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Featured graphic. OD maps for showing changes in Irish female migration between 1851 and 1911

Our featured graphic (figure 2) comprises two OD (origin–destination) maps showing changes in female migration in Ireland between 1851 and 1911 and how these changes vary spatially. Although male and female destination patterns are similar, the OD maps show where *female migration exceeds that of males*. They show that more women than men migrated *locally* in 1851. By 1911, although this local pattern persists in northern parts, the geography of female out-migration in the south became more extensive (Kelly et al, 2013).

The OD map works by using a grid-like layout that presents each county as a grid square in an approximate geographical layout as illustrated below (see https://vimeo.com/71454100). Although not all adjacencies are preserved, broad geographical flow patterns can be determined more effectively than in flow maps or OD matrices (Wood et al, 2010). Each of these big grid squares represents an origin county. We then *embed* a choropleth *destination* map *inside* each origin square. Each choropleth map is a destination map within this *geographically ordered matrix* (Guo et al, 2006) of origins. In the featured graphic, we simply replace the choropleth maps with the same grid layout as used for the origins (figure 1). This means that each county–county pair is equally visually salient and the same layout exists at both hierarchical levels. In fact, *OD maps have exactly the same cells as OD matrices*, but have the advantage that *geographical structure is retained*, allowing the geography of flows to be considered.

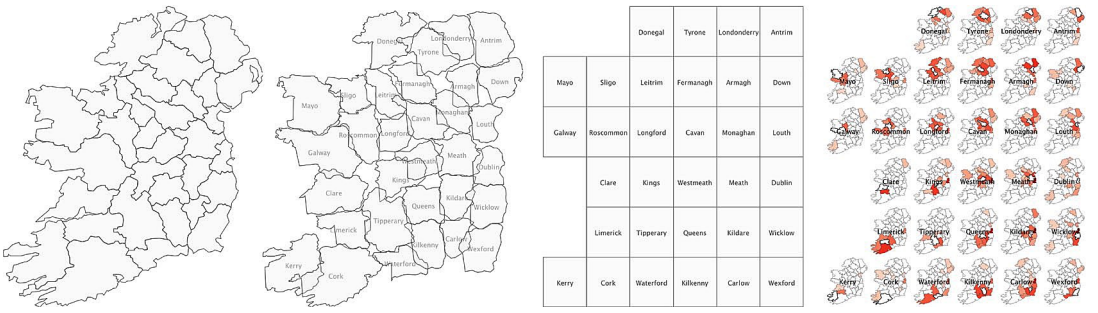

Figure 1. [In colour online.] Constructing an approximate geographical layout for origins, with the 19th-century counties of Ireland (left) morphing to a regular grid (centre), and embedding maps of destinations for each origin (right). The featured graphic (figure 2) replaces the embedded destination maps with maps using the grid layouts.

Origin counties in each destination map are white, as we do not consider within-county migration, and outlined in black. The dark shading around origins indicates that female migrants outnumber male migrants locally in most situations.

A proportion of 1851 migrants may have been displaced as a result of the famine. More, however, were prefamine migrants, who had moved for marriage or to take up positions as domestic servants. Whatever their reasons, whether for employment or for marriage, when moving away from their county of birth female migration was primarily local, although Dublin was also attractive to migrants from eastern counties. The widening of geographical horizons that we see in 1911 was stimulated by a number of factors. The increasing move away from subdivision towards primogeniture meant there were fewer farmers for rural women to marry or farms to marry into, leading to increased competition in local marriage markets. Moreover the social vacuum left by emigration, and the trend towards movement stimulated

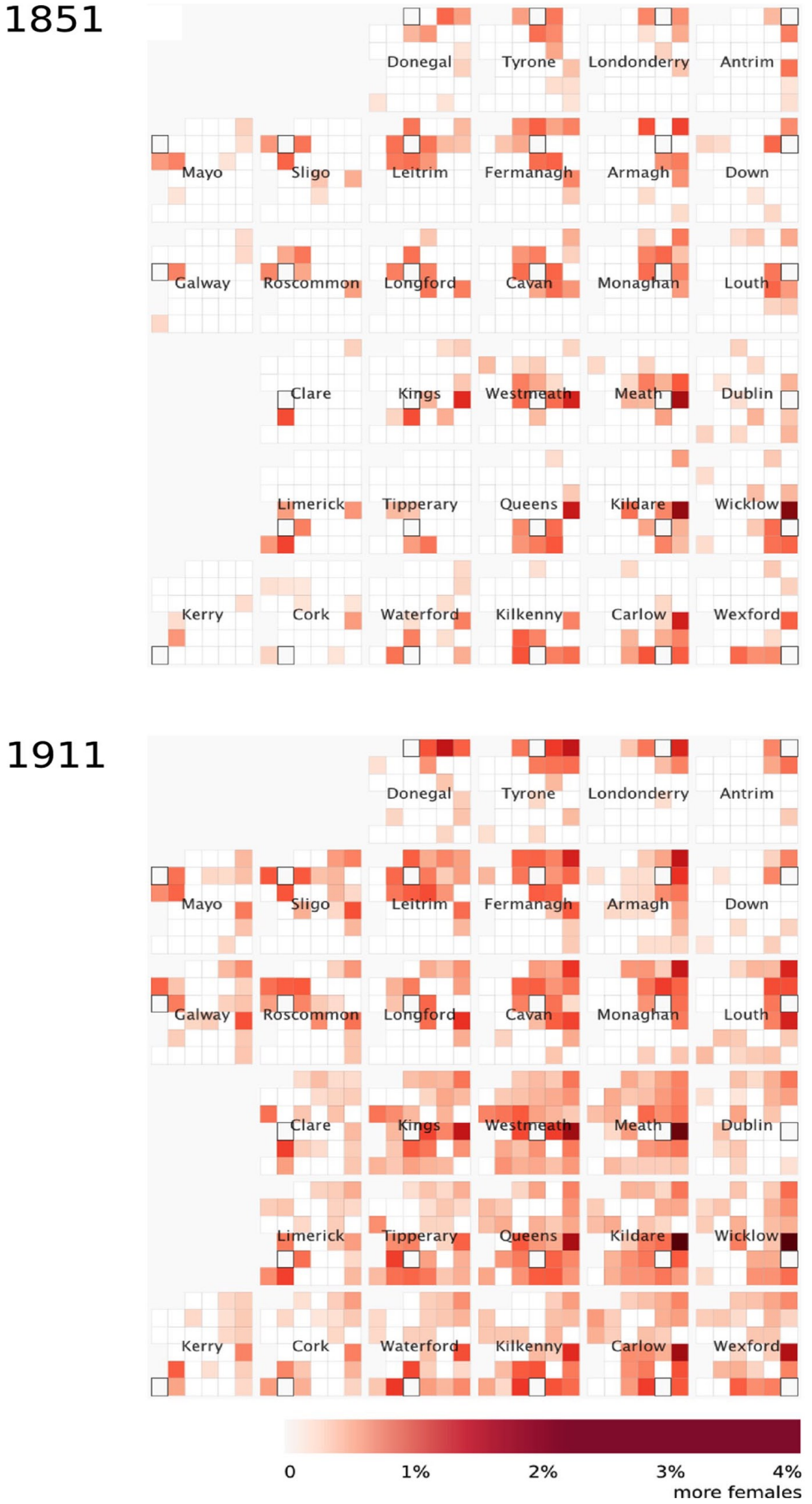

Figure 2. [In colour online.] County pairs where female exceeds male migration. Shaded by the degree to which female exceeds male migration, taking into account the gender balance of the population, expressed as a proportion of the migrant population.

by emigration, coupled with improved communications and rising social expectations may also have encouraged women to seek opportunities elsewhere on the island. The persistence of the local pattern in northern counties was due to the strong textile industry in the north east which continued to provide northern women with employment within their region (Kelly et al, 2013). OD maps enable us to see flow patterns holistically and with equal salience, meaning that we can develop and explore hypotheses such as those presented here in a way that is not possibly with the census tables or OD matrices.

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