



2017/2018 Regional Travel Survey In-Depth Analysis Work Start and End Times

In the Fall of 2019, TPB staff began releasing the preliminary results of the Regional Travel Survey. TPB staff asked regional stakeholders to offer questions that the RTS might help inform. The RTS is a once-a-decade household travel survey which collected detailed information about households and their daily travel obtained from a travel diary. This piece is part of a series of responses to thought provoking-questions offered by our stakeholders.

QUESTION

How have average work start and end times changed over the past ten years?

INTRODUCTION

Data from the 2017/2018 Regional Travel Survey (RTS) can be compared with data from the 2007/2008 Household Travel Survey (HTS) to determine how commuting patterns have changed over time. Shifting work start and end times have implications for both roadway congestion and transit use in the TPB Planning region. The primary data sources are the one-day travel diaries that were completed by all household members who participated in either of these surveys.

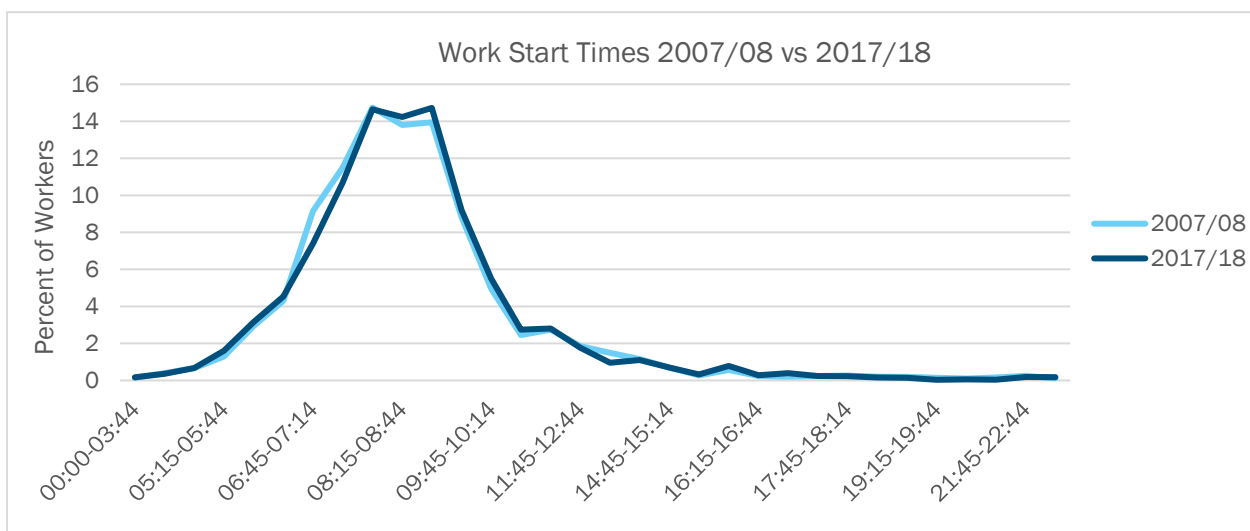
APPROACH

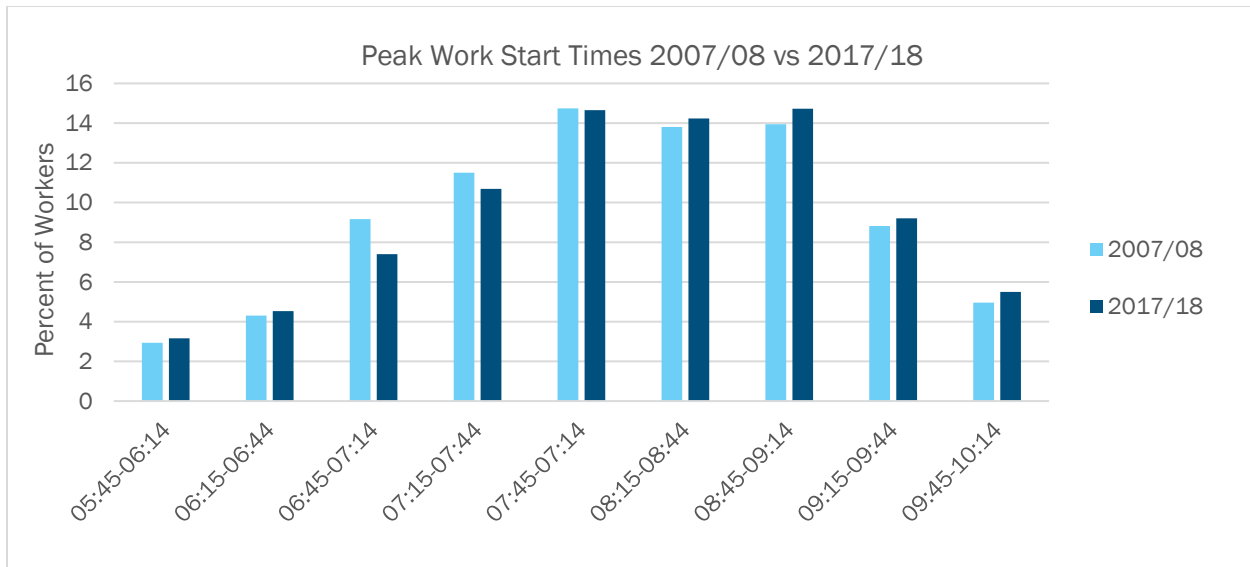
For this question, we used the origin and destination purpose to determine which trips were work trips. We then recorded the arrival time for trips with the destination purpose of work to use as a proxy for work start time and we recorded the departure time for trips with the origin purpose of work to use as a proxy for work end time. To eliminate trips taken in the middle of a workday, we used only the first arrival at work and the last departure from work if there were multiple work trips for an individual in the survey day. The resulting work start and end times were cross tabulated with household income, gender, and employer type. This analysis was performed for both the 2007/2008 HTS and the 2017/2018 RTS to determine how work start and end times have changed in the past ten years, and if those changes vary by household income, gender, or employer type.

Detailed breakdowns of each comparison are shown in the tables and charts below, with key takeaways for each. Highlighting is used in certain tables for emphasis. In advance of preparing these responses, the tabulations were reviewed for accuracy and robustness. To create these tables for the TPB Planning Region, the survey results were expanded using weights that considered the probability of selection of individual households as well as adjustments for household size, workplace location, and Metrorail ridership.

ANALYSIS AND KEY FINDINGS

A. 2007/08 vs 2017/18 Work Start Times



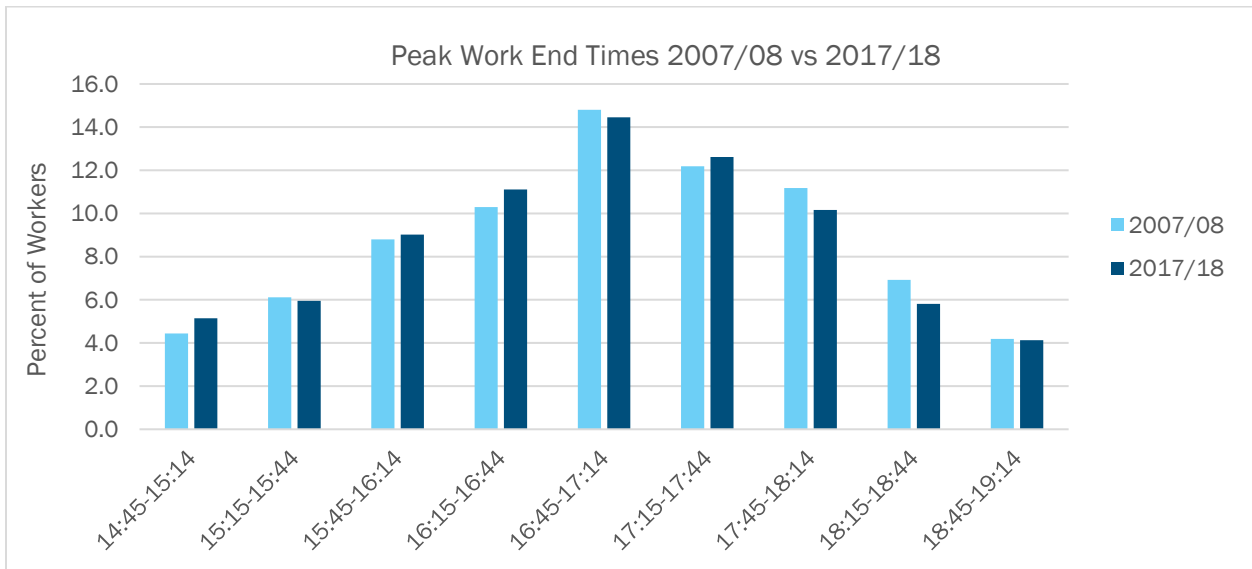
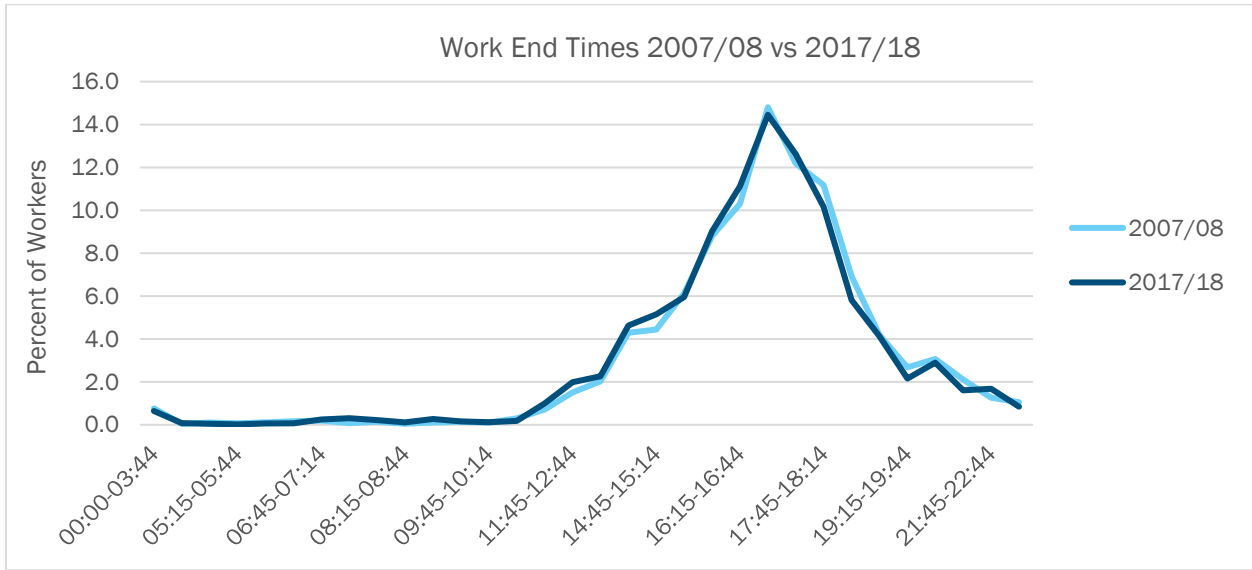


Key Findings for 2007/08 vs 2017/18 Work Start Times:

- The graph of work start times throughout the day shows that the start times observed in 2017/18 very closely match those observed in 2007/08.
- The median work start time for both 2007/08 and 2017/18 was 8:25 am.
- The peak work start times chart shows that a higher percentage of workers started their workday in 2007/08 between 6:45 and 7:44 am than in 2017/18.
- A slightly higher percentage of workers started their workday in 2017/18 between 8:15 and 10:14 am than in 2007/08. This may represent a slight shift towards later shift start times.

Work Start Time	Percent of Workers who start their workday during each time period	
	2007/08	2017/18
Start times before 5:45 am	2.5	2.8
05:45-06:14 am	2.9	3.2
06:15-06:44 am	4.3	4.5
06:45-07:14 am	9.2	7.4
07:15-07:44 am	11.5	10.7
07:45-08:14 am	14.7	14.7
08:15-08:44 am	13.8	14.2
08:45-09:14 am	13.9	14.7
09:15-09:44 am	8.8	9.2
09:45-10:14 am	5.0	5.5
Start times after 10:14 am	13.3	13.1
Total	100	100
Median Start Time	8:25 am	8:25 am

B. 2007/08 vs 2017/18 Work End Times

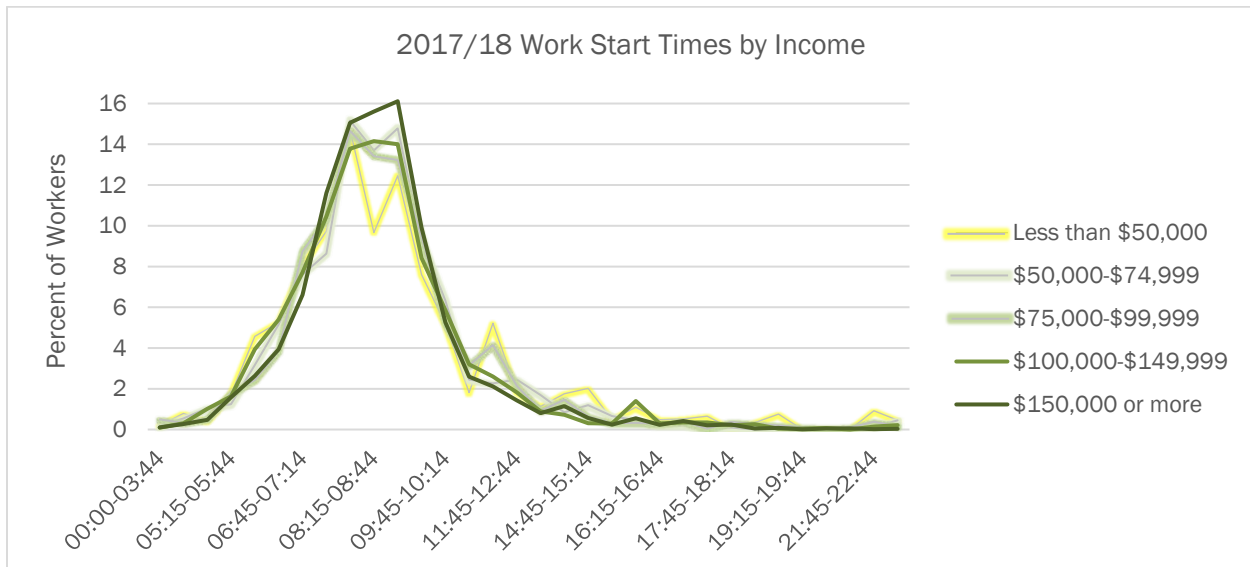


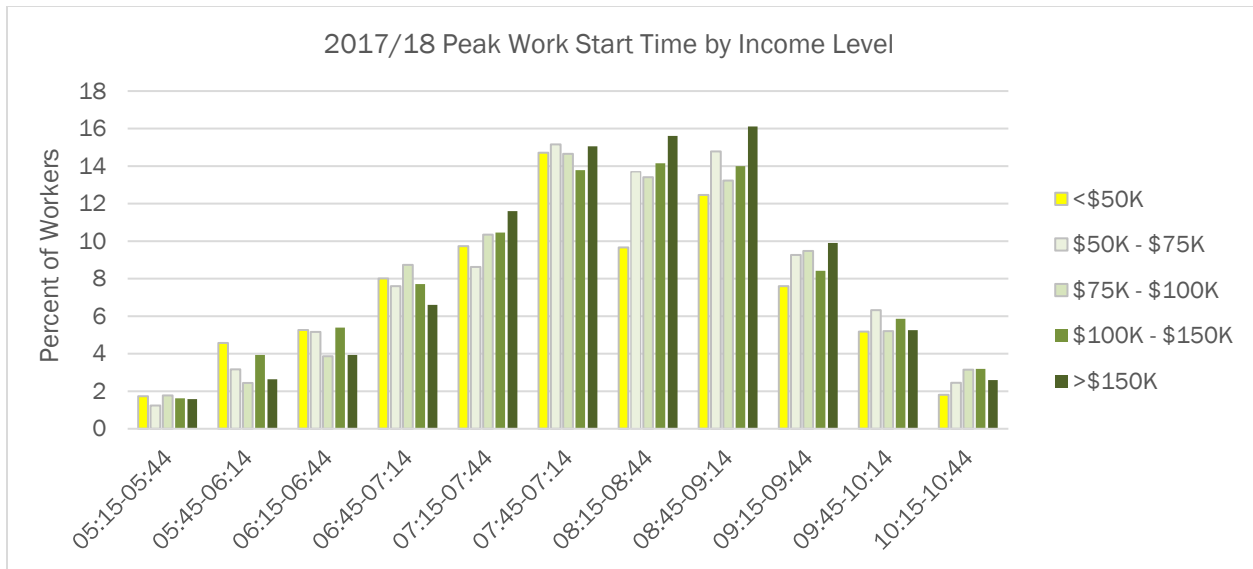
Key Findings for 2007/08 vs 2017/18 Work End Times:

- A slightly higher share of workers in 2017/18 ended their workday between 4:15 and 4:44 pm and 5:15 and 5:44 than did in 2007.
- A higher share of workers in 2007/08 ended their workday between 5:45 and 6:44 pm than did in 2017/18.
- With the apparent later shift in work start times between 2007/08 and 2017/18, a similar shift in work end times would be expected, but this was not observed.
- The median work end time observed in 2007/08 was 5:00 pm and in 2017/18 the median work end time was 4:57 pm.
- Overall, differences in work end times between 2007/08 and 2017/18 are very small with no clear trend toward earlier or later work end times.

Work End Time	Percent of workers who end their workday during each time period	
	2007/08	2017/18
End times before 2:45 pm	10.9	12.4
2:45 - 3:14 pm	4.4	5.1
3:15 - 3:44 pm	6.1	6.0
3:45 - 4:14 pm	8.8	9.0
4:15 - 4:44 pm	10.3	11.1
4:45 - 5:14 pm	14.8	14.5
5:15 - 5:44 pm	12.2	12.6
5:45 - 6:14 pm	11.2	10.2
6:15 - 6:44 pm	6.9	5.8
6:45 - 7:14 pm	4.2	4.1
End times after 7:14 pm	10.2	9.2
Median Work End Time	5:00 pm	4:57 pm

C. Work Start Time by Income Level





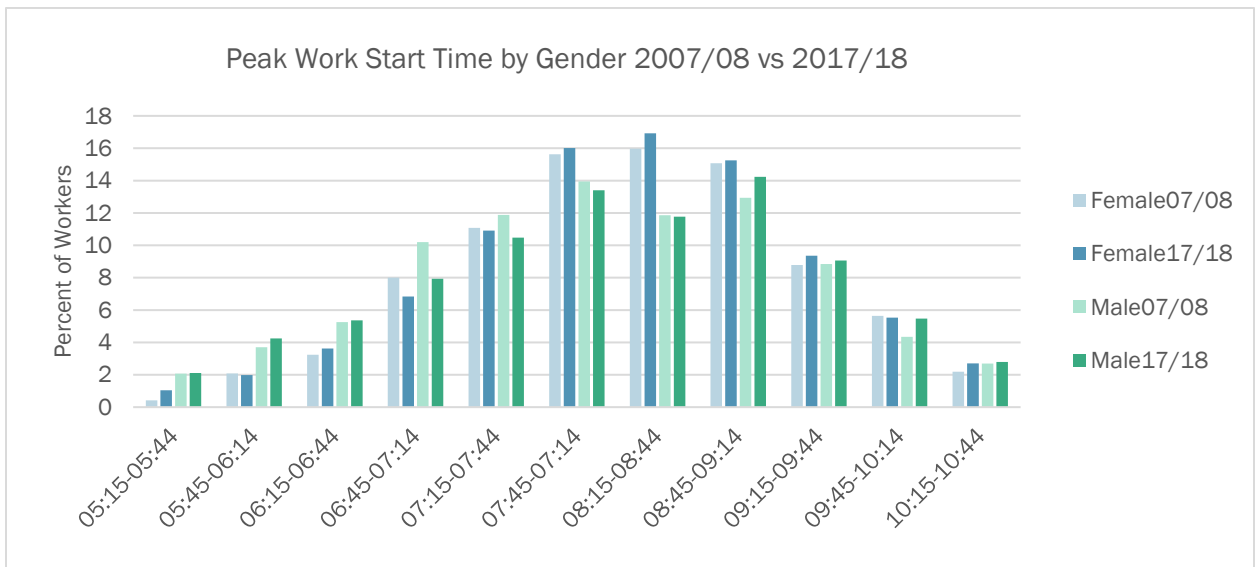
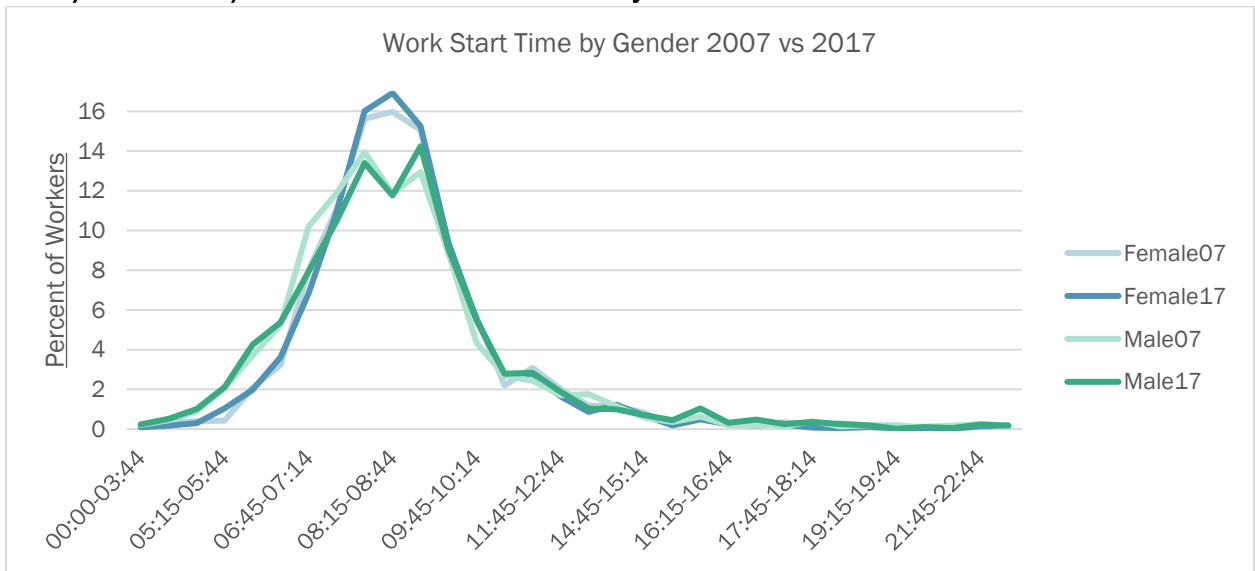
Work Start Time	Percent of workers by work start-time period in each household income level									
	<\$50K (%)		\$50-75K (%)		\$75-100K (%)		\$100 -150K (%)		>150K (%)	
	07/08	17/18	07/08	17/18	07/08	17/18	07/08	17/18	07/08	17/18
Before 5:15 am	1.7	1.4	1.4	1.7	1.0	1.3	1.1	1.4	1.1	0.8
05:15-05:44 am	1.3	1.7	2.0	1.2	1.5	1.8	1.2	1.6	0.9	1.6
05:45-06:14 am	4.4	4.6	4.0	3.2	2.4	2.4	3.0	3.9	1.8	2.6
06:15-06:44 am	5.7	5.3	4.2	5.2	4.4	3.9	4.5	5.4	3.3	3.9
06:45-07:14 am	8.7	8.0	8.6	7.6	10.5	8.7	8.9	7.7	9.2	6.6
07:15-07:44 am	8.3	9.7	11.6	8.6	12.0	10.4	11.6	10.5	12.6	11.6
07:45-08:14 am	14.5	14.7	13.7	15.2	15.1	14.7	14.6	13.8	15.5	15.1
08:15-08:44 am	11.2	9.7	13.3	13.7	13.8	13.4	14.7	14.2	14.2	15.6
08:45-09:14 am	13.4	12.5	13.6	14.8	13.4	13.2	14.3	14.0	14.3	16.1
09:15-09:44 am	6.5	7.6	8.3	9.3	8.1	9.5	9.0	8.4	10.6	9.9
09:45-10:14 am	5.1	5.2	4.3	6.3	4.8	5.2	5.0	5.9	5.3	5.3
After 10:14 am	19.2	19.6	15.0	13.2	13.1	15.5	12.1	13.3	11.2	10.9
Total	100	100	100	100	100	100	100	100	100	100
Median Start Time	8:29	8:25	8:25	8:26	8:23	8:26	8:25	8:23	8:25	8:26

Key Findings for Work Shift by Income Level:

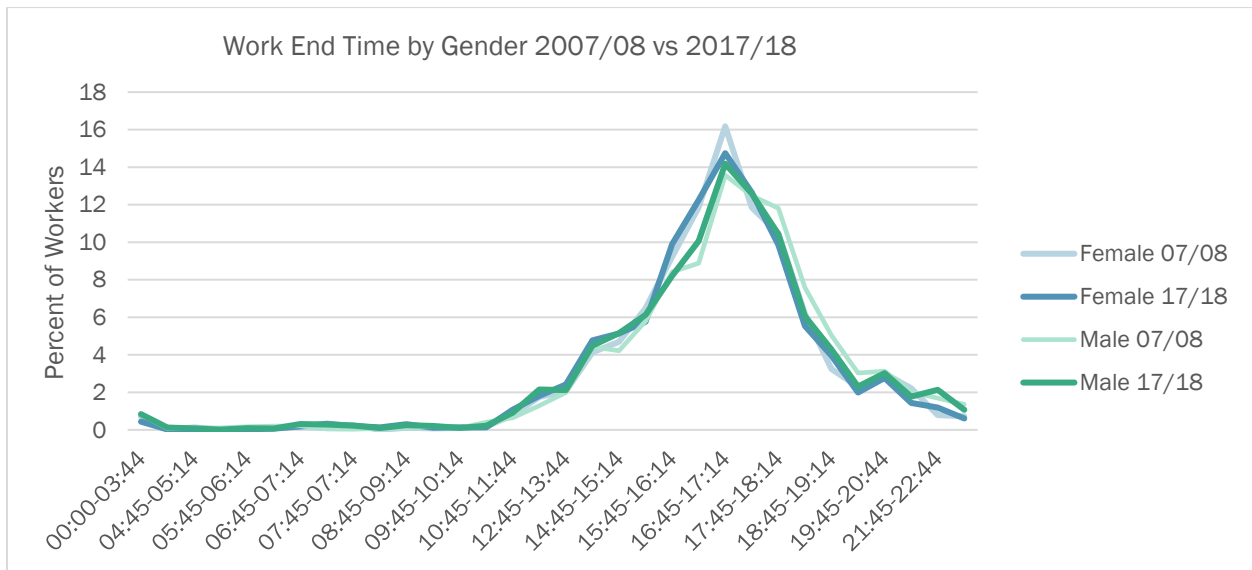
- There is a higher share of peak work start times in the early morning for workers from lower (<\$50K) income households.
- There is a higher share of peak work start times in the mid-morning for workers from higher (>\$150K) income households.

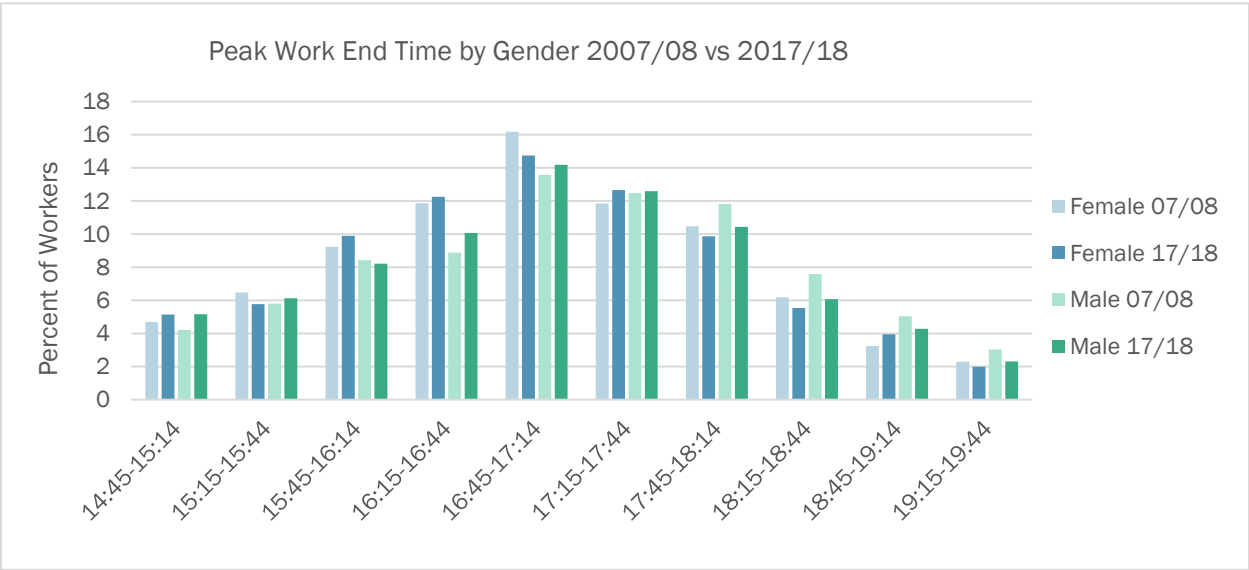
- The percentage of workers who begin work after 10:14 am tends to be highest for workers from lower income households and lowest for workers from higher income households. This, coupled with the higher percentage of workers from lower income households starting work in the early morning, suggests that lower wage jobs tend to have shift start times throughout the day, while higher wage jobs tend to have start times between 7:00 and 9:00 am.
- These patterns are consistent between the 2007/08 and 2017/18 surveys.

D. 2007/08 vs 2017/18 Work Start and End Times by Gender



Work Start Time	Percent of female and male workers who begin their workday during each time period			
	Female (%)		Male (%)	
	07/08	17/18	07/08	17/18
Start times before 5:15 am	0.8	0.6	1.5	1.8
05:15-05:44 am	0.4	1.0	2.1	2.1
05:45-06:14 am	2.1	2.0	3.7	4.2
06:15-06:44 am	3.2	3.6	5.3	5.4
06:45-07:14 am	8.0	6.8	10.2	7.9
07:15-07:44 am	11.1	10.9	11.9	10.5
07:45-08:14 am	15.6	16.0	13.9	13.4
08:15-08:44 am	16.0	16.9	11.9	11.8
08:45-09:14 am	15.1	15.3	12.9	14.2
09:15-09:44 am	8.8	9.4	8.8	9.1
09:45-10:14 am	5.6	5.5	4.3	5.5
Start times after 10:14 am	13.2	12.0	13.4	14.2
Total	100	100	100	100
Median Start Time	8:29	8:27	8:15	8:21





Work End Time	Percent of female and male workers who end their workday during each time period			
	Female (%)		Male (%)	
	07/08	17/18	07/08	17/18
End times before 2:45 pm	10.8	12.2	11.0	12.6
2:45 – 3:14 pm	4.7	5.1	4.2	5.2
3:15 – 3:44 pm	6.5	5.8	5.8	6.1
3:45 – 4:14 pm	9.2	9.9	8.4	8.2
4:15 – 4:44 pm	11.9	12.3	8.9	10.1
4:45 – 5:14 pm	16.2	14.7	13.6	14.2
5:15 – 5:44 pm	11.8	12.7	12.5	12.6
5:45 – 6:14 pm	10.5	9.9	11.8	10.4
6:15 – 6:44 pm	6.2	5.5	7.6	6.1
6:45 – 7:14 pm	3.2	4.0	5.0	4.3
End times after 7:14 pm	9.0	8.0	11.2	10.3
Total	100	100	100	100
Median End Time	4:59 pm	4:56 pm	5:09 pm	4:58 pm

Key Findings for Work Start and End Times by Gender:

- Work start times for females tends to be concentrated between 7:15 and 9:15 am.
- There was a larger share of work start times for males in the early hours of the morning (before 7:45 am) in 2007/08, this share was reduced in 2017/18 and was closer to the female share for the same time periods.

- Similar to start times, male work end times were more diffuse in 2007/18, with a larger share of later end times than females. This share was reduced in 2017/18 and was closer to the female share for the same time periods.

E. 2007/08 vs 2017/18 Work Start Times and End Time by Employer Type

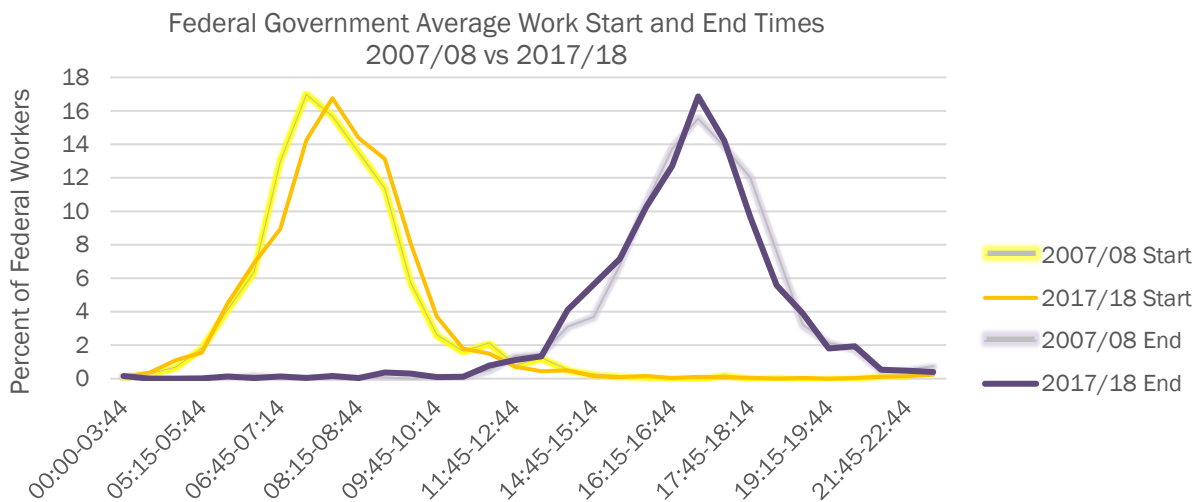
Work Start Time	Percent of workers who begin their workday during each time period by employer type											
	For-Profit Firm		Non-Profit Firm		Federal Government		State or Local Government		International Organization		Self Employed	
	07/08	17/18	07/08	17/18	07/08	17/18	07/08	17/18	07/08	17/18	07/08	17/18
Before 5:15 am	1.7	1.5	0.6	0.4	1.1	1.6	0.6	0.4	0.0	0.6	0.4	0.9
05:15-05:44 am	1.2	1.9	0.6	0.6	1.8	1.6	1.7	1.7	0.0	0.2	0.3	1.9
05:45-06:14 am	2.7	2.9	1.9	1.7	4.1	4.5	3.4	3.9	4.0	0.0	1.4	2.2
06:15-06:44 am	4.0	3.9	1.9	2.6	6.4	6.9	5.5	6.5	0.0	2.3	2.0	1.1
06:45-07:14 am	8.0	7.3	6.6	5.0	13.0	8.9	10.8	10.0	4.4	1.3	4.9	2.8
07:15-07:44 am	9.3	8.6	9.8	10.0	17.0	14.3	15.0	15.7	5.9	2.9	5.5	6.0
07:45-08:14 am	14.5	13.1	12.5	14.6	15.7	16.8	18.9	18.1	14.5	10.7	11.2	12.8
08:15-08:44 am	12.7	13.2	15.8	15.9	13.5	14.4	17.0	16.0	13.0	28.2	13.6	10.2
08:45-09:14 am	14.9	15.3	19.3	19.7	11.4	13.1	8.1	9.1	18.0	24.9	13.6	10.8
09:15-09:44 am	10.6	10.1	10.8	11.8	5.7	8.1	5.2	4.6	20.9	9.3	6.4	8.4
09:45-10:14 am	5.7	6.3	6.2	6.3	2.6	3.7	3.3	3.6	12.5	10.7	6.6	6.6
After 10:14 am	14.6	15.8	14.0	11.4	7.7	6.2	10.6	10.4	6.9	8.9	34.1	36.2
Total	100	100	100	100	100	100	100	100	100	100	100	100
Median Start Time (am)	8:30	8:33	8:44	8:38	7:55	8:00	8:02	7:58	8:57	8:44	9:03	9:15
Median End Time (pm)	5:10	5:00	5:05	4:57	4:59	4:55	4:16	4:15	5:58	5:44	5:00	4:29

Key Findings for Work Start and End Times by Employer Type:

- Median work start time overall and by both household income and gender are fairly consistent at about 8:30 am, however, when analyzed by employer type, clear differences are evident.
- The median work start time for for-profit firms was roughly 8:30 am, for non-profit firms it was slightly later at around 8:45 am. Both federal and state and local governments had the earliest median start times at around 8:00 am.
- International organizations and self-employed workers had the latest start times at roughly 9:00 am. Both of these categories had small sample sizes so these data may not be representative, however the patterns were similar for both the 2007/08 and 2017/18 surveys.

F. 2007/08 vs 2017/18 Work Start Times and End Time for Federal Government Employees

Work Start Time	Percent of Federal Government workers who start their workday during each time period		Work End Time	Percent of Federal Government workers who end their workday during each time period	
	2007/08 (%)	2017/18 (%)		2007/08 (%)	2017/18 (%)
Start times before 5:15 am	1.1	1.6	End times before 2:45 pm	7.5	8.9
5:15 – 5:44 am	1.8	1.6	2:45 – 3:14 pm	3.7	5.6
5:45 – 6:14 am	4.1	4.5	3:15 – 3:44 pm	6.8	7.2
6:15 – 6:44 am	6.4	6.9	3:45 – 4:14 pm	10.4	10.2
6:45 – 7:14 am	13.0	8.9	4:15 – 4:44 pm	13.7	12.7
7:15 – 7:44 am	17.0	14.3	4:45 – 5:14 pm	15.5	16.9
7:45 – 8:14 am	15.7	16.8	5:15 – 5:44 pm	13.9	14.2
8:15 – 8:44 am	13.5	14.4	5:45 – 6:14 pm	12.0	9.6
8:45 – 9:14 am	11.4	13.1	6:15 – 6:44 pm	7.6	5.6
9:15 – 9:44 am	5.7	8.1	6:45 – 7:14 pm	3.2	3.9
9:45 – 10:14 am	2.6	3.7	7:15 – 7:44 pm	2.1	1.8
Start times after 10:14 am	7.7	6.2	End times after 7:44 pm	3.6	3.3
Total	100	100		100	100
Median Start Time	7:55 am	8:00 am	Median End Time	4:59 pm	4:55 pm



Key Findings for Work Start and End Times for Federal Employees, 2007/08 vs 2017/18:

- In 2007/08, the largest share of work start times for federal employees was spread out from 6:45 to 9:14 am, in 2017/18 the largest work start time share took place in a narrower timeframe from 7:15 to 9:14 am.
- Similar to start times, in 2007/08 over 10 percent of federal employees ended their work shifts in each 30-minute time period between 3:45 and 6:15 pm. In 2017/18, a larger share of federal employees ended their shifts during a narrower timeframe, between 3:45 and 6:00 pm.

SUMMARY OF FINDINGS

A comparison between the 2007/18 HTS and the 2017/18 RTS data reveals that overall, there has been very little change in work start and end time in the past ten years.

- Work start and end times for workers from lower income households tend to be more spread out throughout the day and work shifts for workers from higher income households tend to be concentrated in the 8:00 am to 5:00 pm timeframe. This has equity implications; for example, the availability and frequency of transit service are typically highest during the morning and afternoon peak periods which correspond with standard business hours (8:00 am to 5:00 pm).
- The largest share of work start times for females observed in 2007/08 was concentrated in a 90 minute time period, while for males the start times were spread out over a wider time frame. By 2017/18, work start times for males had also become slightly more concentrated. This may reflect differences in work-life balance and domestic responsibilities for each gender.
- Median work start time overall and by both household income and gender were fairly consistent at about 8:30 am in both 2007/08 and 2017/18, however, when analyzed by employer type, clear differences are evident. Median shift times for government employees trend earlier, followed by for-profit and non-profit firms, the latest shift times were observed for employees of international organizations and the self-employed.
- Work shifts of federal employees were observed to take place during a narrower time frame in 2017/18 than in 2007/08.
- The original question asked if work shifts have become more flexible in the past decade. This analysis demonstrates that there was very little change in work shifts between 2007/08 and 2017/18, but the very small changes suggest that work shifts are becoming slightly less flexible.