



An Introduction to PSWCI

(Panel Study of Workers' Compensation Insurance)



Korea Workers' Compensation and Welfare Service(K-COMWEL)
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PSWCI: Panel Study of Workers' Compensation Insurance

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Backgrounds

Industrial injury is an incident that occurs at work, involving harm or damage resulting from job-related activities. This may include physical or mental impairments resulting in loss of labor ability. It has adverse effects on injured workers' employment status, income, and livelihoods. Industrial injury can also have a significant impact on the workers' health, quality of life, and social relationships.

The workers' compensation insurance system provides a social safety net that protects injured workers from the aforementioned risks. When a worker suffers an industrial injury that results in a disability or death, compensation is provided to the injured worker or surviving family members. By providing the services needed by an injured worker in a timely manner, this system helps workers recover from their injuries and rejoin the workforce. These goals are actualized through the medical rehabilitation compensation services in place for the victims of industrial injuries. These hold important significance in the policies that govern Korea's workforce and social security system.

It appears that the impact of industrial injuries on individuals, families, society, and the nation has become more diversified than in the past due to structural changes in the industrial/labor market, as well as the social environment. This leads to ongoing reinterpretation and in-depth discussion regarding the implications of industrial injuries and the workers' compensation insurance system from a modern viewpoint. Our study provides insightful data for the workers' compensation system, focusing specifically on workers who have suffered from industrial injuries.

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Purpose of the Investigation

The purpose of the Panel Study of Workers' Compensation Insurance (PSWCI) is to construct a dynamic time-series dataset by following up on injured workers and contribute to policy establishment, management, and development. This study is meaningful as it covers the injured workers' job retention and related socio-economic traits, providing fundamental data for comprehensive understanding of their diverse situations and requirements. Also, PSWCI is unique as a sole source of panel data that represents the Korean injured workers population.

There are many factors that affect injured workers' living and job retention: socioeconomic characteristics of individuals/families, social, economic and working environment, and the workers' compensation system. This study is important as it systematically accumulates

multilateral and empirical data such as injured workers' labor participation, factors related to industrial injuries, personal and household characteristics, health, daily life, and quality of life.



Survey Overview

A. Research Design

The subjects of PSWCI are individuals who have experienced an industrial injury and have concluded their medical treatment and rehabilitation. The target population was defined as the database of injured workers who terminated medical care, provided by the Korea Workers' Compensation & Welfare Service(K-COMWEL). Those who were inaccessible, such as individuals with unknown addresses, deceased individuals, and foreigners, were excluded from the survey population. The survey population for the 1st cohort study (conducted between 2013 and 2017) consisted of 82,493 injured workers who had terminated medical care/rehabilitation between January 2012 and December 2012. In the 2nd cohort study (conducted between 2018 and 2022), the survey population consisted of 75,392 individuals who terminated their medical care/rehabilitation between January 2017 and December 2017. For the 3rd cohort study (conducted between 2023 and 2027), the survey population includes 103,022 individuals who terminated their medical care/rehabilitation between January 2022 and December 2022 (Table 1).

The sampling frame is reconstructed every 5 years, considering the characteristics of injured workers after medical care. The sample has been designed to ensure the representativeness of samples and convenience of investigations by using key variables such as disability grade, gender, age, and residence.

B. Survey Timeline and Cycles

The PSWCI is conducted annually from August to October, allowing for timely recording of the subjects' conditions and transitions. The 1st cohort study began with its 1st wave survey in 2013 and concluded in 2017 with its 5th wave survey. The 2nd cohort study was conducted from 2018 to 2022. The 3rd cohort study began its 1st wave survey in 2023.

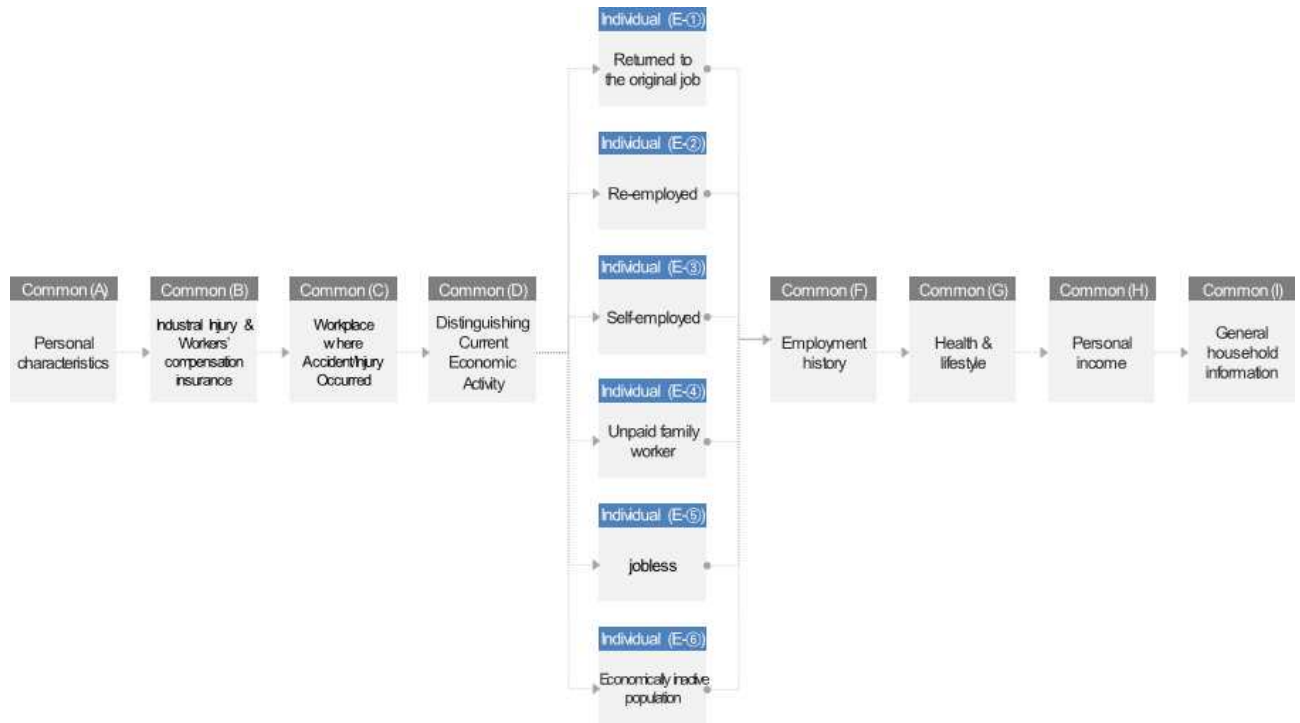
C. Methods

In this study, one-on-one interviews are conducted, with interviewers visiting the interviewees to collect data directly. Interviews are conducted face-to-face using tablet PCs. Interviewers collect interviewees' responses through survey programs installed on tablet PCs, following given paths. This approach reduces the potential for errors that may occur during the survey, increases the reliability and accuracy of the findings, and makes it convenient to investigate.

<Table 1> Survey Overview

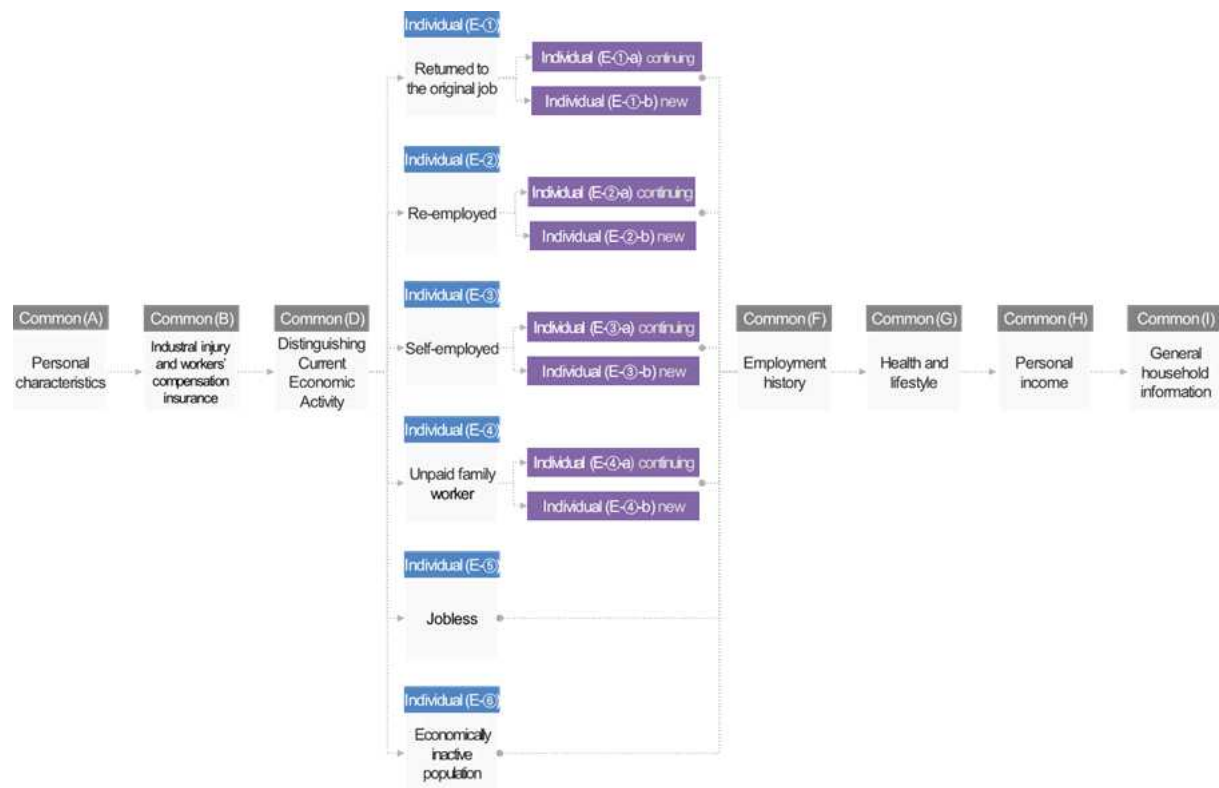
	1 st Cohort	2 nd Cohort	3 rd Cohort
Population	82,493 injured workers who terminated their medical care/ rehabilitation in 2012	75,392 injured workers who terminated their medical care/ rehabilitation in 2017	103,022 injured workers who terminated their medical care/ rehabilitation in 2022
Sample Design	<p><u>Stratification:</u> following priority allocation by disability grade, subjects were distributed proportionally based on geographic residence and utilization of rehabilitation services</p> <p><u>Intrinsic stratification:</u> gender, age group, convalescence</p>	<p><u>Stratification:</u> following priority allocation by disability grade, subjects were distributed proportionally based on gender and age groups</p> <p><u>Intrinsic stratification:</u> geographic region, utilization of rehabilitation services</p>	<p><u>Stratification:</u> following priority allocation by disability grade, subjects were distributed by the square root proportion across age groups and utilization of rehabilitation services</p> <p><u>Intrinsic stratification:</u> gender, geographic residence</p>
Sample Size	2,000 subjects	3,294 subjects	3,691 subjects
Survey Timeline	2013 – 2017 Surveys were conducted annually for 5 years (from August to October)	2018 – 2022 Surveys were conducted annually for 5 years (from August to October)	2023 – 2027 Surveys are scheduled to be conducted once annually for 5 years (from August to October)
Methodology	Computer-assisted personal interviews (CAPI)	Tablet-assisted personal interviews (TAPI)	Tablet-assisted personal interviews (TAPI)
Contents	Personal characteristics, circumstances surrounding the workplace injury, economic activity, work history, overall health, quality of life, family/household circumstances, etc.		

A. Survey Flow Chart



<Figure 1. Flowchart of PSWCI questionnaire (1st wave) >

The questionnaire for the 1st wave of the PSWCI consists of a total of nine parts, from part A to part I (Figure 1). Participants are required to answer part A to D at the beginning of the investigation. Especially, the respondents' current economic activity states are investigated in part D and classified into 6 different groups, from E-① (those who returned to their original job) to E-⑥ (Economically inactive population).



<Figure 2. Flowchart of PSWCI questionnaire (2nd to 5th wave) >

The structure of the questionnaire was changed from 2nd wave survey.

In part D, where current economic activity is distinguished, we firstly demonstrate the respondents' employment situation as answered in the previous survey. After that, questions regarding changes in their economic activities are presented to classify them by their employment situation. The respondents are required to answer one of ten subareas in part E corresponding to their employment situation in part D.

The respondents are further classified in part E. Those who are currently employed are categorized as “returned to original the job”(E-①), “re-employed (other than the original job)”(E-②), “self-employed”(E-③), or “unpaid family worker”(E-④). Each group is subdivided into “keep the same job as the last survey(continuing)” or “newly investigated job from the last survey(new)” by comparing their workplace answered in the previous survey. For instance, an injured worker who returns to the same workplace they were employed at before the accident after receiving medical care is classified as “returned to the original job”(E-①). If the respondent reported workplace in the last survey matches the current one, indicating they have remained in the same job since the previous survey, they are further classified as “returned to the original job(keep the same job as the last survey)(E-①-a)”. The respondent who did NOT return to the original job in the last survey but has returned to it during the 2nd wave survey, is considered as “returned to the original job(newly investigated job from the last survey)(E-①-b)”.

Unemployed respondents are classified into two categories: “jobless”(E-⑤) and “economically inactive population”(E-⑥).

B. Survey Questions (1st wave)

Factors		Detailed Breakdown
Personal Characteristics / Attributes (A)		<p>[Administrative data] gender, age group, disability grade, area of residence</p> <p>[Survey data] educational background, marital status before/after the accident/injury, registration information as a person with disabilities (disability registration status, type, grade, time of registration, personal assistance services), certifications/qualifications held (existence or nonexistence, number of, type, name, time of acquisition, usefulness), employment history before the accident/injury (work experience, # of jobs, industries, employment period, occupations, occupational status)</p>
Industrial Injury and Workers' compensation insurance (B)	Circumstances of the Industrial Injury (Ba)	<p>[Administrative data] occurrence year, type of the accident/injury, injured part</p> <p>[Survey data] first aid, medical institution transfer information (accompanied people, means of transportation, time required), people who selected medical institution, whether surgery was required, processing of medical treatment and compensation (processor, timing/role of an attorney), substitute worker while respondent was receiving medical treatment</p>
	Convalescence (Bb)	<p>[Administrative data] convalescent period</p> <p>[Survey data] doctor's explanation, appropriateness of the treatment period, non-benefit payer and amount, experience of transfer to another hospital (frequency, reasons), recommendations for rehab hospitals</p>
	Compensation (Bc)	<p>[Survey data] compensation information from K-COMWEL, relationship with the business operator, private insurance of the workplace (employee health actual expense insurance, employer's liability insurance), additional compensation agreement with the workplace, additional compensation benefit from the employer (receipt of, amount), employer's special considerations (contents, satisfaction), private medical insurance subscription</p>
	Rehabilitation (Bd)	<p>[Administrative data] usage of rehabilitation services, usage of vocational/social psychological services</p> <p>[Survey data] information on rehabilitation services, route to service awareness, attending physician's return-to-work counseling and level of satisfaction with this service, usage and usefulness of vocational evaluation and/or return-to-work report, experience with educational and vocational training (# of times, field of expertise, period, training institution attended), work performance (immediately after the termination of medical treatment and current), areas in need of additional support, concerns about using support services, desire for rehabilitation</p>
Workplace where Accident/Injury Occurred (C)		<p>[Administrative data] employment period</p> <p>[Survey data] hiring date, industrial classification, type of work performed, job classification, special employment types, occupational status, working hours, type of employment, location of workplace, presence/type of shift system, weekly forty-hour system, labor unions (existence, membership, reason for not joining), welfare benefits, social insurance subscription, term of employment contract (established, periodic renewal, auto-renewal, type of employment in case of not contracted), ability to continue working/reasons for inability, expected employment period/reasons, written employment contract, entity responsible for wage payment, wage calculation method, average monthly income, working days/hours, overtime allowance/hours, size of business/workplace, exposure to workplace risk factors, need for/wearing of personal protective equipment, toxic spills</p>

Factors		Detailed Breakdown
Distinguishing Current Economic Activity (D)		<p>[Survey data] income-earning activities in the previous week, unpaid family work, temporary leave of absence, type of occupation, whether working in workplace where accidents have occurred, hours of unpaid family work, job-seeking activities performed during the past 1-4 weeks, and availability to work</p>
Current Type of Economic Activity (E)	returned to the original job (E-①)	<p>[Survey data] point in time when returned to work, required period to return to work/reasons, current workload(changes from the point of industrial injuries/reasons, job description, job classification), occupational states, current job(changes from immediately after returning to work/reasons), adapting to work(adaptations, obstacles), size/changes in business/workplace, number of/changes in working days/hours, Overtime status. overtime pay. overtime compensation, changes in working hours work(presence, hours, allowance), shift system(presence, type), weekly forty-hour system, wage calculation method, average monthly income, labor unions (existence, membership, reason for not joining, changes in membership), welfare benefits and their changes, enrollment/changes in social insurance programs, location of workplace and locational changes, term of employment contract (established, periodic renewal, auto-renewal, type of employment in case of not contracted), whether it is possible to continue working/reasons, expected employment period/reasons, wage payment entity, special employment types, written employment contract, programs/people that helped to return to work, necessary supports from K-COMWEL to return to work, how proactive the business owner was to make the injured worker to return, changes in workload intensity after return, difficulties in returning process/reasons, employer's special considerations, colleague relationships and changes after return, colleagues' solicitude, thoughts about current work, job satisfaction, intention to change jobs(intent, reasons, desiring type of job, preparatory activities)</p>
	Re-employed (E-②)	<p>[Survey Data] business contents/industrial classification, hiring date/start work date, the way to get a job, current work (changes from the point of industrial injuries, job description, job classification), adapting to work(adaptations, obstacles), occupational status, type of working schedules, size of business/workplace, type of occupation, number of working days/hours, overtime work(presence, hours, allowance), shift system(presence, type), weekly forty-hour system, wage calculation method, average monthly income, labor unions (existence, membership, reason for not joining), welfare benefits and their changes, enrollment in social insurance programs, location of workplace, term of employment contract (established, periodic renewal, auto-renewal, type of employment in case of not contracted), whether it is possible to continue working/reasons, expected employment period/reasons, wage payment entity, special employment types, written employment contract, programs/people that helped to return to work, changes in workload, difficulties in returning process/reasons, employer's special considerations, colleague relationships/comparison, colleagues' solicitude, thoughts about current work, job satisfaction, intention to change jobs(intent, reasons, desiring type of job, preparatory activities)</p>

Factors		Detailed Breakdown
	Self-employed (E-③)	[Survey Data] business contents/industrial classification, job description, job classification, start-up date, foundation motive, the way to start a business, period of business, initial investment/how to raise, preparation for business, obstacles, business information(type, number of employees, sales, profits, liabilities, number of workplaces, forms, work area, partnerships, enrollment in workers' compensation insurance), business type, type of employment/seasonality, location of workplace, regularity of working hours, number of working days/hours, working days absence due to health problems, break-even point, difficulties in operating current business, intention to change jobs(intent, reasons, actual job-seeking activities, desiring type of job, preparatory activities), consulting experience/contents, programs/people that helped to return, difficulties in operating business after accident/reasons, relationships with employees after return, colleagues' special considerations, thoughts about current work, management assessment
	Unpaid Family Worker (E-④)	[Survey Data] business contents/industrial classification, job description, job classification, hiring date, reason for joining the company, relation to employer, number of employees, type of business, type of employment/seasonality, location of workplace, type of working schedules, regularity of working hours, number of working days/hours, difficulties in work, working days absence due to health problems, intention to change jobs(intent, reasons, actual job-seeking activities, desiring type of job, information about new jobs, the reason desiring the job, standards for selecting a job, preparatory activities), thoughts about current work, job satisfaction
	Jobless (E-⑤)	[Survey Data] ways to solve economic problems, job-seeking activity(experience, time point), ways to find a job, desiring type of job/reasons, information about new jobs, standards for selecting a job, difficulties in finding a job, special considerations for work performance
	Economically Inactive Population (E-⑥)	[Survey Data] ways to solve economic problems, willing to find a job/reasons, possibility of finding a job/reasons, job-seeking activity(experience, time point), ways to find a job, desiring type of job/reasons, information about new jobs, standards for selecting a job, difficulties in finding a job, special considerations for work performance
Employment History (F)		[Survey Data] career disruption experience in workplace where accident occurred/time point/reasons, job experiences after termination of medical care(work experience, the number, time point, business type, occupation, work status, average monthly income, size of business, type of working schedules, number of working days/hours, overtime work hours, labor unions, social insurance, reasons for resignation
Health & Lifestyle (G)	Industrial Injury and Personal Health (Ga)	[Survey Data] degree of recovery, degree of pain & discomfort, health status before the accident, presence of chronic diseases before the accident

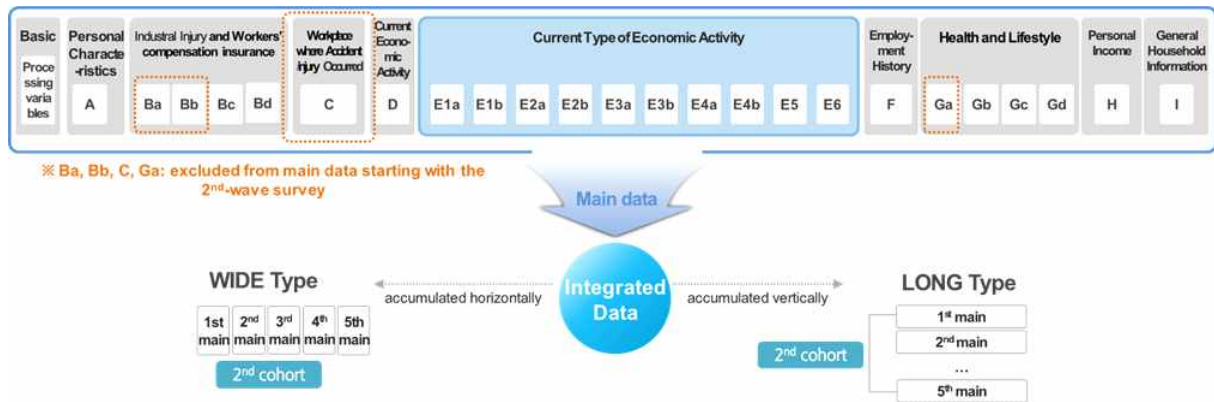
Factors		Detailed Breakdown
	Current Health and Life (Gb)	[Survey Data] health condition, disturbance caused by health problems, with/without chronic disease and its type, using medical institutions (number of outpatient visit, number/length of hospitalization, longest period of hospitalization, reasons for hospitalization, type of medical institution), dissatisfying medical experiences/reasons, physical disabilities and limits, aid for daily life(necessity, helper, time needed, areas to be helped), difficulties in daily life, typical everyday activities, leisure, number of days/hours spent to exercise, amount of sleep, smoking/drinking status and frequency
	Quality of Life (Gc)	[Survey Data] influences of industrial injuries on life, socioeconomic status, self-esteem, daily life satisfaction, self-efficacy
	Social Relationships (Gd)	[Survey Data] changes in social relationships after industrial injuries, group activities/types, religious activities, people to ask for help in problematic situations
Personal Income (H)		[Administrative Data] workers' industrial injuries insurance benefits [Survey Data] generation/amount of earned income, unearned income
General Household Information (I)		[Administrative Data] workers' industrial injury insurance benefits [Survey Data] number of household members, information of household members(gender, relation, time of birth, level of education, marital status, employment status, average monthly income, receipt of workers' industrial injury insurance benefits), household income(generation/amount of earned income, unearned income), household consumption, insufficient living expenses experience and the way to get supplementary money, household assets(financial assets holdings/value, real estate/other assets holdings/market price, ownership of real estate/type/market capitalization, liabilities/amount, savings/amount, type of housing facilities, housing ownership)

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Panel Data Structure

A. Data Structure

Data for PSWCI consist of two types: main data and integrated data (Figure 3). The main data contain overall information of the relevant year following the questionnaire, from part A to I. Integrated data refer to the main data processed in two formats, wide-type and long-type. Each is produced by accumulating main data in horizontal and vertical way. Although integrated data generally follow the original form of main data, some of the variables for part E (Current Type of Economic Activity) are combined as one: the variables are not distinguished by whether the respondents' economic activities have changed after the previous survey. Therefore, variables for eight parts that are divided into two groups, 'continuing(a)' and 'new(b)' in main data (part E-①-a to E-④-b), are integrated as four variables. This makes it possible to reduce the size of the data set and improve user convenience.



<Figure 3. Data Structure>

B. Key variables

1. Panel ID

The units used in PSWCI are 'individual'. Panel ID(PID) is the variable used to identify each individual. PID retains the same value at each iteration.

2. Personal Characteristics and related variables of injured workers

Basic demographic variables are provided including gender (male/female), age group (30 or younger/40s/50s/60 or older), highest level of education attend (no education, elementary school, middle school, high school, college or higher), and geographic residence (area).

The age group (age**4) variable categorizes subjects based on their age as of August of the relevant year.

The highest level of education attained (edu**) variable is reorganized into five categories based on the respondents' state of graduation. Those who responded that he/she left high school halfway in part A (Personal Characteristics / Attributes), for instance, will be sorted as "3. Middle school graduate".

Geographic residence (area**) refers to the location of the panel at the time of the investigation. The residence is inquired in seventeen cities and provinces and categorized into six regions (Seoul/Gangwon, Busan/Ulsan/Gyeongnam, Daegu/Gyeongbuk, Incheon/Gyeonggi, Gwangju/Jeolla, and Chungcheong/Sejong/Daejeon).¹⁾

Certain variables representing the characteristics of injured workers are derived from information provided by K-COMWEL. Disability grade variable is organized into three types: binary variable, categorical variable, and continuous variable (Table 3).

1) In the 1st-wave survey, this variable was used to determine where the participant was living at the time that medical treatment concluded. This information is based on administrative data from K-COMWEL.

<Table 3> Disability Grade Variables

disa**2 (2 categories)		disa**6 (6 categories)		disa**15 (15 categories)	
Value label	value	Value label	value	Value label	value
Disability grade (Grade 1~14)	1	Grade 1~3	1	Grade 1	1
		Grade 4~7	2		
		Grade 8~9	3		
		Grade 10~12	4		
		Grade 13~14	5		
No disability	2	No disability	6	No disability	15

※ ** indicates the survey wave. For example, “disa012” refers to the variable for disability status in the 1st wave survey.

Disability grade in industrial injury compensation system is a categorization of the level of disability resulting from industrial injuries, following a classification list of personal damage, prescribed by law. This is used to compute the amount of compensation. There are fourteen grades, ranging from 1 to 14. The lower the grade number is, the more severe the disability is. “No disability (without a physical disability)” refers to injured workers who are not assigned a disability grade. The industrial injury disability grade is distinct from the disability grade system prescribed by the Korean Act on Welfare of Persons with Disabilities.

Convalescence (con) is classified into six categories: 3 months or less, 3~6 months, 6~9 months, 9~12 months, 1~2 years, and over 2 years. Type of accident (accident) is the type of industrial injury which the injured worker experienced. This is categorized as “work-related accident”, “occupational disease”, and “commuting accident”.

Injured part (injurypart) refers to the specific body part damaged by the industrial injury. There are 21 categories for this variable: head, eyes, ears, face, neck, arms, hands/fingers, breast/back, waist, buttocks, legs, feet/toes, multiple areas, circulatory system, respiratory system, digestive system, urinary and reproductive system, nervous system, abdomen, whole body, and others.

Injury type (injurytype) refers to the type of wound from the industrial injury. There are 14 types of injuries, such as fractures, sprains, backpain and musculoskeletal diseases, amputations, cuts, abrasions, bruises/concussions, ruptures/lacerations, stabbings, burns, injury-related pain, infection/poisoning, internal injuries including brain cardiovascular disease, and others.

Employment period (workperiod) indicates the duration of time that the subject worked at the workplace where the accident/injury occurred. It is divided into 14 categories: less than a month, 1~2 months, 2~3 months, 3~4 months, 4~5 months, 5~6 months, 6~12 months, 1~2 years, 2~3 years, 3~4 years, 4~5 years, 5~10 years, 10~20 years, and over 20 years.

The rehabilitation service utilization (service**) variable shows whether the individual used

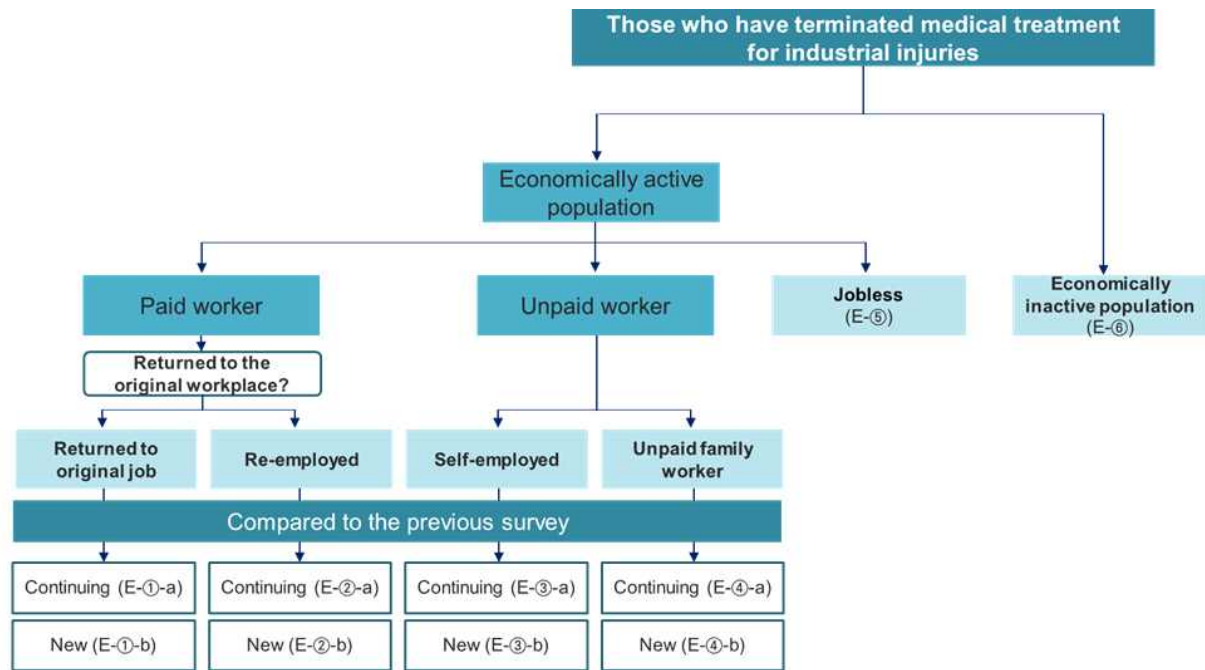
the rehabilitation services provided by K-COMWEL. This variable is divided into two groups, vocational rehabilitation services (jobservice**) and social rehabilitation services (socservice**). Information regarding the usage of each service is also provided. The variable (service**) indicates if the individual has used any vocational/social rehabilitation services. The data contain the information at the point of convalescence termination, provided by K-COMWEL.

There are four types of variables related to economic activity status and type of economic activities (Table 4). Individuals' economic activity status is investigated in "D. Distinguishing Current Economic Activity" depending on the following definitions, and the employed are classified into four groups: returned to the original job, re-employed, self-employed, and unpaid family worker. These are further divided into ten categories (emp**10) from the 2nd wave, by classifying the employed into "continuing" and "new" job (figure 4).

<Table 4> Economic Activity Status Variables

emp**2 (2 categories)		emp**3 (3 categories)		emp**6 (6 categories)		emp**10 (10 categories)	
Value label	value	Value label	value	Value label	value	Value label	value
Employed	1	Employed	1	returned to the original job	1	returned to the original job (continuing)	11
						returned to the original job (new)	12
				re-employed	2	re-employed (continuing)	21
						re-employed (new)	22
				self-employed	3	self-employed (continuing)	31
						self-employed(new)	33
				unpaid family worker	4	unpaid family worker (continuing)	41
						unpaid family worker (new)	44
Unemployed	2	jobless	2	jobless	5	jobless	55
		economically inactive population	3	economically inactive population	6	economically inactive population	66

※ ** indicates the survey wave. For example, "Emp012" refers to the variable for economic activity status in the 1st wave survey.



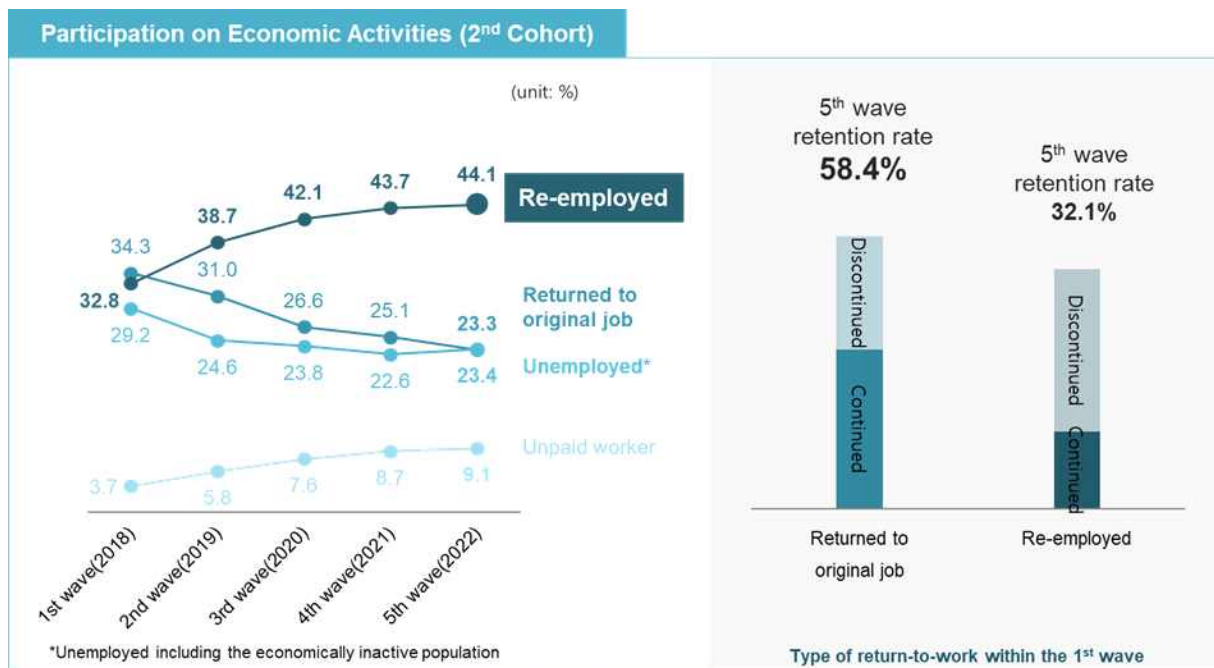
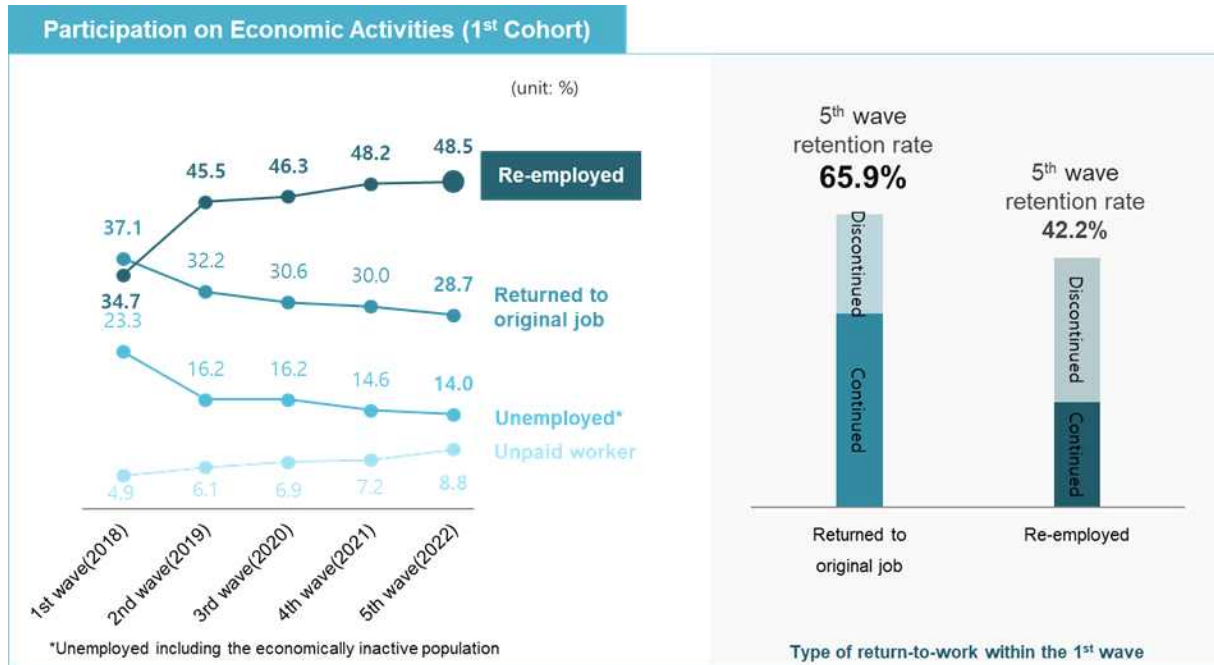
※ Based on the 5th wave PSWCI

<Figure 4> Distinguishing Economic Activity Status and Type of Economic Activities

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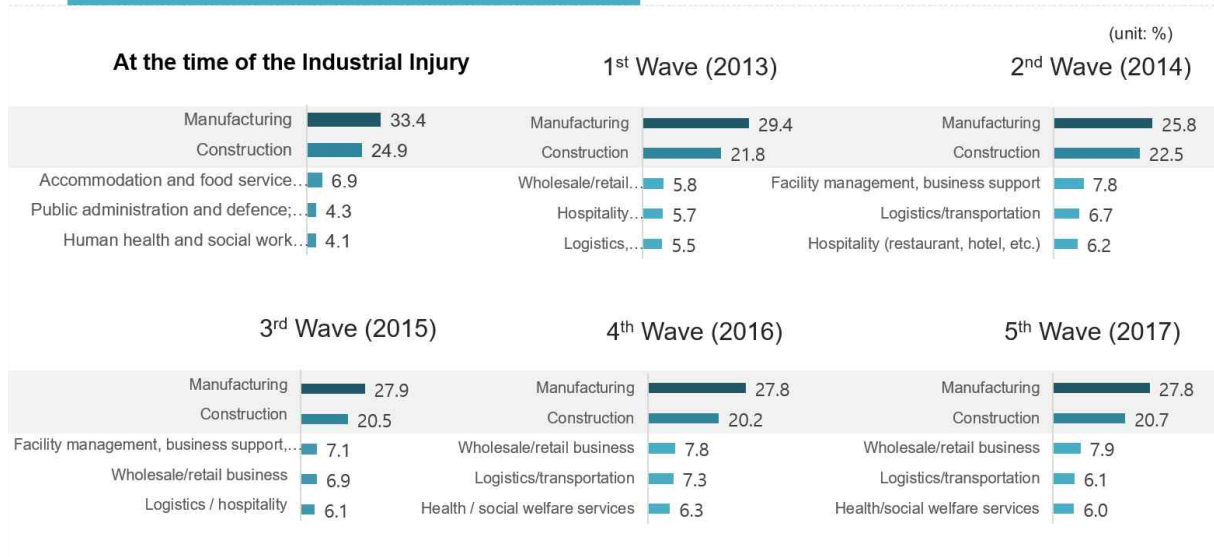
Key Findings²⁾

A. Participation of Injured Workers in Economic Activities



2) Outcomes with weighted data.

Status of the Top 5 Industries (1st Cohort)



* In accordance with the 9th Korean Standard Industrial Classification Standard

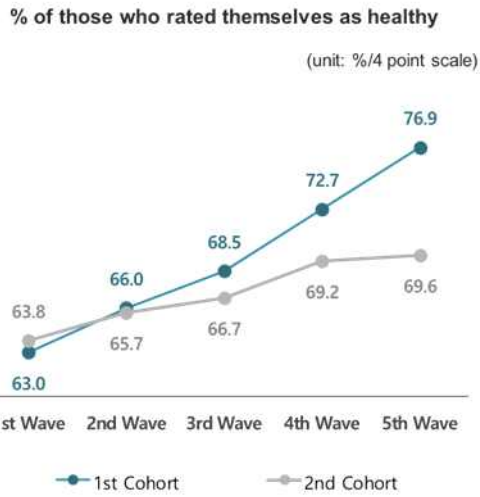
Status of the Top 5 Industries (2nd Cohort)



* In accordance with the 10th Korean Standard Industrial Classification Standard

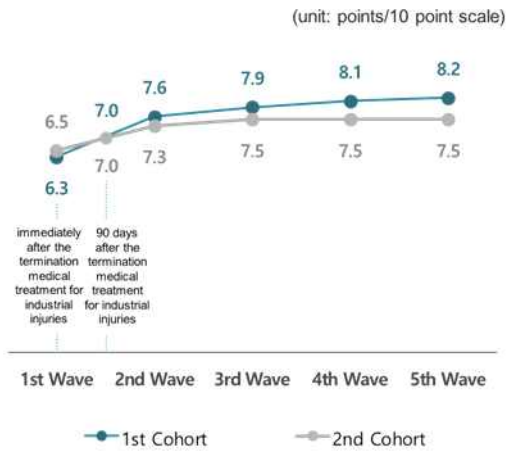
B. Injured Workers' Health and Life

Perceived Health Status



* Percentage of those who responded "very good" + "kind of good"

Work Performance Ability

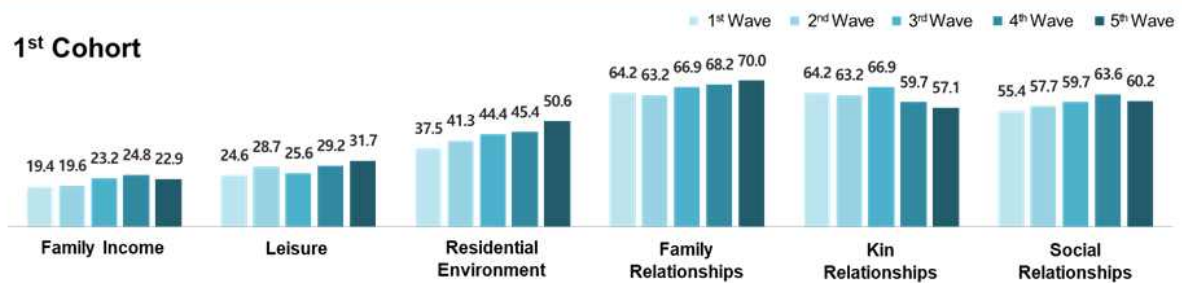


* This score is rated subjectively under the assumption that "10" represents work performance ability BEFORE the industrial injury occurred

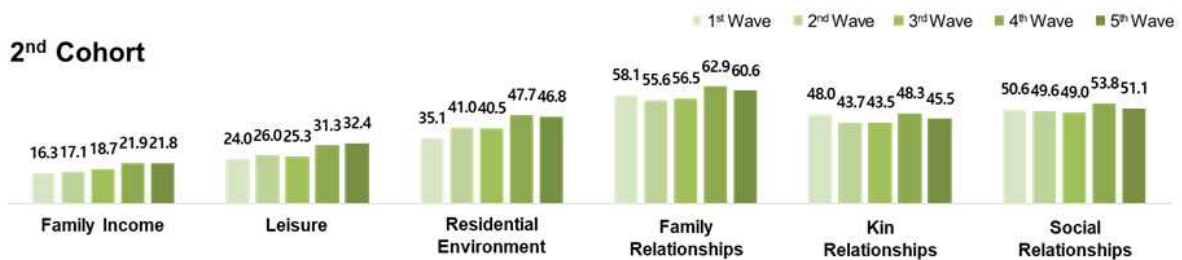
Level of Satisfaction with Everyday Life

(unit: %/5 point scale)

1st Cohort

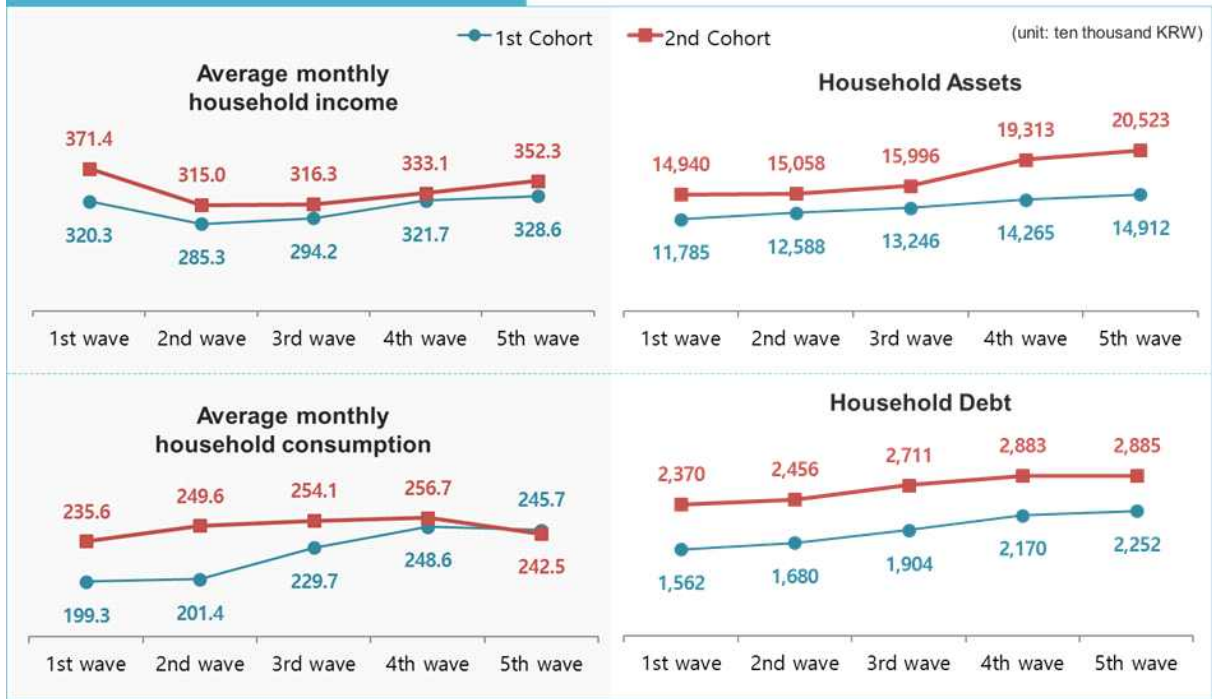


2nd Cohort



* Percentage of those who responded "very satisfied" + "satisfied"

Economic Situation of Households



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