

FTB consists of two components, Part A and Part B. Part A aims to "assist low- and middle-income families with the direct costs of raising dependent children", while Part B is targeted toward younger children and single parent households (Department of Social Services, 2025).

2.4.1 FTB Part A

FTB A is paid on a "per child" basis, meaning that the amount received increases for each dependent child. FTB is attached to the child, rather than to the parent. As our calculator is person, rather than household, based we assume the person the calculator is being run on at a given point in time is the one receiving FTB in a couple. This has little practical implication for the results, as household income stays the same.[16]

To be eligible for FTB A, the family must have a "Family Tax Benefit Child", which is a child under 15, or a child aged 16-19 in full-time secondary study. Additionally, they must be in the care of the individual at least 35% of the time (Department of Social Services, 2025).[17] For simplicity, within the calculator we assume that all children reported under the age of 20 are FTB Children.[18]

The household receives an amount per fortnight for each child under the age 12, and a slightly higher amount for each child aged 13-19. There is also a "base rate" for all children.

The Income test is based upon "adjusted taxable income" (ATI). This includes taxable income, foreign income, net investment losses, fringe benefits, and reportable superannuation contributions (personal contributions on top of the employer mandated superannuation contributions) (Australia, 2025). We do not account for the depth of all these categories in the calculator.

FTB has two income tests – the "maximum rate" and the "base rate":

- The Maximum rate income test, which has an initial threshold, below which income has no effect on FTB A. Each dollar between the initial threshold and the second threshold reduces the rate of payment by 20 cents, and each dollar above the second threshold reduces the rate of payment by 30 cents.
- The Base Rate income test, which takes the second threshold of $115,997 and reduces the "Base Rate" for each child by 30 cents for each dollar earned.

The individual receives the higher of these two rates. The tax calculator therefore makes a calculation for both the base and maximum rate of FTB A and chooses the higher of these two. The calculator also makes note of whether the maximum rate or the base rate was chosen, which is important for determining the calculation of Rent Assistance. (To receive Rent Assistance, the individual must be receiving more than the base rate of FTB A.)

If either partner in a couple is receiving a taxable benefit, then they are exempt from the FTB income test.[19]

FTB A also includes an "annual payment" per child. To recieve this, a FTB recipient must submit their tax returns to Services Australia at the end of the financial year, so that Services Australia can revise their FTB payments based upon their actual, rather than reported income, for the year.[20] This is a non-trivial amount, as it effectively translates to additional 3 weeks

16 For instance, Household Income = Person Income + Partner Income + FTB = (Person Income + FTB) + Partner Income. The key assumption is that we make partner FTB = 0. For instance, if a user ran the calculator for themselves, and then for their partner separately, FTB would be double counted.
17 If the custody of the child is split, for instance, FTB can be split proportionately. We do not consider this in the calculator.
18 Given that a 19-year old in secondary school is likely rare, this is a conservative assumption we may update in future iterations of the calculator.
19 In practice this is relatively rare as the partner income test or the income test for the taxable benefit often fully abates the payment before FTB would begin to abate.
20 It is our understanding that this was introduced to ensure that a household overpaid for FTB over the year is less likely to go into debt.

of FTB A for the individual. This FTB A supplement has a separate income test, with a hard cutoff of $80,000 of ATI for the year. This introduces a notch at $80,000 per year, where moving from $80,000 to $80,001 results in the individual losing this supplement.

2.4.2 FTB Part B

FTB part B is paid based upon the age of the youngest dependent child and is targeted to single parent households and parents with young children. To be eligible, an individual must either have a child under the age of 13 or be a single parent of a child aged 13-18. All the "FTB Child" requirements from Part A also apply. FTB B is a flat fortnightly payment the youngest child is under the age of 5 or is a lower payment is the child is under the age of 18. There are two income tests for FTB B, depending on whether the individual is partnered:

- If the individual is single, the income test for FTB B is a cliff face at at the maximum threshold. Above this, they lose all of their FTB B.
- If the individual is partnered, the higher earner must not earn more than maximum threshold if they do, again it is a cliff face. It the individual is the lower earner, they can receive FTB B in full earning up to a low yearly threshold. Above this, they lose 20 cents for every dollar of income earned (Department of Social Services, 2025).

FTB B also has a lump sum annual payment received in full for all FTB B recipients.

3. Coding

The e61 tax calculator is coded using R and presented using R Shiny. It consists of:

- Scripts which are responsible for taking input (person characteristics), and applying the rules of the tax and transfer system to the person.
- Policy files, which are quarterly. These contain variables and values corresponding to the value that each policy parameter held in each quarter.
- The Shiny, which takes the output produced from the Scripts and presents the data to the user.

The Scripts on the back-end of the calculator operate as a series of nested functions which calculates the relevant component of the tax system at a given point in time. The sequencing of calculations is important to ensure an accurate reflection of the system.

1. The calculator first calculates the person's private (labour) income.
2. Based upon this private income, the calculator assesses whether the individual is eligible for a taxable benefit, and abates this taxable benefit based upon private income. If the person will not receive FTB A, the calculator estimates supplementary benefits at this point, and whether these should be abated.
3. The calculator calculates income tax, the medicare levy, any HECS repayments.
4. The calculator estimates both FTB A and FTB B based upon Adjusted Taxable Income. If the person is eligible for supplementary benefits and recieves FTB, these are also calculated here.
5. The above are summed to calculate net income.

3.1 Formulas

Below demonstrates the formulas we use on the back-end of the calculator. Text in italics demonstrates behaviour that is only undertaken for the SIH-TTC.

3.1.1 Private Income

First, we obtain information on labour market income exogenously from the user. This is either their maximum labour market income, or their hours worked. For maximum labour market income, we increase income from 0 to their maximum income in increments of 1000. When obtaining their hourly wage, we then estimate annual income as:

$$\text{Labour Income} = \overline{\text{Hourly Wage}} \times \text{Hours Worked} \times 52$$

Where we vary hourly market engagement via hours worked.

In the SIH-TTC we directly obtain the person's reported hourly wage. Under baseline simulation, we keep their reported hours worked constant, but can vary this to simulate different levels of labour market engagement. We also obtain information on non-labour income from the person, and add this to their labour market income.

3.1.2 Taxable Benefit

We then estimate their taxable benefit. We estimate this by first taking their maximum amount of taxable benefit they are eligible for:

$$\text{Max Taxable Benefit} = f(\text{Labour Income}, \overline{\text{Demographics}})$$

Where demographics determine if they are eligible for either the Parenting Payment or the JSP, and whether they are a single earner or coupled earner.

We then estimate the person's eligibility for supplementary benefits (Rent Assistance, the Energy Supplement, and The Pharmaceutical Allowance).

For Rent Assistance tied to the taxable benefit, we calculate three eligibility criteria: a) if they are a renter, b) if their rent is above the minimum threshold for CRA, and c) they have no FTB eligible children. If either a) and b) are failed, the person recieves no rent assistance. If c) is failed then we estimate CRA later on when we estimate FTB A, as CRA will be tied to FTB, not their taxable benefit. If all three are passed, we estimate CRA based upon the following criteria:

$$\text{Max CRA} = \begin{cases} 0.75 \times (\text{Rent} - \text{Min Threshold}_j), & \text{if Rent} < \text{Max Threshold}_j \\ 0.75 \times (\text{Max Threshold}_j - \text{Min Threshold}_j), & \text{otherwise} \end{cases}$$

Where (j) is a person's household structure, which determines the maximum amount of CRA.

We then assign the person the maximum amount of the Energy Supplement to the person, and the Pharmaceutical Allowance to PP Single Recipients, based upon their family structure (j).

We then abate their taxable benefit, and any supplementary benefits based upon their private income, and their partner income, according to the relevant personal income and partner income tests. We first estimate the theoretical amount of abatement:

$$\text{Abatement} = \text{Abatement}(\text{Labour Income}, \overline{\text{Partner Income}})$$

We then calculate the net amount of taxable and supplementary benefits a person receives using a residual/overflow method. First, we abate the taxable benefit, noting a person cannot recieve a negative taxable benefit:

$$\text{Taxable Benefit} = \max(\text{Max Taxable Benefit} - \text{Abatement},\ 0)$$

We then calculate the 'residual' - the amount of the abatement that is remaining as:

$$\text{Residual}_1 = \mathit{max}(\text{Abatement} - \text{Taxable Benefit} - \mathit{Max}(\text{Taxable Benefit - Abatement}, 0), 0)$$

This residual represents how much abatement is remanining for the supplementary benefits. For example, consider a scenario where the Taxable Benefit is \$320, but \$340 needs to be abated based upon partner and personal income. The Residual will be:

$$\text{Residual}(1) = 340 - (320 - \max(320 - 340, 0))$$

$$= 340 - (320 - 0)$$

$$= 20$$

This Residual is then applied to the first supplementary benefit (CRA), where a new residual is calculated and applied to the second, through to the 'nth', such that:

$$\text{Residual}_n = \text{Residual}_{n-1} - \left(\text{Supplementary Benefit}_n - \max(\text{Supplementary Benefit}_n - \text{Residual}_{n-1}, 0)\right)$$

Where we work through Supplementary Benefits 1, ..., n, until all Supplementary benefits are fully abated, or no residual is remaining (Residual = 0).

In the SIH, we create an Asset test flag based upon the person's reported liquid and illiquid assets. If the person fails the asset test, we automatically set the Taxable Benefit (and accordingly any supplementary benefits) to 0.

3.1.3 Income Taxation, Medicare Levy, and HECS

We estimate Taxable Income as:

$$\text{Taxable Income} = \text{Labour Income} + \text{Taxable Benefit}$$

We then apply a tax function based upon the Australian Income Tax Schedule as:

$$\text{Maximum Tax} = \text{TaxFunction}(\text{Taxable Income})$$

We then estimate any relevant tax offsets (LITO, LMITO, BTO, SAPTO), based upon whether they are active in our year of interest, and whether the person is eligible based upon their level of taxable income. For the BTO the offset is a function of their Taxable Benefit estimated above.[21] We also calculate the Budget Repair Levy if it is active.

The person's total tax paid is then therefore:

$$\text{Income Tax} = \max(\text{Maximum Tax} - \text{Tax Offsets} + \text{BRL},\ 0)$$

We then calculate the Medicare Levy seperately, which is either 2% of taxable income, or reduced based upon the person's taxable income and household structure:

$$\text{Medicare Levy} = f(\text{Taxable Income}, \overline{\text{Household Structure}})$$

HECS is applied based upon whether the user has reported any HECS debt. The HECS repayment is estimated by the HECS repayment schedule, where the person cannot pay back more than their total HECS debt to the government. As such:

$$\text{HECS Repayment} = \min(f(\overline{\text{HECS Debt}}, \text{Taxable Income}),\ \overline{\text{HECS Debt}})$$

3.1.4 FTB

We then estimate Family Tax Benefit (FTB) based upon a family's Adjusted Taxable Income (ATI). Within our model this is:

$$\text{ATI} = \text{Taxable Income} + \overline{\text{Partner Income}}$$

If a person does not have children, they do not recieve FTB.

The Maximum rate of FTB A is:

21 With the exception of PP Single.

$$\text{Max FTB A} = \text{FTB A Young Child Rate} \times \text{Number of Young Children} + \text{FTB A Older Child Rate} \times \text{Number of Older Children}$$

We also estimate if the household is eligible for Rent Assistance here if they are a renter, and if their rent is above the minimum threshold relevant to their demographics. See the Taxable Benefit Section for the function.

We calculate two abatement methods, based upon the household's ATI. The two methods are the Maximum rate income test, and the Base rate income test. We take the lesser of these two total abatement amounts such that the person recieves the greater amount of FTB overall:

$$\text{FTB Abatement} = \min(\text{Amount Abated under Maximum Rate}, \text{Amount Abated under Base Rate})$$

We then abate the Maximum rate of FTB A accordingly:

$$\text{FTB A Abated} = \max(\text{Max FTB A} - \text{FTB Abatement}, 0)$$

If the Abatement Method is via the "Base Rate", the person is no longer eligible for Rent Assistance or the Energy Supplement, and so these are abated to zero. Otherwise they are paid at their full rate.

FTB A also includes an End of Year Supplementary Component, which we estimate on a fortnightly basis. It is a function of the number of dependent children, and is only available to households above the end of year income threshold:

$$\text{FTB End of Year} = \begin{cases} \text{End of Year Per Child Rate} \times \text{Number of Children}, & \text{if ATI} < \text{Threshold} \\ 0, & \text{otherwise} \end{cases}$$

We combine these:

$$\text{FTB A} = \text{FTB A Abated} + \text{FTB End of Year}$$

We then estimate FTB B, which is a flat rate depending on the age of the youngest child. FTB also has an end of year component, which is a flat amount:

$$\text{Maximum FTB B} = f(\text{Age of Youngest Child}) + \text{FTB B End of Year}$$

FTB B is then abated depending on the the income of the lower income earner in the household. For single income households, FTB B is fully abated if their income exceeds the maximum threshold:

$$\text{FTB B Abatement} = f(\text{Maximum Household Earner}, \text{Minimum Household Earner})$$

$$\text{FTB B} = \max(\text{Maximum FTB B} - \text{FTB B Abatement}, 0)$$

3.1.5 Bringing it all together

We now have all components of income after taxes and transfers. We can then estimate household income as:

$$\text{Net Income} = \text{Taxable Income} - \text{Income Tax} - \text{Medicare Levy} - \text{HECS Repayments} + \text{FTB A} + \text{FTB B} + \text{Supplementary Benefits}$$

Where Supplementary Benefits are:

$$\text{Supplementary Benefits} = \text{CRA} + \text{ES} + \text{PA}$$

All of these variables are exported for the user.

3.1.6 Partner Income Endogenity, and Household Income

As we alter a person's labour market engagement, their changes in earnings can theoretically influence their partners income. In the R Shiny, we treat Partner income as exogenous, as defined by the user, and we assume the partner is not claiming any government benefits.

In reality, this is not true. As we alter our person's labour market engagement (and hence their Taxable Income), this can affect their partner's income - and hence the household income - in the following ways:

1. It can affect their partner's eligibility for taxable benefits. For instance, if our person earns $200,000 per year, their partner is not eligible for any taxable benefits due to the partner income test. However, if our person reduced their labour market engagement to 0, their partner now becomes eligible for a taxable benefit. When our calculator runs on the SIH, we recognise this, and estimate partner's taxable benefits after our person's labour market engagement has been determined.
2. It can affect their partner's medicare levy, as the medicare levy exemption is based upon partner income. We therefore estimate both the person and their partner's medicare levy after the person's labour market engagement hass been determined.
3. It can also affect whether the income test applies

3.1.7 Does it matter where FTB goes?

FTB is a household level payment, rather than an individual payment. In our calculator we always include FTB with the person that is being analysed, not their partner. Therefore, we always assume that the partner's FTB is 0. Mathematically this makes no difference to household income, as:

$$\text{Household Income} = (\text{Person Income} + \text{FTB}) + \text{Partner Income}$$

is equivalent to:

$$\text{Household Income} = \text{Person Income} + (\text{Partner Income} + \text{FTB})$$

or

$$\text{Household Income} = (\text{Person Income} + \frac{1}{2}\text{FTB}) + (\text{Partner Income} + \frac{1}{2}\text{FTB})$$

The key thing with the calculator is to not estimate Person Income, and then Partner income separately with the calculator, and then combine the two estimates together. For instance, if we ran the calculator once on Person a, and then again on their patner (Person b), this would overstate their household income by FTB.

4. Calculator Performance

We have benchmarked the outcomes of the e61 TTC based upon the publicly available OECD TaxBEN calculator, and have found that our calculator produces almost identical results. The below section documents our QA against the OCED TaxBEN model.

4.1 Overview

- The e61 Tax and Transfer Calculator has been quality assured against the publicly available OECD TaxBEN.
- On the Quality Assurance Date: 15/10/2024, the latest version of the OECD TaxBEN was only available for Australia for 2023 data. These data are from Q1 2023 (matching the "Guide to Australian Government Payments" from January 2023). Policy parameters are also recorded OECD documentation from "Description of policy rules for 2023".
- The OECD policy rules document contains (at least) one error. On page 27 of the OECD documentation, they have not updated the Medicare Levy thresholds, meaning they reflect 2022 rather than 2023. We confirmed that the actual TaxBEN model runs on the 2023 thresholds (the documentation is incorrect, not the model).

4.2 Adjustments Required for Comparison

- TaxBEN produces **monthly** output, while the e61 tax calculator produces **annualised** output. To make the e61 TTC comparable to TaxBEN, we convert annualised values to monthly values (by dividing by 12).
- TaxBEN models labour market engagement as a % of an FTE (38 hours per week), and therefore increases in increments of 0.38 hours per week. The e61 TTC model considers increases of 1 hour per week, so for direct comparability, we adjusted our back-end of the calculator to make labour market engagement go up in units of 0.38
- TaxBEN does not allow the user to simply select an hourly wage, rather it is a % of average income. We set the wage to the maximum allowed in TaxBEN, which equates to approximately $50.374 per hour. Even at nine decimal places, there is still some minor rounding errors where labour income does not exactly match OECD's, with a difference of approximately $0.05 (5 cents) per 0.38 hours worked.
- TaxBEN does not disaggregate outputs as granularly as the e61 TTC:
  - It combines FTB A, FTB B, Parenting Payment, and supplementary payments (except CRA) into one "Family Benefits" category, making it difficult to pinpoint specific differences.
  - It assigns JSP instead of Parenting Payment to coupled families with children. This does not impact payment amounts since rates and abatement thresholds are identical for PP coupled and JSP coupled.
  - It combines the Medicare Levy and Income Tax under "Income Tax."
  - It includes the Energy Supplement and Pharmaceutical Allowance within main payments, whereas e61 TTC separates them out.
  - It reports **household** rather than individual incomes, payments, and tax. As e61 TTC operates at the individual level, partner incomes and payments must be differenced out for direct comparison.
  - TaxBEN includes the Telephone Allowance, while e61 TTC currently does not.
  - TaxBEN applies a different methodology for abating CRA and FTB. When FTB is reduced due to supplement removal, CRA is reapportioned accordingly. In practice, this means that the household sometimes sees an **increase** in receiving CRA after earning more income. This is because TaxBEN is assuming that a greater proportion of benefits are now CRA, rather than FTB (even though the total benefits recieved are unchanged). Therefore, when comparing the two models, we evaluate **FTB + CRA** combined, rather than separately.

4.3 Comparison Approach

We compare output for four cameos, each capturing key aspects of the Australian tax and transfer system for working-age households:

- A single person renting without dependents (eligible for JSP, CRA, and income tax).
- A single person renting with two dependents (eligible for PPS, FTB A, FTB B, and CRAs).
- A coupled person renting with dependents, with a partner earning $50,000 (eligible for PP Coupled, FTB A, FTB B, CRA, and will have partner abatement).
- A coupled person renting with dependents, with a partner earning $90,000 (as above, but including higher income thresholds for FTB).

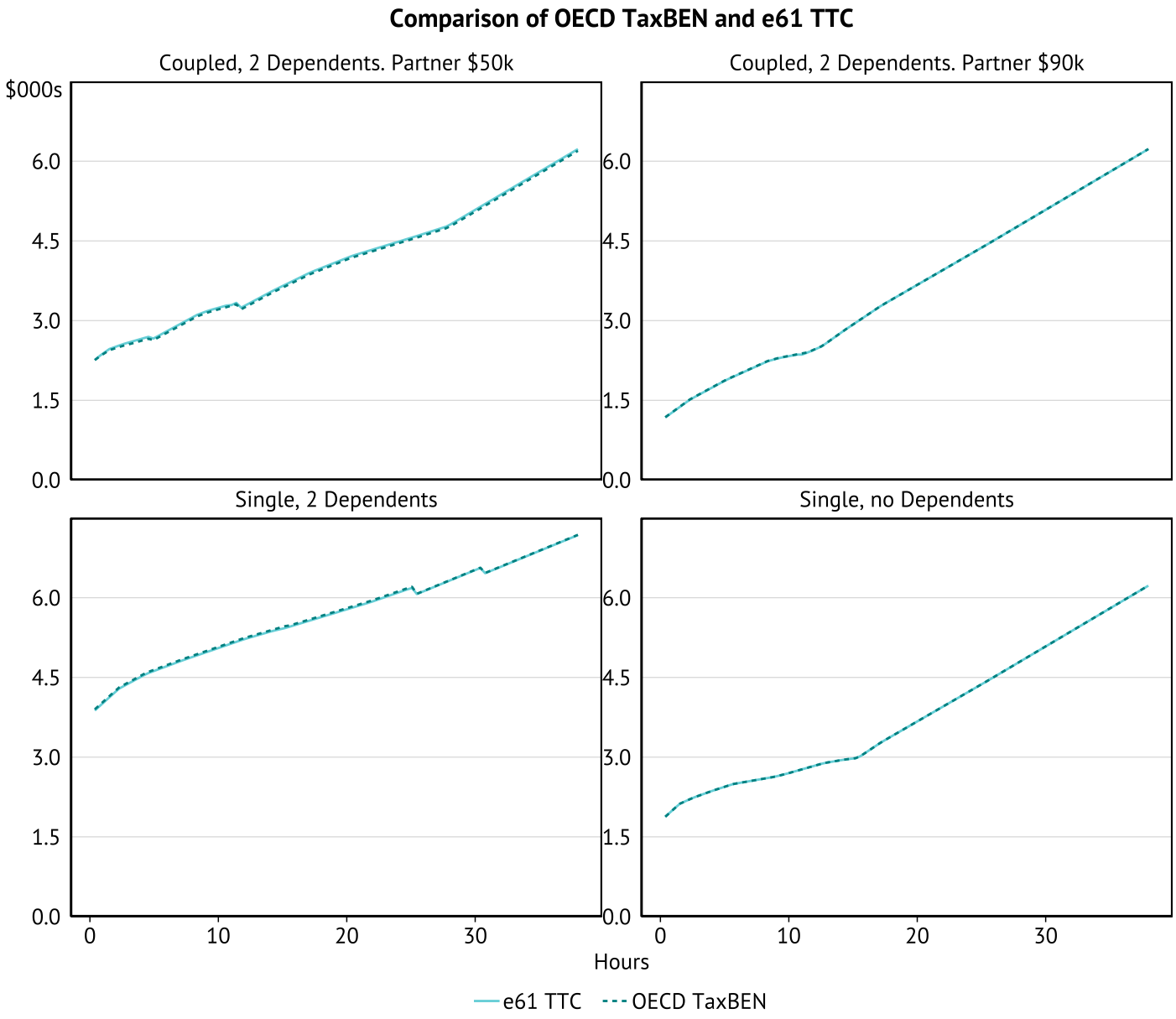
In all cases, individuals consider working up to 38 hours per week, earning $50.37 per hour 1.

4.4 Key Comparison Findings

4.4.1 Single Person, No Dependents, Renting

- e61 TTC closely matches TaxBEN, with differences of approximately $1 per month.
- These differences appear to stem from rounding errors in JSP and CRA rates.

Figure 1: OECD TaxBEN vs. e61 TTC



4.4.2 Single Person, Two Dependents (Aged 4 and 6), Renting

- TaxBEN applies the Seniors and Pensioners Tax Offset (SAPTO) instead of the Beneficiary Tax Offset (BTO) to PPS recipients, increasing the tax burden. There is no clear ATO guidance justifying this difference.
- Temporarily switching e61 TTC from BTO to SAPTO brings tax burdens into alignment.
- TaxBEN finds $20 more per month in Family Benefits, which breaks down as:
  - $11 from the Telephone Allowance (not included in e61 TTC).
  - $6 from a second Energy Supplement (appears to be incorrectly applied in TaxBEN).
  - A residual $4 difference in FTB A, which remains unexplained, but may be due to some other supplementary payment we do not include.

4.4.3 Coupled Person, Partner Earning $50,000, Two Dependents, Renting

- TaxBEN includes partner's income tax, which must be adjusted for comparison.
- Partner's Medicare Levy abates with household income, impacting reported tax burden.
- TaxBEN omits Pharmaceutical Allowance, which must be subtracted from e61 TTC.
- A persistent $4 monthly discrepancy in FTB A remains unexplained.

4.4.4 Coupled Person, Partner Earning $90,000, Two Dependents, Renting

- As before, the models are nearly identical except for the $4 monthly gap in FTB A.

4.5 Conclusion

- The QA confirms that the e61 TTC aligns closely with TaxBEN and accurately captures major inflection points, notches, and abatement rates in the Australian tax-transfer system.
- This does not rule out potential errors from incorrect parameter inputs in future updates.

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