Interim Report
27 August 2022

Research Project 2022/06

Intention of Activity-From-Home and Travel after the COVID pandemic

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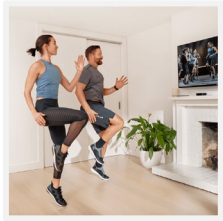
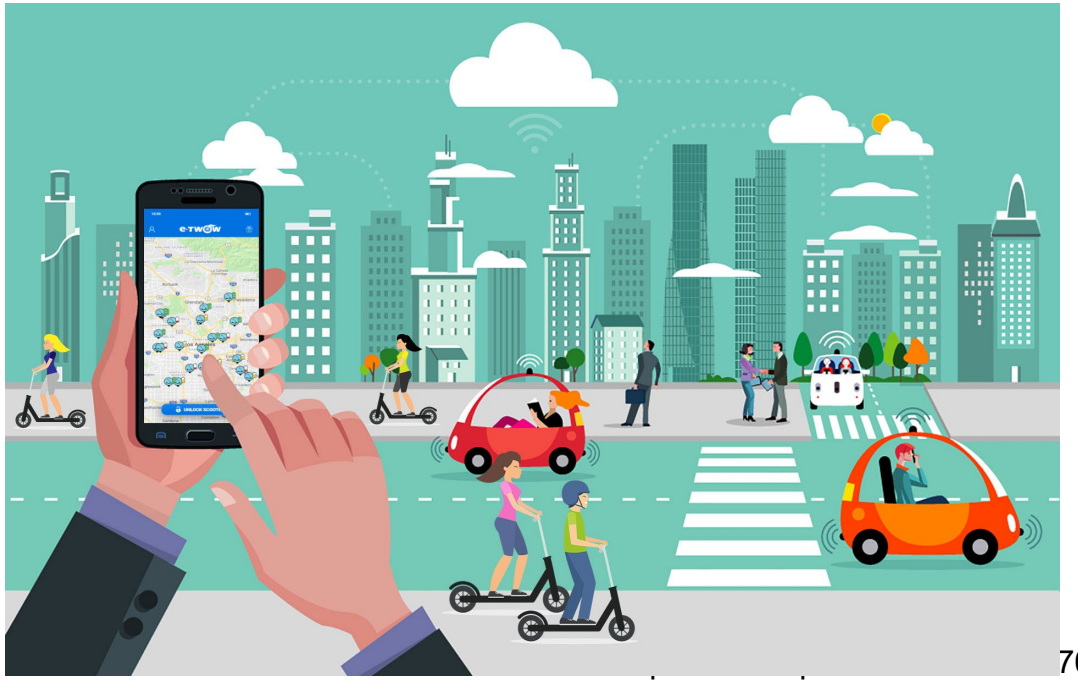
COVID-19 Changing Lifestyle

- **Old paradigm**
  - Suburbanization
  - Traffic congestion
  - Inadequate public transport
  - Insufficient railway passengers
  - Increasing car dependency
  - Large energy consumption
  - Air pollution, PM2.5

- **Smart and Healthy City**
  - Urban form: compact & polycentric development
  - Housing: affordable/quality house
  - Travel: destination/departure time/mode/payment: MaaS
  - **Work/Study/Shop/Food-order from anywhere**

Need systematic behavioral change (Vichiensan et.al., 2021)





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What will likely change post COVID-19 (next year)?

- **House**
  - Technology enhancing **Activity From Home**
  - Neighborhood living environment
- **City**
  - Decentralized, polycentric development ?
  - More flexible activity pattern?
    - Co-working space
- **Travel**
  - Less or more car dependency?
  - Transit-oriented?
  - Micromobility?

Research Motivation

- ❑ To what extent AFH will continue post-COVID?
- ❑ What will be the consequent travel behavior?

Hypothesis

- People will continue to do Activity From Home (**AFH**) post COVID-19
- Certain amount of travel demand will be suppressed by AFH

Objectives

1) To determine the post-impact of COVID on activity from home (AFH)
2) To determine the influential factors driving activity from home (AFH) after the COVID pandemic

Intention of Activity from Home

- **Advantages and disadvantages of AFH**
  - Time/cost saving, wiser time usage, avoiding traffic congestion, producing less and/or exposing less to PM2.5, improving work-life balance, healthier lifestyle, etc.
- **Workplace, school, seller, and social factors**
  - Support of the employer, school, food shops, department store to allow, encourage, and promote to work/study/shop from home
  - Social influence of friends and colleagues working/studying/doing online shopping, etc.
- **Perceived difficulties of AFH**
  - Nature of the job, study, commodities that allow doing the related activities from home
  - **Technology barriers** (such as how to join the online platform of meeting and good/service ordering as well as the speed of the internet connection
  - Although one may see a behavior as advantageous and socially desirable, if the perceived control on the behavior is low, the intention to engage in that behavior would be low (Ajzen, 1991).

Ref: Mokhtarian and Salomon (1997), Haddad et al. (2009), Jain et al. (2021) and Nguyen (2021), etc.,

Related Psychological Models/Theories

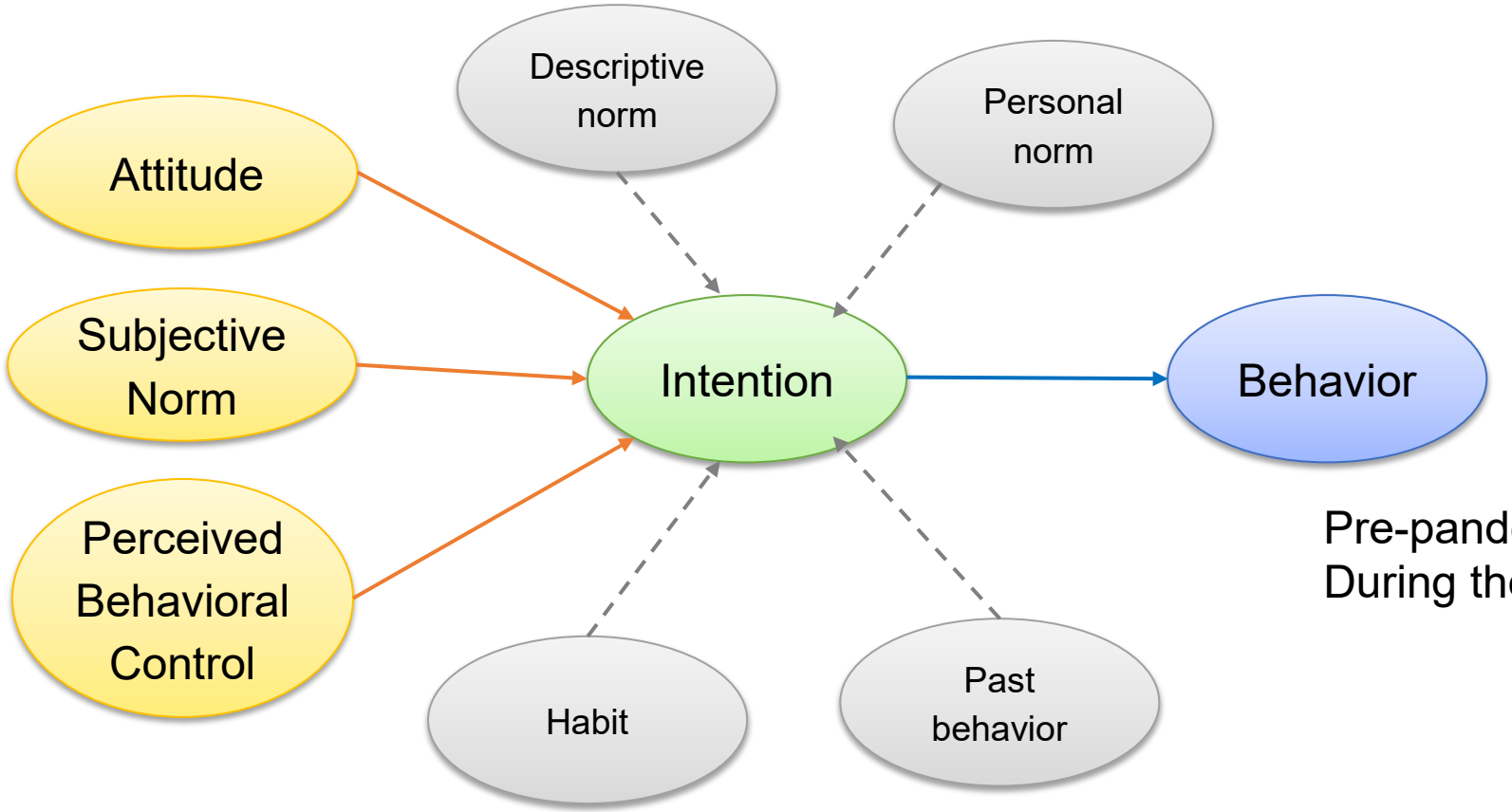
Theory of Reasoned Action (TRA), 1975	• Intention to perform a certain behavior is affected by attitude and subjective norms (social influence)
Innovation Diffusion Theory (IDT), 1983	• Adoption of an innovation is affected by 5 factors: relative advantage, compatibility, complexity, trialability and observability
Theory of Planned Behavior (TPB), 1985	• Intention is predicted by 3 determinants: **Attitude towards behavior**, **Subjective norm** and **perceived behavior control** (that obstruct users from performing)
Value-based Adoption Model (VAM) 1988	• Perceived values are the antecedence of attitude towards a certain adoption behavior and attitudes form the intention to adopt that behavior.
Technology Adoption Model (TAM), 1989	• Perceived **usefulness** (expected improvements by using the service) and perceived **ease of use** (expected easiness of using the service) influence the **attitude**
Combined TAM & TPB (C-TAMTPB), 1995	• Behavior **intention** is predicted by 3 determinants: attitude, subjective norms and perceived behavior control. **Attitude** is formed by perceived ease of use and perceived usefulness
Unified Theory of Acceptance and Use of Technology (UTAUT), 2003	• Behavioral intention is affected by 4 main factors: performance expectancy, effort expectancy, social influence and facilitating conditions and gender, age, experience and voluntariness of use act as moderating variables
Consumer Acceptance and Use of Information Technology (UTAUT2), 2012	• UTAUT2 with 3 additional factors: Hedonic motivation, price value, habit

Theory of Planned Behavior & Beyond

The degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question

Perceived social pressure to perform or not to perform the behavior

Perceived ease or difficulty of performing the behavior



Pre-pandemic
During the pandemic

Endogenous (dependent) variable:
Intention to increase AFH post-COVID

Reviewer 1	It is very interesting research. However, a main concern is that it is difficult to get reliable answers from respondents because their lifestyles after the pandemic are uncertain. This is very much depended on various uncontrollable circumstances of the society.

Interview Survey

Part I: Socio-economic	Part II: Activity & Travel	Part III: Attitude & Personality
• Gender, age • Occupation • Income • Vehicle • Housing type • House location • Neighborhood • Work/study place	• Pre-pandemic (actual) • During the pandemic (actual) • Post-pandemic (intention)	• 7-point Likert scale • Several measurement items for: ✓AT ✓SN ✓PBC ✓INT

- ✓ Minimum sample = Number of variables (40) x 10 = 400
- ✓ Various groups of people (3)
- ✓ Targeting approximately 1,200 samples who live in Bangkok area
  Geographical area: city center, suburb
  - ✓ Occupation: white-collar, students, self-employed
  - ✓ Type of job: office, technical, financial, academic
- ✓ Face-to-face interview

Some sample attitudinal statement questions:

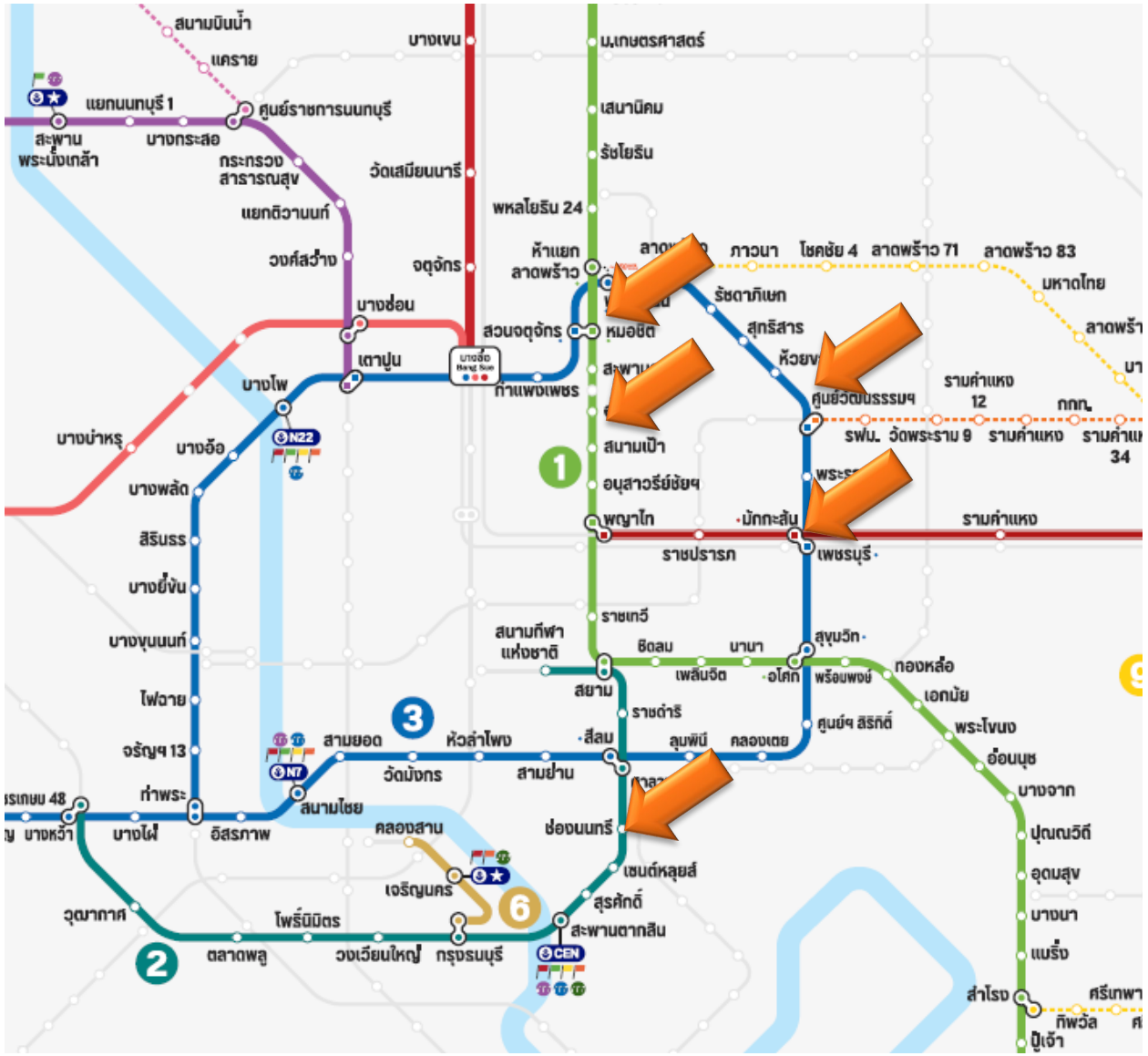
- AFH help me in improving productivity
- … help me in saving time
- … help me improve my health
- … be safer for me
- … be cheaper for me
- … reduce my stress
- People around me do Work/Study FH
- … online shopping
- … order food via app
- … do exercise at home
- … walk in neighborhood
- My job/study allow me to do Work/Study FH
- The internet I am using is fast enough
- I can do online shopping at reasonable price
- I can use mobile app to order food/beverage
- I can do exercise at home
- I can walk in my neighborhood
- After the pandemic is over, I intend to work from home more frequently than I did before COVID

Data Collection

- **Questionnaire design**
- **Pre-survey**
  - Online (June 2022)
    - N=99
  - Personal interview (July 2022)
    - N=167
- **Survey**
  - Personal interview (August 2022)
    - N=516
    - Valid samples = 509

Survey in August 2022

- **Office areas around the stations**
  - Mo chit station
  - Ari station
  - Asok station
  - Chong Nonsi station
  - Phra Ram 9 station



Mo chit station area

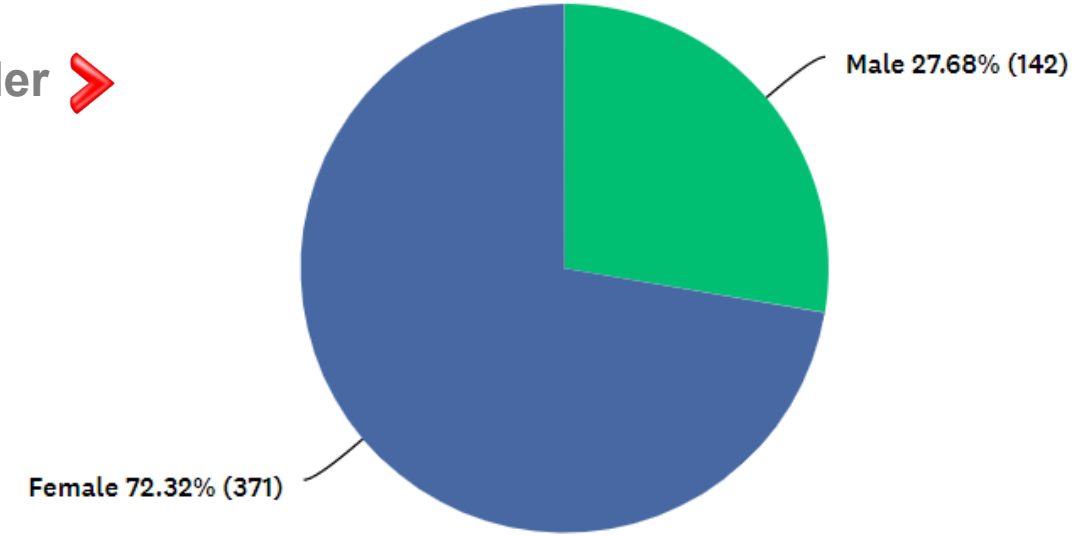
Ari station area

Asok station area

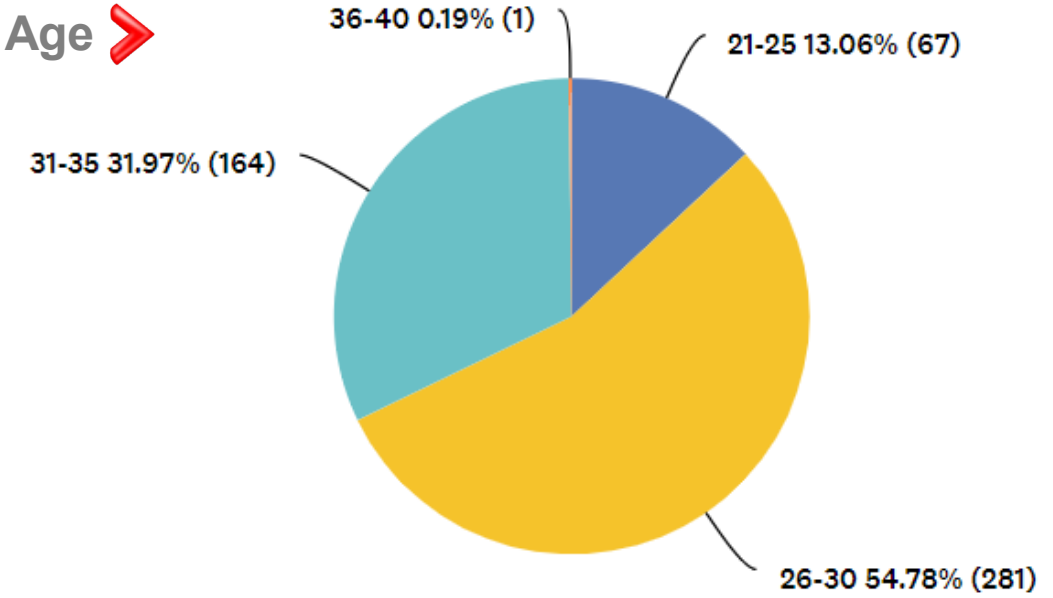
Chong Nonsi station area

Phra Ram 9 station area

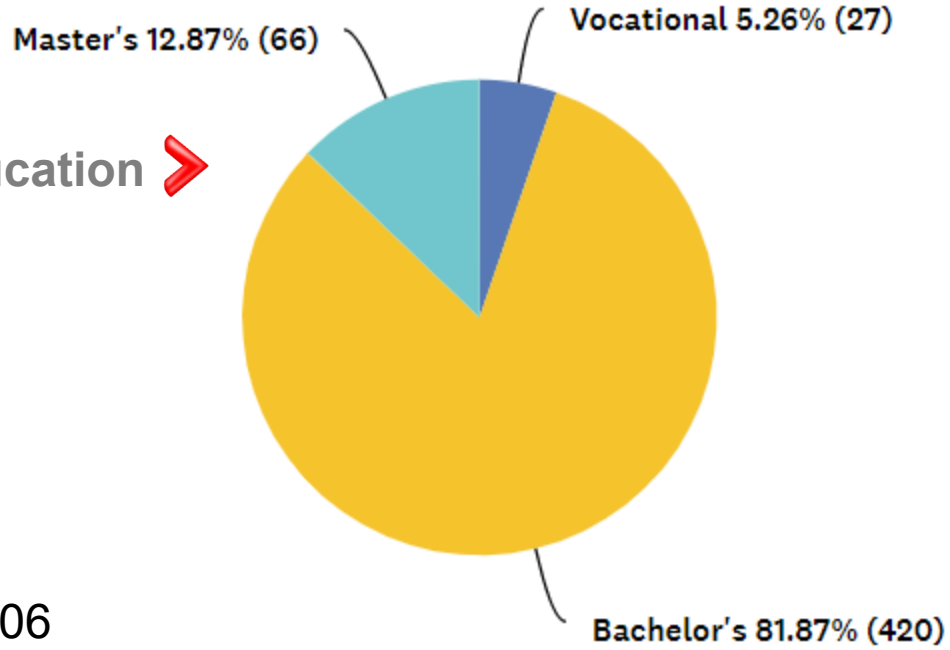
Gender



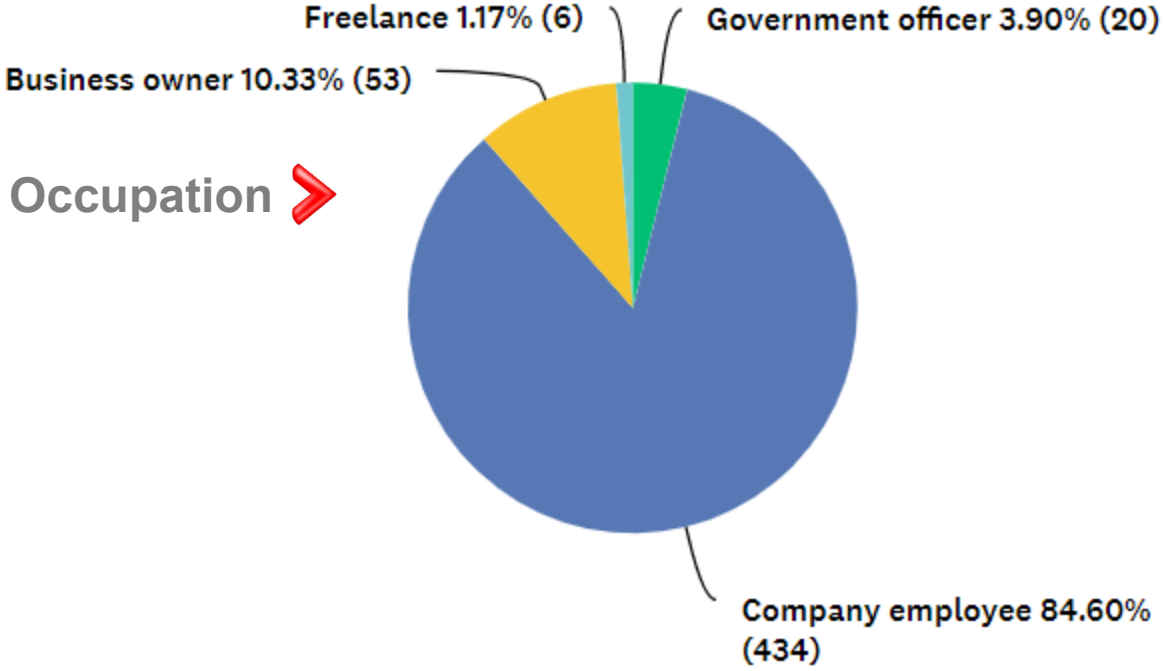
Age



Education

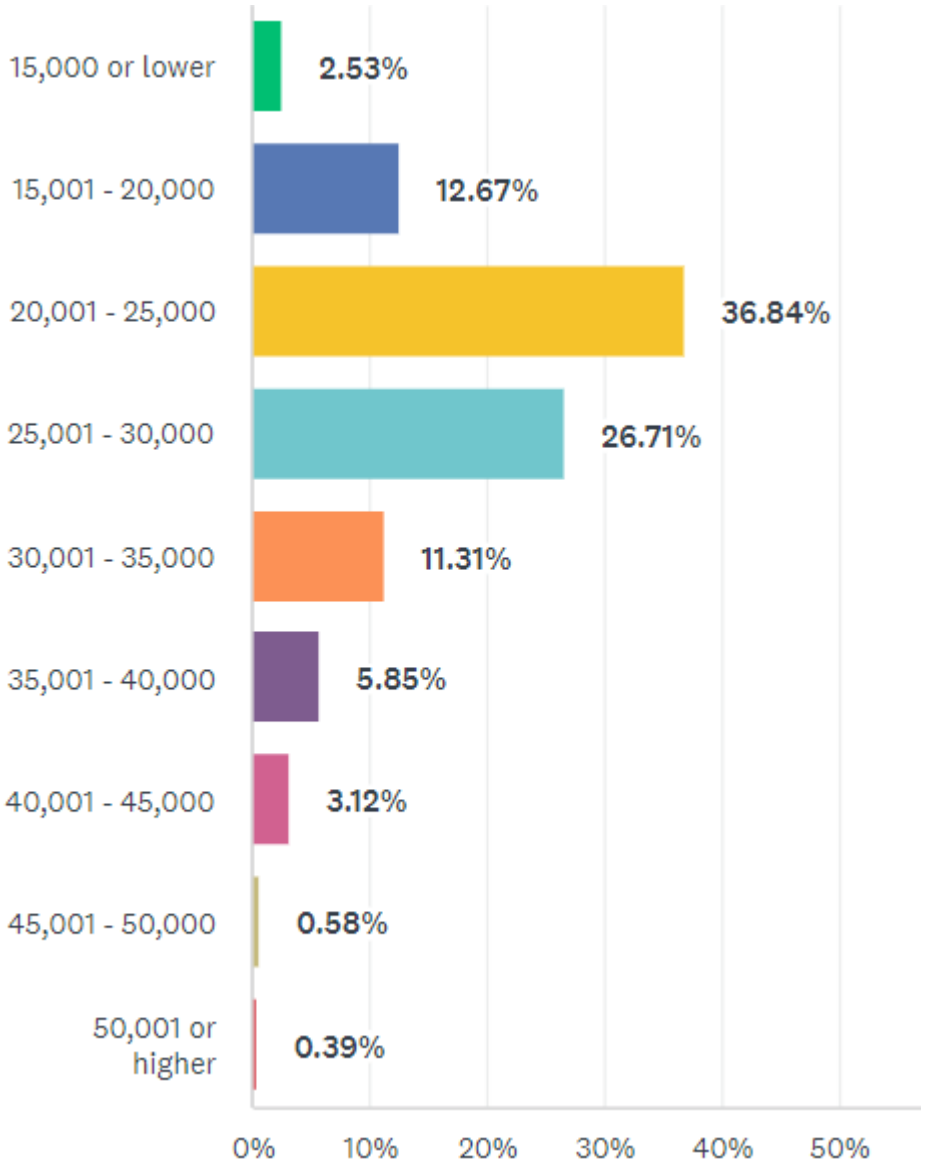


Occupation

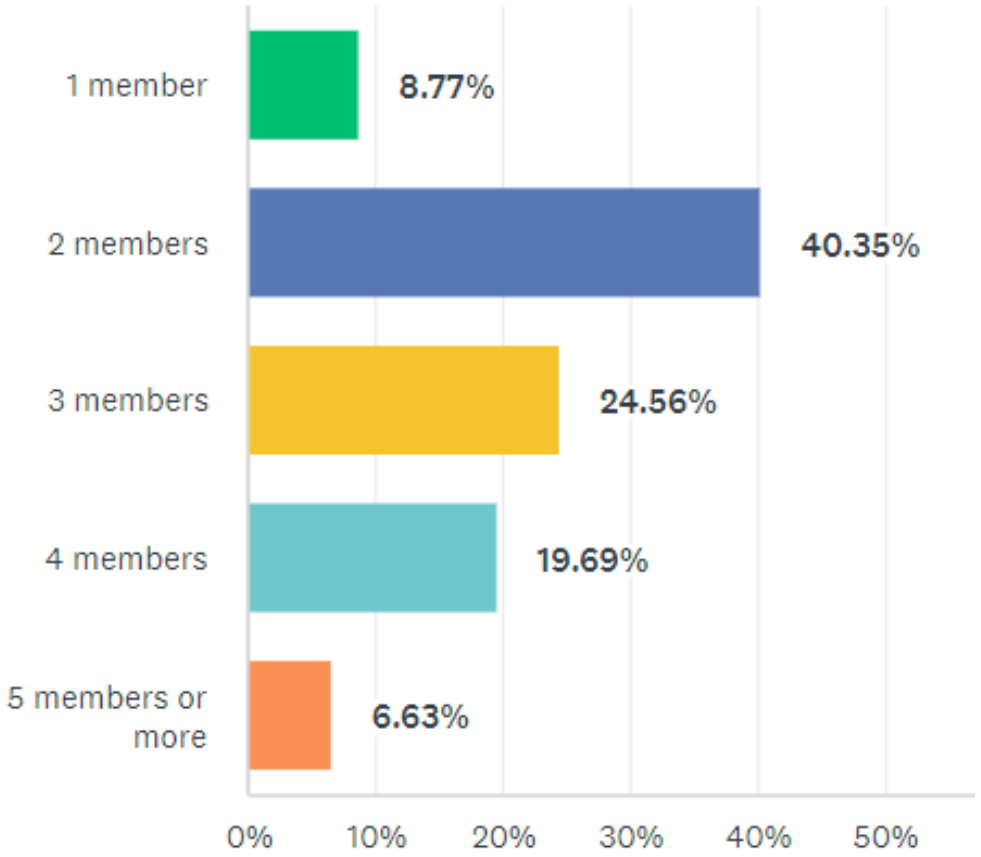


N=506

Personal Income

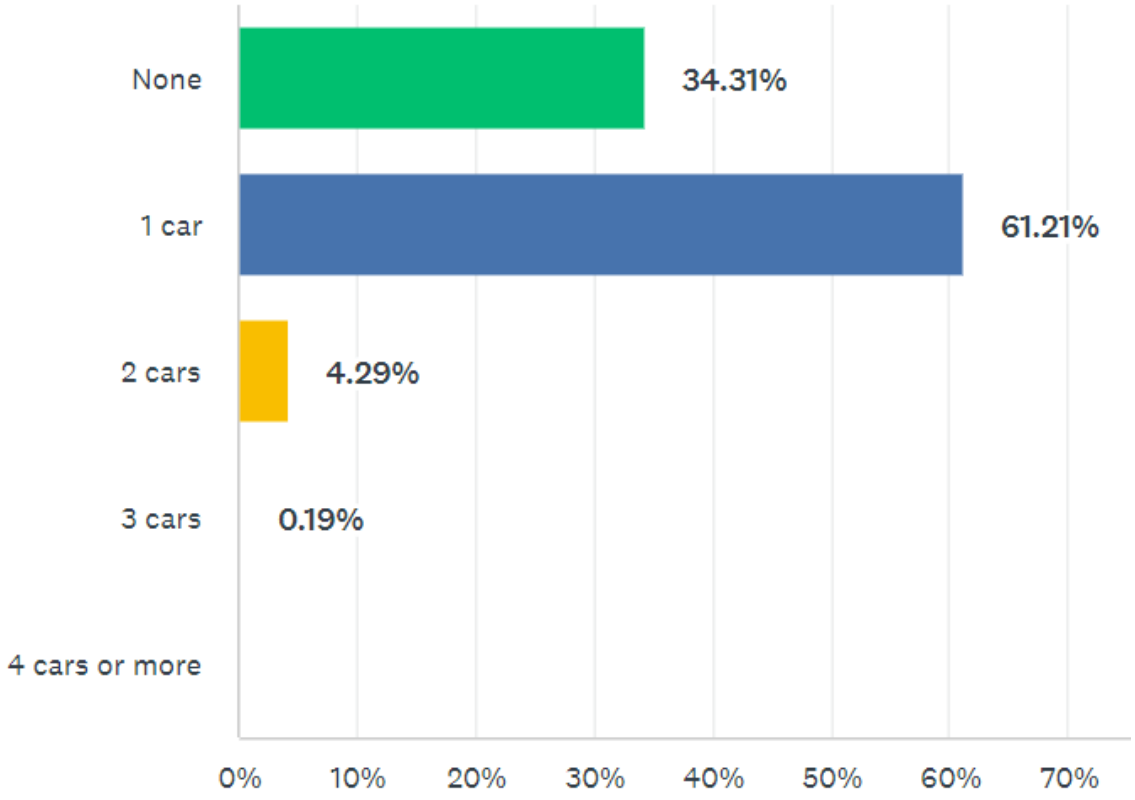


Household size

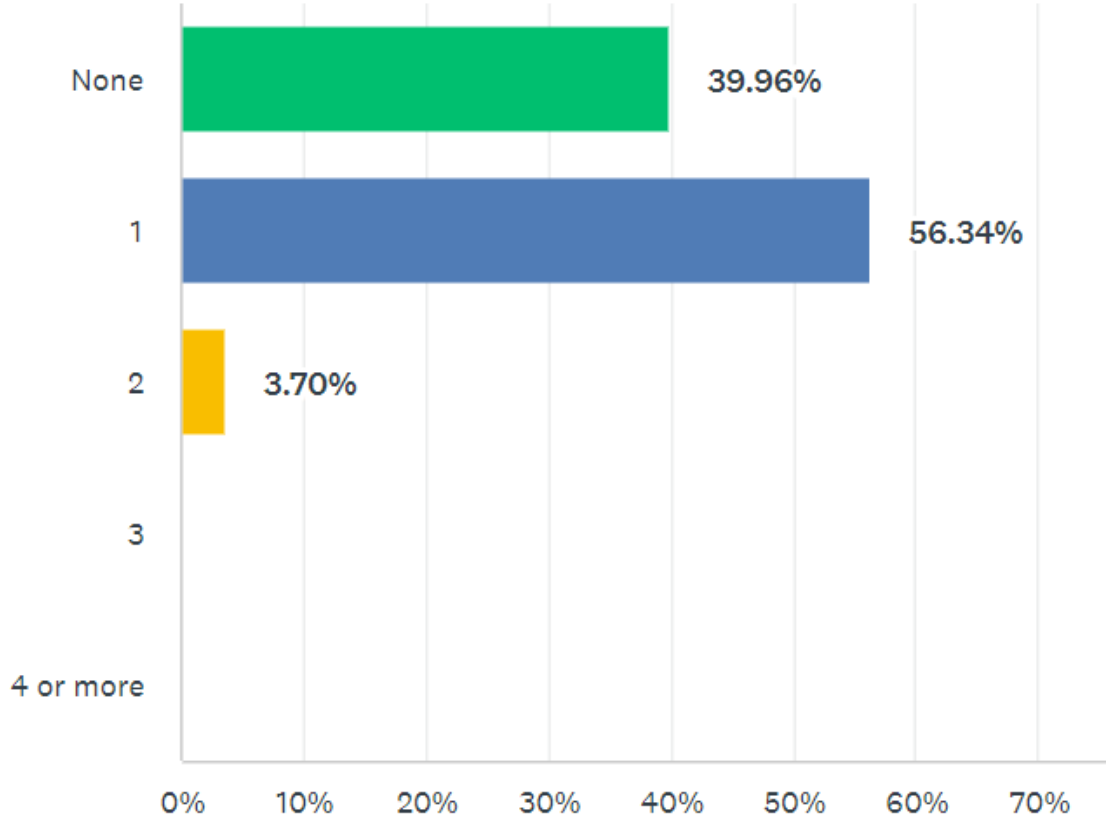


N=506

No. of private car available

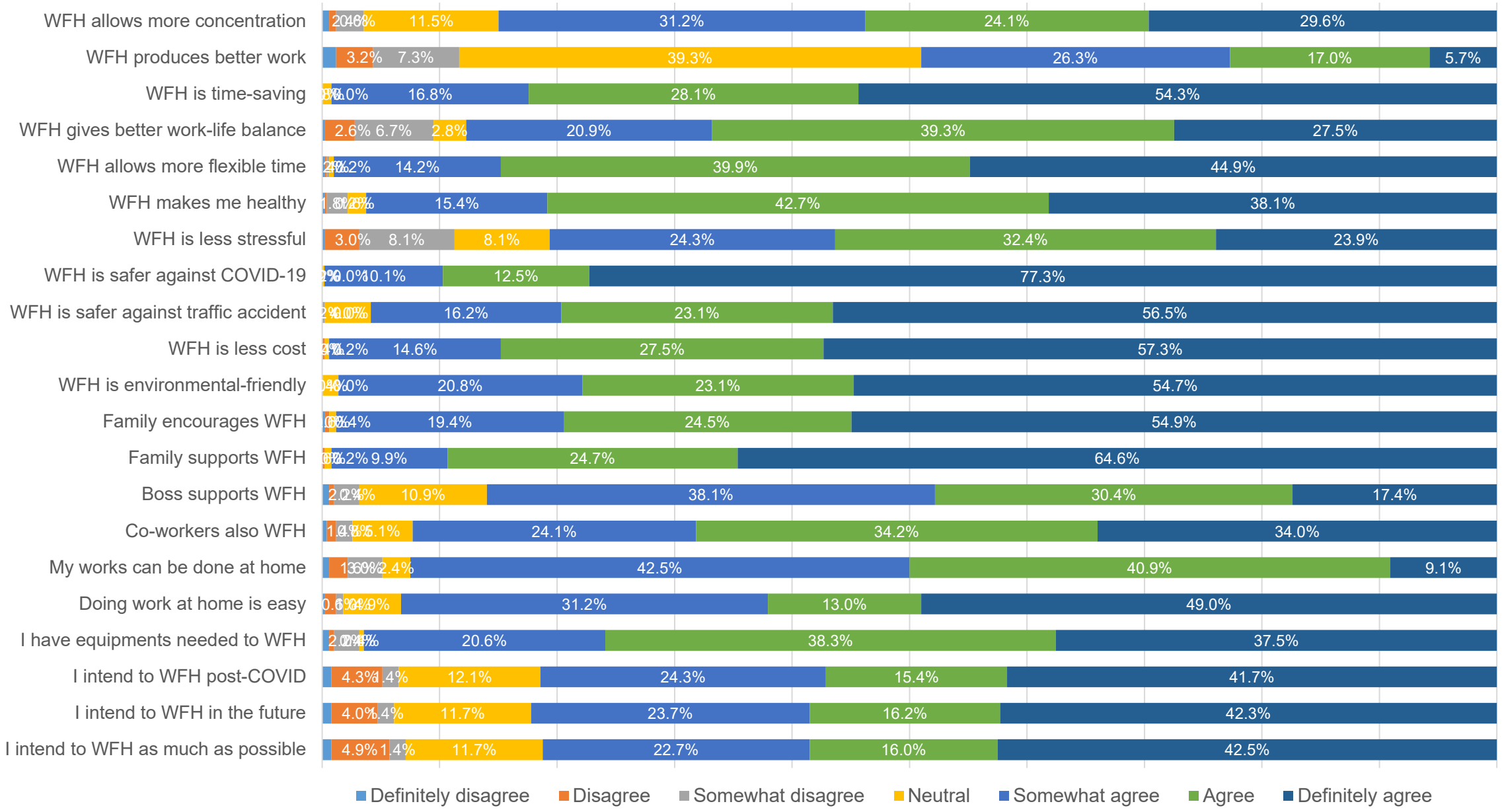


No. of motorcycle available



N=506

Work from Home



Analysis

Modeling

- Exploratory Factor Analysis (EFA)
- Confirmatory Factor Analysis (CFA)
- Structural Equation Modeling (SEM)

AFH factors

- Housing features
- Neighborhood environment
- Transportation system
- Technology literacy, digital accessibility

Behavioral change

- Activity pattern
- Travel pattern
  - Trip purposes (work/education/shop/other)
  - Frequency
  - Mode

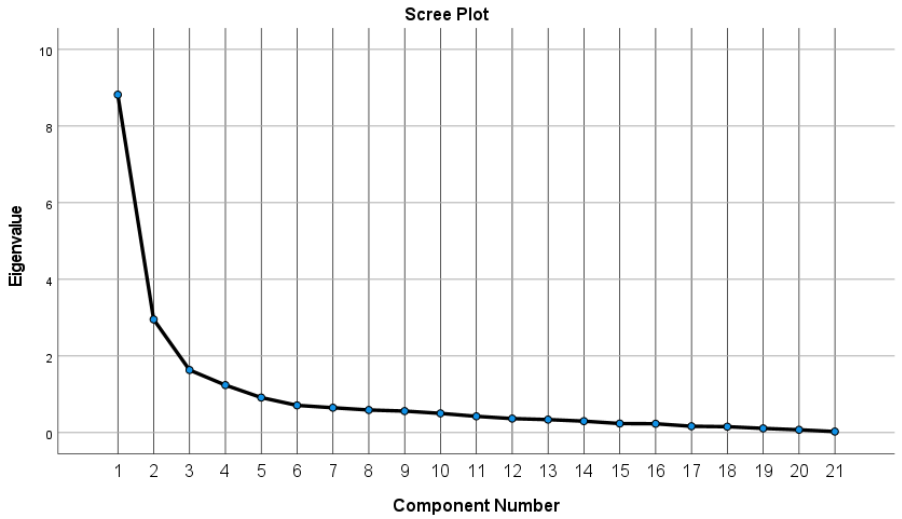
- Real estate developers
- Urban planners
- Transport planners
- Transport providers

Exploratory Factor Analysis

KMO and Bartlett's Test[a]

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.904
Bartlett's Test of Sphericity	Approx. Chi-Square	7853.605
	df	210
	Sig.	.000

a. Only cases for which Occ_Office = 1 are used in the analysis phase.



Rotated Component Matrix[a,b]

	Component 1	2	3	4
LessCost	.834	.333		
FamilyEncourage	.814	.321		
SafeAccident	.782	.355		
EnvFriendly	.777	.422		
FamilySupport	.774			
SafeCOVID	.754			
FreeTime	.725	.470		
FlexibleTime	.535		.483	
WFH-fterCOVID	.303	.891		
WFH-Future	.320	.886		
WFH-whenPossible	.364	.876		
WorkAtHomeEasy	.610	.639		
WorkLifeBalance			.816	
Healthy			.796	
LessStress			.695	
Quality	-.349		.547	
Concentrate	.330		.394	
BossSupport				.725
CoworkerWFH	.341			.700
HaveDeviceNeeded				.673
WorkAllowWFH		.555		.556

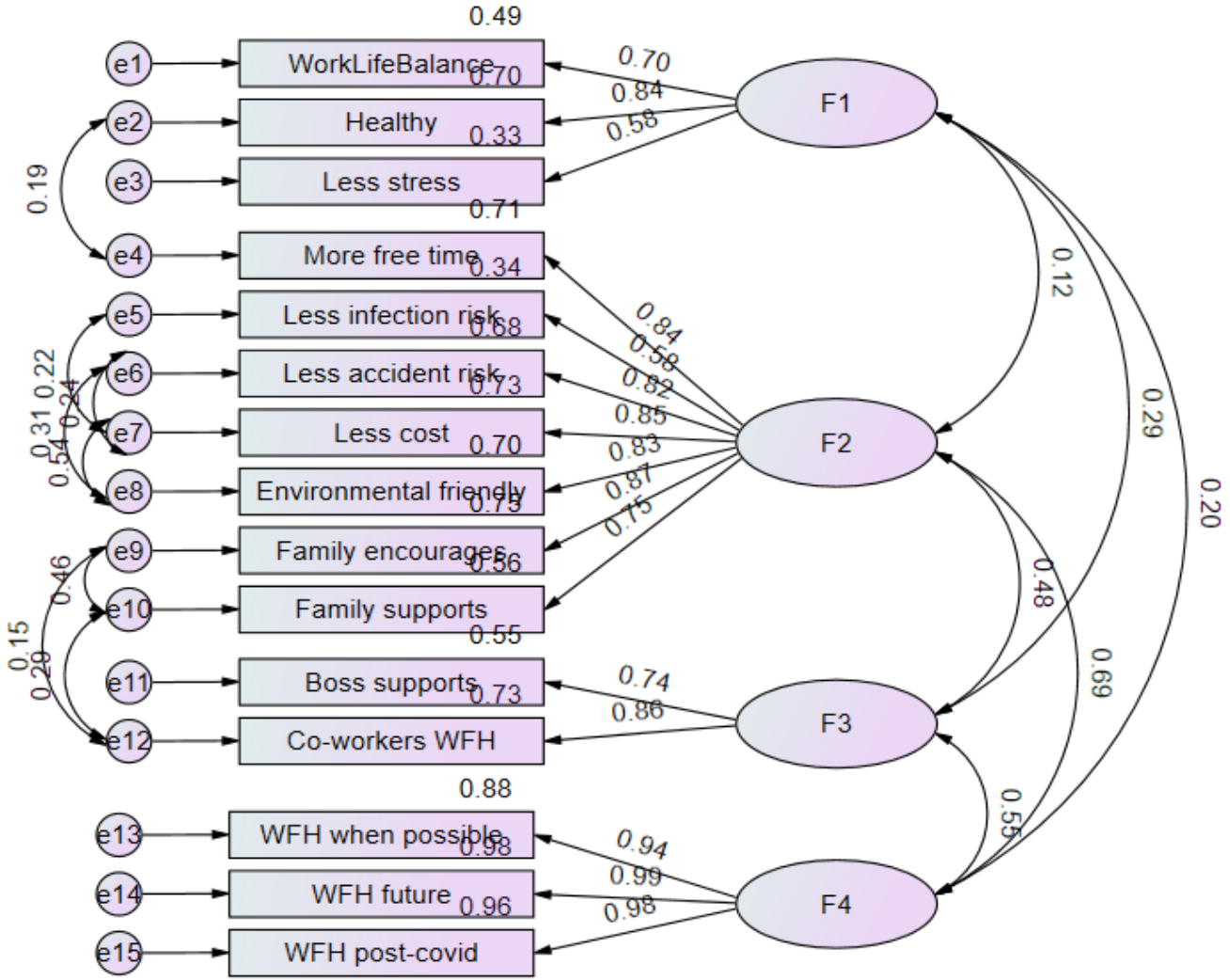
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

b. Only cases for which Occ_Office = 1 are used in the analysis phase.

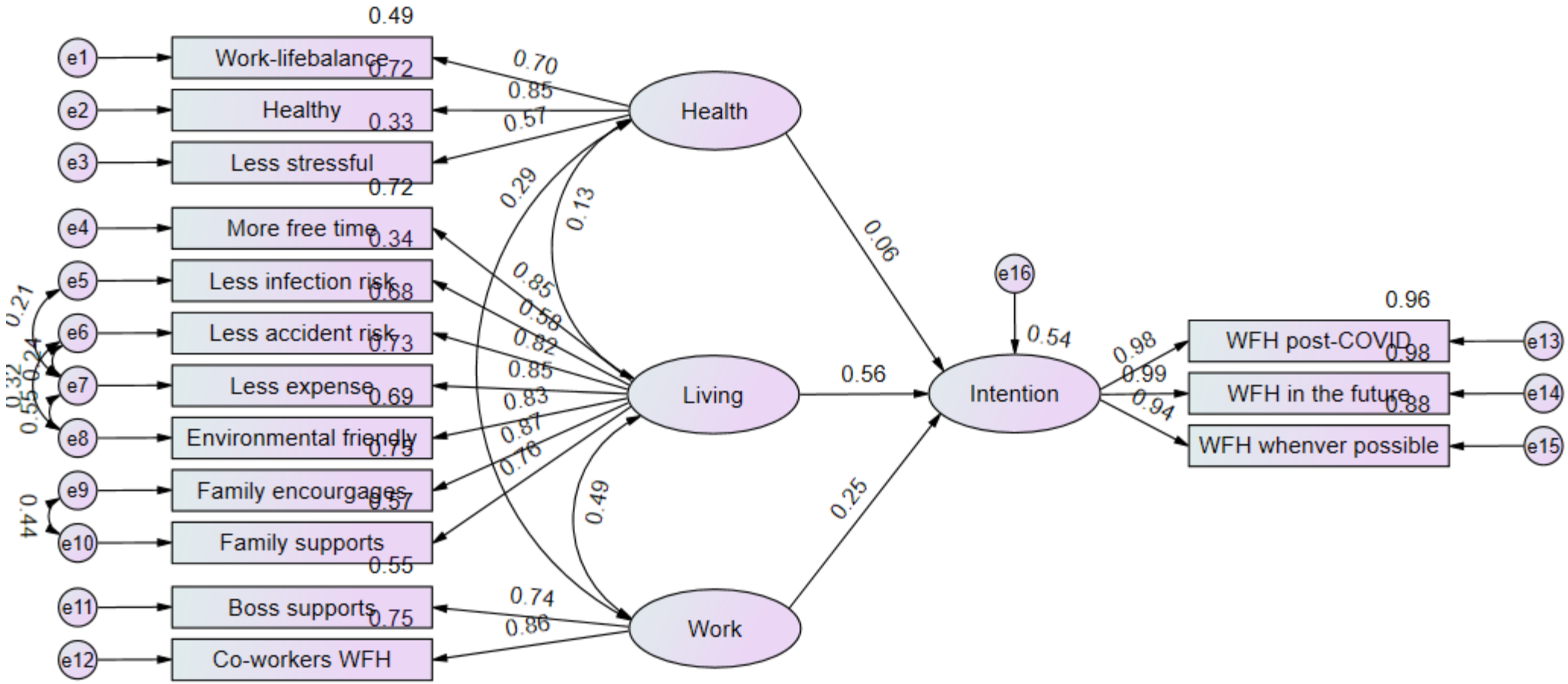
- Estimation by SPSS Statistics 28
- N= 449; Occupation type = 1 (Government officer) & 2 (company employee)
- Extracted 4 factors, explaining 69.739% of the total variance

Confirmatory Factor Analysis



CMIN/DF=2.488, df=76, GFI=.946, AGFI=.915, CFI=.981, RMSEA =.058

Structural Equation Model



CMIN/DF=2.680, df=79, GFI=.939, AGFI=.907, CFI=.978, RMSEA =.061

Remaining Tasks

- **Data collection**
  - ✓Work from home
  - Food delivery order
  - Online shopping
- **Modeling and analysis**
- **Policy recommendation**
- **Report and documentation**

Schedule

Activities	2022										2023	
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Literature review												
Data collection												
Analysis												
Policy recommendation												
Report & documentation												
Inception report submission												
Interim report presentation												
Interim report submission												
Final report presentation												
Final report submission												

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