Untact Prevention Projects for Platform Workers
For securing the basic right to be safe and healthy
-Focusing on delivery workers in two-wheeled vehicles-

Hongwon Yi, Manager
Service Industry department
Occupational Safety and Health Future Technology Institute
Korea Occupational Safety and Health Agency
1. Background and purpose
Soar in food delivery with the advent of COVID-19

**Food Delivery**
(Baedal Minjok, Yogiyo)

- **1st week of Jan, 2020**: 2.41 million
- **2nd week of Jan**: 2.81 million
- **3rd week of Jan**: 2.73 million

**Online Shopping**
(Coupang, Wemape, Timon, 11th Street, Gmarket)

- **1st week of Feb, 2020**: 1.17 million
- **2nd week of Feb**: 1.14 million
- **3rd week of Feb**: 1.14 million

*First COVID-19 Positive Case in Korea (20th of Jan.)*

- **1st week of Feb, 2020**: 3.14 million
- **2nd week of Feb**: 2.84 million
- **3rd week of Feb**: 2.91 million

Unit: No. of users

Increase 20-30%
Hyper-growth of Food Delivery industry, relatively non-resilient labor force

In 2019
(349,000)

In 2020
(390,000)

Increase by
11.8%

<No of workers in Delivery Industry (Statistic Korea)>

In 2019
(1.4 trillion 3.6 billion KRW)

In 2020
(20 t, 140 b KRW)

Increase by
43.5%

<Turnover in Food Delivery Industry (Ministry of Science and ICT)>

In 2019
(349,000)

In 2020
(390,000)
Increasing injury cases counted in Industrial Accident Statistics

- E.g.) Workers in two-wheeled delivery service

<KOSHA>
No. of Industrial Accident (Fatalities)

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<tr>
<th>Year</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
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<td>_fatalities</td>
<td>2,388 (36)</td>
<td>2,359 (24)</td>
<td>2,691 (26)</td>
<td>2,958 (30)</td>
<td>3,733 (31)</td>
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6~14 times difference

Extending business category subject to worker’s compensation, Mandatory insurance coverage extension (After July 2021)

<NPA>
No of Accident of two-wheeled vehicles (Fatalities)

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2017</th>
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<td>Fatalities</td>
<td>13,076 cases (428 persons)</td>
<td>13,730 cases (406 persons)</td>
<td>15,032 cases (410 persons)</td>
<td>18,467 cases (422 persons)</td>
<td>18,280 cases (439 persons)</td>
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Source: TaaS, NPA: the National Policy Agency

Unit: injured person (number of death)
Changes in the no. of Workers’ Compensation insurance holders among workers in special employment type

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Assume that some of two-wheeled delivery workers take out the Workers’ Comp insurance
Traditional prevention projects, ineffective for platform workers

Traditional prevention projects in KOSHA (for manufacturing, construction)
- On-site Technical guidance
- Collective training, e-learning (employers, workers)
- Subsidy (Clean Project, etc.)
- Various Certification projects

Rise of platform workers in COVID-19 (for service)
- Food Delivery (Baemin connected, Coupang eats)
- Package Delivery (Coupang Flex, Woodil)
- Car Sharing, Chauffeur car hire (So-car handler, Tada)
- Housekeeper (Daerijubu, Cleaning Lap)
Challenges of prevention projects targeting platform workers

**Job attribute**
- Freelancer
- Daily work
- Part timer
- Individual Business
- Exact Statistics X

- Weaken workability

**Work attribute**
- Mobile worker
- Irregular working hour
- Work while eating
- Night work
- APP Algorithm
- Based work

- Hard access

**Injury attribute**
- High Traffic Accidents
- Low awareness on Industrial accident
- Less Technology for prevention
- High intensity, high frequency in Industrial accident

- Only through awareness raising projects (Providing Campaign, luminous sticker)

**New form of job advent**

**Hard to Reduce industrial accident with traditional method**

**Not easy with traditional technical assistant method**

**Difficult in effective service provision**
2. Current Project
Changes in KOSHA’s prevention activities for the service industry
(2015~2021)

KOSHA Prevention Project

Visit Food service industry, provide technical materials, on-site check (KOSHA, Accident prevention institute)

PPEs (Safety helmet) provision and Campaign with the NPA

Training and material provision to related institute (Korea Food service, Franchise)

Notice of amendment in law, Technical guidance (accident prevention institute), material provision (handbook)

Survey on state of delivery workers (2019)

Visit delivery service company, guide OSH law, technical guidance

Building prevention system to reduce accident by two-wheeled vehicles

KOSHA Prevention Project

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Building prevention system to reduce accident by two-wheeled vehicles

Direct hire by restaurant

(Changes in Industrial structure)
Soar in delivery agency industry and advent of platform workers

<Past>
How : Indirect (Adver., material provision)
For whom : via related institute

<Present>
How : Direct (Law revision, on-line)
For whom : workers

Year

OSH Act

Newly add Article related to two-wheeled vehicles

[For workers]
- Safety Helmet
- Headlight, stop lamp,
- taillight, rear view,
- brake

[For workers, duty of delivery service company]
- Including items on the left
- Customer’s verbal abuse handling manual
- Minimum 2 hours of education

[For workers, duty of delivery service company]
- Check drivers wear helmet
- Regular notice on prevention issue
- Don’t guarantee delivery on a tight time frame
- Active cooperation with Gov. policy

[Duty of platform company]
New approach = Develop **KOSHA platform** interlinked with delivery APP  
(Open-API)  
(Nov. 2020)

- **Input**
  - Coordinate of two-wheeled vehicles accidents (Cooperation with NPA)
  - Real-time data from the National Weather Service
  - Identify management status (survey)

- **Process (Real-time)**
  - GIS Analysis on Accident coordinate
  - Analyze location, Weather and day by riders' location (Algorithm)

- **Output (Cloud server)**
  - Accident prone zone by two-wheeled vehicles (about 2,000 zones)
  - Spot education Automatic match (120 clips)

- **Linked with delivery APP (Platform)**
  - [Open-API]

**Feedback (Data collating)**
How to work? the prevention system on the platform for delivery in two-wheeled vehicles

<Before tasks>
• When run the APP, show location-based education video (within 15 secs)
  (linked with KOSHA streaming server)

<During tasks>
• Voice alarming on any safety-related alert including accident prone zones
  (linked with KOSHA’s database on accident prone zones)

Welcome riders!
Safe delivery in on your shoulders!
Enjoy your safe drive and safe delivery!

Task starts
Voice/at restaurant

Danger!
Accident prone zone!
Be aware!

Alarm
On the road

Task ends
Voice/destination of a delivery

Safety, It’s your right.
Delivery business as well as KOSHA are with you for your safety.
- The delivery worker uses delivery app which is interlinked with KOSHA system. (0' 47")
- The service provides information based on the daily weather and location. (1' 23")
- When log in the app, check list for wearing proper PPEs pops up. (1' 32")
- While delivering, 2-3 seconds before entering the accident-prone area, the app makes alerts so that the worker can reduce speed or more cautious in that area. (Red round area, 2' 7")
Major function (1)
Show Spot video-clip (msg) by target based on Algorithm (administrator display)

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[KOSHA Alert]
Accidents rise as deliveries increase

< Spot video-clip broadcasting algorithm setting display>
Major function (1)
- Broadcasting case (Guide, benefit, precautions, etc.)

[2nd week of Mar. 2021:
Ask safety driving during regulating period]

[1-4th weeks of July 2021:
Guide the coverage extension of workers comp]

[July-Sep. 2021:
Guide the health examination (general, special)]

[Aug.-Sep. 2021:
Notice precautions when typhoons approach]
Major function(2)
Check and notice accident prone zone by two-wheeled vehicles

<Check on the PC(Web)>

<Check on the mobile (Web)>

<Delivery APP display>
Major function (2)
- Manual function to add accident prone zone by two-wheeled vehicles (KOSHA Administrator display)
Major function(3) Delivery worker-related data analysis and use in prevention activities

[Analysis of delivery service use by hour]

[Prevention APP use by date]

[Prevention APP use by delivery service company]

[지역별재해예방서비스사용현황]
Real-time big-data (unanimous) collating and analysis by regions
(Administrator display)

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28. 경기도  임진구  ACNG2ETICERCYVTA4A1S5XN7THd: dataType=JSON&pa 주식회사 2021-09-22 21:48
29. 경남도  진주시  ACNG2ETICERCYVTA4A1S5XN7THd: dataType=JSON&pa 주식회사 2021-09-22 21:47
30. 경북도  의정부시  ACNG2ETICERCYVTA4A1S5XN7THd: dataType=JSON&pa 주식회사 2021-09-22 21:39
31. 부산광역시  금제동  ACNG2ETICERCYVTA4A1S5XN7THd: dataType=JSON&pa 주식회사 2021-09-22 21:33
32. 충청남도  예산군  ACNG2ETICERCYVTA4A1S5XN7THd: dataType=JSON&pa 주식회사 2021-09-22 21:31
33. 경북도  구포시  ACNG2ETICERCYVTA4A1S5XN7THd: dataType=JSON&pa 주식회사 2021-09-22 21:31
Comparison between Traditional approach and Data-driven approach
(Suppose to implement prevention projects for 100,000 workers)

<table>
<thead>
<tr>
<th></th>
<th>Traditional approach (On-site visit technical guidance)</th>
<th>New (data-driven) approach (Open-API, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Period</strong></td>
<td>One year (1,000 persons x 100 days)</td>
<td>One day (Immediate)</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>Over 2 billion KRW (20,000 KRW x 100,000 sites)</td>
<td>0 KRW (Spend 100 million KRW for the development cost)</td>
</tr>
<tr>
<td><strong>Effect</strong></td>
<td>Short-term (Gradually decrease)</td>
<td>Continue (Show everyday, limitless)</td>
</tr>
<tr>
<td><strong>Technical guidance</strong> (how well info is conveyed)</td>
<td>Depends on technical expert</td>
<td>Depends on sophistication of info system and algorithm</td>
</tr>
</tbody>
</table>
3. Future Project

(Second half of 2021 - 2023)
# KOSHA's Data-driven prevention projects by step

<table>
<thead>
<tr>
<th>Step</th>
<th>Traditional</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Visit or indirect project</td>
<td>Provide simple info</td>
<td>Provide customized* data in real-time * analyze and combine</td>
<td>Direct data collating and service provision</td>
<td>Build up voluntary safety management system (Private market activation)</td>
</tr>
<tr>
<td>Contents</td>
<td>Visit and technical guidance, campaign</td>
<td>Provide raw data of accident spot and alerts</td>
<td>Provide real-time date combination of weather, date, location</td>
<td>Real-time data collating and analyzing &amp; prevention projects implementation</td>
<td>Provide market customized additional service</td>
</tr>
<tr>
<td>E.g.</td>
<td>Survey on Quick-service industry</td>
<td>Provide 6,000 accident spot alerts as a pilot project in 2019</td>
<td>Develop “Prevention project on two-wheeled delivery platform system” (one of 2020 projects)</td>
<td>Pilot project in 2021 (Data collating via LTE device, 100 devices for 4 months)</td>
<td>Lower the private insurance rate based on data</td>
</tr>
<tr>
<td>Note</td>
<td>Low effect as it is one-time event</td>
<td>Extra cost for data analysis by businesses</td>
<td>Need for knowhow on system develop and analysis</td>
<td>High cost for data collating and system running? (Public burden)</td>
<td>Bear by buyer (Business)</td>
</tr>
</tbody>
</table>

*Note: 
Low effect as it is one-time event
Extra cost for data analysis by businesses
Need for knowhow on system develop and analysis
High cost for data collating and system running?
(Bear by buyer (Business))

We are here
Current project(1) Real-time bigdata platform-based prevention project

<How it work>

- Attach IoT transmitter (LTE-based, volunteer)
  - X,Y coordinates
  - Gyroscope triaxis
  - Acceleration triaxis

In 2021
- Big-data collating and pattern analysis (100 transmitters, 4months)

In 2022
- Build own platform and test on interlink with private devices (plan)

In 2023
- Develop as a project, Subsidize based on driving data (Proposal)

[Transmit date to KOSHA platform]

[Subsidize by analyzing the data & make added value]
<What to expect>

[Lead safe driving]
- Drivers can self-check with driving data
- Provide driving data of a user compared to one of others, leading the user safety drive by themselves

[Social and economic cost reduction]
- Lower some of Worker’s comp rate (20,000 KRW or lower/month) by unit of workers
- Reduce some high rate of private paid transportation insurance (8-12 million/year)
- Reduce direct-indirect social expenses due to accident reduction
Current project(2) Dealing with Bad algorithm on the platform

< AS is >
(Notice delivery time causing illegal (unsafe) driving)

- Platform business could control various circumstances with the APP
- Compose Algorithm not considering the existing law

< To be (End of 2021) >
(Calculate delivery time by reflecting weather, traffics, etc.)

- To deal with certain issues with bad algorithm, develop and disseminate guideline
- Open own digitalized algorithm for free

[APP Delivery time] [Time required for Delivery on navigation]

[Real-time safety delivery time calculator (being validated)]
Current project(2) Dealing with Bad algorithm on the platform

<What to expect>

[Deal with immoderate bad algorithm]
- Beat bad algorithm composed without legal, societal or cultural consideration
- New platform business can refer to algorithm guideline

[New Safety & Health alternative for undeveloped area]
- Able to protect vulnerable workers who have been in the blind spot of protection from accident since before the time of platform advent
- Allow low cost · high efficiency prevention projects
Current project(3) Data-driven sensing the danger of platform worker

<Use site data, web-crawling data (2023-) >

- Sense dangers such as delivery volume, working condition, industry changes by collating from on-site workers and extracting keywords from real-time keywords on portal site and News articles
4. Conclusion and challenges
Conclusion and challenges

- In the past, safety and health was related to work environment. For platform workers, influence of algorithm gets bigger.

- Platform business can easily make and edit algorithm endangering safety and health of workers, but respond to this at the public level needs time and money.

- Most of platform workers are not registered and there's no digital record of them. This makes hard to evaluate the safety and health performance of prevention projects.

- Nevertheless, data-driven prevention projects for platform workers is not optional but essential.

- Expect that low cost & high efficiency data-driven projects would take a pivotal role to secure the right to be safe for the vulnerable workers in this Untact Era.
Expect to widen target of data-driven prevention projects

<table>
<thead>
<tr>
<th>In 2020</th>
<th>In 2021</th>
<th>2022-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery workers in two-wheeled vehicles</td>
<td>Package delivery, taxi, designated driving service</td>
<td></td>
</tr>
<tr>
<td>In 2022</td>
<td>Home electronics installer, housekeepers, credit-card recruiter, door-to-door salesperson, insurance recruiter, etc.</td>
<td></td>
</tr>
</tbody>
</table>
Thank you