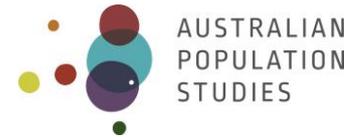


## Visualising the internal migration of the mainland China-born population between Australian capital cities over time



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Over the past three decades, migration from mainland China to Australia has become increasingly significant. The 2016 Australian Bureau of Statistics (ABS) Census of Population and Housing (Census) recorded a total of 526,000 China-born migrants living in Australia, accounting for 2.2 per cent of the total national population, ranking it as the largest non-Commonwealth foreign-born group in the country (ABS 2016a). Drawing on data from three Australian censuses, we visualise 5-year internal migration flows of the China-born population between Australian state and territory capitals.

Data were retrieved online from TableBuilder Pro for the 2006, 2011 and 2016 censuses (ABS 2006; 2011; 2016a). The mainland China-born population was defined as those residing in Australia who were born in the People's Republic of China but not the Special Administrative Regions of Macau and Hong Kong. Capital cities were spatially defined as Greater Capital City Statistical Areas (ABS 2016b). Our DemoGraphic is a series of three directional circular plots (Abel 2016) that depict the system of internal migration flows representing the relative size and direction of internal migration movements (Figure 1, page 58). The plots were created using the R statistical software and employing the package 'circlize' (available at: <https://www.r-project.org/about.html>).

The circular plots represent the volumes, origins and destinations using lines of varying width and colours to capture migration flows between capital cities (Figure 1). The length of each segment for a given city represents the number of migrants moving to and/or from a particular capital. For each city the direction of migration flows is indicated by an arrow pointing from origins to destinations. Each capital city and the flows originating from that city are represented by a single colour (e.g. Sydney is depicted in red for each of the three plots). Each tick mark on the perimeter of the circle is used to represent a total of 200 migrants. We exclude the least numerically significant 30 per cent of flows from each of the circular plots. Excluding these smaller flows helps to enhance the visual clarity by focussing on the main residential migration movements.

Our DemoGraphic illustrates a number of interesting internal migration patterns over the decade to 2016.

- The absolute volume of internal migration between capital cities has increased 340 per cent over the decade. This increase includes migration to and from the smaller capital cities of Hobart, Darwin and Canberra, which did not have large China-born populations in earlier decades compared to the larger capitals of Sydney and Melbourne.
- There appears to be some stability in the internal migration trends of China-born migrants over time. More specifically, the share of migration across capital cities has principally remained the same, with Sydney the largest origin and destination followed by Melbourne and then Adelaide.
- The proportion of overall flows by capital city shows little change over time in Sydney, Melbourne and Canberra. However, Brisbane's in-migration flows of the China-born population increase substantially over the period to 2016, reflecting a growing Chinese community in Brisbane and sustained migration from the other capital cities – in particular Sydney and Melbourne. An increase in out-migration flows is observed in both Adelaide and Hobart, especially over the period 2011 to 2016. Out-migration from Adelaide, especially in the period 2011 to 2016 may be tied to a relatively weaker job market and economic outlook (Adzuna 2016; Beer 2008).
- Sydney and Melbourne both remain the largest destinations for China-born migrants. The attraction of these two cities over the other Australian capitals for China-born migrants is arguably a function of denser social ties allied with a broader range of economic opportunities.

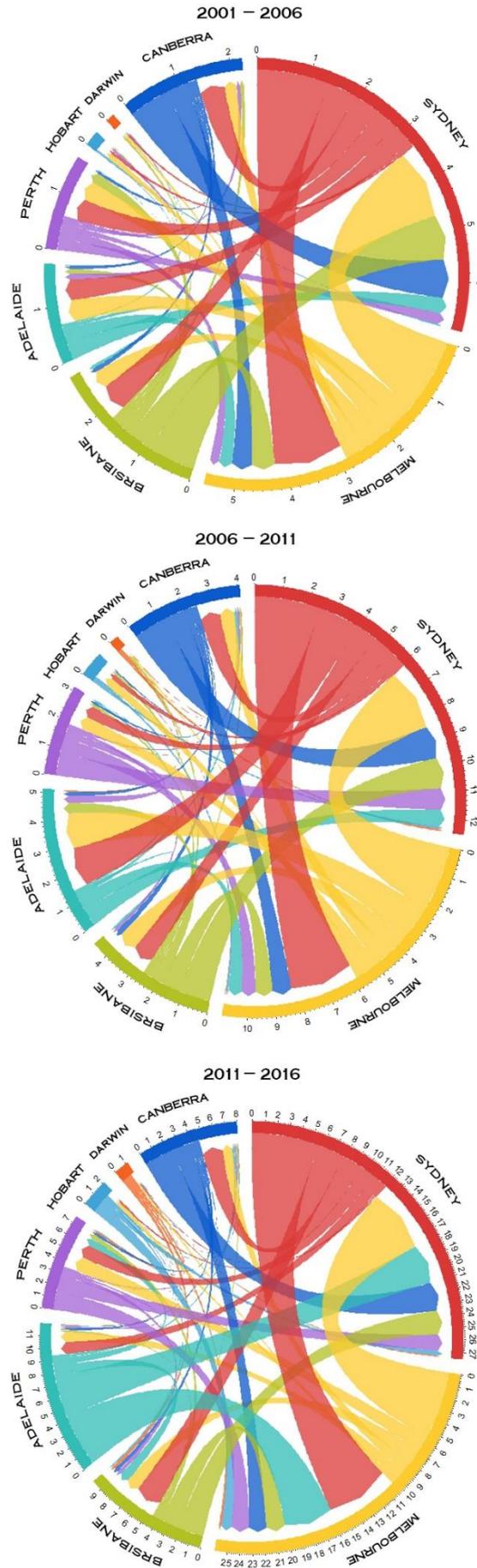
There is a need to deepen our understanding of the internal migration patterns of the China-born population by capturing these movements at a range of spatial scales and unpacking the reasons under-pinning these flows. With such knowledge we will be able to better understand internal migration pathways after settlement, and how these pathways mesh with longer-term integration in Australian society.

### Acknowledgements

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### References

- Abel G (2016) Updated circular plots for directional bilateral migration data. <https://gjabel.wordpress.com/tag/circular-plot/>. Accessed on May 2016.
- ABS (Australian Bureau of Statistics) (2006) *Census of Population and Housing – Fact Sheets, 2006*. Cat. No. 2914.0. Canberra: ABS.
- ABS (2011) *Census of Population and Housing: outcomes from the 2011 Census output geography discussion paper*. Cat. No. 2911.0.55.003. Canberra: ABS.
- ABS (2016a) *Migration, Australia, 2015–16*. Cat. No. 3412.0. Canberra: ABS.
- ABS (2016b) *Australian Statistical Geography Standard: Volume 1 – Main Structure and Greater Capital City Statistical Areas*. Cat. No. 1270.0. Canberra: ABS.
- Adzuna (2016) *Australia job market report*. <https://www.adzuna.com.au/blog/wp-content/uploads/2016/03/Adzuna-March-Job-Report-Robots-by-20301.pdf>. Accessed on March 2016.
- Beer A (2008) Risk and return: housing tenure and labour market adjustment after employment loss in the automotive sector in Southern Adelaide. *Policy Studies* 29(3): 319–330.



**Figure 1:** The internal migration of the mainland China-born population between Australian capital cities over three census periods

Source: ABS 2006, 2011 and 2016 Census data.

Note: Each tick mark on the perimeter of the circle is used to represent a total of 200 migrants.