Good afternoon, everyone.

I am really honored to be here and to have the opportunity to introduce my studies.

As you can see, I’m here today to talk about precarious employment and health consequences.
In my presentation, I’m going to divide this talk into four parts.

First of all, I will briefly touch on the background of precarious employment. And then I would like to show my recent two studies, Study 1 is titled ‘subcontractors and risk for work-related disease and absenteeism’ and Study 2 is concerned with ‘precarious employment and the risk of suicide’.

Finally, I will come to summarizing these two study findings and suggestion of policy direction and implementation of precarious employment.
Before taking about subcontracting as the main keyword, I would like to remind you ‘what does work mean to you?’.

As you may be aware, work is an essential human activity. And an important component of social recognition, self-esteem, individual identity and participation in society.

According to the International Labour Organization (ILO),

For so long in the past, work means stable and full-time job, representing substantial progress over an earlier age.
However, for several decades, economic changes, such as financial crises, globalization, high competition, and rapid technological innovation, induced labor market flexibility.

‘Flexibility’ is basically the ability to respond to economic changes.
- Minimum government regulations
- Easier to hire and fire workers
- Greater job insecurity and stress
- Rising inequality in the workplace

As a broad economic idea, Flexibility is the ability to respond to these changes.

Flexible labor markets has characteristics including a minimum of government regulations, easier to hire and fire workers, employees have greater job insecurity and stress. Also flexibility increased social and economic inequality between secure job contact workers and insecure workers.
As you may know, in traditional work arrangement, “Standard employment” is based on full-time, continuous employment, where the worker has access to good wages and benefits in the workplace.

But, labor market flexibility encouraged the changes in employment condition.

 Particularly, over the past several decades there has been a significant increase in part-time, temporary and casual forms of work, so-called ‘Non-standard employment’ or ‘Precarious employment’.

(Rodgers, 1989; Benach et al., 2000)
Let’s now look in more detail on the differences between standard and precarious discrete jobs.

Precarious employment is a term to describe non-standard employment. Compared with standard employment, precarious employment has more insecurity and greater flexibility.

As you can see here, precarious employment included both ‘atypical forms of work’ (like fixed term and part-time work) and ‘very atypical forms of work’ (for example, part-time work of fewer than 10 hours a week, very short fixed-term contracts (six months or less), zero hours working and non-written contracts.)
If you have a look at this slide, you can find many definitions of what constitutes precarious employment.

Until now there are no agreed official definitions of precarious employment. But the definitions have commonly suggested that precarious workers are related to uncertain, unpredictable and risky employment.

To sum up these definitions... (next)
In contractual arrangement, precarious employment has limited duration (such as fixed-term, short-term, and temporary labor), and their employment relationship included triangular, self-employment, and subcontracting employment relation.

So, precarious conditions are characterized by low wages, little job security and minimal control over their work conditions, lack of access to social protection and benefits, and lack of limited access.
As you may be aware, precarious employment is not a new issue.

But more precarious forms of work have increasingly taken and the normalization of such a precarious work negatively affect society and individual.

In many studies, precarious workers are found to have increased risks of occupational health and safety.

As you can see here, they are work-related accidents and injuries at high-risk. And they have ergonomic risk, muscular-skeletal pains. They are subject to higher toxic exposures, workload, job stress, and job in-satisfaction.

As a result, precarious employment is linked to negative health outcomes.

In the following two studies, I’d like to expand more on the issues for precarious employment.
Now, I'll move on to my first study. This topic is "subcontractors and increased risk for work-related diseases and absenteeism".

Background: Despite increasing reliance on subcontracting in many economic sectors, there is little information available on occupational health and safety issues among subcontractor employees. The purpose of this study was to investigate the effect of subcontracting on self-reported health problems and absences due to occupational accidents and sickness using a nationally representative sample from South Korea.

Methods: The data used were sampled from the second wave of the Korean Working Conditions Survey (2010). Information on 3,292 parent firm employees and 728 subcontractor employees was obtained. For the logistic regression model, the outcomes were work-related health problems and absenteeism. The independent variables were personal and occupational characteristics, job aspects, and working hazards.

Results: Subcontractor employees were significantly more likely to experience health problems than the employees at parent firms. In particular, subcontractors' risk of injuries...
Before taking about this study, I would like to briefly touch on the definition of subcontracting and subcontractors.

Subcontracting is a particular form of precarious employment. It is a contractual agreement, whereby a contractor authorizes another firm (a subcontractor) to perform a specific task as part of the overall project.

Subcontractor means any person or entity engaged in a subcontracting arrangement.
Well, why subcontractors are susceptible to occupational health and safety?

As you may be aware, subcontracting (or subcontractors) depends on a set of hierarchal economic relationships, in terms of work organization, employment status, and effort levels.

So, subcontracting workers have many disadvantages related to their wages, working conditions, worker’s right, and controlling occupational hazards.
Under these flexible conditions, subcontractors are becoming more common in many economy sectors (i.e., construction industry, radioactive and chemical waste and manufactures).

In Korea, subcontracting is pervasive in all industries.

- 24.6% of manufacturing business with more than 300 employees (Ministry of Employment and Labor)

Lack of studies regarding the occupational health effects on subcontracting employees

No available government data
- Subcontractors are excluded from compensation coverage
- Employers seek to avoid legal and financial responsibility

(Quinlan et al., 2003; Gochfeld and Mohr, 2007)

Under these flexible conditions, subcontractors are becoming more common in many economy sectors (such as construction industry, radioactive and chemical waste, nuclear weapons production, shipbuilding, and manufactures).

In Korea, subcontracting is also pervasive in all industries. According to the Ministry of Employment and Labor, approximately 24.6% of manufacturing business with more than 300 employees uses subcontractor employees.

But, studies on the occupational health and safety for subcontracting employees are lacking.

Really, it is difficult to find no available government-wide data.

possibly because subcontractors are formally excluded from workers’ compensation coverage or are subject to voluntary coverage, or because employers seek to avoid legal and financial responsibility for them.
In this study, to investigate the effect of subcontracting on self-reported health problems and absences due to occupational accidents and sickness.

We compared work-related health problems and absenteeism between subcontractor employees and traditional workers in parent companies.
For this study, we used a sample from the Korean Working Conditions Survey [2010].

A total of 4,010 participants were included for this study (Among them, 3,282 parent firm employees and 728 subcontractor employees)

3,282 parent firm employees and 728 subcontractor employees

All measurements were based on self-reports and included several work-related health problems and absences.

And Personal characteristics (such as age, gender, education, and smoking), occupational factors (such as employment status, company size, and working time and day) job aspects (such as job insecurity, job satisfaction, and job stress) Working environmental risks (physical, chemical, biological, ergonomic, and emotional exposures) were measured.
So, I analyzed the data using logistic regression (especially, PROC SURVEYLOGISTIC procedures) with survey weighting variable.

In order to explain how much the potential intermediary variables attenuated the effects of subcontractors' health, I made a series of the five regression models by adjusting for potential confounding variables.

As you can see here, Model I adjusted for personal characteristics (such as age, gender, education, and smoking)
And Model II additionally adjusted for occupational characteristics (such as employment status, company size, and working time and day)
Model III further adjusted for job aspects (such as job insecurity, job satisfaction, and job stress)
Model IV adjusted for exposure to working environment hazards such physical, chemical, biological, ergonomic, and emotional factors;
In the final Model V, all potential variables were adjusted.
This is our findings and shows the general characteristics of study population.

In the comparison of the characteristics, Compared with parent firm workers, subcontractors are more likely to be older, lower education and income. They are blue-collar workers.

Subcontractors worked more than 40 hours per week and worked in small size companies. They have irregular/temporary employment status.

So, subcontracting workers were more likely to be less involved in unions, and to experience less job satisfaction. They are highly considered that their health and safety are at risk because of their work.

Regarding to occupational hazard, subcontractors are more likely to be exposed to physical and chemical materials.
As seen in this figure, subcontractors experienced higher rate of all kinds of health problems, except for heart disease and absence due to work accident.

In the next slide,---(next)
This table shows the odds ratio of subcontracting workers on work-related health problems and absenteeism.

The probability to have worse health problems and absenteeism was modeled, and odds ratios indicate risk increase of subcontractors compared to parent firm workers. Here, to consider the effects of work-related health problems, such as personal and occupational characteristics, job aspects, working environmental hazards, we conducted further analyses by the five logistic regression models.

As seen in the table, compared with parent firm employees, subcontractor are significantly more likely to experience work-related health problems, like skin, muscular skeletal, headache, injury, anxiety and depression, overall fatigue, and absence due to health problems. In particular, subcontractors’ absence were significantly lower than parent firm workers.

Even though, as seen in previous figure 1, subcontractors reported more occupational injuries.

In addition to this, I considered the effects of work-related factors, such as personal and occupational characteristics, job aspects, working environmental hazards, using a series of ordered logistic regression models (like Model 1-5). Among the factors, undesirable job aspects (Model III) and poor working environmental conditions (Model IV) showed the largest impact, making considerable attenuation on the risk of subcontractors’ health outcomes.
I’d like to recap the main points of this study, I found that subcontractor employees were significantly more likely to experience health problems than those at parent firms.

Especially, subcontractor’s risks for injury, anxiety and depression, and absence due to illness were two or three times increased. subcontractors are less likely to miss work due to occupational accidents, even though, they experienced more occupational injuries.

In addition to this, We looked at that subcontractors characteristics, particularly job aspects and occupational hazards, are associated with poor occupational health.
This is the first study to report health and safety implication of subcontracting using a national-wide survey data, but many important limitations should be considered.

As you know, this study is based on a cross-sectional design, so could not establish the causality.

For example, we cannot determine whether individuals are forced into vulnerable employment arrangement because of their health.

The next thing is work-related health assessments using self-reports. So self-report may depend on a variety of conditions of the respondents, and latency or cumulative dose/exposure related to occupational disease are not be considered.

In this study, we included many potential variables to explain employees’ health and safety risk, but I can not rule out the possibility of missing variable bias.

Finally, employment arrangements, including subcontracting, are affected by the socio-political contexts of each county, so, identifying the risk factors for subcontractors’ health outcomes may have differences among countries.
Let’s look now at the second study. The next thing I’d like to talk about is precarious employment and the risk of suicide ideation and suicide attempts.
As you may know, suicide is a significant public health problem, because it is preventable and is associated with human, social, and economic losses.

According to WHO, almost one million people commit suicide annually, which is an average of one suicide death every 40 seconds.

Suicide are affected by several factors, including personality characteristics (such as impulsivity and aggression), a family history of suicide, social deprivation, alcohol or drug abuse, and psychiatric disorders.
Background

- Impact of occupation or employment status on the risk of suicide is of notable.
- Suicide rates vary across occupational groups.
  - Higher suicide rates: physicians, nurses, pharmacists, veterinarians, police officers, farmers, and military personnel
  - Individuals who are unemployed or have a lack of full-time employment

(In addition to this), occupation or employment status is important risk factor for suicide.

Recent studies have shown that suicide rates vary across occupational groups. In particular, suicide rate is high in physicians, nurses, pharmacists, veterinarians, police officers, farmers, and military personnel.

And suicide risk also elevated among individuals who are unemployed or have a lack of full-time employment.
Now, I’d like to remind you the increases in precarious employment.

In recent decades, labor market has been less uniform and more flexible, and has complex work arrangements. This trend is mainly a result of increasing precarious workers.

As I talked about, precarious employment refers to non-standard, part-time, or contingency work and it is characterized by a temporal nature, powerlessness, limited benefits, and low earnings.

Because of these conditions, precarious employees are known to be more susceptible to emotional distress, mental and physical illness, and stressful working conditions than standard work employees.

(Rodgers, 1989; Benach et al., 2000; Schneider et al., 2011)
Then, what are the odds of suicide thoughts and attempts of precarious employees?

This question is my second study's subject. So, here, I hypothesized that precarious employees would be more susceptible to suicide.

I compared suicidal ideation and suicide attempts between precarious employees and their non-precarious counterparts.
Well. Let's talk about study methods, including data source, measurements, and statistical analysis.

For this study, I used the 2008 Korean Community Health Survey data.

And a total of 52,161 participants were included. (Among them, 41,063 non-precarious employees and 11,098 precarious employees)

All measurements were based on self-reports and included employment status, whether is non-precarious or precarious employment. Suicidal ideation and suicide attempts were based on a question of whether the respondent had contemplated or attempted dying in the past 12 months. Suicide attempts were based on a question regarding whether the respondent had attempted suicide in the past 12 months.

In addition, workers' socio-demographic characteristics, job categories, health problems, and feelings of depressive were measured.
So, I analyzed the data using logistic regression models using SAS software.

In order to investigate the effect of the individual employee variables on suicide risk, I made a series of the five regression models by adjusting for potential confounding variables.

As you can see here, Model 1 adjusted for demographic characteristics (such as age, gender, and marital status);
Model 2 adjusted for Model 1 + income and education;
Model 3 adjusted for Model 1 + job categories (such as white-collar, pink-collar, blue-collar, and military);
Model 4 adjusted for Model 1 + smoking and alcohol consumption;
Model 5 adjusted for Model 1+ physical health status (based on a history of disease, including hypertension, diabetes mellitus, dyslipidemia, stroke, myocardial infarction, or angina)
Model 6 adjusted for Model 1 + depressive feelings (based on the experience of feelings of depression during the past 12 months).
All potential variables were adjusted in Model 7.
This is our findings. Figure 1 shows the percentage of suicidal ideation and suicide attempt between non-precarious and precarious employees.

As you can see, employees with precarious work had relatively higher rates of suicidal ideation.
Almost 4.4% of workers had non-precarious employment, but 10.0% was precarious employees.

So, a small proportion of the employees actually attempted suicide.
But, suicide attempt of precarious employees was higher than that of non-precarious employees.
Next, we compared the characteristics of employees with suicidal ideation and suicide attempts.

Compared with non-precarious employees with suicide ideation or attempts, precarious employees with suicide are more likely to be older, females, and divorced or widowed. They have low education and income and are engaged in blue-collar work. So, precarious employees are more likely to be never smokers and currently alcohol drinkers. With regard to health status, they reported more depressive feelings than non-precarious employees.
This table shows the odds ratio of precarious employees on suicidal ideation and suicide attempts. The probability to experience suicide behaviors was modeled, and odds ratios indicate suicide risk increase of precarious employees compared to non-precarious workers.

Here, to consider the effect of the individual employee variables on suicide risk, such as socio-demographic characteristics, job categories, smoking and alcohol consumption, smoking and alcohol consumption, and depressive feeling, we conducted the logistic regression analyses like this.

As seen in the table 1, in the final model 7, we found that precarious employees had increased risk for suicidal thoughts and actions.

In addition to this, in a series of regression model (1 to 6), the odds ratios were largely decreased in terms of income and education (in model 2) and depressive feelings, so these factors -income, education, and depressive feelings- appear to have the effectual association with the risk of suicide.
From this second study, I’d now like to sum up the main points. Precarious employees had a higher risk of suicidal ideation and suicide attempts than non-precarious workers. So, their increased suicide risk was associated with social and economic indicators and health consequences. Especially income, education, and depressive feelings are more important risk factors for suicide. This is the first study to suggest that the precarious employment may be a risk factor for suicidal thought and actions. But many limitations of this study should be considered. As you know, this study is based on a cross-sectional design, so could not establish the causality of the association between precarious employment and the risk of suicide. The next important thing is that all measurements were self-reported data, so it would be distorted by recall bias and misclassification or might be complicated by over- or under-reporting. In particular, psychometric measures, like suicide and feelings of depression, may increase and decrease over time. Thus, a self-report single question screening may be unable to capture people potentially at risk. In addition to this, the community health survey data were collected in 2008 in the midst of the Great Recession, which was a period of significant financial turmoil around the world, including South Korea. This fact may limit the temporal generalizability of our findings. Finally, we included many potential variables to explain workers’ suicide risk, but this study was not designed for workers’ health, so work-related factors (for example, job insecurity and job stress), not included. I can not rule out the possibility of residual confounding effects by unmeasured confounders.
In the final section, I’ll briefly summarize the main issues on the precarious employment and health, based on the my recent two studies.

In the first study, I talked about subcontractors’ health. Subcontractors, as a particular form of precarious employment, they had a higher risk of work-related diseases and absenteeism rate compared with employees of parent firms.

Secondly, I reported that precarious employees had a higher risk of suicidal ideation and suicide attempts than non-precarious employees.
Then, why precarious workers including subcontractors, are associated with worse health outcomes?

As seen in study 1 and 2, a considerable part of health status inequalities of precarious workers could be attributed to socially advantaged, job burdens (i.e., insecurity, non-unionization, and dissatisfaction), and hazardous working conditions.

Another reason is that precarious workers frequently experienced social exclusion, discrimination, accidents, and emotional distress by standard, permanent workers.

Thus, these factors are caused from

The problems of precarious employment is not new issue but, in part, this finding implies the Korean-specific features.

regulations limiting the use of precarious workers are relatively permissive in Korea compared to the other OECD countries, and even they are easily violated.
Finally, I would like to say “Safety and health concerns of precarious employment are important not only to individuals but also to organization.”

In Korea, regulations limiting the use of precarious workers are relatively permissive, compared with the other OECD countries. There is a need to make a closer links between labor law and social security law.

- Expanding social benefits (i.e., medical care and pensions)
- Regulating occupational health and safety
- Minimizing exposure to the hazard

(Chai, 2002; Kim et al., 2008; Weiss, 2011)

For example, policy strategies expand social benefits (such as medical care and pensions), to more effectively regulate occupational health and safety, and to Minimizing exposure to the hazard at the workplace may help to improve health outcomes of precarious workers.

I’d like to move on/draw your attention to my future plan.
If I could work in Seoul National University, I could have great opportunities to realize my research work in the community field. Worker’s Health Center is similar with occupational version of Community Health Center. It is supported by Ministry of Employment and Labor in central government. They adopt commissioned management mainly by medical college. The Core strategies are Health services for vulnerable workers and Establishment of networking with regional resources. It conducts Medical counseling, post-examination health care, working environment management. The ultimate mission is Prevention of work-related disease and Health promotion & chronic disease management.
Eleven Worker’s Health Center have been established recent 4 years. I expect(heard) there’s a plan to take management of another one by Seoul National University.
To manage this center, It needs a occupational and environmental board certified doctor, who has wide experience in occupational health field.
Worker's health center aims to make networks with regional health resources such as regional organization, workplace, occupational health institute, local administration.
Worker's health center contribute to Seoul National University in this manner. It'll improve the public health service provision to vulnerable population by Regional community service and occupational health management. It could be applied as educational purpose by Public Health Practice for undergraduate students and Comprehensive training for medical residents. In research area, Worker's health center could be Field for occupational health study, Application of public health program.
As a candidate of faculty member, I could manage Worker’s health center successfully.
And I have worked at medical college recent 6 years. Making use of my experience, I contribute improve graduate and undergraduate education. Finally I have many research experience and outcome including 40 scientific publication. I plan to concentrate my research ability to make more high quality journal publication.
With all these experience I could make an effort to advance of Seoul National University.
That is the end of my presentation. Thank you for listening my presentation. Do you have questions?