Does Commute Time Affect Productivity?

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NYU Wagner, 3/30/19

Background

At a previous workplace, my manager found a position at a different college. While we worked together, both of us had shared similar commute times of approximately an hour and fifteen minutes. My manager’s new position cut her commute down to fifteen minutes. I remember the excitement on her face when she described having two extra hours in her day. In my own work experience, I have found that my commute can affect my overall mood and effort from time to time. This CAT was conducted to determine if the length of commute effects overall productivity in employees.

CAT Question

*Does commute time affect employee productivity?*

PICOC

<table>
<thead>
<tr>
<th>Population</th>
<th>Who?</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>What or how?</td>
<td>Long commute</td>
</tr>
<tr>
<td>Comparison</td>
<td>Compared to What?</td>
<td>Short commute or no commute</td>
</tr>
<tr>
<td>Outcome</td>
<td>What are you trying to accomplish, improve, or change</td>
<td>Performance</td>
</tr>
<tr>
<td>Context</td>
<td>In what kind of organization?</td>
<td>Workplace</td>
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</tbody>
</table>
Inclusion Criteria

a) Language: articles in English

b) Type of studies: empirical, quantitative studies, preferably meta-analyses and/or longitudinal/controlled studies

c) Outcome: performance, productivity, absentee rate, well-being

d) Context: studies related to workplace settings.

Search Strategy

The following databases were used to identify studies: ABI/INFORM Global and Google Scholar. The following generic search filters were applied to ABI/INFORM Global during the search:

1. Scholarly journals, peer-reviewed
2. Articles in English

A search was conducted using combinations of different search terms, such as ‘travel distance’, ‘travel time’, ‘commut*’, ‘perform*’ and ‘productiv*’

Documentation of the Search

<table>
<thead>
<tr>
<th>Search terms</th>
<th>ABI/INFORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1: ti(“commut*”) OR ab(“commut*”)</td>
<td>2,535</td>
</tr>
<tr>
<td>S2: ti(“travel distance”) OR ab(“travel distance”)</td>
<td>332</td>
</tr>
<tr>
<td>S3: ti(“travel time”) OR ab(“travel time”)</td>
<td>1,318</td>
</tr>
<tr>
<td>S4: S1 OR 2 OR 3</td>
<td>4,045</td>
</tr>
</tbody>
</table>
Study Selection

Selection took place in multiple phases. First, the titles and abstracts of 249 studies identified were screened for their relevance to this CAT. In case of doubt, the study was included. Duplicate publications were removed. This first phase yielded 2 relevant non-controlled posttest studies and 2 relevant cross sectional studies. The second phase included a search of the included studies references, which yielded an additional non-controlled posttest study and a non-randomized controlled study.

Data Extraction

See attachment

Critical Appraisal

After a critical appraisal of eleven studies, only six studies were included. The overall quality of the studies included was low. In particular, there was a lack of meta-analyses conducted on this subject. Due to the low quality and quantity, the initial search was expanded to use sources from Google Scholar and the references from each article were checked, garnering an additional two studies, one of which proved to be a non-randomized controlled study of high quality (level B).
The initial search produced four relevant studies. Two of these studies were cross-sectional and two were non-controlled posttest. All four were of low quality (level D and E) but due to the scarcity of relevant material, they were included.

**Results**

**Definition**

The concept of a long commute is generally considered to be a commute that takes more than one hour. Citizenship behavior refers to “behavior that is defined as individual behaviors that are beneficial to the organization and are discretionary, not directly or explicitly recognized by the formal reward system” (Organ and Ryan, 1995). Subjective well-being is defined formally in the 2013 OECD Guidelines on Measuring SWB as “Good mental states, including all of the various evaluations, positive and negative, that people make of their lives, and the affective reactions of people to their experiences” (OECD 2013). As such, SWB is “a broad concept encompassing (1) self-evaluations of satisfaction with different aspects (or domains) of one’s life (e.g. satisfaction with home, family, job, health) and with life overall-referred to as ‘evaluative wellbeing’; (2) the frequency with which one experiences different emotions,-referred to as ‘experiential wellbeing’, and (3) whether individuals feel they are fulfilling their potential-referred to as ‘eudaimonic wellbeing’. The first two of these SWB dimensions are sometimes jointly referred to as ‘hedonic wellbeing’, since they relate to pleasure and satisfaction” (e.g. de Vos et al. 2013).

**Causal mechanism**

The causal mechanism behind long commutes affecting performance as follows:
a) The longer a commute, the more fatigue an employee will experience on their way to and from work.

b) Employees will lose out on time to sleep, prepare for work, spend time with their families, and destress.

c) Employee are more likely to take a sick day due to in climate weather or health concerns if their commute is long.

d) Job satisfaction and thus performance will be lower if the employee’s overall well-being is lower.

Main Findings

Evidence suggests longer commutes ...

1. ... negatively affect employee leisure and family time (level D)
   Time spent commuting is time the employee could otherwise be spending with their family or at leisure.

2. ... increases the rate of absenteeism and sick days (level E)
   Employees with a longer commute are more likely to take sick days as the commute adds frustration and stress to the days daily activities and when employees are sick they are less likely to want to add stress and frustration to their day.

3. ... lowers job satisfaction (Level B)
   Commute time lowers job satisfaction because it is encompassed in the employees overall view of their employment.

4. ... negatively affects subjective well-being and overall health (level D)
   Longer commutes cause more stress and reduce the employees over all relaxation time.

5. ... increases stress (level E)
   Longer commuting presents a longer more taxing task for employees than a shorter commute.

6. ...negatively affects employee citizenship behavior (level E)
   Employees with a longer commute are more likely to be stressed when then get to work, which leads to them being less likely to cooperate with others as they are in a bad mood.
Conclusion

The outcome of this CAT suggests that longer commutes negatively affects job satisfaction, absenteeism, and employee well being. It is therefore very likely that longer commutes affect the overall wellbeing of employees and strong evidence exists that when an employee’s wellbeing is low, their performance suffers.

Limitations

Concessions were made in relation to the breadth and depth of the search process. As a consequence, some relevant studies may have been missed. A second limitation concerns the critical appraisal of the studies included. This CAT did not conduct a comprehensive review of the psychometric properties of the tests, scales and questionnaires used. Although one of these studies was well controlled, no single study can be considered to be strong evidence – it is merely indicative. Given these limitations, care must be taken not to present the findings presented in a CAT as conclusive.

Implications and recommendations

It was found that employees with longer commutes take have a higher absentee rate, have a lower subjective well-being due to their lower amount of leisure time and time to spend with their families, and have lower job satisfaction. In order to address these detrimental effects management can use a variety of techniques and employee benefits, which include flexible work schedules that may enable employees to travel during hours of lower congestion and telecommuting to work. These modern benefits can increase job satisfaction and allow employees more time to destress. These results however do require further exploration as the quantity and quality of current research is low.
<table>
<thead>
<tr>
<th>Author &amp; Year</th>
<th>Sector / Population</th>
<th>Design + sample size</th>
<th>Main Findings</th>
<th>Effect Size</th>
<th>Limitations</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santhosh V.A. (2015)</td>
<td>386 public and private sector employees</td>
<td>Cross-sectional study</td>
<td>Commuting alone has little impact on citizenship behavior, however, there is a negative correlation between aspects of commuting such as period and cost that affect citizenship behavior.</td>
<td>Distance Traveled $r = -0.074$ Period of commuting $r = -0.057$ small</td>
<td>Sample not randomly selected. Small sample size It is likely data dredging has taken place.</td>
<td>E</td>
</tr>
<tr>
<td>Clark, Chatterjee, Martin, Davis (2019)</td>
<td>26,551 Individuals from the UK.</td>
<td>Non-controlled posttest only study</td>
<td>Longer commute times are associated with lower job and leisure time satisfaction. Shorter commute times contribute to higher subjective wellbeing</td>
<td>Job Satisfaction $r^2 = .0327$ Strain $r^2 = .049$ medium</td>
<td>The intervention or exposure was not independent of other changes.</td>
<td>D</td>
</tr>
<tr>
<td>Wheatley, Bickerton (2016)</td>
<td>141 Highly Skilled workers in the UK</td>
<td>Non-controlled posttest only study</td>
<td>Commuting time factors into necessary work-related activity. Lengthy commutes negatively affect commuters’ leisure and family time and overall happiness. Commuting stress (for automobiles) also negatively affects health</td>
<td>None Reported</td>
<td>The intervention or exposure was not independent of other changes. The method of measurement was unclear/unreliable</td>
<td>E</td>
</tr>
<tr>
<td>Study</td>
<td>Sample Size</td>
<td>Study Type</td>
<td>Findings</td>
<td>Limitations</td>
<td>Comments</td>
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<tr>
<td>Chakraborty, Subramanya (2013)</td>
<td>43 Employees in Urban Aeronautical Industry</td>
<td>Cross-sectional study</td>
<td>Workers who’s travel is more than 60 minutes are more prone to absenteeism than workers with a commute less than 60 minutes</td>
<td>None Reported</td>
<td>Sample not randomly selected, Small sample size, It is likely data dredging took place</td>
<td></td>
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<tr>
<td>Stutzer, Frey (2008)</td>
<td>Unclear</td>
<td>Non-randomized controlled study</td>
<td>People with longer commutes report lower job satisfaction and has a negative correlation with health satisfaction. There is a decrease in life satisfaction if commuting time is increased</td>
<td>None Reported</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Taylor, Pocock (1970)</td>
<td>1,994 office workers in London</td>
<td>Non-controlled posttest only study</td>
<td>Commuters with journeys longer than an hour and a half had 17% more sick days and 22% more spells. Those with longer journeys had more spells but their average length was slightly less.</td>
<td>None Reported</td>
<td>The criteria to select subjects were not clearly defined, The intervention or exposure was not independent of other changes</td>
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