

FACTBase

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The Dilemma in Sub-Regional Commuting: Matching Resident Jobs Skills to Workplace Location

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Introduction

From a strategic planning standpoint, State and local governments advocate for the retention of workers in outer metropolitan regions through the provision of local jobs. 'Employment self-sufficiency' targets or jobs-housing balances are used to assess regional success at achieving a better balance between available jobs and working residents, which in turn has the potential to reduce congestion and decentralises the city (WAPC, 2015; also Martinus and Biermann, 2016, for summary of measures). However, targeting improvements in the jobs-to-housing ratio generates questions regarding worker skill levels in different sub-regions. If certain skills or qualification levels are more easily retained in outer metropolitan areas, then should these jobs be targeted for overall employment growth? The problem being that worker mobility may also be linked to skill and qualifications levels (Bill et al., 2007; Yigitcanlar et al., 2007). In which case, indiscriminate employment growth may lead to greater disparity in worker incomes and job opportunities between the Central and outer metropolitan regions.

This FACTBase examines the jobs skills matching within

metropolitan sub-regions by mapping where people live and where they work. Jobs skills matching 'captures how well skills obtained through education and training correspond to the skills required in the labour market' (OECD and World Bank, 2013). While skills are attained through work experience in a particular industry, they are often transferrable between industry types.

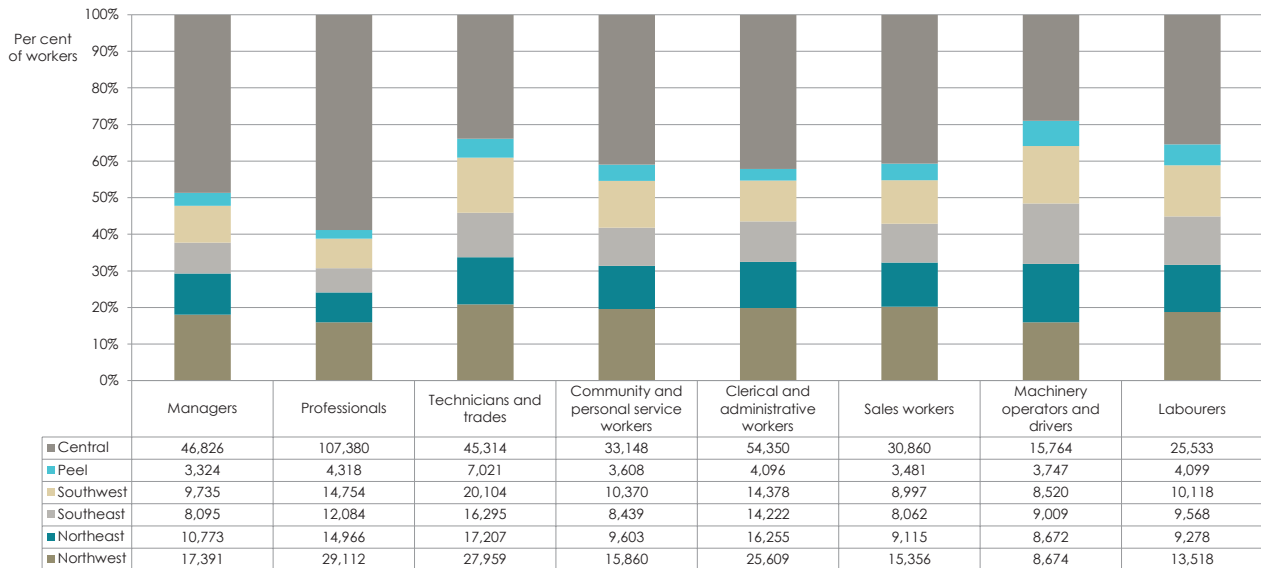
This FACTBase focuses on occupation type as an indicator of a certain level of worker qualification or set of skills. Occupation type data was extracted from the Australian Bureau of Statistics (ABS) 2011 *Census of Population and Housing* using TableBuilder. An occupation journey-to-work matrix was constructed by summing local government areas (LGAs) according to *Perth and Peel@3.5 million* sub-regional boundaries (WAPC, 2015). The next sections identify sub-regional patterns of worker residence, job location and commuting by occupation type. It finds that job-skills matching requires increasing the quality of employment opportunities in outer metropolitan sub-regions rather than absolute and undiscerning increases in job growth.

Worker residence and job location

People live in a particular place for a variety of reasons, such as access to work, urban amenity (such as good schools, shops and nature), social networks, status and/or a particular lifestyle – seachange or treechange. For some, this is not so much a choice but a question of affordability of land prices or rents. The cheapest areas usually are the most disadvantaged in terms of connectivity to employment opportunities and urban amenity, the majority being in outlying metropolitan areas. Despite low connectivity, these areas are highly attractive residential locations to workers with a wide range of skills. This section examines the pattern of residential choice to sub-region employment location for workers from a particular occupation skill set.

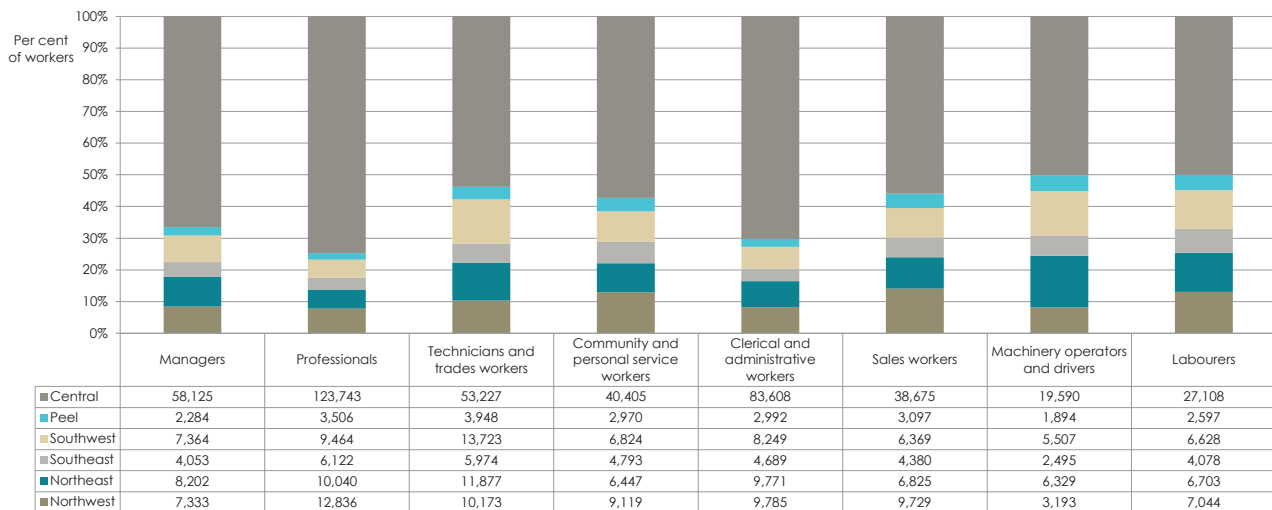
Figure 1 disaggregates where workers live by occupation type. Across all types, the most populous Central sub-region has the highest number of workers. For managers, professionals, and community and personal service workers, the numbers of workers in each sub-region are ranked in order of: 1) Central; 2) Northwest; 3) Northeast and

Figure 1:
Where workers reside, by occupation, absolute numbers and per cent



Source: ABS (2011)

Figure 2:
Where worker jobs are located, by occupation, absolute numbers and per cent



Source: ABS (2011)

Southwest being relatively equal; 4) Southeast; and finally, 5) Peel. Southeast ranks above Northeast in technicians and trade, but in reverse for clerical and administration. Sales, machinery operators and drivers and labourers are relatively well distributed across Southwest, Southeast, Northeast and Northwest.

Figure 2 presents the sub-regions where different occupation types work, with Central again providing the greatest source of jobs. Interestingly, the occupation distribution pattern of the outer sub-regions is less consistent in terms of where people are employed compared to where they live (in figure 1). The outer sub-region of highest

employment for managers and machinery operators and drivers is in Northeast, professionals, community and personal, sales and labourers is in Northwest, and for technicians and trade is in the Southwest. The Peel sub-region had the least number of people working across all occupation types.

Table 1:
Sub-region job skills mismatch, occupations minus numbers of working residents in those occupations, number of workers, 2011

Sub-region	Managers	Professionals	Technicians and trades workers	Community and personal service workers	Clerical and administrative workers	Sales workers	Machinery operators and drivers	Labourers
Northwest	-10,058	-16,276	-17,786	-6,741	-15,824	-5,627	-5,481	-6,474
Northeast	-2,571	-4,926	-5,330	-3,156	-6,484	-2,290	-2,343	-2,575
Southeast	-4,042	-5,962	-10,321	-3,646	-9,533	-3,682	-6,514	-5,490
Southwest	-2,371	-5,290	-6,381	-3,546	-6,129	-2,628	-3,013	-3,490
Peel	-1,040	-812	-3,073	-638	-1,104	-384	-1,853	-1,502
Central	11,299	16,363	7,913	7,257	29,258	7,815	3,826	1,575

Source: ABS (2011)

Table 1 subtracts the number of workers employed in a sub-region from the number residing there for each of the occupation types. Figures in red denote a deficiency in the number of jobs against working residents with those job skills. Overall, the outer sub-regions appear to operate as large residential areas for workers in the Central sub-region. The Northwest sub-region provides by far the least numbers of jobs across all skills types for its residents, except for machinery operators and drivers, while the Southeast sub-region has the least number of jobs to residents.

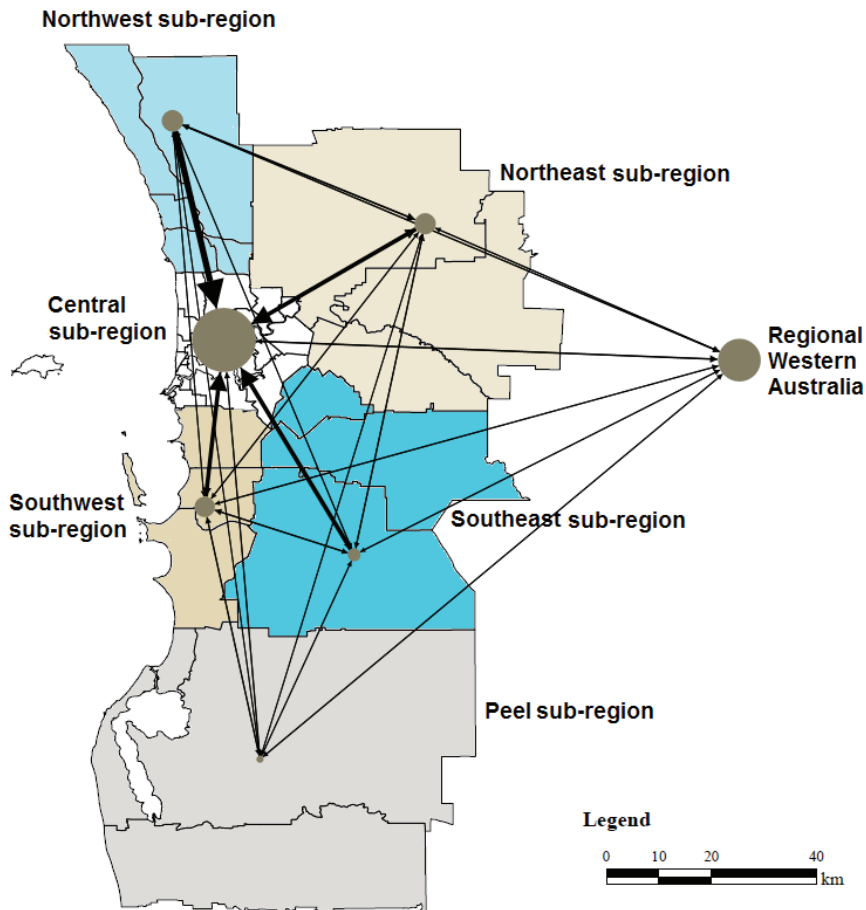
Occupation sub-regional commuting patterns

General commuting is often used as a blanket measure to assess the appropriate delivery of employment in sub-regions. Strategic metropolitan plans provide sub-region job-housing target ratios to guide the land-use planning and structure plans of local governments (see Martinus and Biermann, 2016). In outer sub-regions, these targets underestimate the numbers of commuters travelling to other sub-regions, in particular the Central sub-region. These ratios also give very little detail as to the job skills of each sub-region, and differences between

the commuting pattern of workers with particular skills or qualification levels.

Figure 3 graphically illustrates the numbers of workers both employed in a region and commuting to other regions. Circle size represents actual worker numbers, while arrow thickness denotes the size of the commuting labour force between regions. Regional Western Australia (WA) is included in the analysis given the large number of its workers commuting from Perth and Peel across various industry and occupation types. The majority of work for the metropolitan work force is found in Regional WA and the Central sub-region. The heaviest commuter flows are to Central from the adjacent sub-regions of Northwest, Northeast, Southwest and Southeast. The Peel sub-region has a more even spread of commuters travelling to each of the other sub-regions, including Central.

Figure 3:
Sub-regional commuting patterns



Source: Martinus and Biermann (2016)

Table 2 details sub-region residential origin to sub-region work destination by occupation type; Table 3 displays this as a per cent or ratio of the occupation sub-region total. Examining Table 2 and 3 together shows the pattern of commuting flows across Perth and Peel. Whilst there are many insights to be drawn, this FACTBase focuses on the capacity of each outer sub-region to retain a specific occupation type. This is highlighted through the difference between the number or per centage employed in the sub-region of residence and the Central sub-region given the gravitational pull of employment opportunities found there.

The Peel sub-region appears to have the best jobs-skills match for residents of all the outer sub-regions, with substantially more people living and working in the region than travelling to Central. From a transport perspective, this is the least connected region. Interestingly, the other areas of relatively low transport connectivity, the Southeast and Northeast sub-regions, demonstrate the poorest jobs-skills match. That is, across almost all occupation types the majority of work for those residing in these sub-regions is found in Central. The sub-regions of Northwest and Southwest, lying on the well-connected north-south axis, have a greater proportion

of almost all occupation types living and working there than commuting to Central.

From an occupation perspective, the majority of people working as professionals or clerical and administrative workers in each outer sub-region travel to Central rather than work in their own sub-region. In contrast, sales workers are the highest retained occupation type with more people working and living in their own sub-region than working in Central.

Table 2:
Sub-regional commuting patterns by occupation, absolute numbers, 2011

From		To	Regional WA	Central	Northwest	Northeast	Southeast	Southwest	Peel	Total
Southwest	Managers	849	3,809	60	231	285	4,223	278	9,735	
	Professionals	1,374	6,867	66	255	518	5,097	577	14,754	
	Technicians and trades	5,260	4,719	81	344	493	8,673	534	20,104	
	Community and personal service	1,247	2,752	59	133	360	5,430	389	10,370	
	Clerical and administrative	980	6,690	34	223	323	5,785	343	14,378	
	Sales	795	2,462	29	78	188	5,124	321	8,997	
	Machinery operators and drivers	2,370	1,874	38	250	215	3,547	226	8,520	
	Labourers	2,684	1,907	52	110	238	4,924	203	10,118	
Southeast	Managers	659	3,909	55	446	2,478	525	23	8,095	
	Professionals	1,059	6,529	76	480	3,203	651	86	12,084	
	Technicians and trades	3,921	6,023	110	894	3,961	1,301	85	16,295	
	Community and personal service	906	3,410	54	304	3,371	372	22	8,439	
	Clerical and administrative	945	8,552	38	589	3,411	663	24	14,222	
	Sales	612	3,399	41	253	3,417	316	24	8,062	
	Machinery operators and drivers	2,155	3,665	47	761	1,642	664	75	9,009	
	Labourers	2,140	3,383	52	364	3,129	473	27	9,568	
Peel	Managers	409	477	6	48	71	420	1,893	3,324	
	Professionals	507	640	16	12	41	490	2,612	4,318	
	Technicians and trades	2,304	572	11	56	75	763	3,240	7,021	
	Community and personal service	483	246	5	12	39	298	2,525	3,608	
	Clerical and administrative	349	681	16	21	42	392	2,595	4,096	
	Sales	296	193	9	13	23	234	2,713	3,481	
	Machinery operators and drivers	1,493	226	17	56	55	344	1,556	3,747	
	Labourers	1,248	181	16	17	64	241	2,332	4,099	
Northwest	Managers	1,521	8,766	5,467	1,306	100	228	3	17,391	
	Professionals	2,542	15,983	9,101	1,162	97	213	14	29,112	
	Technicians and trades	8,201	8,972	8,014	2,111	179	474	8	27,959	
	Community and personal service	1,904	5,601	7,568	635	89	57	6	15,860	
	Clerical and administrative	1,947	14,008	8,223	1,266	42	119	4	25,609	
	Sales	1,288	4,970	8,325	656	47	67	3	15,356	
	Machinery operators and drivers	2,704	2,373	2,409	998	67	113	10	8,674	
	Labourers	3,531	3,236	5,798	777	56	117	3	13,518	
Northeast	Managers	1,001	4,903	451	3,963	299	145	11	10,773	
	Professionals	1,414	7,428	461	5,024	464	167	8	14,966	
	Technicians and trades	4,321	5,931	596	5,617	406	318	18	17,207	
	Community and personal service	1,072	3,533	375	4,299	257	60	7	9,603	
	Clerical and administrative	1,186	8,540	471	5,636	288	131	3	16,255	
	Sales	687	3,165	335	4,742	138	43	5	9,115	
	Machinery operators and drivers	2,421	2,911	265	2,725	181	166	3	8,672	
	Labourers	2,153	2,557	302	4,005	164	97	0	9,278	
Central	Managers	4,344	36,261	1,294	2,208	820	1,823	76	46,826	
	Professionals	10,007	86,296	3,116	3,107	1,799	2,846	209	107,380	
	Technicians and trades	10,971	27,010	1,361	2,855	860	2,194	63	45,314	
	Community and personal service	4,858	24,863	1,058	1,064	677	607	21	33,148	
	Clerical and administrative	4,409	45,137	1,003	2,036	583	1,159	23	54,350	
	Sales	3,118	24,486	990	1,083	567	585	31	30,860	
	Machinery operators and drivers	4,235	8,541	417	1,539	335	673	24	15,764	
	Labourers	6,200	15,844	824	1,430	427	776	32	25,533	

Source: ABS (2011)

Table 3:
Sub-regional commuting patterns by occupation, per cent, 2011

From	To	Regional WA (%)	Central (%)	Northwest (%)	Northeast (%)	Southeast (%)	Southwest (%)	Peel (%)	Total (%)
Southwest	Managers	8.7	39.1	0.6	2.4	2.9	43.4	2.9	100.0
	Professionals	9.3	46.5	0.4	1.7	3.5	34.5	3.9	100.0
	Technicians and trades	26.2	23.5	0.4	1.7	2.5	43.1	2.7	100.0
	Community and personal service	12.0	26.5	0.6	1.3	3.5	52.4	3.8	100.0
	Clerical and administrative	6.8	46.5	0.2	1.6	2.2	40.2	2.4	100.0
	Sales	8.8	27.4	0.3	0.9	2.1	57.0	3.6	100.0
	Machinery operators and drivers	27.8	22.0	0.4	2.9	2.5	41.6	2.7	100.0
	Labourers	26.5	18.8	0.5	1.1	2.4	48.7	2.0	100.0
Southeast	Managers	8.1	48.3	0.7	5.5	30.6	6.5	0.3	100.0
	Professionals	8.8	54.0	0.6	4.0	26.5	5.4	0.7	100.0
	Technicians and trades	24.1	37.0	0.7	5.5	24.3	8.0	0.5	100.0
	Community and personal service	10.7	40.4	0.6	3.6	39.9	4.4	0.3	100.0
	Clerical and administrative	6.6	60.1	0.3	4.1	24.0	4.7	0.2	100.0
	Sales	7.6	42.2	0.5	3.1	42.4	3.9	0.3	100.0
	Machinery operators and drivers	23.9	40.7	0.5	8.4	18.2	7.4	0.8	100.0
	Labourers	22.4	35.4	0.5	3.8	32.7	4.9	0.3	100.0
Peel	Managers	12.3	14.4	0.2	1.4	2.1	12.6	56.9	100.0
	Professionals	11.7	14.8	0.4	0.3	0.9	11.3	60.5	100.0
	Technicians and trades	32.8	8.1	0.2	0.8	1.1	10.9	46.1	100.0
	Community and personal service	13.4	6.8	0.1	0.3	1.1	8.3	70.0	100.0
	Clerical and administrative	8.5	16.6	0.4	0.5	1.0	9.6	63.4	100.0
	Sales	8.5	5.5	0.3	0.4	0.7	6.7	77.9	100.0
	Machinery operators and drivers	39.8	6.0	0.5	1.5	1.5	9.2	41.5	100.0
	Labourers	30.4	4.4	0.4	0.4	1.6	5.9	56.9	100.0
Northwest	Managers	8.7	50.4	31.4	7.5	0.6	1.3	0.0	100.0
	Professionals	8.7	54.9	31.3	4.0	0.3	0.7	0.0	100.0
	Technicians and trades	29.3	32.1	28.7	7.6	0.6	1.7	0.0	100.0
	Community and personal service	12.0	35.3	47.7	4.0	0.6	0.4	0.0	100.0
	Clerical and administrative	7.6	54.7	32.1	4.9	0.2	0.5	0.0	100.0
	Sales	8.4	32.4	54.2	4.3	0.3	0.4	0.0	100.0
	Machinery operators and drivers	31.2	27.4	27.8	11.5	0.8	1.3	0.1	100.0
	Labourers	26.1	23.9	42.9	5.7	0.4	0.9	0.0	100.0
Northeast	Managers	9.3	45.5	4.2	36.8	2.8	1.3	0.1	100.0
	Professionals	9.4	49.6	3.1	33.6	3.1	1.1	0.1	100.0
	Technicians and trades	25.1	34.5	3.5	32.6	2.4	1.8	0.1	100.0
	Community and personal service	11.2	36.8	3.9	44.8	2.7	0.6	0.1	100.0
	Clerical and administrative	7.3	52.5	2.9	34.7	1.8	0.8	0.0	100.0
	Sales	7.5	34.7	3.7	52.0	1.5	0.5	0.1	100.0
	Machinery operators and drivers	27.9	33.6	3.1	31.4	2.1	1.9	0.0	100.0
	Labourers	23.2	27.6	3.3	43.2	1.8	1.0	0.0	100.0
Central	Managers	9.3	77.4	2.8	4.7	1.8	3.9	0.2	100.0
	Professionals	9.3	80.4	2.9	2.9	1.7	2.7	0.2	100.0
	Technicians and trades	24.2	59.6	3.0	6.3	1.9	4.8	0.1	100.0
	Community and personal service	14.7	75.0	3.2	3.2	2.0	1.8	0.1	100.0
	Clerical and administrative	8.1	83.0	1.8	3.7	1.1	2.1	0.0	100.0
	Sales	10.1	79.3	3.2	3.5	1.8	1.9	0.1	100.0
	Machinery operators and drivers	26.9	54.2	2.6	9.8	2.1	4.3	0.2	100.0
	Labourers	24.3	62.1	3.2	5.6	1.7	3.0	0.1	100.0

Source: ABS (2011)

Conclusion

This FACTBase discusses where workers live and where they work by occupation as a means to understand sub-regional jobs-skill matching to residents. While such information is critical for metropolitan strategic planning, the complex commuting patterns presented in this FACTBase have no easy solution as increases in absolute jobs may result in greater disparities in employment opportunities between Central and outer metropolitan sub-regions. As such, planning authorities need to explore alternative mechanisms to redress resident jobs-skills imbalances between the outer and Central sub-regions. This may mean reimagining traditional industrial strengths and better understanding natural competitive advantages and how these align with alternative or emerging industries. In other words, job-skills matching across the entire metropolitan region requires the creation of high-quality skilled employment opportunities rather than absolute numbers of jobs in outer metropolitan sub-regions.

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About FACTBase

FACTBase is a collaborative research project between the Committee for Perth and The University of Western Australia to benchmark the liveability of Perth and its global connectedness through an examination of Perth's economic, social, demographic and political character.

The FACTBase team of academics and researchers condense a plethora of existing information and databases on the major themes, map what is happening in Perth in pictures as well as words, and examine how Perth compares with, and connects to, other cities around the world.

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Kirsten Martinus is a Research Fellow at The University of Western Australia's School of Earth and Environment. Her research interests lie in urban and economic development, social capital formation, innovation and globalisation studies.

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