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Work-Life-Fit in the Structural Engineering Industry

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Abstract
Diversity in the Architecture, Engineering, and Construction (AEC) industry has long been a focus and a topic of great interest. The existing work styles contribute to the lack of diversity in the AEC industry, and the industry has been reluctant to evolve and change. Margins are often slim; consultants work to a deadline and frequently work long hours outside a traditional work schedule. This creates a challenge for many individuals in striking a balance between work life and personal life. Allowing work-from-home, flexible hours, off-shift work, and part-time work allows all professionals in the workplace to stay productive while acting as caregivers or meeting other personal demands. While work-life balance may be geared toward creating a delineation between work life and personal life (50%-50%), work-life fit is about creating a work and lifestyle that fosters both personal and professional life at the same time.

To achieve ultimate results, all professionals need their workplace to create a supportive environment personally and professionally. This will benefit the employee and employer for multiple reasons, including recruitment and retention. Workplaces which offer more flexible work hours are likely to actualize a decrease in absenteeism. When employees feel their employer is supportive, they are less likely to leave, increasing employee retention and reducing costs associated with turnover in a market where professionals available and qualified for employment in the AEC industry is finite.

This paper is based on data collected via interactive software, Mentimeter, during a presentation to the Structural Engineers Association of Arizona. There were approximately 50 engineers in attendance with 20 responding to the live survey. Data was collected based on responses during the presentation. While this paper reviews a specific issue within the AEC industry, it is not in support of any one group or their proposed solution to this problem. Flexible work challenges were identified by participants, by Interns, practicing Engineers, and Firm Principals. The need for a change in the industry is documented through the data collected.

Keywords: Work-Life-Fit, Work-Life-Balance, Structural Engineering, Architectural Engineering, Flexible Work Styles

Introduction

Work-Life-Fit can be defined as uniquely different than Work-Life-Balance. While Work-Life-Balance approximates a lifestyle with an equal split of time invested at work, and time outside of work. Work-Life-Fit is focused on the individual and the company. Work-Life-Fit might be best summarized as 1) When People Work, 2) Where People Work, and 3) How Much People Work [1]. While there might be an assumption that Work-Life-Fit is only focused on reducing the hours an employee works, it is more focused on how to leverage the hours that an employee wants to work.

Employees frequently receive emails outside of regular work hours [2]. Anecdotally, the authors sent an email mid-afternoon on a Saturday to four working individuals. All four had responded

within an hour. This is representative of the new normal. If so, and we are all working outside the traditional office, how can we best recruit and retain employees?

Using an opportunity to provide an interactive presentation to the Structural Engineers Association of Arizona (SEAoA), the authors sought feedback on the need for a more flexible work environment for consulting structural engineers. Using interactive Mentimeter software, feedback data was collected during the presentation. A lively discussion also occurred, which is presented in a forthcoming Structure Magazine article. Based on the discussion additional research is required in this area for both individuals and companies to better understand flexible work models. While many engineering associations offer continuing education credits (CEUs) or professional development hours (PDHs) as incentive to attend these conferences, the Arizona Board of Technical Registration [3] does not require continuing education for Professional Engineer (PE) licensure renewal. It would indicate that members who attend either self-select for interaction and community or require continuing education for licensure out of state.

Engineers are all college graduates, which means they are at a minimum in their early twenties. It is expected that young engineers would be planning a four-year internship. At that point, in the late-20s to early-30s, engineers take their initial exam for professional licensure. During this time, early career stage engineers are also considering building a family. It is into this mélange of disparate goals; individuals may start to seek more flexibility from their employer.

Background

In the post-Covid era, most employers have remote work. When we consider recent graduates whom we are recruiting, they have attended some number of classes remotely. It could be further stated that students have been involved in online learning since before Covid, via Google provided computing devices and Google Classroom, a learning Management system [4]. The delivery of K12 education has changed in a permanent way [5&6], which can also be said for undergraduate students [7]. This all points to a change in learning styles [8], which may also be changing how post-Covid graduates interact in a work setting.

To support the structural engineering industry, the authors presented on the Work-Life-Fit, a flexible work model, to the SEAoA. The presentation was based on a recent article by the authors in Structure Magazine. The purpose of the presentation is to support both the individual and the company to embrace alternative work schedules, which can include remote work options, but are part of a broader concern with limited workforce. Work-Life-Fit focuses on what the employer provides in addition to traditional monetary compensation and fringe benefits. Traditional monetary compensation may include overtime and/or straight-time overtime pay. Traditional fringe benefits include paid time off, sick leave, vacation, dental, medical and vision insurance, and possibly maternity leave.

As professionals, in terms of work-life balance the required overtime [9] may be to the extent that it is outside of typical childcare [10]. Similarly, there can be a lack of flexible work times or part-time options, which can be extremely desirable when returning from maternity leave [9]. Anecdotally, flexible or part-time work may be more available when companies need engineers in an area where there is a limited workforce.

Current workforce limitations can be partly attributed to Covid itself, but there also was a downtown in undergraduate student enrollment which has been slow to rebound [11]. For each year of low enrollment, there is a corresponding low graduation rate, i.e., 2020 enrollment creates the 2024 graduation class. Low student enrollment and associated low graduation rates create a need to retain current employees and to find new ways to recruit new employees.

While employers and educators continue to point to a shortage of engineers [12 & 13]. Oklahoma specifically points to a need for an additional 3,000 engineers graduating annually [13]. There is also discussion about the engineers who do not stay in the industry [14]. As construction is cyclical, with downturns in the economy, and other opportunities, lay-offs can be used as a tool to "clean house." This is similar to the oil & gas industry which has been shown to use similar tactics [14]. In the post-Covid environment layoffs and back-to-work mandates can create a sense of precarity in employment, which can cause employees to seek more stable employment opportunities [14].

Flexible work models are one solution to the perceived workforce shortage. Required overtime [15] may require childcare outside the normal hours [16]. Flexible work times and part-time options are desirable when returning from maternity leave [16]. Anecdotally, flexible or part-time work may be more available when companies need engineers in an area where there is a limited workforce. The in-person presentation, survey and ensuing discussion collected data on this important and continuing topic.

Methodology

The authors recently attended the SEAoA event (June 2024) to present on Work-Life-Fit. The presentation was interactive using Mentimeter software. Data was collected under an Institutional Research Board approval through Oklahoma State University. While reviewed by an IRB, consent was assumed via participation. Participants used their phones and the Mentimeter App online for responses. The responses were then immediately presented live as they were collected. Based on this lack of presumed privacy, explicit consent was not a requirement. Participants were verbally told the data was being collected and would be used for future articles.

During introductions of the presenting authors, we provided our own identities/identifiers with basic demographics. Then these same demographics were collected from the participants. Descriptive statistics were the only method used. Based on the software data no unique identifier was provided for individuals, rather, data was aggregated by the software. Therefore, there is not an opportunity for comparisons across questions.

The SEAoA conference had approximately 180 attendees and exhibitors, with 100 being conference attendees. There were two sessions running concurrently, which allowed for approximately 50 to be in attendance during a session. During the interactive portions of the presentation, it was hoped to receive approximately 20 responses. The response rate varied from 13-21 respondents. There was not a requirement for respondents to answer all the questions.

Results and Discussion

As the presentation was interactive, the presenters shared their own experience when a slide was shown, i.e. demographics. Similarly for open ended response questions, the presenters would provide example responses verbally to start the activity. Participants were reminded that participation was encouraged but not required. Lastly, participants were told that Work-Life-Fit was not equivalent to "remote work."

For demographics, the first question was "Who are we?" The participants were 77.8% male, 22.2% female with no other responses provided. For comparison, in civil engineering about 16.6% of the workforce are women [17]. Participants were then asked, "What is your age?" The participants were on average around 41 years of age (Figure 1). A corollary question was asked, "How many years of experience do you have?" Participants had on average 19 years of experience (Figure 1). This certainly makes sense, as most graduates of an engineering program are between 22-24 years of age.

Figure 1. Participant Age and Experience

Participants were then asked, "What is your current role or position?" A word cloud shows the responses from the participants. As would be expected, based on average age and years of experience, participants identified mainly as management, partners, and principals (Figure 2). However, correlating to Figure 1, age and years of service includes EIT or Engineers in Training (Figure 2).

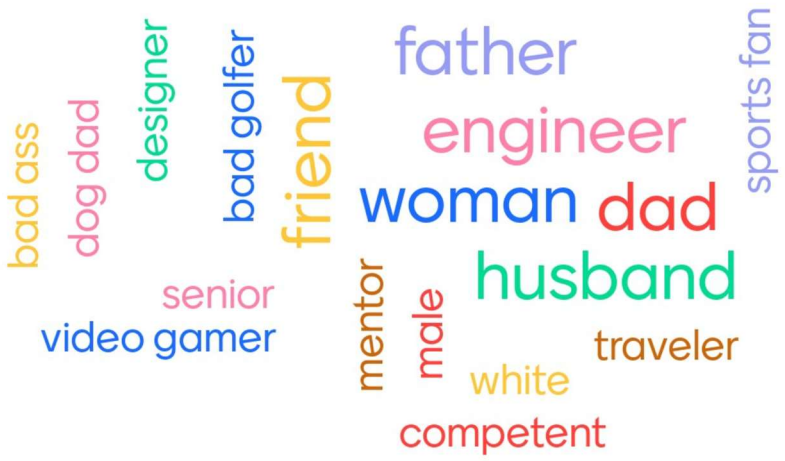

Figure 2. Word Cloud: Who are we? (personal identity/identifier)

In order to encourage the group to identify as individuals, the next question asked, "Who are we?" The presenters have examples, like "woman," "engineer," "mother." Responses did go beyond the normative identify factors like gender and race. Responses included "bad golfer," "video gamer," and "dog dad" (Figure 3).

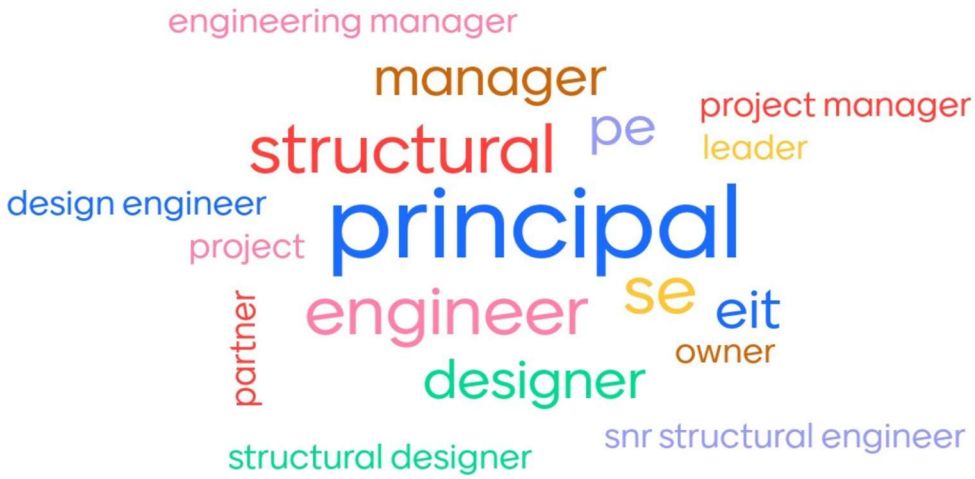

Figure 3. Word Cloud: Who are we? (professional identity/identifier)

The next questions used a slider to indicate agreement 1) "My company supports flexible work hours," and 2) "My company allows part-time work for engineers" (Figure 4). In general, there was agreement with both statements. It is evident that the flexible work hours concept was more acceptable than part-time work.

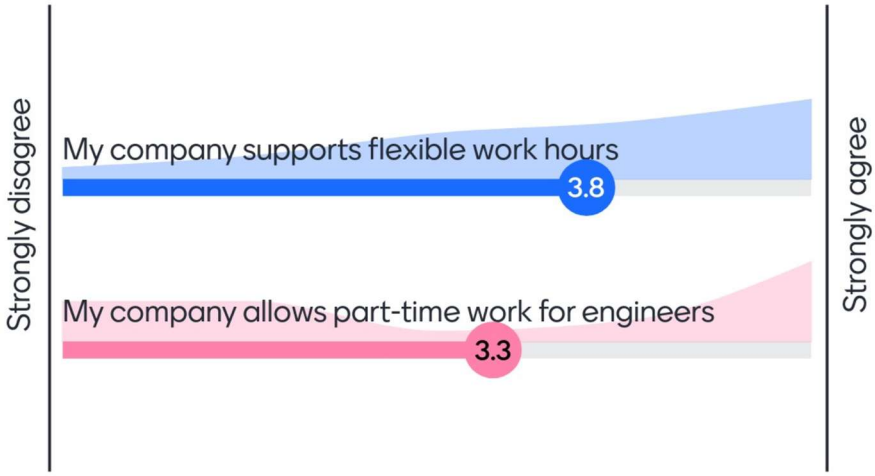

Figure 4. Company Work-Life-Fit Alternative Hours

Again, using a slider, participants were asked to indicate agreement with the following statements: 1) My company allows work from home/remote work, and 2) There are limits to flexible work hours or remote work at my company. The responses were slightly more towards agreement with limits on flexible work showing a stronger agreement (Figure 5). This would indicate that employees are acquainted with their company remote work policy.

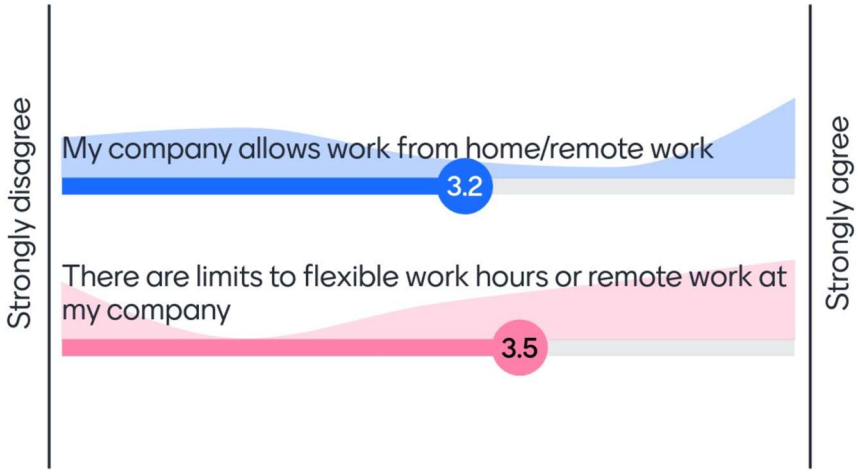

Figure 5. Company Work-Life-Fit Alternative Location

Participants were asked to respond to the following statement: "I am a caregiver for children or adults/elders in my home." Participants were 35% (7) "yes" of 20 responses. Considering the respondents were 22.2% women, that means that there were definitely care-givers amongst the male participants. When asked if their company provided on-site daycare, all of the participants indicated "no" (19 of 19 responses).

Using a slider, participants were asked to indicate agreement to the following statements 1) “My company supports necessary absence due to family needs,” and 2) “My company provides maternity/paternity/adoption leave.” There was a strong agreement with company support of absence due to family needs. However, maternity/paternity/adoption leave did not receive the same level of agreement.

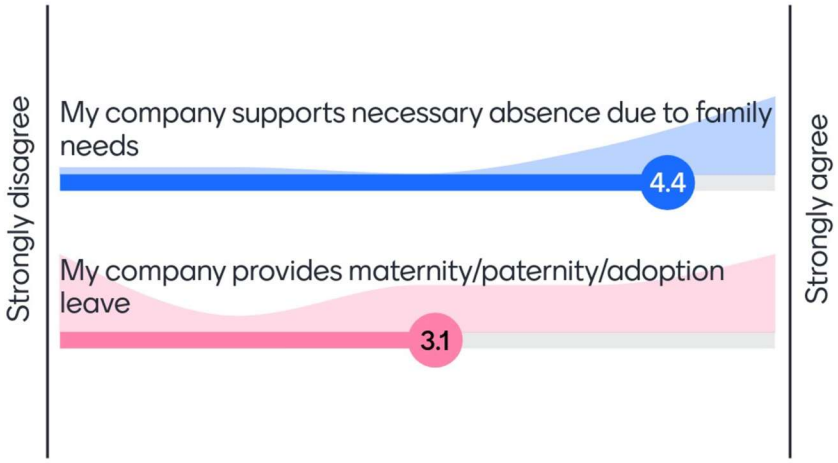

Figure 6. Company Work-Life-Fit Family Support

As corollary questions to the previous statements, participants were asked “Have you filed FMLA for your own or family health care needs?” (Family Medical Leave Act). There were three “yes” responses or 15.8% (of 19 responses). The next question asked, “Which leave is supported maternity/paternity/adoption/other?” What is shown is a lack of equity where maternity and paternity leave is not equal (Figure 7). This may make parents have to choose who will stay home, based on whose company supports leave and how much leave is available. It should be noted that some states have mandated family leave requirements [18].

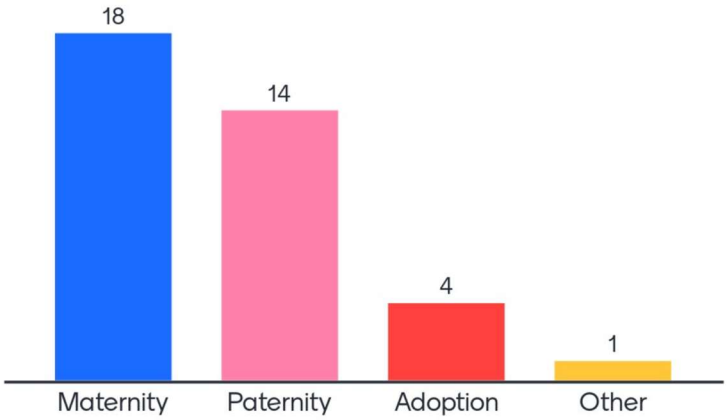

Figure 7. Leave Types Provided by Employers

The last question was directed at the management, partners, and principal engineers. Participants were asked "What concerns might you have about flexible work models?" The responses are shown in Figure 8. Participants were told multiple times during the presentation that Work-Life-Fit was not "remote work", but remote work could be a Work-Life-Fit option. Another note in the presentation was that Work-Life-Fit was for the individual and the company. While the participants had been learning about Work-Life-Fit and had been told the differences between Work-Life-Fit and remote work, it is evident that there was still a concern about Work-Life-Fit being remote work in disguise. The main themes identified in the Word Cloud and via in person discussion included Mentoring, Learning by Osmosis, Community, Client Interactions. It is interesting that distraction and engagement are also on the list. It would be interesting to determine what the cell phone and internet policies are for the same employees. "Cyber Monday" is a retail phenomenon and is documented to include shopping from workplaces [19].

Figure 8. Concerns About Flexible Work

At the end of the presentation, a question-and-answer portion occurred with lively participation, which continued into the dinner that evening. Participants from sole proprietorships (2) had different perspectives than those from larger companies. Participants in management were concerned with insurance and tax complications from remote work.

Conclusion

A group of Structural Engineers in Arizona attended a presentation on the topic of Work-Life-Fit. During the presentation, data was collected interactively through Mentimeter. The group represented Structural Engineers intending to receive Professional Development Hours or Continuing Education Units. However, participants ranged in age and role/position at their companies. Participants were also asked to self-identify. These identifications included "dog dad," "mentor," and "video gamer." This question was to purposefully elicit responses outside of the workplace. It is these other identities which Work-Life-Fit supports. The concept of "flexible work hours" was reported as being the most common flexible work option by this group.

While the FMLA is mandated, it appears that participants felt their company also supported family leave. However, when specifically asked about maternity/paternity/adoption/other, it appears only maternity leave is available at most companies represented. The current greatest misconception on flexible work options is that employees immediately move to remote work. There is still disparity in available family leave types where maternity and paternity leave availability is not equal. There is also a lack of availability or knowledge about part-time work options for engineers.

Previous literature describing work-life-fit, provides a Venn diagram of the intersection between work, family, and community [20]. The purpose of the presentation and discussion was to determine the state of the industry and to create a continuing dialogue on re-orienting how we work. While we were focused on employees, employers and employees have strong feelings about a change to the workplace. Concerns identified included the effects of remote work on mentoring and collaboration [21]. Some firms have already started working on solutions for this problem as they have already moved to a fully remote work environment [21].

Limitations of this research include the participant group being limited to those attending the Arizona Structural Engineers conference.

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