PULSE LAB JAKARTA

2021 ANNUAL REPORT

Accelerating Analytic Partnerships for Development and Humanitarian Action

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UN Global Pulse in Indonesia operates as Pulse Lab Jakarta, a joint data innovation facility of the United Nations and the Government of Indonesia (via the Ministry of National Development Planning). Functioning as an analytic partnerships accelerator, the Lab operates in the problem, solution and identity spaces where it applies mixed-methods research approaches.

As part of the UN Global Pulse network, the Lab works at the intersection of digital innovation and human sciences to inform, inspire, and strengthen the ability of the United Nations family and those it serves to anticipate, respond and adapt to the challenges of today and tomorrow.

UN Global Pulse in Indonesia is grateful for the generous support of the Australian Government.

Kementerian PPN/ Bappenas

PULSE LAB JAKARTA

United Nations

Australian Government


DASHBOARD REALTIME
ANALISIS
SCAN DISINI
DATA REKAP
Check in
SCAN
PUSKESMAS
WARUNG MAKAN

OUR PARTNERS

> It has been such an honor to work with the passionate and highly competent team at UN Global Pulse and we do appreciate them for the hard work and collaborative outputs so far. One lesson from developing the COVID-19 risk assessment map is to keep advocating and improving its value for a wider audience so that they can see the benefits from this initiative, as well as explore how other audiences can help raise awareness. Several relevant improvements might be needed for the interactive map in line with the conditions of the COVID-19 pandemic today.

Jimy Gunawan
Project Officer, Jabar Digital Service

> The collaboration was essential in building a data analytical dashboard necessary for addressing policy questions concerning MSMEs for our internal unit and other stakeholders. Pulse Lab Jakarta has been helping us through the provision of professional data scientists with advanced expertise as well as an amazing project coordination team. We went through a pleasant process and have achieved all the activities so far on time. We hope for even better results from this collaboration in 2022.

Mariska
Associate Planner, Ministry of National Development Planning Indonesia

> The collaboration contributed to enhancing the network and promoted a greater understanding on women owned microenterprises. It was a positive collaboration with clear value added from Pulse Lab Jakarta, which helped to deepen insights with innovative and rich data analysis, as well as interesting perspectives on shared-value partnerships.

Anna Winoto
Team Leader, Kompak

OUR PARTNERS

IDRC | CRDI
International Development Research Centre
Centre de recherches pour le développement international

Canada

Sida

gender at work

KOMPAK
Kolaborasi Masyarakat dan Pelayanan untuk Kesejahteraan Kemitraan Pemerintah Australia - Indonesia

JABAR DIGITAL SERVICE

Cardno

KAI

Ladysmith

The Australia-Indonesia Centre

KEMENTERIAN KESEHATAN REPUBLIK INDONESIA

SIAP SIAGA
Australia – Indonesia Partnership for Disaster Risk Management

FACEBOOK

> "I would rate the collaboration with Pulse Lab Jakarta as overall very positive and productive. Considering the nature of the project, there were clear challenges due to time constraints and difficulties in acquiring datasets needed to build, calibrate and validate the model. Despite these issues, this collaboration led to the development of a new ABM model for the spread of COVID-19 with useful insights gained from the outputs of our simulations."
>
> **Vincent Lemiale**
> Team Leader, The Commonwealth Scientific and Industrial Research Organisation

> "It is important for MoFA to put emphasis on the definition of digital diplomacy as one of the instruments of foreign policy. Our partnership and experiences with PLJ served as the strategic link towards MoFA development on such definition especially in data-driven diplomacy and the utilisation of machine learning in foreign policy making. The world is changing, it got bigger and closer at the same time."
>
> **Listiana Operananta,**
> Indonesian Consul General in Perth, Western Australia, Director of Information and Media 2018-2021

> "The collaboration with Pulse Lab Jakarta was brilliant. Pulse Lab contributed to an increase in knowledge and appreciation on innovative tools used for policy making. Pulse Lab's participation in our Policy Innovation Exchange, a cross-border exchange of innovative tools and processes which can be used in policymaking at sub-national and national levels, helped increase the momentum for future efforts to be taken to arm policymakers against the complexities of problems they face."
>
> **Nitasmai Ransaeva**
> Head, Thailand Policy Lab
> United Nations Development Programme

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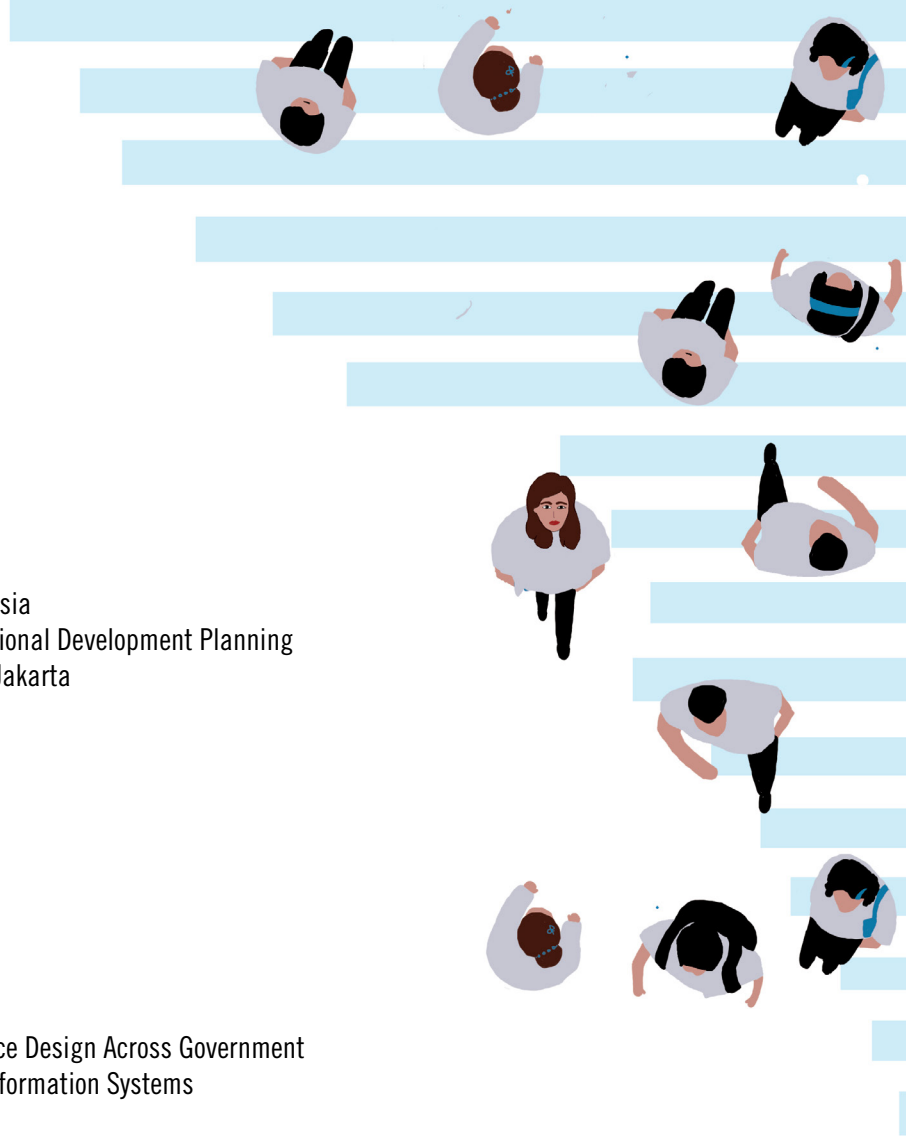
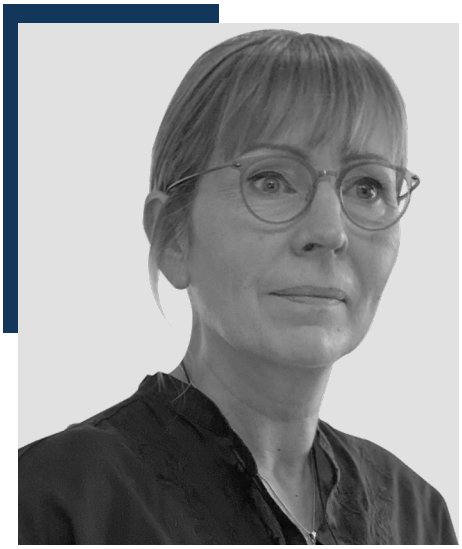


ACRONYMS

ABM	-	Agent Based Modelling
ADB	-	Asian Development Bank
AI	-	Artificial Intelligence
AI4COVID	-	Artificial Intelligence for COVID-19 Response & Recovery
Bappenas	-	Ministry of National Development Planning
COVID-19	-	Coronavirus Disease 2019
CSIRO	-	Commonwealth Scientific Industrial Research Organisation
DNKI	-	Indonesian National Council for Financial Inclusion
DTO	-	Digital Transformation Office (Ministry of Health)
DFAT	-	Australian Department of Foreign Affairs & Trade
e-PPGBM	-	an online application for recording and reporting on community-based nutrition
GEDSI	-	Gender Equality, Disability and Social Inclusion
GoI	-	Government of Indonesia
HCD	-	Human Centered Design
ICTs	-	Information and Communication Technologies
IDRC	-	International Development Research Centre
IFRC	-	The International Federation of Red Cross and Red Crescent Societies
ISR	-	Independent Strategic Review
KAI	-	Kereta Api Indonesia
KSI	-	Knowledge Sector Initiative
MoFA	-	Ministry of Foreign Affairs
MSBs	-	Micro and Small Businesses
MSMEs	-	Micro, Small and Medium Enterprises
NGO	-	Non-governmental Organization
PLJ	-	Pulse Lab Jakarta
PWDs	-	People with Disabilities
RAII	-	Responsible Artificial Intelligence Index
SEADS	-	Southeast Asia Development Solutions Knowledge and Innovation Platform
Sida	-	Swedish International Development Agency
SMEs	-	Small and Medium-sized Enterprises
UN	-	United Nations
UN ESCAP	-	United Nations Economic and Social Commission for Asia and the Pacific
UNICEF	-	United Nations Children's Fund

FOREWORD



Valerie Julliand

Resident Coordinator,
United Nations in Indonesia

With the COVID-19 vaccine becoming available in 2021, we were reminded of the potentials and opportunities that science, innovation and technology provide for advancing humanity. The role of data has been central in these developments, particularly in helping governments to understand and address inequalities that have been exacerbated during the pandemic.

In Indonesia, the work of UN Global Pulse through Pulse Lab Jakarta continues to inform local interventions and aid the Indonesian Government in delivering effective public services for its citizens. From understanding barriers to utilizing digital tools among women micro business owners, to building capacities within government ministries to better harness data innovations, their work has been monumental in strengthening the digital ecosystem to deliver better results - yet there is still more work to be done.

Moving forward it is important to invest in innovative, people-centered and gender responsive systems, which can provide actionable, evidence-based insights to lead recovery efforts, support national priorities and accelerate the achievement of the Sustainable Development Goals. It is with this vision in mind that I wholly support the UN Secretary-General's Our Common Agenda, which looks to strengthen global cooperation and multilateralism in order for us to better work together to protect all people everywhere and our planet.

Evidence through the synthesis of data is the common denominator across all of our efforts, in order to monitor progress and identify information gaps. We are grateful for the valuable inputs the UN Global Pulse team has provided towards the implementation of the UN in Indonesia data strategy with a use case approach on people with disabilities, and look forward to receiving further contributions in our collective journey ahead.

A stronger UN is one with greater capabilities for data, innovation, strategic foresight, behavioral science and results, and the work of UN Global Pulse continues to introduce innovative methods and approaches to help us get there. I would like to extend congratulations to the UN Global Pulse team here in Indonesia, as well as express my appreciation to the Government of Indonesia and the Government of Australia for this collaboration and their continued support.

FOREWORD

Dr. Ir. Himawan Hariyoga Djojokusumo, MSc.

Executive Secretary, Ministry of National Development Planning Indonesia

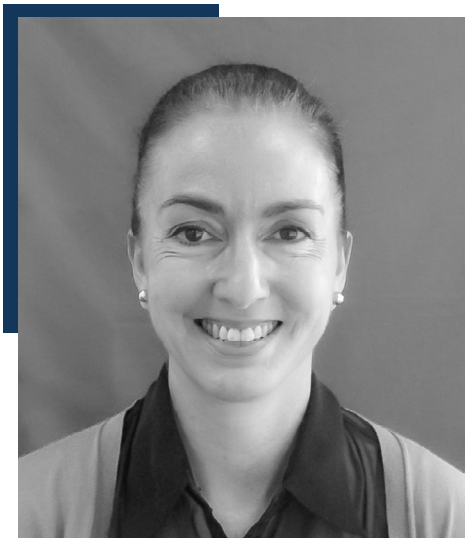
Over the past two years, we have seen the socio-economic impacts of COVID-19 on our society. In response, global leaders have worked collaboratively with international organizations, development agencies and the private sector in taking action to address these unprecedented challenges. In Indonesia, the Government has designed and implemented various programme to strengthen the national health system, build resilience systems, as well as reform the economy to accelerate post-crisis recovery.

In particular, the pandemic has presented opportunities for the Government to innovate and build back better through the utilisation of data and digital technologies. In line with this effort, I am pleased to see how UN Global Pulse in Indonesia through Pulse Lab Jakarta has shifted from a "request-based" approach to a design-thinking approach in partnering with various governmental entities to utilize digital technologies, better manage and harness their data, and strengthen their analytical skills and capabilities. As this annual report captures, some of the analytic projects have inspired the Indonesian Government to invest more resources in adopting these novel and innovative approaches.

I am also delighted that in addition to the conclusion of four analytic projects with the Center for Development of Planning Data and Information (Pusdatinrenbang), UN Global Pulse in Indonesia has focused its work on two important sectors - health and MSMEs. Its collaboration with the Digital Transformation Office of the Ministry of Health highlights the importance of establishing analytic partnerships in designing data-informed countermeasures for the pandemic, and particularly to understand constraints in our health data systems impacting on the quality and validity of data. Likewise, with MSMEs making up the backbone of Indonesia's economy, UN Global Pulse's focus on mapping the distribution of MSMEs across the country and exploring future scenarios represents a critical part of development planning.

I would like to express my appreciation to the Government of Australia for its continued support to the work of Pulse Lab Jakarta and would like to congratulate the team for its efforts in strengthening analytic partnerships to #buildbackbetter which we hope will further progress as lessons and insights for the Asia Pacific region.

FOREWORD



Kirsten Bishop

DFAT Minister Counsellor,
Australian Embassy Jakarta

The COVID-19 pandemic and the pressure it has placed on national and global economies emphasizes the need for timely, high quality, open and disaggregated data and analytics. Such data is critical in understanding, managing and mitigating the human, social and economic costs of the pandemic, including through the development of better public policy responses and accelerating action to address development challenges.

The Australian Government has provided ongoing support to evidence-based policy making in Indonesia, through a number of long-standing investments, such as the Knowledge Sector Initiative, the Abdul Latif Jameel Poverty Action Lab (J-PAL) Southeast Asia, and the partnership between the Government of Indonesia and the United Nations Global Pulse, known as Pulse Lab Jakarta. Since 2015, DFAT has provided core funding support to Pulse Lab Jakarta .

We are pleased to see the evolution of this partnership over time, from its original role in experimenting with the use of unconventional data sources, through to its more direct contribution to policy-making processes today. As outlined in this annual report, we see that Pulse Lab Jakarta has progressed towards an increasingly impactful role in accelerating innovative partnerships and helping to develop a data ecosystem that is better able produce the analytics needed by development partners in Indonesia and across the Indo-Pacific region.

We can see that digital transformation is increasingly important in helping to address complex development challenges. We have seen this play out during the COVID-19 crisis, which has been referred to as a “data-driven pandemic”. In this context, many new approaches are now being adopted by governments and development partners alike.

It is therefore more important than ever to carefully consider the underlying data infrastructure, protocols and procedures which help ensure innovations are effective, inclusive and appropriate to the context in which they are used. Equally important is the issue of data privacy and protection.

This is why Pulse Lab Jakarta’s work on integrating consideration and understanding of issues affecting gender equality, disability and social inclusion into emerging system designs is so important. We encourage Pulse Lab Jakarta to continue its focus on digital inclusion to ensure tools and innovations recognize and address the needs of those at most risk of being left behind. We also strongly support the manner in which Pulse Lab Jakarta has pushed for better data security and supported better data privacy measures in a number of its partnerships.

EXECUTIVE SUMMARY

Despite the ongoing COVID-19 pandemic affecting the team both internally as well as externally in accelerating analytic partnerships, 2021 has proved a rewarding year for Pulse Lab Jakarta. Together with the broader components of the UN Global Pulse Network, significant steps have progressed to transition PLJ as an innovation facility of the United Nations and the Government of Indonesia undertaking several multiyear programmes nationally and internationally.

This is supported by the ever-increasing demand for evidence production and the transition towards "living evidence"[1] - dashboards and visualisations to provide insights on policy questions and make better sense of policy issues combined with a clear understanding of social systems in which policy for development and humanitarian action is undertaken.

This was highlighted by DFAT's Independent Strategic Review (ISR) which also gauged PLJ's impact in stimulating interest as well as application of data science methods to create public value from the perspective of users and partners. Interviews conducted found that: ".... (W)here these technologies are applied, they have significant potential to influence policy. And while this may typically be policy at an operational level, practical decisions affecting the allocation of resources and how they are deployed can have significant impact regardless".

Inputs from the ISR mentioned above illustrate how Pulse Lab Jakarta's repositioning has helped to deliver better results and act as a conduit to provide convergent validity to global and regional or national agendas seeking to improve the effectiveness of societal change action. Pulse Lab Jakarta interfaces digital innovation components found in global initiatives such as "Our Common Agenda", with member state and local actor agendas through programs such as "Data Innovations for Sustainable Development and Inclusive Growth" (DFAT), the Global South AI4COVID Program (IDRC and Sida) and the Global Data Access Initiative (Google Foundation). Each of these are foundational building blocks as PLJ progresses towards management and coordination of regional data initiatives and advocacy.

[1] Reference to Report of the Global Commission on Evidence to Address Societal Good, p. 55

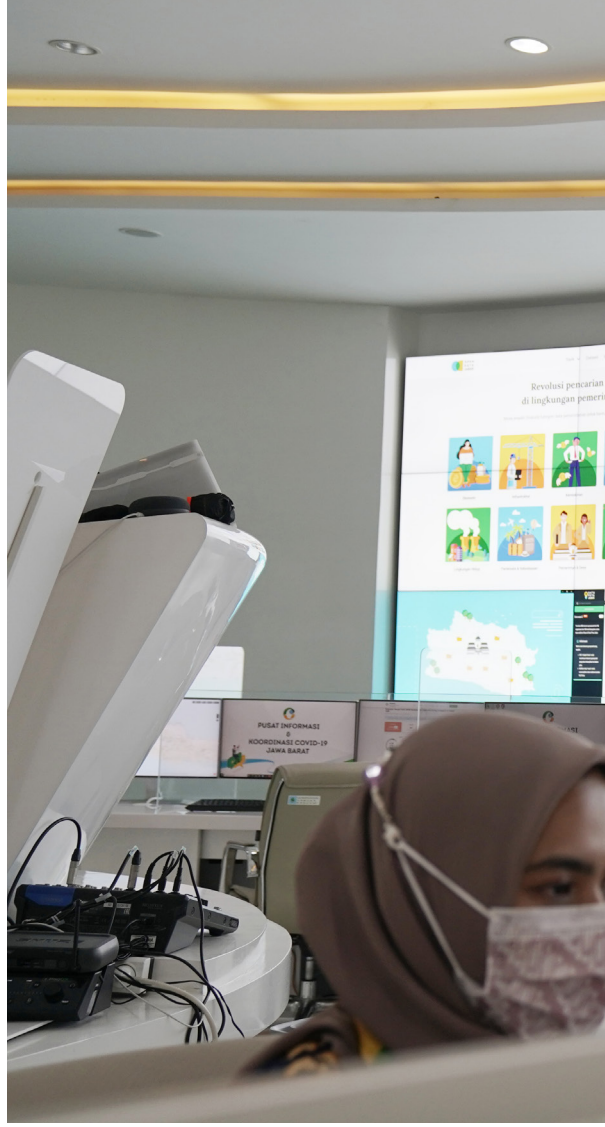
YEAR IN (P)REVIEW

The shift in 2021 towards greater impact

in our work extends beyond an end-of-year timeline. Transitioning from mostly prototyping data innovations to a focus on systems thinking design, our collaborations with key stakeholders and partners served to highlight various shortcomings in existing systems and identify underlying issues for improved integration and sustainability. In particular, the COVID-19 crisis prompted a renewed focus to improve public service delivery through a more data-driven and people-centered approach. This has led to a greater demand for and appreciation of our work as a mixed-methods data innovation facility that combines data analytics with service design to generate value. In this annual review, we look at what we accomplished and the emerging impact from the processes put in motion to address some of the challenges.

Increased Demand for Data Analytics & Service Design Across Government

Data is critical for designing responsive programmes and informing evidence-based decisions across different levels of government. Non-traditional data in the form of big data has helped in recent years to close information gaps with more dynamic and timely insights, yet traditional data such as official statistics also remain important. Showcasing the art of the possible, our work over the years has demonstrated the wealth of insights that can be generated from combining these datasets. Complemented by service design that looks at the end-to-end processes and resources required for our data-driven innovations to run and generate value, this mixed-methods approach can be particularly actionable in helping governments to better respond to new challenges and meeting the needs of citizens in an inclusive way. However, achieving this outcome requires a change in existing practices that does not just focus on building new tools, but also seeks to address issues within existing systems and the lack of interlinkages with emerging ones. Supported by Bappenas as our main government counterpart, in 2021 we focused on how to address some of these issues through targeted systems mapping research and data dives conducted with several units in the Indonesian Government.



Jabar Digital Service, West Java Government

COVID-19 Risk Assessment Mapping in West Java, Indonesia

To support COVID-19 response, we worked with Jabar Digital Service of the West Java Government, Bappenas and UNICEF Indonesia to refine the COVID-19 risk assessment map we previously developed at the height of the COVID-19 crisis in 2020. The map was designed to identify COVID-19 transmission hotspots in West Java (the country's most populous province of 50 million people), by overlaying administrative data with Facebook Population Density Maps. As the pandemic evolved and new needs for the map emerged, we embarked on a second phase of the project in 2021 to reconfigure the map's data analysis and visualization features, as well as to build further linkages for effective adoption within its operational environment. Following its handover to Jabar Digital Service, the map was integrated into PIKOBAR (the Information and Coordination Centre for Disease and Disaster in West Java) and installed in the provincial government's digital Command Centre. Harnessing learnings from this data-driven risk assessment map, our team went on to partner with CSIRO (Australia's National Science Agency and Innovation Catalyst) to develop a computational model for

Following its handover to Jabar Digital Service, the map was integrated into PIKOBAR (the Information and Coordination Centre for Disease and Disaster in West Java) and installed in the provincial government's digital Command Centre.

simulating actions and interactions with respect to a range of possible COVID-19 social restriction scenarios in Bekasi, an urban city in West Java with a population of about 3.5 million people. This research provided data-informed policy insights on crowd dynamics and infection trends at a microscopic level based on places of transmission such as home, workplace and school. This collaboration also catalysed a new partnership with the Indonesian Ministry of Health focused on health data analytics (details of which are discussed later in this review).

Disaggregating Data for Inclusive Transport Planning

To understand the diverse needs of its passengers, we partnered with PT KAI (Indonesia's national railway company) to analyze millions of passenger data, including demographic information, origin-destination points and transaction details. The analysis provided high resolution insights with near precision on the day-to-day mobility of passengers, and represented anonymized information of who, what, when, where and and how at an individual level. Disaggregating the data by sex, the analysis provided further insights towards inclusive transport planning, especially for women passengers travelling alone during nighttime hours. This analytic approach was particularly welcomed since railway passenger data as reported annually by the Indonesian Ministry of Transportation has never been disaggregated. The research analysis not only served as a capacity building activity to help train authorities and government decision-makers make use of their data, but also highlighted the importance of ensuring the availability of disaggregated data, for instance to address the needs of vulnerable passengers such as people with disabilities. Additionally, the process of accessing and analyzing the data provided new perspectives on how the national railway company could better integrate its varied amount of data collected with external transport systems for better business development in line with their inclusive development agenda as a state-owned enterprise. An op-ed, co-authored by one of the railway company's commissioners, the UN Resident Coordination in Indonesia and our Head of the Lab, was later published in The Jakarta Post on How Big Data is Helping to Transform Indonesia's Public Transport System based on insights that emerged from this work.

Disaggregating the data by sex, the analysis provided further insights on how transport services could be improved, especially for women passengers travelling alone during nighttime hours.

Directorate of SMEs and Cooperatives Development, Bappenas

Strengthening MSMEs for Inclusive Growth

To answer **critical policy questions on the state of Indonesia's MSMEs sector,** we ran a series of tailored data dives with the Directorate of SMEs and Cooperatives Development and the Data and Information Centre within Bappenas. The underlying objective was to identify what traditional and non-traditional datasets might be relevant, in addition to surveying their availability and assessing data gaps that might exist. With growing digitalization in this sector, the process provided a practical use case on systems design to ensure integrated data flows and sustainable pipelines for data insights. This is especially crucial as there has yet to be a unified database on MSMEs in Indonesia. To start, the team sought to design an informational data analysis tool to examine the geospatial dynamics of MSMEs at the district level with the aim of identifying enablers and inhibitors of inclusive growth. The data workshops conducted were foundational for the design process, and brought together a multidisciplinary group of domain experts with experience in the MSMEs sector. As a learning-by-doing collaboration, it also served as a capacity building exercise for the units within Bappenas to assess existing conditions and resources, as well as identify capacity gaps where improvements would be needed for effective design, implementation and maintenance of a unified country-wide MSMEs data system. To explore the intersection between the system and its users, a user research was also conducted with potential users and technical custodians to assess the end-to-end processes and resources (people, infrastructure and protocols) required. Through this service design approach, recommendations were developed for a systems-wide data integration strategy to support policies impacting more than 30 million MSMEs in the country. In 2022, the project will take on a futures and foresight lens to look at issues on the horizon that could potentially influence the dynamics of MSMEs in Indonesia and help nurture a broader enabling environment in the region towards their inclusive growth.

Skip to see how we applied our mix methods approach in these projects

Digital Transformation Office, Ministry of Health

Health Data Analytics for Managing Pandemics

To leverage **health-related datasets for actionable insights**, the Indonesian Ministry of Health through its Digital Transformation Office requested advanced data analytics support from our team. Having conducted considerable data analyses, the Ministry's key objective for this collaboration was to explore what useful insights could be gleaned by combining data from across its different systems to aid COVID-19 response. Through a joint research dive, an exploratory analysis was conducted to examine available datasets, as well as to determine the quality of data and interlinkages needed to support broader data harmonization in the health sector. The research dive allowed for the development of a common understanding on the applicability of the analysis to specific contexts, with practical knowledge transfers among the domain experts involved. Beyond the technical analysis, a data ethics framework was also incorporated throughout the process, including a risks, harms and benefits assessment. This process brought attention to particular issues of data partnerships and sharing agreements that need to be thoroughly considered to ensure the responsible use and protection of data across the data ecosystem. In addition, the Digital Transformation Office is also tasked with implementing a long-term digital transformation strategy in coordination with relevant stakeholders across government, the private sector and the development sector. Our engagement in this consolidated effort lends experiential expertise at the intersection of different policy domains and the core pillars of the UN Secretary General's "next-gen" transformation agenda to inform policies and actions by the Ministry of Health and others. A user research was conducted in conjunction with the research dive, which helped to assess policy implications, as well as shape recommendations on steps that should be taken to improve both data quality and essentially the quality of related data-driven decisions.

Strengthening MSMEs for Inclusive Growth and Sustainable Development

Unified MSMEs Database?

Available Data?

DATA AN

Data Vis
Predictiv
Artificial
Machine
Resea

Business Category
Turnover Category
Business by Scale

Economic Census 2016

Internet Coverage
Internet Utilization

Village Potential Staticstics 2018

Domain Experts + Staff

MIX

PUKMK (Directorate of MSMEs and Cooperatives Development)

Pusdatinrenbang (The Data Information Centre of the Indonesian Ministry for National Development Planning)

Policy Issues
Understanding factors that support or hinder the development of MSMEs

Understanding various future scenarios of MSMEs growth and economic contributions

Enablers + Inhibitors of Growth

Understanding Demands + Needs

End Users + Technical Custodians

Potential Gaps?

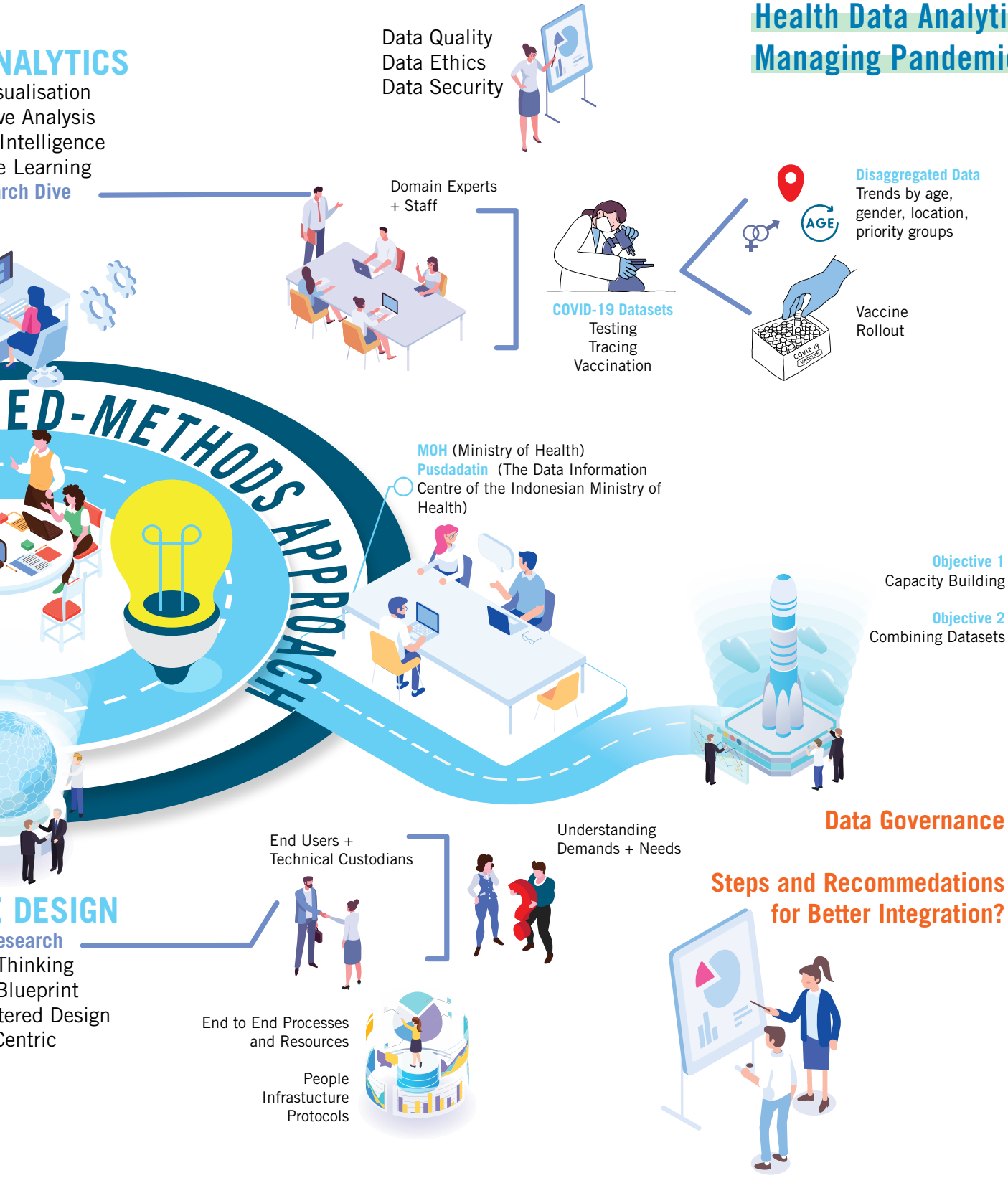
What is the Future of MSMEs in Indonesia?

End to End Processes and Resources

People
Infrastucture
Protocols

SERVICE
User Re
Design T
Service E
Human Cent
User C

Health Data Analytics for Managing Pandemics



Increased Digitalization and Optimization of Information Systems

The COVID-19 crisis brought data innovations to the fore, which is marked by citizens' increased exposure to ICTs and governments growing adoption of digital technologies to improve practices and outcomes. Designing these tools in a user-centric way remains a priority to ensure that citizens can fully realize the benefits of digitalization, and at the same time governments can effectively tackle policy questions through a more data-informed approach. As our work on digital innovations continues to demonstrate, digital transformation in the public sector is imperative. In 2021, we renewed our focus to further foster an enabling environment in Indonesia, where structural and behavioural barriers to adoption are reduced; transparency in data is prioritized to restore public trust in government; and guiding principles are collectively established to strengthen linkages within the broader data ecosystem.

Independent Research: Beyond Sticky Floors

Overcoming Behavioural Barriers to Adopting Digital Tools Among Women Business Owners

To examine **the difference in outcomes and coping strategies between women and men owned MSBs,** we conducted a mixed-methods study in 2020 with UN Women that focussed on the utilization of digital platforms in response to the pandemic. One of the policy recommendations that came out of the research pointed to enhancing women's access to technology to help them unlock the potential of digitalization. With this motivation in mind, in 2021 we revisited the qualitative data that was collected as part of the research with a view to identifying design opportunities that might help women necessity business owners overcome behavioral barriers to adopting digital tools. Aptly titled "Beyond Sticky Floors", PLJ subsequently published a seminal research report that underlined some of the behavioural challenges (so called the "sticky floors") that are often overlooked in the discourse on increasing digitalization. The report assessed that women micro business owners often face specific behavioural barriers or "sticky floors" to adopting and using digital tools, and these barriers vary depending on where they are in their digital capabilities journey. This independent research, demonstrating how behavioral economics principles can be used to complement the intervention design process, was one of the Lab's key contributions to the 2021 UN Behavioural Science Report.

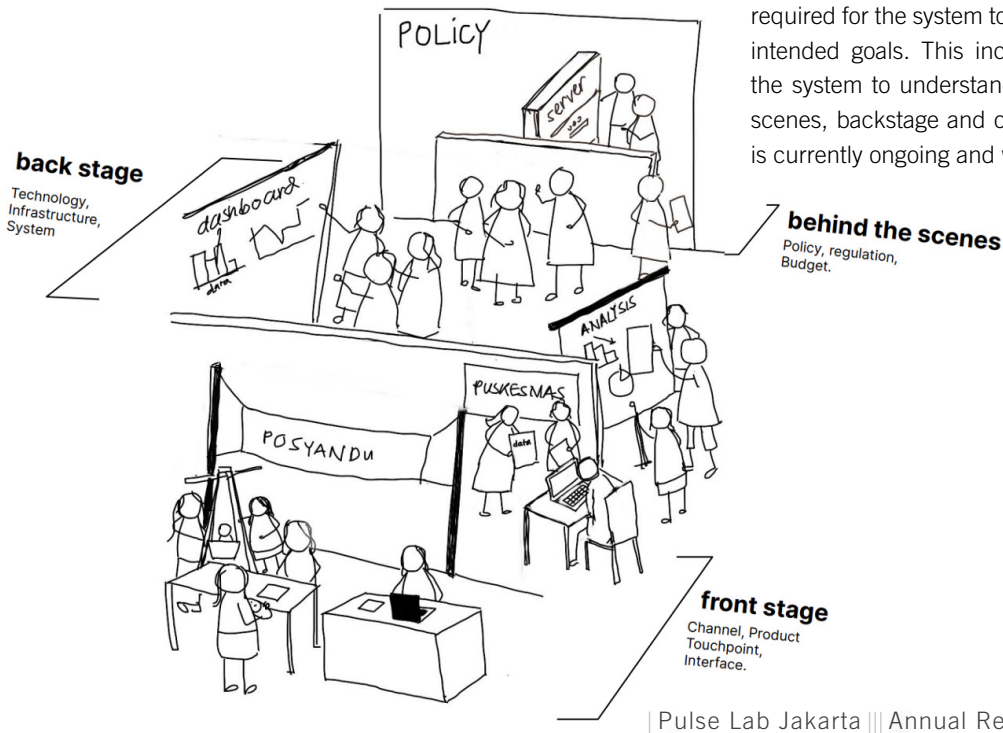
Women micro business owners often face specific behavioural barriers or "sticky floors" to adopting and using digital tools.

Ministry of Health & UNICEF

Applying Service Design to Optimize Indonesia's National Nutrition Information System

To support the National Movement for Stunting Reduction in Indonesia, the Ministry of Health launched SIGIZI - a national nutrition information system to record and report nutrition data within communities (particularly on adolescents, pregnant women and toddlers). One of the key components of this system is known as e-PPGBM, which is an online application system for recording and reporting on community-based nutrition. Challenges in implementing this system, for instance amongst health workers who use this tool to report the nutritional status of children in their areas, have reduced optimization. These challenges include different data collection and reporting mechanisms, lack of clarity in follow-up mechanisms, as well as suboptimal use of the data in districts and provinces. To better understand the contributing factors, we have been supporting UNICEF and the Ministry of Health to systematically investigate the platform's implementation gaps and develop actionable recommendations to refine the development of the system. This assessment employs a service design methodology that includes in depth desk reviews, remote qualitative surveys and interviews to glean useful insights for planning and organizing resources, such as the people, infrastructure, communications and processes required for the system to run smoothly and meet the intended goals. This includes holistically assessing the system to understand what goes on behind the scenes, backstage and on the frontstage. The study is currently ongoing and will conclude in 2022.

This assessment employs a service design methodology that includes in depth desk reviews, remote qualitative surveys and interviews to uncover useful insights for planning and organizing resources.



Adapting to Digital Diplomacy with Machine Learning

With data analytics offering digital solutions to improve operational efficiency we've been supporting the Indonesian Ministry of Foreign Affairs in applying machine learning to process thousands of documents from its global outposts. In 2020, we worked alongside the Ministry to develop a machine learning data analysis and visualization tool to analyze documents and extract insights for diplomatic engagement. Following successful prototyping and testing, we facilitated a service blueprint workshop in 2021 with the Ministry to assess the various components and touchpoints tied to the use of the tool. This included exploring the technical requirements and human resources needed to support its implementation, use, maintenance and development. Attended by staff across three different units within the Ministry, the discussions led to a supplementary system maintenance roadmap that outlined key components and actions items that should be taken into consideration. One of which included providing advanced data analytics training for the Ministry's staff involved in the day-to-day operation and maintenance of the tool. Accordingly, a hands-on, knowledge exchange session was conducted between our team and the Ministry's staff with training modules focused on data processing, machine learning and artificial intelligence applications prior to fully handing over the tool to the Ministry. Besides strengthening their data science capacity, the service design methodology that was introduced for the service blueprint also served as a capacity building exercise to help the Ministry's staff make better use of the tool. Discussions are ongoing across various levels within the Ministry on how to further integrate the tool and the learnings to generate more data-informed insights.

Besides strengthening their data science capacity, the service design methodology that was introduced for the service blueprint also served as a capacity building exercise to help the Ministry's staff make better use of the tool.

Directorate of Spatial Planning and Disaster Management & The Centre for Data and Information, Ministry of National Development Planning

Improving Data Preparedness and Information Management System for Disaster Management

Varying data standards is one of the challenges in the public sector due to the disparate ways data tend to be collected. This siloed approach tends to hinder effective coordination, especially at the onset of a crisis. To develop a disaster management data preparedness roadmap for damage and loss assessment, we teamed up with the Directorate of Spatial Planning and Disaster Management, as well as the Centre for Data and Information within Bappenas. This roadmap is intended to help the Ministry better prepare resources that are needed for an integrated data system, which can promote effective collaboration between actors at the sub-national and national levels. In assessing the existing conditions, the team found that whilst there is an abundance of disaster-related data available for use across the system, the data was often not in a format that could be easily ingested and processed. For instance, some of the data was provided in a raw format without adequate metadata and with variable consistency, including missing primary key or ID, and geographical location. In the case of anonymized data about people, this was often without age and gender identifiers. Based on these findings amongst others, the roadmap outlined steps that should be taken to achieve the Directorate's overarching objective of establishing a damage and loss calculation system. The steps focused on: data preparedness (to ensure the availability of data with good quality that can be used when needed); information management (to ensure effective and efficient coordination and data sharing with other parties); and information system (to facilitate data collection and processing). Establishing data research collaboration with other ministries and agencies; recruiting staff with the appropriate technical skills and knowledge; and strengthening internal and external data governance mechanisms were some of the key recommendations put forward to ensure the roadmap's smooth implementation.

In assessing the existing conditions, the team found that whilst there is an abundance of disaster-related data available for use across the system, the data was often not in a format that could be easily ingested and processed.

Repositioning to Deliver Better Results

With the release of the UN Secretary-General's forward looking Our Common Agenda in September 2021, our role as an analytic partnerships accelerator becomes all the more relevant in the development ecosystem in Indonesia and the Asia Pacific region. Working at both a member state and regional level has allowed for a number of collaborations to be developed and maintained with various actors, particularly within the private sector where "shared value" partnerships are more easily developed within overlapping development and commercial environments. As our work continues to demonstrate, tangible results have also been more easily gained through linkages to policy makers and their agency, providing clearer "identity" spaces for more effective adoption of innovations in the "solution" spaces. Coupled with our growing capabilities for data, innovation, strategic foresight, behavioral science and results orientation (which make up the UN's Quinter of Change), our local and regional experiences, as well as being an interlocutor in the Global South make us well placed to support the Agenda's call for "global cooperation and reinvigorating inclusive, networked, and effective multilateralism". Below are a few related engagements that are already underway, with more details to follow in 2022:

Facilitation and technical support for UN Data Strategy Use Case

Pulse Lab Jakarta has already commenced this role and is providing advisory support to the UN Country Team in Indonesia in establishing a use case focused on people with disabilities data. The collaboration involves participation from seven UN agencies working in Indonesia. The undertaking is intended to serve as a learning opportunity to be shared and replicated across other member states in the Asia Pacific region that are grappling with similar data issues to ensure inclusive digital transformations. This use case will not only provide concrete action from a data perspective in implementing the commitment of the UN Country Team in Indonesia on leaving no one behind, but will also contribute to and be informed by broader member state and regional digital transformation agendas.

Management and Coordination of Regional Data Initiatives and Advocacy

Pulse Lab Jakarta has been designated to manage the implementation of the Global Data Access Initiative (GDAI). The initiative aspires to accelerate attainment of the Sustainable Development Goals, by providing responsible and sustainable access to high quality, trusted, and trustworthy public and private data (including across national boundaries) alongside plug-and-play digital solutions (AI models) bringing together public, private, and social sectors. The initial pilot countries for 2022 (in collaboration with UNDP and WFP) are in Asia, and this work will affect the lives of 100-500 million people in the humanitarian and recovery contexts. This initiative has the potential for future expansion to the Pacific, as well as to Africa and South America. Regional advocacy will also be supported on tangible issues relevant to all member states in the region, for instance in publishing guidelines and advocating for the development of more accessible/inclusive digital tools.

Technical and Communication Support to Achieve and Scale Impact

Funded by Canada's International Development Research Centre (IDRC) and the Swedish International Development Cooperation Agency (Sida), the Global South AI4COVID program provides competitive grants to research consortia and individual organizations that working across different contexts with governments in relation to COVID-19 response in low and middle income countries. In this multi-year program, PLJ's role is in providing technical and communication support to achieve and scale the impact of the program, specifically serving as a technical resource hub for grantees. This includes ensuring timely flows of knowledge and expertise, augmenting global communication efforts and identifying opportunities for policy linkages and facilitating mobilization for action in the Global South. The inaugural cohort consists of eight research grantees, working in 18 countries within the Global South in Asia, Africa and South America. Ranging from early detection and containment, to mitigation and forecasting, their work covers a range of components related to harnessing AI and data innovation for COVID-19 responses and recovery. Through our role not only are we able to inform and influence the work of others, but also identify innovations at the margins that can be ripe for scaling across regions.

Version 1.0 (Sep. 2021)

UN 2.0 Quintet of Change

THE NEXT 5 YEARS: 2021 AND BEYOND

There is no other global organization with the legitimacy, convening power and normative impact of the United Nations. No other global organization gives hope to so many people for a better world and the future we want. The urgency to come together, to fulfil the promise of the nations united, has rarely been greater.

Over its 75 years, the family of UN organizations has been capable of enormous adaptation and innovation. To continue to address the ever more complex and interconnected challenges of our times, we will need to develop more system-wide solutions, not single-issue responses.

To become more nimble and effective, we will develop and scale new capabilities that promote agility, integration, and cohesion across the UN family. This will be part of a wider transformation in methods & practices towards a **UN 2.0**, which will offer more relevant and system-wide solutions 21st century challenges.

Driven by the Secretary-General's "**Common Agenda**", we will accelerate the UN family's transformation over the next five years through a "**Quintet of Change**" focused on **stronger capabilities for data**, **innovation**, **strategic foresight**, **behavioural science**, and **results**.

UN 2.0
Quintet of Change

DATA, ANALYSIS AND COMMUNICATIONS

Building on the overarching UN Data Strategy, turning the organisation into the state-of-the-art data analyst and communicator for the benefit of the world.

LEARN MORE >>

INNOVATION AND DIGITAL TRANSFORMATION

Based on all available means, using our innovation infrastructure to discover and implement new ideas to create value and help us do our job in a more digital world.

LEARN MORE >>

STRATEGIC FORESIGHT

Engaging in strategic foresight, linking up with other entities around the world to enable anticipatory action and the design of more forward-looking policies and programmes.

PERFORMANCE AND RESULTS ORIENTATION

Ensuring the UN family is focused on impact, learning, and continuous improvement.

BEHAVIOURAL SCIENCE

Leveraging behavioural science to improve UN family programme and policy effectiveness and reduce bureaucratic processes.

LEARN MORE >>

United Nations

Common Agenda

OUR INFLUENCE & EMERGING IMPACT

Throughout 2021, we continued to rely on our results framework that defines impact as **our contributions to change**. This results framework is built on the premise that within the development ecosystem, we play a significant role in working with and strengthening the capacity of our stakeholders and partners to leverage data innovation, AI, and service design to improve public policy making, social intervention designs, and humanitarian responses. In particular, the framework lays down three main categories of impact by which our work brings value to our range of stakeholders and partners: methodological impact, ecosystemic impact and operational impact.

 **METHODOLOGICAL IMPACT**	focuses on PLJ's contribution to the scholarship of methodologies that utilize data innovation, AI, or service design in the development sphere. Under this definition, we capture our results in how we introduce our partners to new ways of looking at data, and how we disseminate innovative methodologies to broaden the overall body of knowledge in data innovation within the development sector. Replication or academic analyses of new methods that we introduce are also charted as our methodological impact.
 **ECOSYSTEMIC IMPACT**	looks at the Lab's contribution to a stronger data innovation ecosystem, both in Indonesia, Asia Pacific and beyond. We are conscious that our innovation can only be fully adopted by our partners if there is a robust ecosystem in place. Our "early-stage" ecosystemic impact looks at how our work builds awareness, interest, and subsequently, demand from our stakeholders for data innovation and service design. As interest and demand increases, our "later-stage" impact highlights our effort in building our partners' capacity, as well as connecting and brokering partnerships among different stakeholders in collaborative projects and research.
 **OPERATIONAL IMPACT**	is defined as the positive effects our services, analytics, or tools have on the work of our partners and stakeholders. This includes, for example, improvements in effectiveness or efficiency due to the adoption or adaptation of PLJ-initiated products. Insights generated from our analytics that subsequently inform policy making processes, intervention designs, or humanitarian responses are also captured as operational impact.

While developing prototypes and producing analytics is a big part of what we do, our intent has always been to ensure that our influence on our partners lasts well beyond the shelf lives of our prototypes and analytics. Such influence mainly manifests in the form of our counterparts' shift in mindset; adoption of novel or more robust technical and analytical approaches; and lasting institutional changes in the way our counterparts approach solving complex development problems. Notably, 2021 also saw PLJ's continuing shift towards a smaller but more focused portfolio. This shift has allowed us to put more energy and resources into contributing to these lasting changes, particularly regarding improving our counterparts' capacity and systems to make full use of big data, AI, and service design. Compared to our previous annual reports, this year's impact section has a shorter list of partners, but with a renewed focus on our lasting contributions to change.

Our reflection this year also draws from an Independent Strategic Review (ISR) that was commissioned by DFAT in 2021, which thoroughly reviewed DFAT's "knowledge to policy" investments in Indonesia. The review asserts that PLJ has made notable success in contributing to evidence-based policy making, and in supporting increased gender equality, disability and social inclusion in Indonesia's knowledge sector.

Excerpt from DFAT's 2021 Independent Strategic Review Regarding Pulse Lab Jakarta Knowledge to Policy Investments in Indonesia

In the cases examined for the ISR, GoI partners expressed the view that PLJ's support was significant in increasing their policy responsiveness and impact. While information alone is insufficient to deliver behaviour change, it can have a catalysing effect. It is clear from interviews that at least for those stakeholders, the ability to obtain relevant insights in real-time from non-conventional, secondary data and present the results in highly visual ways is valued. Furthermore, the value placed on access to up-to-date, relevant information not previously available has increased significantly during the pandemic.

As one interviewee commented, in the current crisis the Ministry receives many proposals for assistance but the depth of PLJ's data is different, providing insights at a neighbourhood (rather than city or village) level. This finding is corroborated by PLJ's own experiences with 12 of the 17 active projects in June 2020 related to COVID-19 responses and the majority of these coming from external requests.

In some instances, utilisation of data and data governance processes provided by PLJ has also increased decision-makers' confidence in the data they are seeing with respect to the pandemic. Partners in the private sector interviewed for the ISR echoed this perspective, equating the quality of PLJ's services with state-of-the-art programming in the private sector. Furthermore, for them this value translated directly into new procedures and practices with direct benefits for women's safety while using public transport networks and MSMEs in accessing financial services.

Methodological Impact

In 2021, we strengthened our brand as a mixed-methods data innovation facility. With a clearer branding and the implementation of this approach in two of our key projects for the year, we started to gain recognition with an increase in demand to share our knowledge and experience in combining data analytics and service design. Our mixed-methods approach and the skills incorporated also made us well placed to support the United Nation's Quintet of Change, especially in areas where we have already built our name, such as digital transformation, data analysis, and behavioural science. Reflecting on our methodological influence and impact throughout the year, below we discuss how we explored the use of agent-based modeling to inform COVID-19 response, experimented with behavioral economics principles to complement the design process, and introduced various aspects of our mixed-methods approach for project implementation to our main government counterparts.

The use of ABM provided insights on crowd dynamics and infection trends based on places of transmission.

As part of our collaboration with the West Java Government on COVID-19 response, we partnered with CSIRO to utilise agent-based modeling (ABM) to model the actions and interactions of individuals during the pandemic. Taking lessons learned from the risk assessment map that PLJ developed with Jabar Digital Service using big data and available administrative data, ABM was used to predict the likely outcomes if a regional government were –in this case the city of Bekasi of 3.5 million people– to introduce different social restriction scenarios. The use of ABM in this context provided insights on crowd dynamics and infection trends based on places of transmission (home, workplace, and school) to help inform decisions and policies to tackle the evolving pandemic.

The UN's Quintet of Change acknowledges behavioural science as one of its five main knowledge areas to advance the UN agenda. This emerging shift was in line with PLJ's continuing experiment with the approach, as demonstrated in our seminal research "Beyond Sticky Floors" that uses behavioural economics principles to complement our intervention design process geared at reducing barriers to adopting technologies among women micro business owners. This complementary approach allowed us to better understand individuals' thought processes and how to nudge certain behaviours through design. Using this report to guide the discussions, we went on to share our learnings from experimenting with behavioural economics amongst colleagues and programme working in the knowledge-to-policy space. Two of which included delivering a workshop for our UN colleagues in Pulse Lab Kampala in Uganda and leading an informal exchange with JPAL-SEA on behavioural science and its application to data analytics and service design.

The Lab's efforts to introduce service design as a viable methodology to improve public services is highlighted by our collaboration with two line ministries. By request from the Indonesian Ministry of Health and UNICEF, the Lab applied service design to better understand the gaps in the Ministry's community-based nutrition recording and reporting system, known as e-PPBGM. The collaboration, which is still ongoing, allowed us to introduce the principles of service design to a key line ministry in Indonesia to improve data collection and reporting mechanisms related to children nutritional status at the community level. Our collaboration will also identify specific ways to improve data usage by district and provincial governments. Given the importance of e-PPGBM in providing

The Lab's efforts to introduce service design as a viable methodology to improve public services is highlighted by our collaboration with two line ministries.

a database to address stunting, the Lab's work to introduce service design to the Ministry is expected to contribute to the country's ongoing effort to improve its human capital. Through a collaboration with the Indonesian Ministry of Foreign Affairs, we worked to develop an in-house machine learning-based tool to more effectively analyse the Ministry's large volumes of diplomatic information. Besides the data science application, part of the capacity building for the Ministry's staff included leveraging a service blueprint to holistically understand the required systems and processes for the tool to function and to be fully optimised. This was another practical application of our mixed-methods approach to ensure greater value.

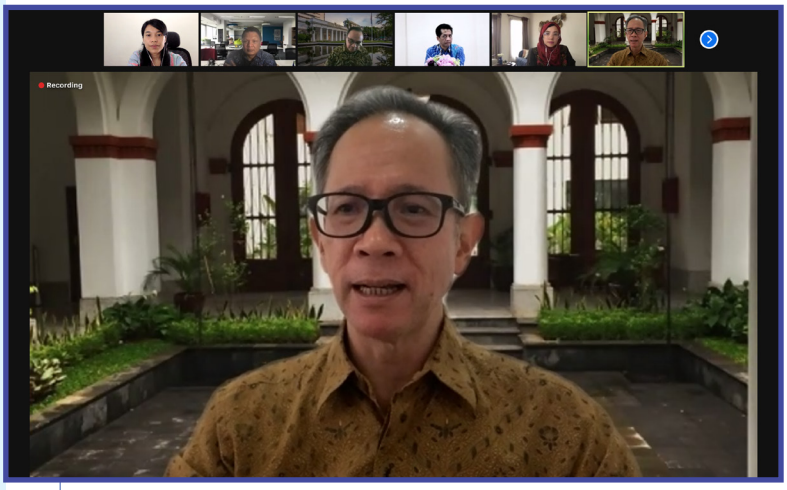
Our commitment to employing and disseminating the use of a mixed-methods approach is further demonstrated in our collaboration with the Ministry of Health (MoH) and Bappenas' Directorate of SMEs and Cooperatives Development. In both cases, quantitative data-driven analytics and data mapping are complemented with service design to improve the quality of interaction between types of services and their users. We also utilised and introduced our Research Dive approach, which helped develop a shared understanding and learning through a hackathon-style, facilitated methodological process of analytics that are tailored to each organization's context and objectives. For the Ministry of Health, the Research Dive sought to build a shared preliminary understanding of the potential and limitations of COVID-19 related health data and through the process develop concrete recommendations to help inform further research. More importantly, the Research Dive was carried out to inform the implementation of the Ministry of Health's recently unveiled blueprint on digital health transformation strategy. For Bappenas, the Research Dive was focused on mapping available datasets that can be utilised to examine the spatial dynamics of Indonesia's MSMEs.

PLJ's contribution to the use of a mixed-methods approach to address social problems and improve public service is gaining attention not only domestically, but also internationally. Throughout 2021, we received several requests and presented on our mixed-methods approach in a number of international fora, including for the UK-based social innovation agency Nesta (more on this below), the Global Development Institute at the University of Manchester, and as part of a regional policy innovation exchange organged by UNDP Thailand Policy Lab.

Ecosystemic Impact

Strengthening our role as an analytic partnership accelerator, we continue to invest in building the capacity of our counterparts and fostering new partnerships. This is with full understanding that these are the foundations of a lasting data innovation ecosystem, which in turn is key to ensuring that our impact is sustainable. The Lab's philosophy on collaborative research is centered on ensuring that capacity building is embedded throughout with targeted and contextualised activities and training sessions. We also contribute to the broader ecosystem as a community of practice, by exchanging knowledge through discussions and engagements in various conferences, and sharing methods, tools and knowledge in technical briefs, scientific journals and white papers.

The Lab's impact on our partners' capacity is particularly evident in three collaborations with the Ministry of Foreign Affairs (MoFA), Bappenas' Directorate of Spatial Planning and Disaster Management, and Indonesia's railway company PT KAI, all of which wrapped up in 2021. Our work with the MoFA, which began in 2019 and focused on utilizing machine learning to transform the Ministry's analytical process of diplomatic information, served as a focal point for PLJ's data scientists to strengthen the capacity of a dedicated team within the Ministry. Through the project-embedded capacity building, the MoFA team is now adept in using and maintaining the tool, including data inputting, system maintenance, information extraction, and data analysis. Our multi-year collaboration in leveraging machine learning in



August/2021

Pulse Lab Jakarta's team meets with Mahendra Siregar (pictured centre), the Vice Minister of Foreign Affairs as well as other colleagues within the Ministry to discuss further collaboration on digital diplomacy.

the diplomatic sphere has also both lent credibility to and strengthened MoFA's role in championing digital diplomacy on the international stage, as showcased in the International Conference on Digital Diplomacy (ICDD) that the Ministry hosted in November 2021.

Meanwhile, our work with Bappenas' Directorate of Spatial Planning and Disaster Management increased awareness and knowledge within the Directorate on both the potential and the challenges of using big data to inform disaster-related responses and policies. A mapping of available datasets and underlying issues was jointly conducted by PLJ and the Directorate, informing the latter's plan to strengthen its data governance and data infrastructure in working towards "Satu Data Bencana" – an integrated data system to improve disaster management. In 2021, the Directorate hired a dedicated staff with this plan in mind to better manage and oversee disaster-related data to which the Directorate has access. The overall collaboration provided lessons that informed the development of a disaster management data preparedness roadmap for damage and loss assessment. Insights gleaned from this exercise were presented during a regional symposium organized by SIAP SIAGA (a DFAT-funded disaster risk management program), which discussed lessons from COVID-19 on data management and implications for future disaster response.

With respect to PT KAI, our collaboration has led not only to the realization of how the railway company's passenger data can be utilised to transform public transport services, but also to the adoption by PT KAI of a robust analytical process to produce evidence-based insights. In a follow-up meeting after the project closed, PT KAI Commissioners expressed satisfaction with the way PLJ worked with the company's analytics team, especially by utilizing a structured analytical process with scientific methodologies to analyse its data. These processes have been adopted by PT KAI's analytics team and are becoming a part of the company's research culture. An op-ed co-authored by one of PT KAI's commissioners with the UN Resident Coordinator in Indonesia and Head of PLJ was published in the Jakarta Post in 2021, which further affirmed the railway company's commitment to leverage big data to transform Indonesia's public transport system, with a focus on improving accessibility for vulnerable cohorts. Coming full circle with our contributions to the ecosystem, the research also highlighted possibilities for transport integration and partnerships with other actors operating in the public-private transport sector towards inclusive transport planning.

2021 also saw PLJ's significant contribution in advocating for gender equality and social inclusion, especially for people with disabilities, in the data innovation ecosystem. Among our most notable impact for the year is in the diplomatic sphere, as an invited speaker at the International Conference on Digital Diplomacy (ICDD), hosted by MoFA. The Ministry also requested the Lab and other partners to review and provide input on the "Bali Message", a joint statement of all participating states around digital diplomacy, as a key output of the international conference. Our inputs led to the incorporation of a statement on ensuring digital inclusion, particularly of women, children, the elderly, and people with disabilities, as well as promoting the attainment of the Sustainable Development goals. The Lab's commitment to serve as a champion for gender equality, disability and social inclusion is also reflected in our key role in the implementation of the UN Data Strategy, where we are providing advisory support to the UN Country Team in Indonesia in establishing a use case focussing on people with disabilities data.

Our impact in the international data innovation ecosystem can be seen with our ongoing work with the Global South AI4COVID Program, where we continue to contribute to policy influence, engagement, and advocacy in the use of data science and AI approaches to address COVID-19 response across 18 countries in the Global South.

Our impact in the international data innovation ecosystem can be seen with our ongoing work with the Global South AI4COVID Program, where we continue to contribute to policy influence, engagement, and advocacy in the use of data science and AI approaches to address COVID-19 response across 18 countries in the Global South. PLJ has also been a participating UN entity for the development and implementation of the UN-ASEAN Joint Strategic Plan of Action for Disaster Management 2021-2025. We are providing key support in building awareness in ASEAN in the adoption of new data innovations to increase effectiveness of interventions and responses, and strengthening collaboration and sharing of best practices in application of data innovation in humanitarian response in the Southeast Asian region. Related to COVID-19 and public health emergencies, Harvard University's Radcliffe Institute of Advanced Studies invited PLJ to participate in its "Safe, Responsible, Fair and Equitable use of Human Mobility Data" seminar, and PLJ provided inputs to a white paper on the topic that was subsequently published.

Members of the Lab's senior management have also been requested to sit in advisory committees, including our Data Policy and Innovation Lead's position as a member in Data for Development's Expert Advisory Committee of the new Responsible Artificial Intelligence Index (RAII). Through this, PLJ is providing inputs by reviewing the methodological framework for the index; advising on the inclusivity of the design process of the index; and advising on capacity building initiatives and mechanisms to advance the impact and reach of the index. Our Social Systems Lead was requested by Nesta, a leading innovation agency for social good from the UK, to share how PLJ operationalizes its mixed-methods approach. Delivered in the form of video recording, the presentation was well received by Nesta and our story has become an important reference point for the innovation agency to develop their own mixed-methods approach. Following this exchange, Nesta requested our Social Systems Lead to sit as an Advisory Committee member for their Collective Crisis Intelligence Project with IFRC. In addition, our Head of Lab is a member of the independent panel of commissioners for the Global Commission on Evidence, where he has advocated for artificial intelligence to be responsibly leveraged to meet the demands for "living" and rapidly updated evidence to address complex social challenges, and cautioned against the potential risk of discrimination when using data.

PLJ also continued to establish new partnerships with Indonesia's line ministries and agencies in the utilization of data innovation and service design. With the endorsement of the Lab's Steering Committee, in 2021 we entered into collaborations with the Ministry of Health (MoH) through its newly established Digital Transformation Office (DTO) and further collaborated with Bappenas through the Directorate of SMEs and Cooperatives Development. With the former, PLJ worked with MoH's DTO in improving the Ministry's understanding of its data that are coming from different systems. With emphasis on responding to the COVID-19 pandemic, a key objective was to explore what insights could be gleaned from combining available datasets. With the latter, the underlying objective was to use evidence to answer key policy questions to improve the growth of MSMEs and their contribution to Indonesia's economy. This is done by mapping existing datasets that are relevant, identifying data gaps, and potentially leveraging foresight to help shape the future of Indonesia's MSMEs. It should also be noted that PLJ's collaboration with the MoH was catalyzed by our work with Jabar Digital Service, further showcasing PLJ's contribution to a dynamic data innovation ecosystem in Indonesia.

Operational Impact

2021 saw PLJ's impact on our partners' processes in policy making, systems strengthening, and public service delivery in multiple sectors, including COVID-19 response, public transportation, diplomacy, women-owned businesses, and health. In several instances, we discovered that our impact on our partners' operation come not only from the uptake of our analytics and prototypes, but also from the process and approach that we introduced and our partners adopted.

Our collaboration with West Java's digital unit Jabar Digital Service on providing data-driven evidence for the provincial government's COVID-19 response continues to evolve. The collaboration has produced a data analytics interactive map on COVID-19 transmission risk for the province. A user research, subsequently done by PLJ, identified potential paths for uptake by relevant decision makers. By 2020, the data analysis and visualization tool was installed in the provincial Command Center. In 2021, they were integrated into the West Java Province's Center for Information and Coordination, Pikobar. As part of Pikobar, the interactive map can now be accessed by the public, informing both policy makers and the population alike on the potential of transmission risks in West Java villages. Beyond the use of the interactive map, our collaboration has also influenced the way Jabar Digital Service conducts research and develops products, as highlighted in our follow up meeting after the project closed. In particular, the agency found high value in PLJ's user research and has begun to adopt the approach to identify paths for uptake for their future analytics, prototypes, and products.

With PT KAI, the Lab demonstrated how big data can help transform Indonesia's public transport system and make it more inclusive by first understanding the diverse needs of the country's passengers. The collaboration leveraged the company's massive passenger data to better understand the behavior and needs of PT KAI's customer base, and especially the needs of vulnerable populations who use its railway. Using 2019 data, our analysis found that half of all passengers that year were female, with a significant number of them travelling in the evening hours. Furthermore, whilst more than 1.5 million trips were completed by passengers over 60 years old in 2019, the data shows that only 4% of elderly passengers used the Government's travel subsidy.

With PT KAI, the Lab demonstrated how big data can help transform Indonesia's public transport system and make it more inclusive.

Finally, the collaboration also highlighted the lack of quality data on passengers with disabilities. Based on that, PT KAI is now committed to catering to the unique needs of people with disabilities and is looking into more systematically capturing data on how this group is using their services. The railway company has also leveraged on their experience working with us to commission a dashboard based on their massive passenger and transported goods data, which is modeled after the data visualisation that PLJ developed.

Our work with MoFA, which began in 2019 and focused on utilizing machine learning to transform the Ministry's analytical process of diplomatic information, came to a close in 2021. To quickly reiterate earlier descriptions of this collaboration, PLJ and MoFA developed a machine learning tool to analyze large volumes of texts from diplomatic cables and internal communications to extract meaningful information. As we've reported in last year's annual report, in 2020 the tool was embedded onto MoFA's monitoring and repository system. In 2021, the tool's potential to inform diplomatic policies and decisions was brought to the attention of the highest echelons. The Minister and Vice Minister are now fully aware of how the tool can significantly improve the way data-driven diplomatic

2021 saw PLJ's impact on our partners' processes in policy making, systems strengthening, and public service delivery in multiple sectors, including COVID-19 response, public transportation, diplomacy, women-owned businesses, and health.

insights can inform decisions. At a formal presentation, the Minister expressed her support for the related agencies to work towards institutionalizing the tool, potentially by focusing on specific directorates to make full use of the tool.

On the analytics front, recommendations from the policy research that PLJ conducted with UN Women and Gojek, launched in December 2020, was presented to Indonesia's Committee for COVID-19 Response and National Economic Recovery and the webinar on Economic Empowerment of the ASEAN MSMEs Entrepreneurs in the Digital Era during COVID-19 to support women-owned MSMEs to cope with the pandemic. Subsequently, our use of a human-centered design lens on the qualitative data we collected for the research has produced valuable insights on behavioral barriers among women micro business owners to make full use of digitalization. The report "Beyond Sticky Floors" sketched several archetypes and identified specific behavioral challenges that hold back each archetype from using digital tools. This independent research, which was subsequently featured in the 2021 UN Behavioral Science Report, highlights these challenges, which go beyond structural issues, and bring them to the forefront of the discourse to support women business owners improve their livelihoods by capitalizing on digital technologies.

From our collaboration with MoH's Digital Transformation Office (DTO), several of the findings from the research dive we conducted with them and the approach that we utilised so far have already influenced DTO's operations. This is particularly true in terms of data governance and data sharing protocols. MoH has always put the utmost importance in the protection of sensitive personal data that they collect. Our collaboration identified specific ways for the DTO to further improve that protection, including a renewed protocol on data masking and improving access controls to the existing health data lake. MoH is already starting to adopt these changes as part of its larger digital transformation agenda.

While our collaborations, services, analytics, and prototypes continue to give direct operational impacts, we are now starting to capture evidence from where our strategy has left behind lasting changes in our partners' operations. The Financial Access Map that we handed over to the Indonesian National Council for Financial Inclusion in 2018 is still being continuously improved by late 2021, with scaled-up geographic coverage and data points. Our work with PT KAI strengthened their staff's capacity and provided them with a working experience that after our collaboration ended, the company commissioned and oversaw a passengers and transported goods dashboard modeled after our data visualization. The Regional Conference on Digital Diplomacy that we helped to initiate with MoFA in 2018 has evolved into the International Conference on Digital Diplomacy in 2021, which MoFA continues to host. And our work with Jabar Digital Service left a lasting influence on their operations, particularly through our introduction of the user research methodology to identify pathways for product uptake and influencing policy with evidence.

The DFAT-commissioned Independent Strategic Review highlighted how PLJ's focus has never been on making changes to "hard" policy (i.e. laws, regulations, formal government statements of priority). Instead, we have always put greater engagement on bottom-up changes in "soft" policy, which is all about changing the operational practice and procedure that existing policies are implemented or "promoting new policies through new ways of working enabled by the technologies." The review rings true as we continue to capture these long-lasting changes in our partners' ways of working due to our influence as an analytic partnership accelerator.

LIST OF ANNEXES

RESEARCH ACTIVITIES

PUBLICATIONS

KNOWLEDGE SHARING ENGAGEMENTS

MEDIA COVERAGE

ANNEX A

RESEARCH ACTIVITIES	PARTNER
Beyond Sticky Floors: Overcoming behavioural barriers to utilising digital tools for women necessity business owners	UN WOMEN
COVID-19 Risk Assessment Mapping for West Java Province - Phase II	JABAR DIGITAL SERVICE; CSIRO; unicef
Adapting to Data-Driven Diplomacy with Machine Learning - Phase II	
Data Preparedness and Information Management System in Disaster Management	Kementerian PPN/ Bappenas
Better Understanding PT KAI Passengers' Travel Behaviour	KAI; Kementerian PPN/ Bappenas
Assessing the Nutrition Data and Information System (e-PPGBM) in Indonesia: Challenges, Gaps, and Opportunities	unicef; KEMENTERIAN KESEHATAN REPUBLIK INDONESIA
Strengthening MSMEs for Inclusive Growth and Sustainable Development	Kementerian PPN/ Bappenas
Health Data Analytics for Managing Pandemics	KEMENTERIAN KESEHATAN REPUBLIK INDONESIA
Global South AI4COVID Program	Sida; IDRC | CRDI International Development Research Centre Centre de recherches pour le développement international
UN in Indonesia Perception Survey	UNITED NATIONS INDONESIA

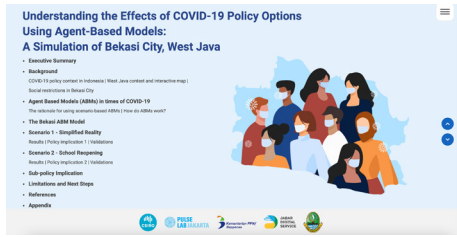
STATUS	Underlying Function		
	Forge and Leverage Strategic Partnerships	Identify and Combine New Data Sources	Contribute to National, Regional and Global Research Agendas
Completed	✔		✔
Completed	✔	✔	✔
Completed	✔	✔	✔
Completed	✔		✔
Completed	✔	✔	✔
Ongoing	✔	✔	✔
Ongoing	✔	✔	✔
Completed	✔	✔	✔
Ongoing	✔		✔
Ongoing	✔		✔

ANNEX B

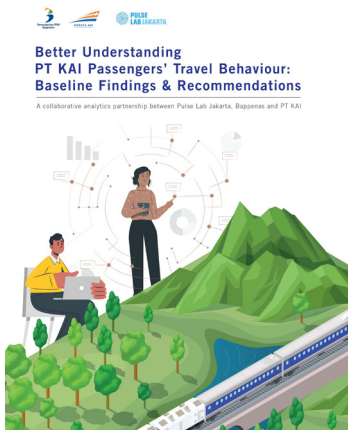
PUBLICATIONS

2020 Annual Report

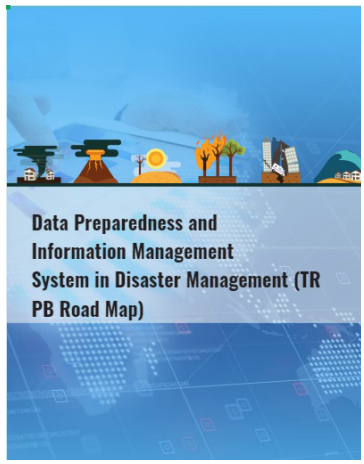
Pulse Stories: Beyond Sticky Floors



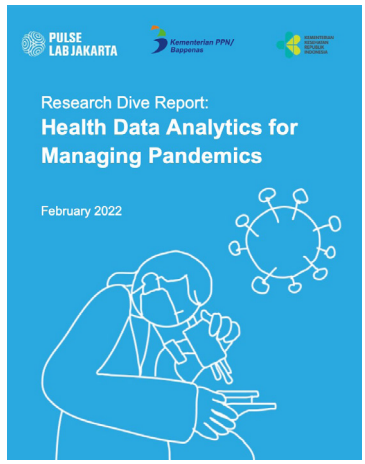
A Simulation of COVID-19 Transmission in Bekasi City, West Java Using Agent-based Modelling



Better Understanding PT KAI Passengers' Travel Behaviour: Baseline Findings & Recommendations



Data Preparedness and Information Management System in Disaster Management



Research Dive: Health Data Analytics for Managing Pandemics

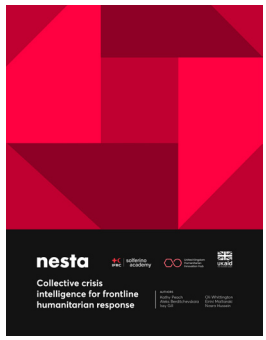
2 Accepted Papers

Information Systems Humanitarian and Disaster Contexts: Levers of Change Based on Lessons from Indonesia
Siap Siaga Regional Lesson Learning Symposium on COVID-19 and Its Impact on Disaster Management and Resilience

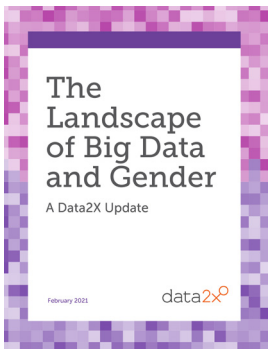
An agent-based model of the spread of COVID-19 in West Java, Indonesia
24th International Congress on Modelling and Simulation

4 Report Contributions

UN Behavioural Science Report
UN Innovation Network



Collective Crisis Intelligence for Frontline Humanitarian Response
Nesta



The Landscape of Big Data and Gender
Data2X

The Evidence Commission report: A wake-up call and path forward for decision-makers, evidence intermediaries, and impact-oriented evidence producers
Global Commission on Evidence

To see a full list of our blogs published in 2021, please visit our Medium Page: https://medium.com/@PLJ

ANNEX C

KNOWLEDGE SHARING ENGAGEMENTS

FEBRUARY 2021

GIZ
New Work Academy

MARCH 2021

ADB
Southeast Asia Development Symposium 2021

Egis Group
After Dark Presentation

The State of Women Institute
Amplifying Her Voice

TIFA Foundation and CIPG
Data Governance in the Health and Educations Sector During COVID-19

Nesta
PLJ and Mixed Methods: The Story So Far

National Monitoring and Evaluation Conference 2021

Women Investing in Women International Women's Day

The Asia Foundation and Gov Lab
The 100 Questions Initiative and Governance

UNDP Accelerator Lab
Futures Games

APRIL 2021

DFAT
Governing in the Digital Age STA virtual Pre-Course Workshop

University of Manchester
Integrative big and thick data approaches for development

Indonesian Ministry of Forestry and Environment
KLHK Innovators Event

NUS
Data Science for Policy Making Sharing Session

100+ requests

~50 speaking engagements

public and private sector

national and international

MAY 2021

AHA Centre
HELIX 2021 Humanitarian and Emergency Logistics Innovation

HARMONI
Empathetic Social Research Webinar

Pulse Lab Finland
Foresight Webinar

TAP webinar
Researchers working towards impact

JUNE 2021

SIAP SIAGA
Changing Use of Technology in Coordinating Assistance

JULY 2021

MINDS Seminar Series on Data Science

Network for Equity through Digital Health
Digital Health: Driving Better Policy

UNESCAP
Stats Café: Machine Learning for Sentiment Analysis

World Statistics Congress

UN Women & UN SIAP
Training on using big data for gender statistics

KNOWLEDGE SHARING ENGAGEMENTS

AUGUST 2021

ASEAN
Strategic Policy Dialogue on Disaster Management 2021

UPI University
Marine Information Systems (SIK) Curriculum Review 2021

Introducing Game-Changers in Disaster Management

Pulse Lab Kampala
Introduction to Behavioural Science

SEPTEMBER 2021

Urban Social Forum
The 8th Urban Social Forum: Another City is Possible!

Sharing Session: Food Systems Governance Platform

100+ requests

~50 speaking engagements

public and private sector

national and international

OCTOBER 2021

Lokalab
Design Thinking in Urban and Regional Planning Analysis

Siap Siaga
Regional Symposium: Lessons Learning on COVID-19 and Disaster Management

UN-ASEAN
Joint Strategic Point of Action on Disaster Management

NOVEMBER 2021

Digital Futures: Co-Designing AI Governance

General Issue Updates (GIU)
"Data Innovation: Leveraging Big Data and Traditional Data in Understanding Pandemic Better"

Indonesia Ministry of Foreign Affairs
International Conference 'on Digital Diplomacy

Thailand Policy Lab
Policy Innovations Exchange

SIAP SIAGA
Inter-Regional Workshop for Strengthening Disaster Management

The Australia-Indonesia Centre
PAIR Summit: Improving health data connectivity

University of Indonesia
Big Data & Public Policy

DECEMBER 2021

24th International Congress on Modelling and Simulation

MODSIM 2021

MEDIA COVERAGE

MARCH 2021

Gojek Implements the Highest Safety Standard In Industry through Woman Safe with Gojek Initiative
Kontan | 2021-03-04

Gojek Improves Security for Female Customer and Driver Partners
Sindonews.com | 2021-03-05

UN Women appreciates Gojek for providing protection to women
antaranews.com | 2021-03-08

Becoming Pioneer of Woman Protection, This UN Agency Calls Gojek an Example
Bisnis.com | 2021-03-08

UN Women Appreciate Gojek's Steps for Woman Empowering Program
Investor.id | 2021-03-10

Infographic: How Indonesia can make data-driven decisions
GovInsider | 2021-03-16

Digitalization: New opportunity, old challenge for gender equality
The Jakarta Post | 2021-03-31

MAY 2021

Monitoring Down to the Village Level, Ridwan Kamil: West Java Develops COVID-19 Interactive Map
Sindonews.com | 2021-05-12

West Java-Bappenas-PLJ Develops COVID-19 Interactive Map
Official Website of the Government of West Java Province | 2021- 05-12

JUNE 2021

2020 Year in Review
empatika.org | 2021-06-02

Gameplay for good: gamified crowdsourcing for better public policy in Southeast Asia
New Mandala | 2021-06-07

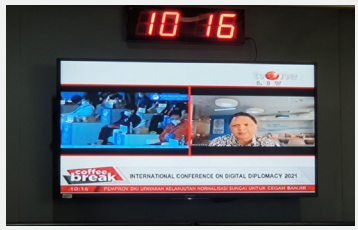
ANNEX D

NOVEMBER 2021

International Conference on Digital Diplomacy
kemlu.go.id | 2021-11-16

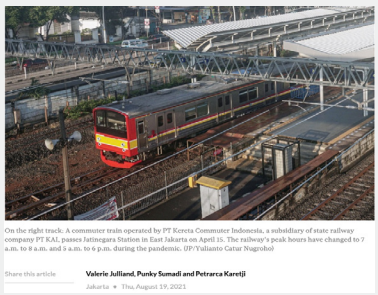
AI project delivers key pandemic data to policymakers in Africa
IDRC | 2021-11-22

Coffee Break tvONE - International Conference On Digital Diplomacy 2021
tvONE | 2021-11-29



AUGUST 2021

How big data is helping transform public transport system
The Jakarta Post | 2021-08-19


On the right track. A commuter train operated by PT Kereta Commuter Indonesia, a subsidiary of state railway company PT KAI, passes Jatinegara Station in East Jakarta on April 15. The railway's peak hours have changed to 7 a.m. to 8 a.m. and 5 a.m. to 6 p.m. during the pandemic. (JP/Yulianto Catur Nugroho)

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Valerie Julliand, Punky Sumadi and Petrarca Karetji

Jakarta ♥ Thu, August 19, 2021

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GSMA | 2021-08-19

DECEMBER 2021

Take lessons from Policy Innovation Exchange
TechSource | 2021-12-11

Mobility startup Jaramba eases chaotic commutes in Indonesia
KrASIA.com | 2021-12-30

This report was written, designed and developed by the UN Global Pulse team at Pulse Lab Jakarta. The report consists of a booklet version and an interactive webpage that can be accessed at **pulselabjakarta.org**.

Cover Design
Lia Purnamasari

Booklet Layout & Design
Alfian Latief & Swastika Exodian

Content Strategy
Dwayne Carruthers & Rivandra Royono

Information Architecture
Dwayne Carruthers

Webpage Design & Development
Alfian Latief & Muhammad Robbi Nugraha

Video Production
Swastika Exodian, Alfian Latief & Dwayne Carruthers

Published March 2022

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