Using Real-Time Reporting to Enhance Statistics and Research

statistics@revenue.ie

24 June 2021

Outline

- 9.45 Online registration opens
- 10.00 Welcome Keith Walsh
- 10.05 Opening remarks Niall Cody, Revenue Chairman
- 10.20 PAYE Modernisation and real-time data for statistics Michelle Haward
- 10.35 Reporting on and analysis of COVID-19 tax supports Lisa Keenan
- 10.50 Using Revenue's real-time data to enhance CSO statistics
  - Earnings and labour costs, Louise Egan
  - Structural earnings outputs, Morgan O'Donnell
  - Monthly employment series, John Mullane
  - Linking of the LFS to the COVID-19 income supports, Jim Dalton
  - Analysing property purchasers, Sean O'Connor
- 11.30 Open forum for Q&A and discussion
- 12.00 Close

Employer tax return filing

Previously:

- An annual return (P35)

- Filing By: February of the following year.

e.g. The 2017 P35 would have a filing deadline of February 2018.

- Processing and late filers cause further time to pass before data can be examined

Effectively, the 2017 employee return data would only be available for analysis in Q2 of 2018.

Revenue
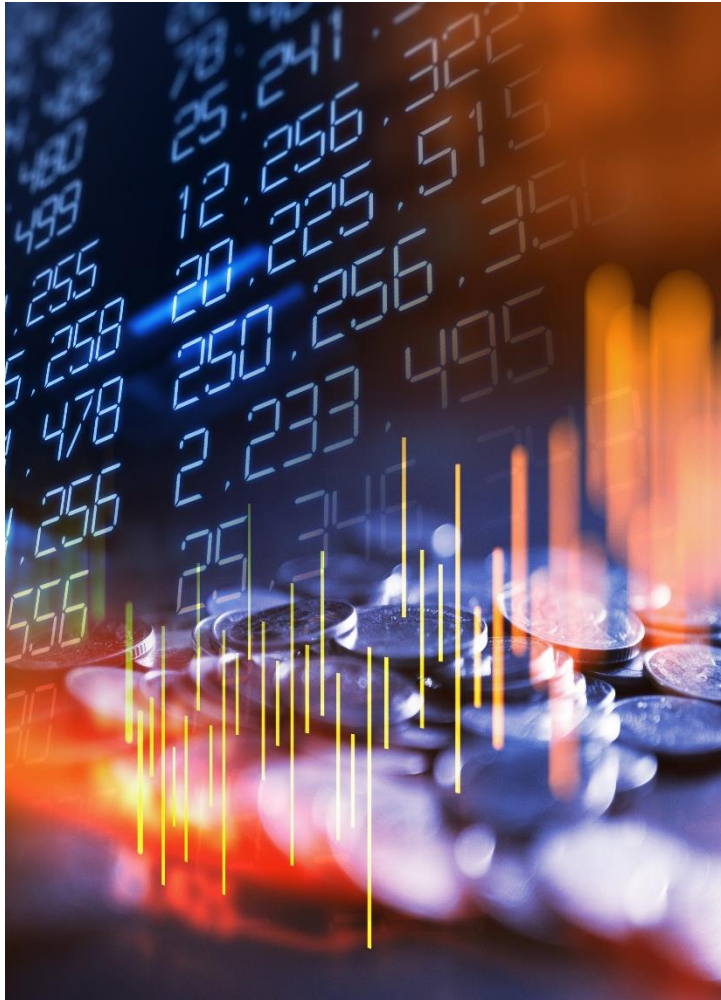Cáin agus Custaim na hÉireann
Irish Tax and Customs

What is PMod?

PAYE Modernisation

- A change in approach

- Came into effect on 1 January 2019

- Real Time reporting by employers when they run payroll

- Every payslip for every employee submitted to Revenue

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Irish Tax and Customs

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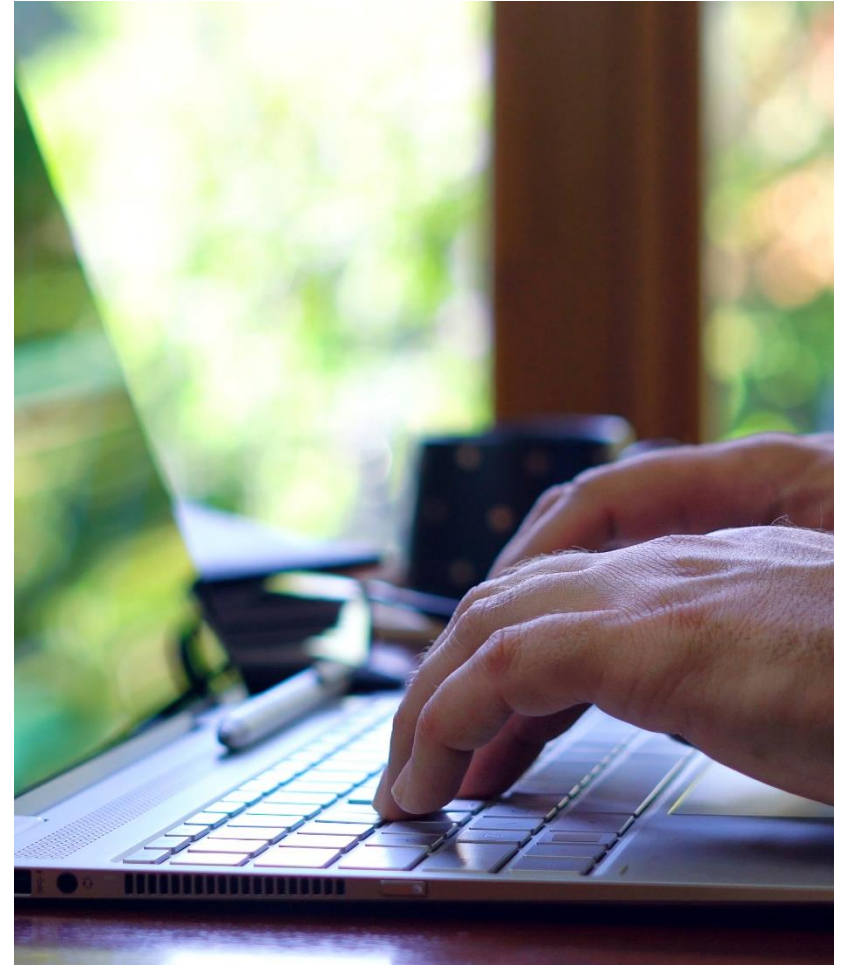
Why PAYE?

- Income Tax (including Universal Social Charge "USC") is the largest single taxhead.

  €22.9 billion paid to the Exchequer in 2019

- PAYE is a significant proportion of this taxhead

  2019 = €18.5 billion in Income Tax via PMOD

- Effective and Efficient

- Prompt Data

- Rapid Response

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PAYE in 2020

182,000 Employers Making Returns

Total Employees: 2.94 million (including TWSS recipients)

€96 billion Gross Pay to Employees (excluding TWSS payments)

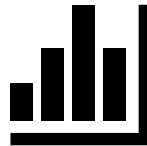€17 billion Income Tax Paid

€3 billion USC Paid

Excluding liabilities on TWSS payments

Excludes PRSI.

PAYE in 2020

€35,688 Average
Gross Pay
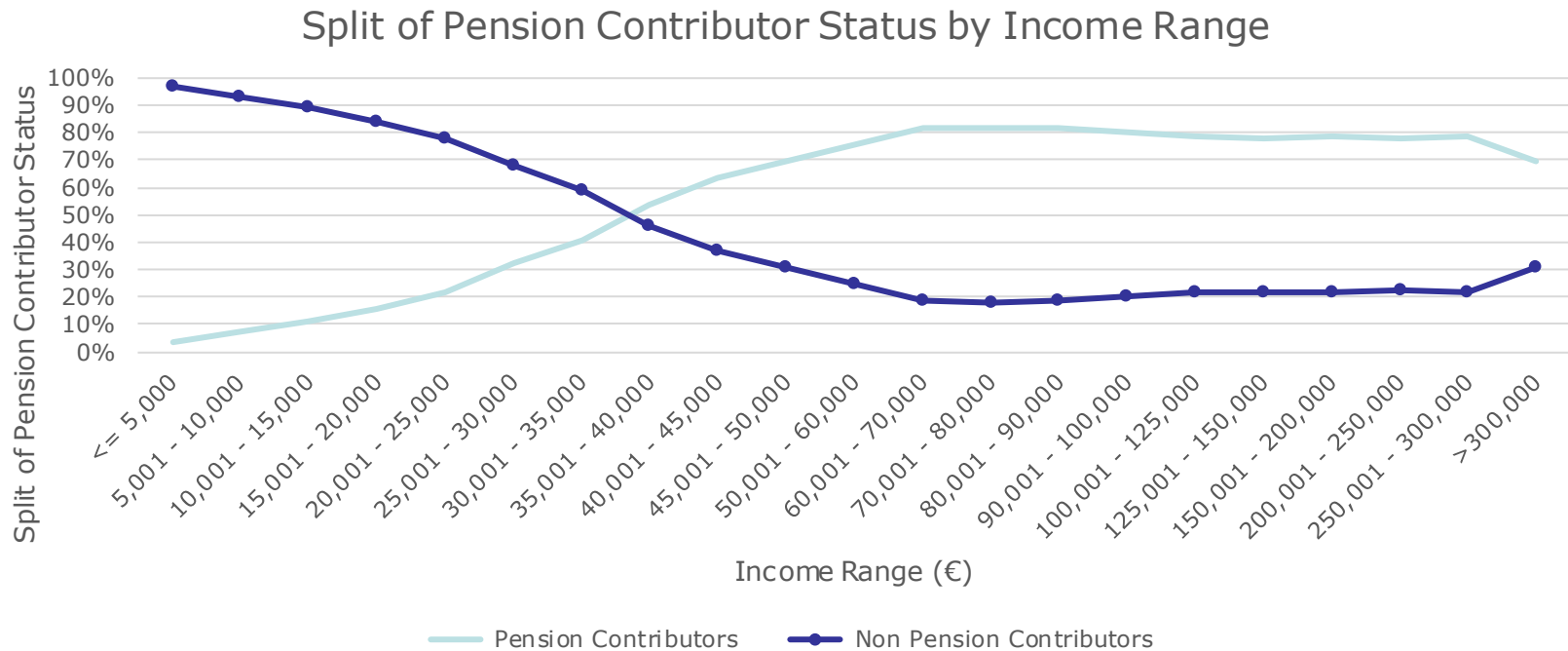
€25,847 Median
Gross Pay

63%

Share of employees with income up to €36,000

5.0%

Share of employees with income over €100,000

Excludes those who received TWSS. Excludes PRSI.

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PMod and Pension Data

Split of Pension Contributor Status by Income Range

- Pension contribution data previously only available at an employer level
- Now available on an individual level
- Allows for far more in depth analysis of pensions, such as who is able to make pension contributions and how much they contribute

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Other PMod Data Uses

- Examine and provide clarity on monthly income tax fluctuations e.g. using sectoral breakdowns

- Provide timely data to other Departments e.g. analysing employment levels in certain sectors

- Analyse job-churn month to month

- Responding to the Covid-19 pandemic

Data Volume

Number of Payslips
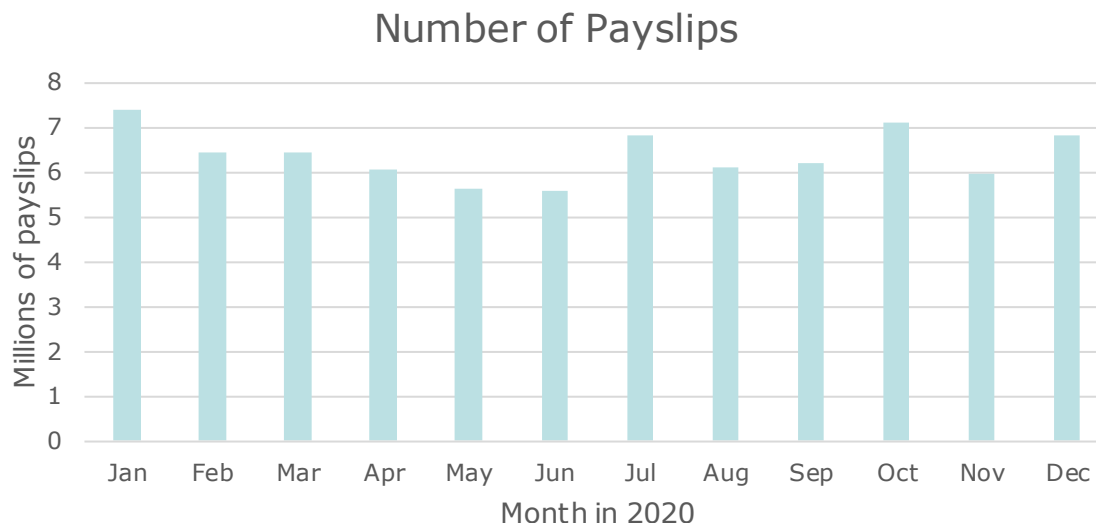
- Extremely large volume of data
- Annual and monthly summary files for analytics software use
- Less data for quicker analysis

Matching with Other Data

Identifiers are available for payslips, employees and employers.

Other data sets can be matched with PAYE data:

- Form 11 Income Tax Returns
- Local Property Tax
- Department of Employment Affairs and Social Protection data
 - Pandemic Unemployment Payment data

Allows for more complex analyses such as labour market movements

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Looking Forward

Scope out the options and timelines for expanding real-time reporting and/or modernisation of Value Added Tax (VAT), Dividend Withholding Tax (DWT), Relevant Contracts Tax (RCT), Professional Services Withholding Tax (PSWT), Stamp Duties and Capital Acquisitions Tax (CAT).

Revenue's Corporate Priorities 2021
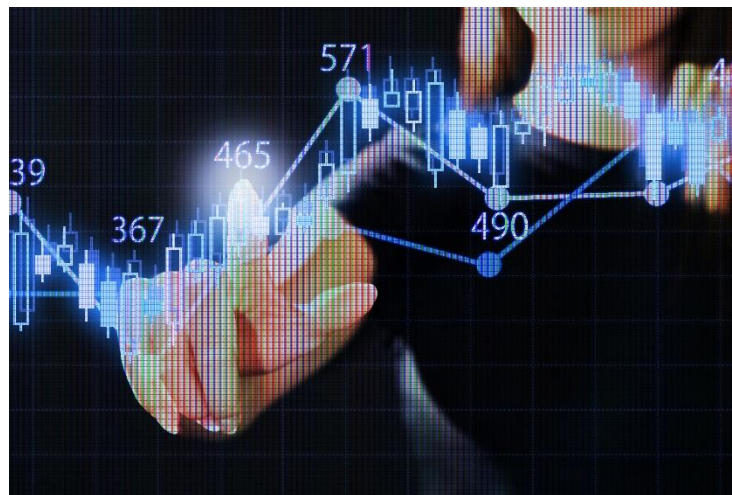
Thank You

Presentation Outline

- Using the PAYE Modernisation system
- Overview of COVID support schemes
  - TWSS
  - EWSS
- Revenue's data releases
- Collaborations and directions for future research

Introduction

- PMod as a rich source of data for the analysis of the labour market

- But the system is more than that – it has made it possible to implement policy

    - TWSS/EWSS – using the system to pay out rather than collect from employees

- Revenue produces weekly statistics on the schemes (with a month's lag)

Overview of income support schemes (I)

- **TWSS**
  - 26th March to 31st August 2020
  - Criteria for eligibility
    - Firms must be negatively impacted by the pandemic
  - Reach of the scheme:
    - Expenditure of just under €2.9bn
    - More than 664,000 employees
      - 365,000 employees directly supported at its close
      - More than 250,000 indirectly supported
    - More than 66,500 employers benefitted
  - Beneficiaries concentrated in sectors most impacted by public health restrictions

Table 1. TWSS Employers and Employees (by Sector)

Sector of Employer	Share of TWSS Employers	Share of TWSS Employees
Accommodation & food services	10.3%	16.7%
Activities of households as employers	0.1%	0.0%
Administrative & support services	4.4%	5.5%
Agriculture, forestry & fishing	1.6%	0.8%
Arts, entertainment & recreation	2.6%	2.7%
Construction	16.0%	10.3%
Education	3.0%	2.0%
Utilities	0.5%	0.7%
Financial & insurance	1.2%	1.2%
Human health & social work	6.4%	4.9%
IT & other information services	2.1%	1.7%
Manufacturing	7.3%	12.6%
Professional & technical services	12.3%	7.9%
Public administration & defence	0.7%	0.4%
Real estate	1.9%	1.4%
Transportation & storage	3.6%	5.4%
Wholesale & retail trade	19.4%	22.4%
Other services	6.6%	3.5%
All Sectors	**100%** **66,500 employers**	**100%** **664,000 employees**

Overview of income support schemes (II)

- **EWSS**
    - EWSS replaced TWSS from 1ˢᵗ September 2020
    - Differences between the schemes – crucially with respect to their operation
    - To mid-June:
        - Cost of more than €3.5bn
    - Scheme is ongoing and statistics are produced monthly
        - Static analysis
        - Flow analysis

EWSS – Overview of June release

Table 2. EWSS headcounts - May 2021 payslips		
	EWSS Only	**% of total**
Employers	34,900	25%
Employees	301,600	14%
Jobs	304,000	14%

EWSS – Overview of June release

Table 3. Employer characteristics - May 2021 payslips			
Firm size	All	EWSS only	Av. Sub. Per EWSS ER
1-2	46%	33%	€1,714
3-9	35%	44%	€5,327
10-49	15%	20%	€19,190
50-249	3%	3%	€80,438
250+	1%	0%	€468,349
Total	**100%**	**100%**	**€10,463**

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EWSS – Overview of June release

Fig 1. Sectoral breakdown of employers - May 2021 payslips

Legend: ■ EWSS only ■ All

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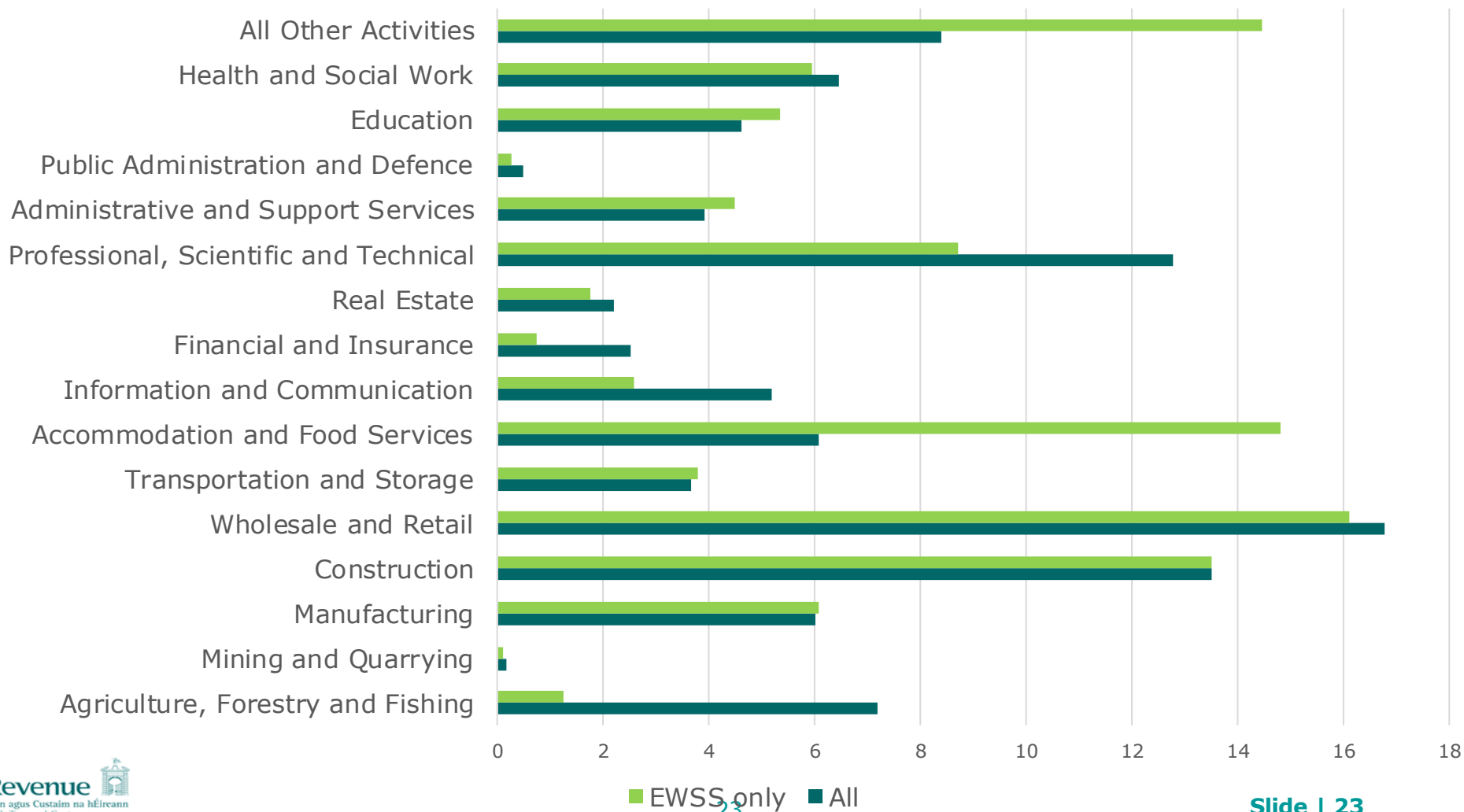
Movement in and out of EWSS

Payslip month	TWSS in Aug	Continuing (EWSS [t-1] → EWSS [t])	New to scheme (non-EWSS [t-1] → EWSS[t])	PUP [t-1] → EWSS[t]	EWSS[t] → PUP[t+1]
Table 3: EWSS employee flows since scheme inception (Revenue, 2021)					
September	67%	-	20%	9%	13%
October	63%	86%	10%	6%	22%
November	61%	90%	7%	6%	4%
December	59%	75%	4%	22%	27%
January	55%	72%	26%	18%	16%
February	54%	90%	8%	10%	5%
March	54%	92%	3%	9%	4%
April	53%	91%	3%	11%	2%
May	53%	84%	4%	19%	2%

Further analysis

- Forthcoming research paper "Job Turnover and the Policy Response in the COVID Era" (*Economic & Social Review*).

- Further Research
  - Overview of EWSS scheme to date (including further sectoral and geographic analysis of beneficiaries)
  - DPER Spending Review (PUP and movement between schemes)
  - Gendered impact of COVID

Thank You

The use of real time data to enhance the Earnings and Labour Costs release

Revenue Seminar - June 2021

Earnings and Labour Costs release

Quarterly release based on data collected by the EHECS survey

Data is collected from enterprises with 3+ employees in NACE sectors B–S, including

- No. persons employed on first and last day of quarter
- For all employees for the quarter

  Total wages

  Total paid hours, whether worked or unworked.

  Total refunds received

Statistics included

- Earnings

    Average weekly and hourly earnings

    Gross wages and salaries payments

- Other labour costs

    Average hourly other labour costs

    The costs to the employer, in addition to wages and salaries, of employing labour.

    Incl. social contributions, BIK, expenses

    Amounts received by enterprises intended to refund part/all costs of wages, salaries, training are deducted from an enterprise's labour cost

- Registered employment

Issues faced

- Lower response rates than previous quarters

- Churn of employment over the quarter was not captured by survey data

- Enterprises and payroll companies had difficulties correctly recording government income support payments

- Alignment of employment with LFS

Strategy

Use administrative data sources to assist in processing survey data, coherence and additional insight

Processing

- **PUP datasets** - created a factor for average employment for the sectors most impacted by persons availing of PUP in quarters where ELC data could not capture employment churn

- **TWSS & EWSS datasets** - allowed for correction of reporting errors and omissions of income support payments

Coherence & additional insights

- **PMOD datasets** used to check coherence of changes in average weekly earnings by NACE sector

- **PMOD datasets** used to provide additional insight for users in relation to the labour market

PMOD & the Labour Market Insight Bulletin Series

- Produced Labour Market Bulletins to complement the standard ELC release

- Provided additional insight for users and provided context to the results in the ELC release

Additional insights

- % change in the number of active employments between two quarters

- % change in earnings by sector between two quarters

- Analysis of earnings for employments active in more than one quarter

Additional insights continued

- Analysis of the impact of TWSS and EWSS schemes

    % of employments directly supported by scheme

    Subsidy payments as % of total earnings

Conclusion

- Administrative real time data greatly enhanced the ELC release

- Allowed us to stick to our standard methodology while remaining relevant

- Continued to be able to meet our Eurostat reporting obligations

- Publication of coherent ELC estimates during the pandemic, supported by administrative data sources

- Additional insights for users

- Positive feedback from our users

Use of Revenue data for Structure of Earnings Statistics

Revenue Seminar - June 2021

Structure of Earnings

- Analysis of earnings by characteristics of employees and their employer

Background

- National Employment Survey (NES)

- Large scale employer survey

- Reference years 2003, 2006-2009

- Discontinued after 2009 for budgetary reasons

Earnings Analysis Using Administrative Data Sources (EAADS)

- First published in 2017 for reference years 2011-2014

- Updated in 2019 for reference years 2011-2018

- Currently working on 2019 and 2020

- Published annually going forward

Earnings Analysis using Administrative data (EAADS)

Admin data source	Key variables
Revenue – employee tax data	Gross Annual Pay, Weeks worked
Dept. of Social Protection	Sex, Age, Nationality, Region lived
CSO Business Register	Economic sector, firm size

EAADS - Employments

EAADS
2 million observation

Exclusions applied

Employee tax data
3 million observations
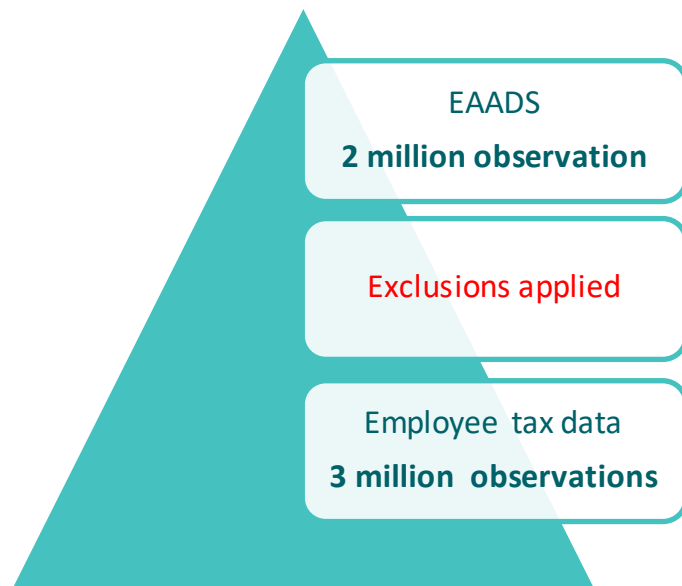
Exclusions

- Employments not active in reference month (October) are excluded

- NACE sectors A, T and U excluded

- Self employed and pension payments excluded

- Low paid secondary employments excluded

- Outliers removed

Earnings Analysis using Administrative data (EAADS)

- Key Statistics: Mean and Median, Weekly and Annual Earnings by:

| Employee characteristics	Enterprise characteristics
Sex	Economic Sector
Age	Firm size
Nationality	
Region lived	

Distribution of Earnings

- Average Earnings - Median as well as Mean

- Earnings at each percentile

- Proportion of employments at different levels of earnings

  - By sex, age, sector

Distribution of earnings – by Sex

Figure 3.2 Distribution of employees (%) by weekly earnings and sex 2018
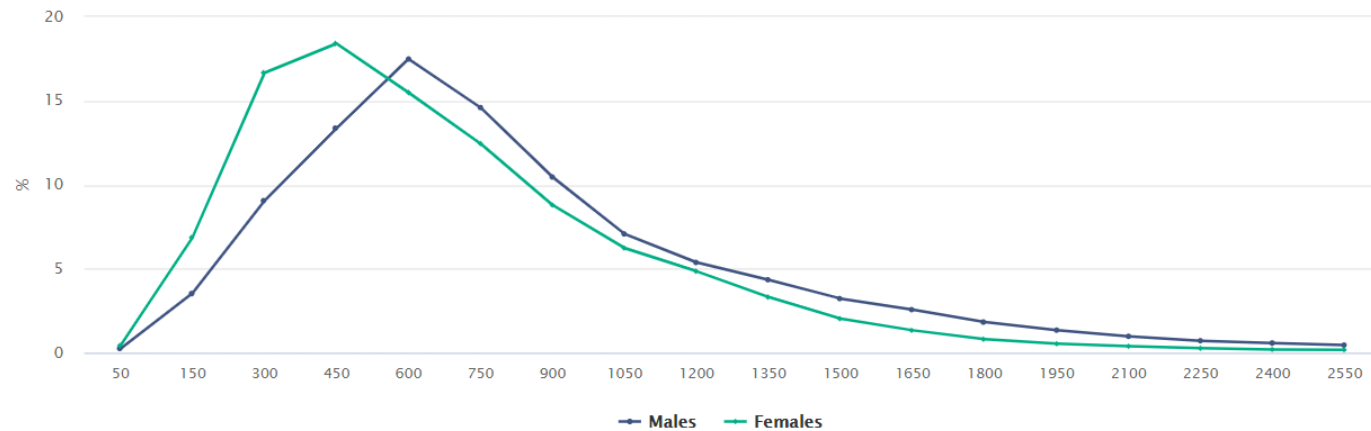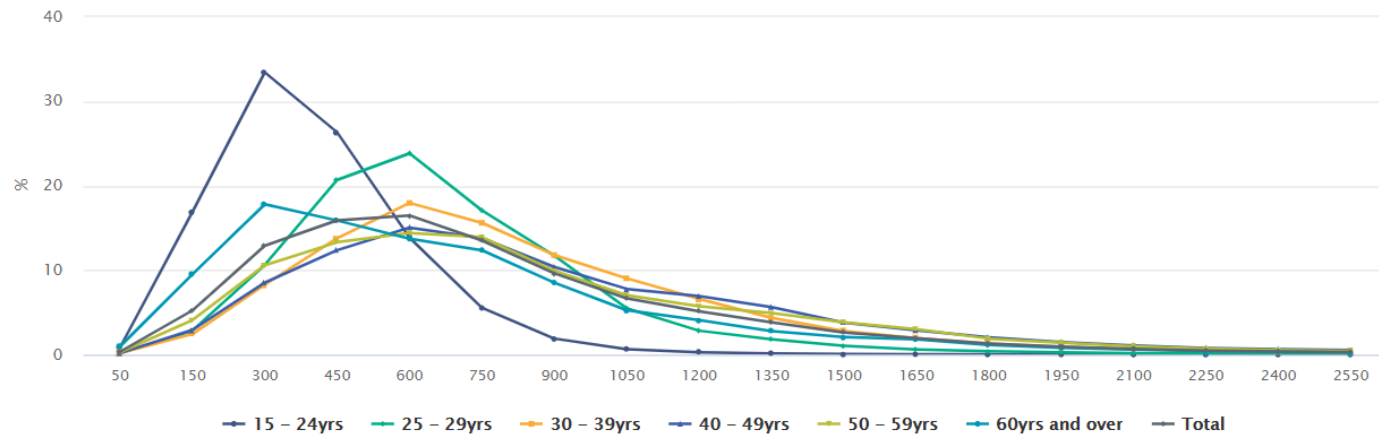
Source: CSO Ireland

Distribution of earnings – by Age

Figure 3.3 Distribution of employees (%) by weekly earnings and age group 2018

Source: CSO Ireland

Ad-hoc queries

- Regularly provide tabular output to users in response to ad-hoc queries:
    - Cross tabulation of characteristics
    - Specific age groups of interest
    - Different classifications for region, nationality, firm size
    - Proportion of employments

Potential analysis

- Further cross tabulation of the main characteristics

- Employee v Employment earnings

- Separate analysis of seasonal work, or secondary employments

- Cohort analysis – track individuals over time

Variables not on Admin data

- Some important variables not available on Admin data

  - Hours worked

  - Full-time/Part-time status

  - Occupation

  - Education

- Considering potential sources for these and other variables

LFS/EAADS

- Developed for Econometric analysis of Public/Private sector pay differential

- Matched sample created with variables required by model
  - Incl. hours worked, FTPT, Occupation and Education

- Results are weighted and calibrated to EAADS totals

- Data for 2011 - 2018

- RMF available to researchers

Summary

- Revenue and other Administrative data are rich source for analysis

- Further outputs & more detailed analysis possible

- Potential to expand outputs and analysis if information on additional variables can be sourced

- Welcome user input on analysis required

Monthly Employment Series

John Mullane

Using Real-Time Reporting to Enhance Statistics and Research

June 2021

Aims of the project

- Measure of persons in employment using administrative data

- Macro-economic view of employment

  - Different to standard measure of employment

  - ILO definition criteria different to this series

  - LFS and PMOD series will likely differ in magnitudes

Conditions

- Individual receives at least 1 payment during reference month

- Exclude self-employed and pensioners

- Retain all NACE codes

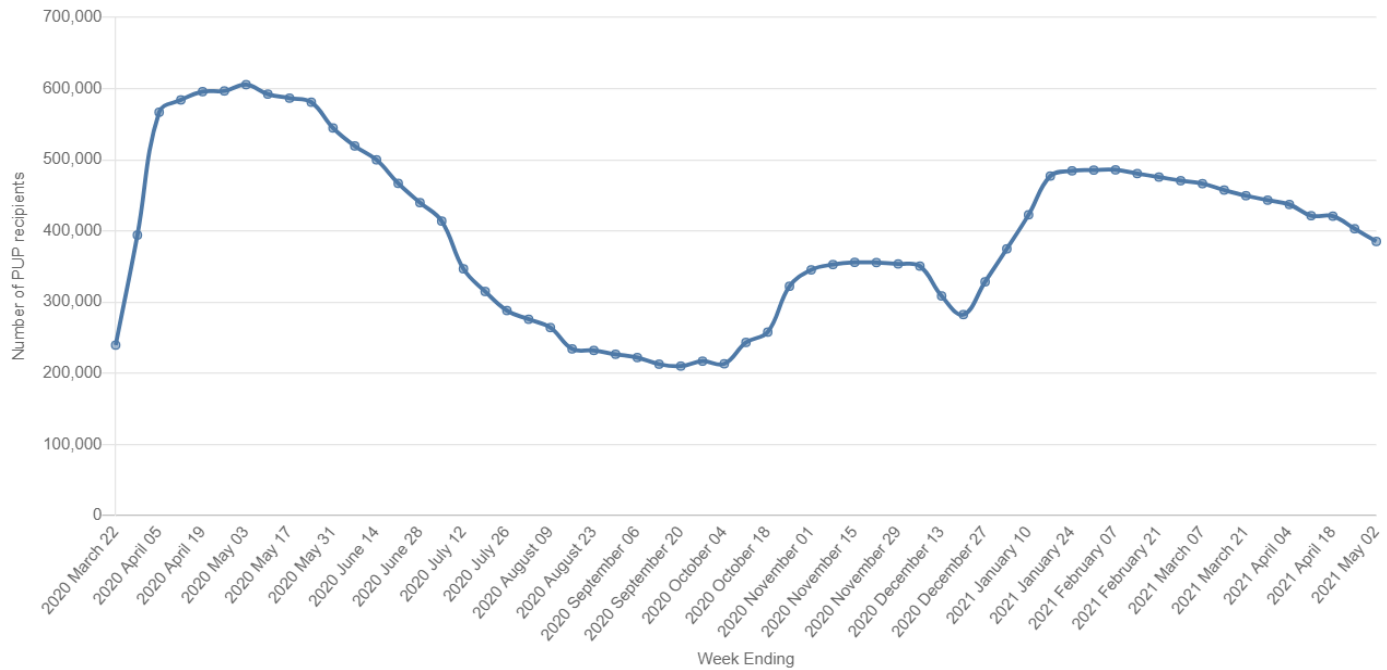- Business Register (CSO) NACE classifications to be used

Visualising data (examples using existing publications)

Figure 2.1 Number of recipients of the Pandemic Unemployment Payment (PUP) each week

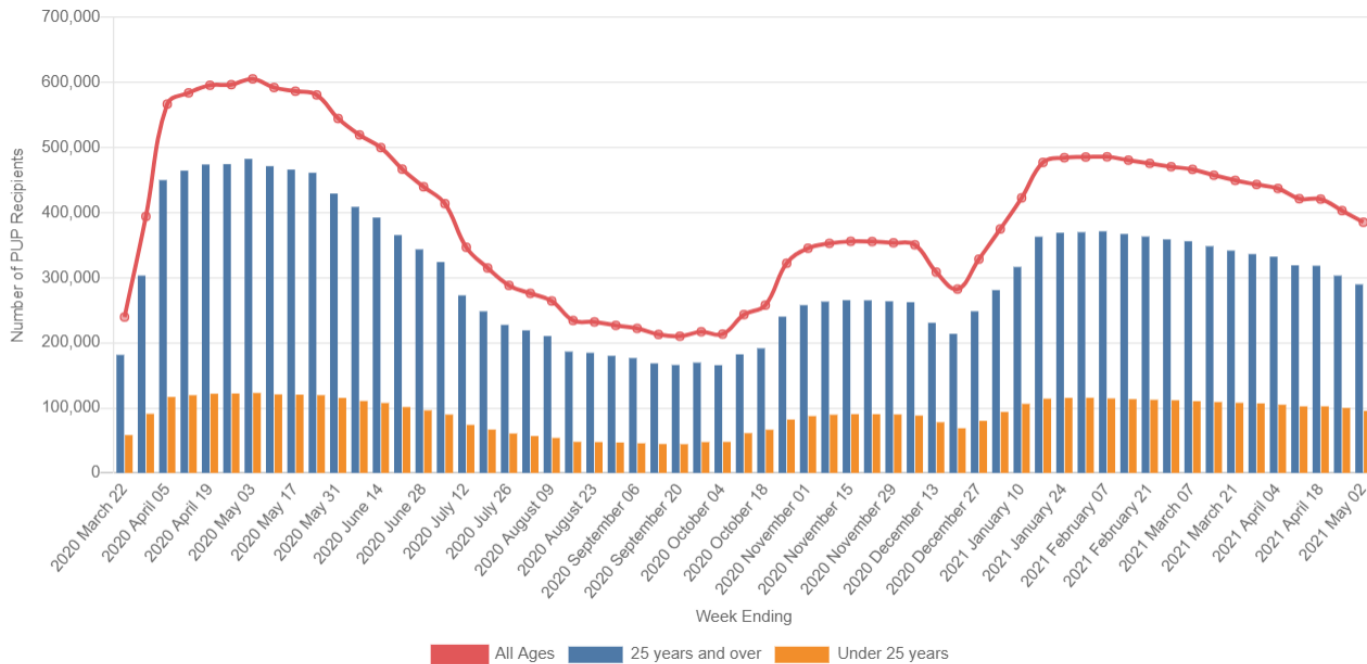© Central Statistics Office, Ireland
https://data.cso.ie/table/LRW13

www.cso.ie

Figure 2.2 Number of recipients of the Pandemic Unemployment Payment (PUP) each week by sex

© Central Statistics Office, Ireland
https://data.cso.ie/table/LRW13

www.cso.ie

Figure 2.3 Number of recipients of the Pandemic Unemployment Payment (PUP) each week by age group

© Central Statistics Office, Ireland
https://data.cso.ie/table/LRW14

www.cso.ie

Communicating data

Variables of interest

- Personal characteristics
  - Sex, Age, Citizenship, Region
- Employer characteristics
  - NACE sector, Size of enterprise

Metrics and Properties of data

- Data present from Jan 2019

- Seasonal adjustment of data when a longer series exists

- Definitions of employment will be different to those on LFS (ILO)

  - Growth rate of number of employees

  - Year on year growth of number of employees

Next Steps

Next Steps

- Employment/Employee level analysis

  - Employment level for employer characteristics

  - Employee level for personal characteristics

- Index/Volumes

- Inclusion/exclusion criteria

- Content for initial publication

National Statistical Institutes employment indexes/series'.

➢ *ONS:*

• Release: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/earningsandemploymentfrompayasyouearnrealtimeinformationuk/march2021

• Methods: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/articles/newmethodsformonthlyearningsandemploymentestimatesfrompayasyouearnrealtimeinformationpayertidata/december2019

➢ *Estonia*: https://www.stat.ee/en/find-statistics/covid-19-impact-estonia/short-term-labour-market-statistics

➢ *USA:* https://www.bls.gov/ces/

The use of Covid-19 income support data in the LFS

Jim Dalton, Statistician

Labour Market, CSO

The Labour Force Survey

- Quarterly household survey with circa 30,000 person respondents each quarter

- Results compiled according to International Labour Organisation (ILO) methodology

- Meets EU Regulations on compilation of Labour Market Statistics

- Results published quarterly

- Official source of Employment and Unemployment statistics for the State

- https://www.cso.ie/en/statistics/labourmarket/labourforcesurveylfs/

Impact of COVID-19

- Significant effect on data collection – move from mix of face to face interviewing /telephone interviewing to just telephone

- ILO methodology did not fully capture the effects of the pandemic

- Needed to provide additional insight for users

Linking LFS data to Covid-19 Income Supports

- CSO does not collect the PPSN of respondents in LFS

- Instead the CSO Administrative data team were able to link the LFS to PUP/TWSS/EWSS data by use of other variables like sex, date of birth, first and last name

- Not a perfect science – At most 69% match success rate up to Q4 2020

Examples of analysis published

Table 4 Percentage of persons aged 15 years and over and benefitting from the PUP or the EWSS and classified by ILO status and PES, LFS Q4 2020

%

	PUP recipients		EWSS recipients		All persons	
	ILO	PES	ILO	PES	ILO	PES
Employed/At work	63.4	42.9	87.2	77.6	57.8	53.3
Unemployed	11.5	25.7	2.6	5.8	3.5	6.3
Inactive	25.1	31.4	10.1	16.7	38.7	40.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Labour Force Survey, PUP data from DSP and EWSS data from Revenue

Examples of analysis published

Table 5 Percentage of persons aged 15-64 years whose employment was affected by COVID-19 (self-reported) by expectation of return to the same job and separately for those benefitting from the PUP or the EWSS, LFS Q4 2020

			%
	PUP recipients	EWSS recipients	All persons
Yes, expect to return to the same job	64.4	41.3	33.3
Yes, have already returned to the same job	14.3	51.6	45.7
No	21.3	7.1	21.0
Total	**100.0**	**100.0**	**100.0**

Source: Labour Force Survey, PUP data from DSP and EWSS data from Revenue

Outcomes/Benefits

- Additional labour market information available for matched income support recipients

- Added value to LFS – greater insight into these recipients

- Data greatly appreciated by users

Analysing Property Purchasers

Revenue statistics seminar

June 2021

Current State

Figure 1.3: Residential Property Price Index

Source: CSO Ireland

Figure 1: Seasonally Adjusted Volume of Production for Building and Construction Indices

— All Building and Construction
— Residential Building
— Civil Engineering

Figure 3: New dwelling completions by Eircode Routing Key Q1 2021

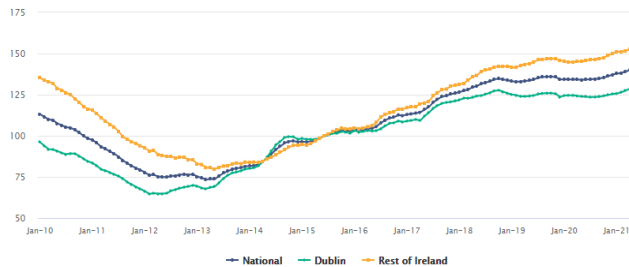< 9   10 – 49   50 – 99   100 – 149   > 150

Source: CSO Ireland

Figure 5.2: Value of Non-Household sector market purchases of residential dwellings (€million) filed with Revenue by NACE sector, 2010–2020
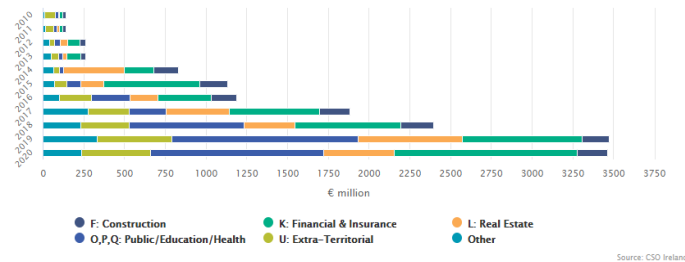

€ million

- F: Construction
- K: Financial & Insurance
- L: Real Estate
- O,P,Q: Public/Education/Health
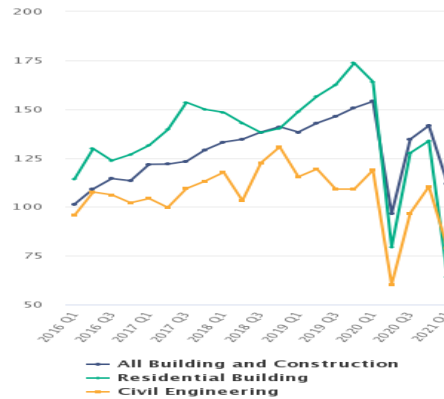- U: Extra-Territorial
- Other

Source: CSO Ireland

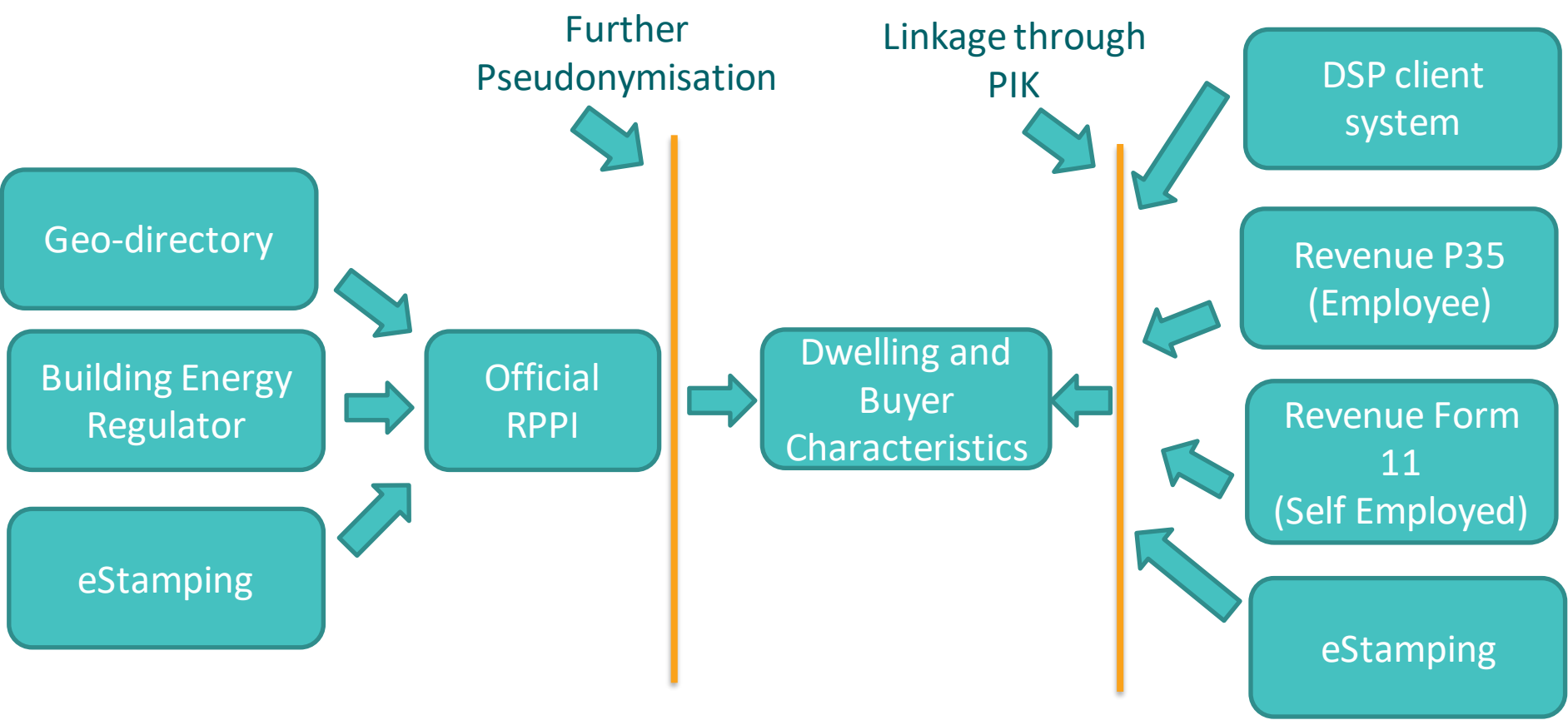Figure 3.1: Volume of household market dwelling purchases by dwelling status, January 2010 to April 2021

— New   — Existing

Source: CSO Ireland

Banc Ceannais na hÉireann
Central Bank of Ireland
Eurosystem

Household Credit
Market Report 2019

€28,186 Household debt per capita, Q1 2019	€2.25 billion The value of new mortgage lending in Q2 2019	34 years old Average age of First Time Buyers in H1 2019
€89,049 Average household income of First Time Buyers in Dublin, H1 2019	17% Self-Builds as a share of Non-Dublin First Time Buyers Lending, H1 2019	40% Share of First Time Buyers with a loan term of greater than 30 years, H1 2019
5.6% The growth rate on consumer credit as at August 2019	58% Average Current-Loan-To-Value for performing loans originated in 2007	

Developing new evidence to help inform

- Information gap in regards to "Who's buying in the property market?"

  - More information on the people.

Further Pseudonymisation

Linkage through PIK

Geo-directory

Building Energy Regulator

eStamping

Official RPPI

Dwelling and Buyer Characteristics

DSP client system

Revenue P35 (Employee)

Revenue Form 11 (Self Employed)

eStamping

Characteristics of Residential Property Purchasers 2010–2019

Median Joint Purchaser Income

Lowest
Longford
€59,300

Highest
Dún Laoghaire
€123,700

Median Joint Purchaser Price Paid

Lowest
Leitrim
€130,000

Highest
Dún Laoghaire
€565,000

The proportion of **properties purchased jointly** increased from **47.0%** in 2010 to **62.2%** in 2019

Nine in ten people who gave a previous **address in Cork** bought a property in Cork – highest proportion in the country

Joint purchasers with a child or children **bought the most expensive properties,** spending **€295,000**

Median age nationally by cohort

Sole Purchaser
42 with child /children
42 without children

Joint Purchaser
38 with child /children
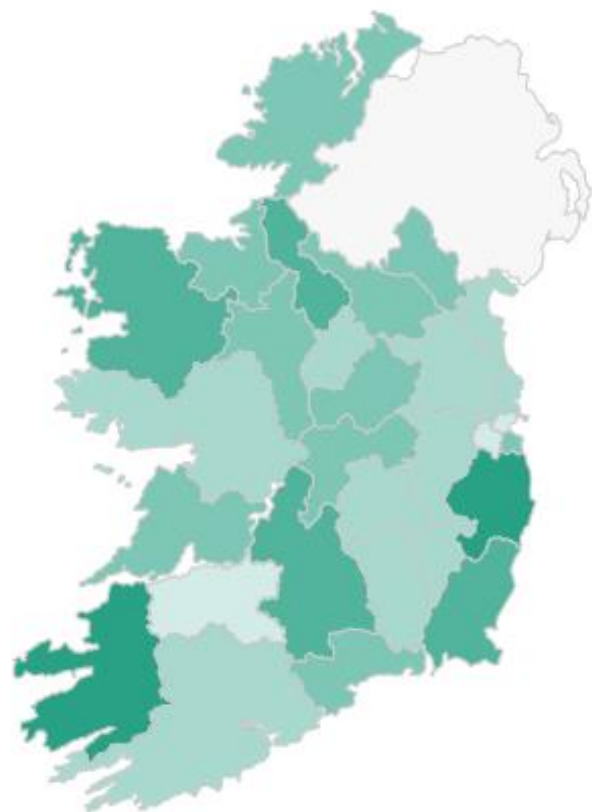**36** without children

Figure 1.1 Volume of household market dwelling purchases by transaction type, 2010–2019

Source: CSO Ireland
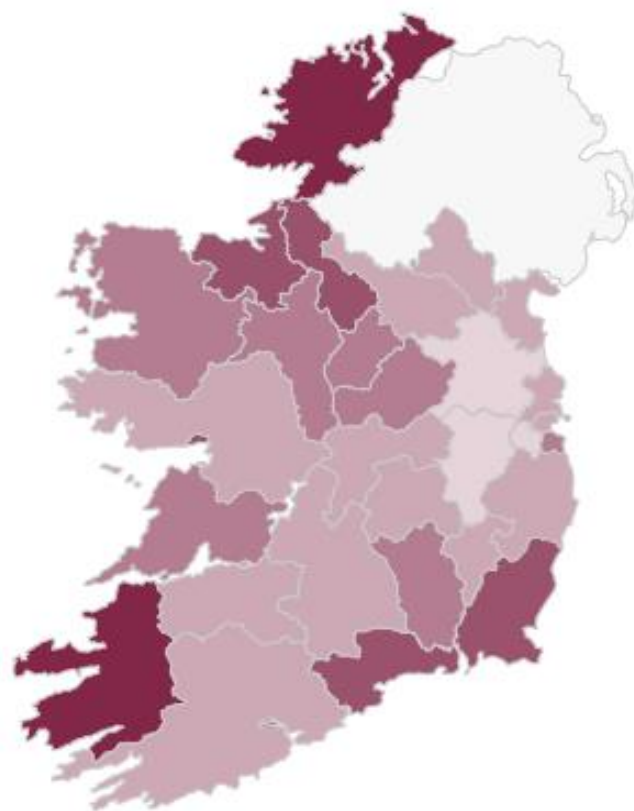
Map 2.1 Median age of sole purchasers by local authority, 2019

Legend: < 39 | 40 – 42 | 43 – 45 | 46 – 48 | > 49

Source: CSO Ireland

Map 2.2 Median age of joint purchasers by local authority, 2019

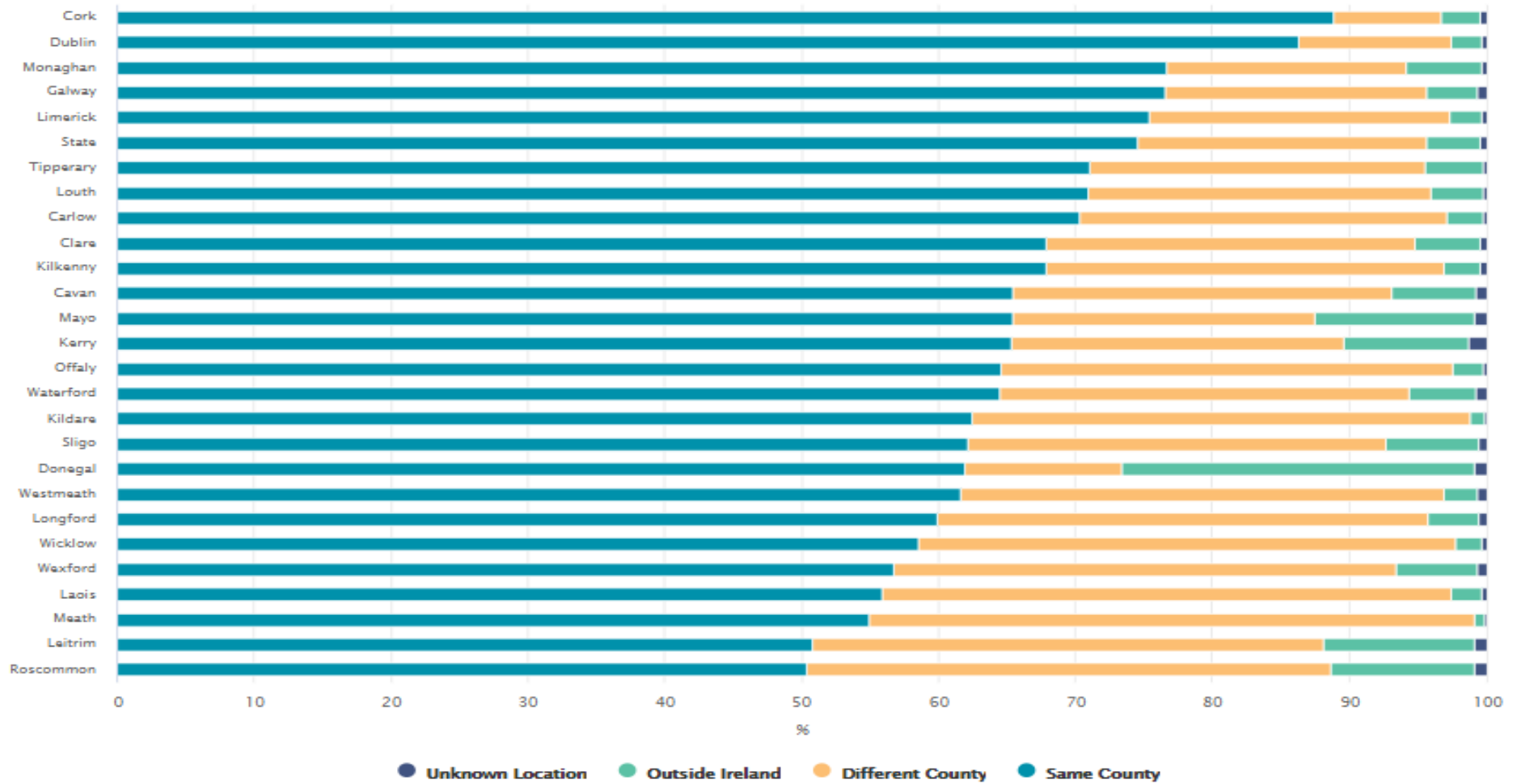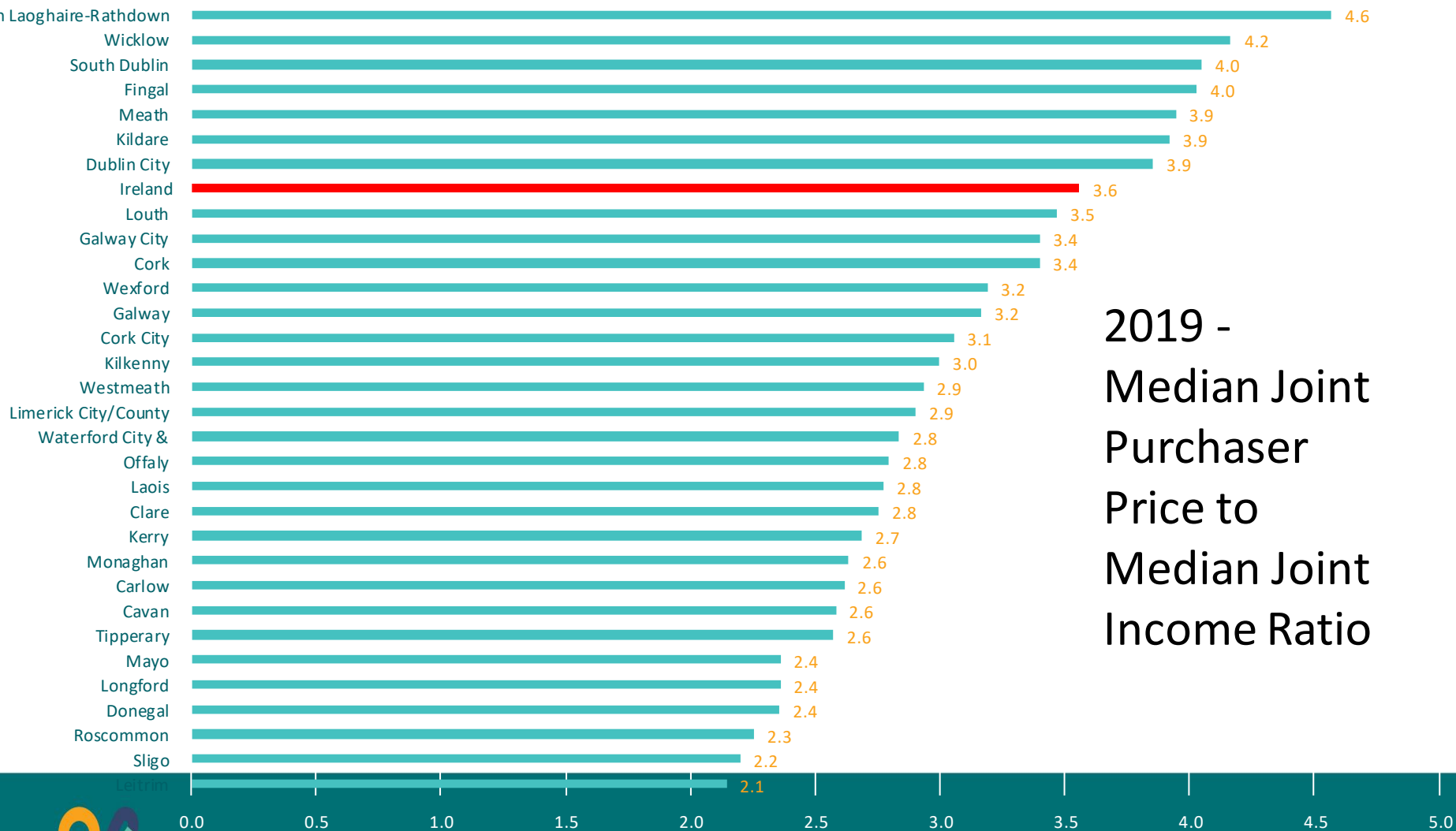Legend: < 36 | 37 – 38 | 39 – 40 | 41 – 42 | > 43

Source: CSO Ireland

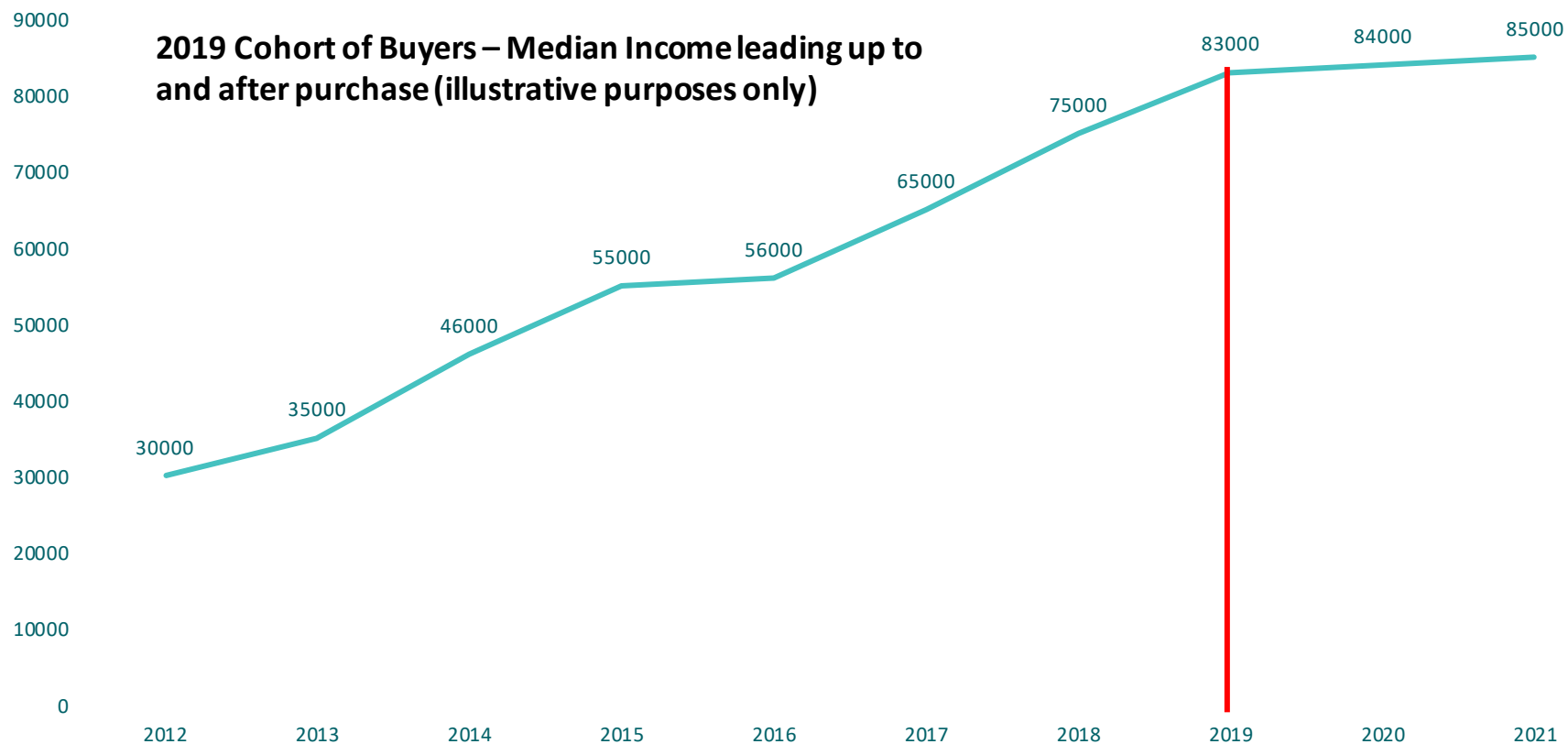Figure 5.1 Property buyers by location of property purchased, 2010–2019

2019 - Median Joint Purchaser Price to Median Joint Income Ratio

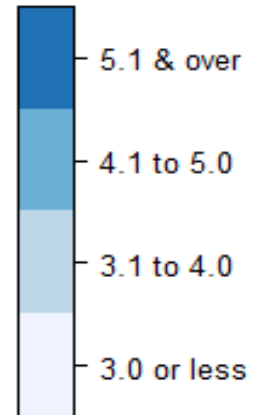| County	Ratio
Dún Laoghaire-Rathdown	4.6
Wicklow	4.2
South Dublin	4.0
Fingal	4.0
Meath	3.9
Kildare	3.9
Dublin City	3.9
Ireland	3.6
Louth	3.5
Galway City	3.4
Cork	3.4
Wexford	3.2
Galway	3.2
Cork City	3.1
Kilkenny	3.0
Westmeath	2.9
Limerick City/County	2.9
Waterford City &	2.8
Offaly	2.8
Laois	2.8
Clare	2.8
Kerry	2.7
Monaghan	2.6
Carlow	2.6
Cavan	2.6
Tipperary	2.6
Mayo	2.4
Longford	2.4
Donegal	2.4
Roscommon	2.3
Sligo	2.2
Leitrim	2.1

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Moving forward – use of real time data

- Analysis to date has used purchasers income the year prior the property purchase.

    - 2019 property purchased references 2018 purchasers income.

- DSP payments, PMod and eStamping returns in near real time (month lag) allows a more real time estimation of median prices and median income.

- Panel analysis (Cohort) approach also possible.

2019 Cohort of Buyers – Median Income leading up to and after purchase (illustrative purposes only)

2014-2018

5.1 & over

4.1 to 5.0

3.1 to 4.0

3.0 or less

Open Forum and Q&A

Please "Raise Your Hand"