Lessons for Health Care Models
Indonesia Case Study

10 October 2019
Lessons for Health Care Models – Indonesia Case Study

First we will look at the current Indonesia national healthcare scheme. Albert will touch on its origin, its mechanics and challenges, while drawing some lessons that are relevant for professionals working in healthcare space, insurance industry and policy making. Allan will continue this dialogue by showing how Indonesia has expanded its healthcare infrastructure over the last thirty years. How efficient was this expansion, and did democratization help?
Presenters

- Albertus Teddy Setiadi, RGA Director, Business Development Actuary
- Allan Hsiao is a PhD candidate in economics at the Massachusetts Institute of Technology
- Kay Shong, FSA, CERA, FSAS, RGA Director, Product Development
- Moderator: Susan Mateja, MAAA, FSA, Vice-Chair of the International Actuarial Association Health Section (IAAHS)
Lessons for Health Care Models – Indonesia Case Study

National Health Care Scheme
presented by Albertus Teddy Setiadi

As Director and Business Development Actuary, Albert is responsible for developing and implementing life reinsurance business strategy for Indonesia. His passion for people, and his actuarial skills and commercial knowledge, coupled with his background in the region, drive his commitment to serve and develop the vibrant life insurance landscape in Indonesia.

Prior to joining RGA in 2019, Albert worked nearly four years for other international reinsurance company as senior actuarial analyst and then as business development manager, utilizing his strategic thinking and creative problem solving skills. He started his career as a Senior Actuarial Executives with Aviva limited.

Albert received bachelor of business degree, with honors, from Nanyang Technological University, and is an active member of the Singapore Actuarial Society.
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Building Health Care Infrastructure
presented by Allan Hsiao

Allan Hsiao is a PhD candidate in economics at the Massachusetts Institute of Technology. His research uses quantitative economic models to study the planning of public infrastructure and generate policy prescriptions. He has also contributed to the medical literature on cardiovascular outcomes and the global burden of disease. He holds a masters in economics from the University of Oxford and a bachelor’s degree in economics from Harvard College.
Lessons for Health Care Models – Indonesia Case Study

Panelist
presented by Kay Shong, FSA, CERA, FSAS

As Director of Product Development, Kay leads new product initiatives in Southeast Asia markets. In addition to product development, her areas of expertise include reinsurance pricing, customer needs analysis, business planning and economic valuation of life insurance companies.

Kay joined RGA in 2017, and prior to that she was Senior Marketing Actuary with a multinational life/health reinsurer based in Singapore. She also served as an actuarial consultant with Willis Towers Watson (previously Towers Perrin), where she provided actuarial support for merger and acquisition needs, IPOs, appointed actuary services and actuarial modelling projects for life insurance companies in Hong Kong, China and Southeast Asia.

Kay currently serves as the Chair of Health Committee in the Singapore Actuarial Society (SAS). She is a Fellow of the Society of Actuaries (FSA), a Chartered Enterprise Risk Analyst (CERA) and a Fellow of the Singapore Actuarial Society (FSAS).
Lessons for Health Care Models – Indonesia Case Study

Moderator
presented by Susan Mateja, FSA, MAAA

Susan is a retired Fellow of the Society of Actuaries (FSA) with over 25 years of experience in Group Health and Life Insurance. She is proficient in pricing, valuation, financial & management reporting, experience & trend analysis, forecasting, mergers & acquisitions, modeling, and management.

Susan has co-authored a number of articles for the Academy’s Contingencies magazine, including a series of 6 articles, titled “International Corner”. She has also spoken at various conferences and colloquiums.

Susan currently serves as Vice-Chair for both the SOA’s International Section Council and the International Actuarial Association Health Section (IAAHS). She is the past-chair of the American Academy of Actuaries Health Practice International Committee (HPIC).
Thank you
Indonesia National HealthCare Scheme

Badan Penyelenggara Jaminan Sosial (BPJS)

Albertus Setiadi
Director, Business Development Actuary (RGA)
Member of Singapore Actuarial Society | Health Sub committee

10 October 2019
Agenda

01 Brief History of Indonesia National Health Care Scheme

02 About BPJS Kesehatan

03 Component of BPJS Scheme (i.e. Member, Funding, Benefits & Role of Private Insurance)

04 Challenges facing BPJS Scheme

05 Summary
Brief History - Indonesia National HealthCare Scheme

1949
Dutch government officially acknowledge Indonesia independence. Then Minister of Health (Mr Siwabessy) issued early proposal for universal healthcare scheme

1968
Formed a formal organization (BPDPK) to manage operation of healthcare scheme coverage for government staff, including their family.

1992 - 2005
Reform BPDPK into PT Askes (state owned company). The new organization extended healthcare scheme to include staff of all state companies. In 2005, PT Askes further extended the program to include coverage for poor family under subsidy of national government, benefitting around 60mn individuals.

2011
Indonesian government issued bill of Universal Health Care Scheme (BPJS) and appointed PT Askes as operator whose name later changed into Badan Penyelengara Jaminan Sosial (BPJS) Kesehatan

2014
1 Jan 2014 as official operation of BPJS Kesehatan which runs BPJS Scheme

Indonesia’s Universal Healthcare Scheme (BPJS) officially started on 1st Jan 2014 & is currently run by state owned operator called BPJS Kesehatan.
About BPJS Kesehatan

- Operator (state owned) of Indonesian National Universal Health Care scheme (i.e. BPJS)
- Mission is to
  - Provide the best service to member
  - Widen coverage to include all Indonesians
  - Ensure sustainability of the scheme
- Essentially, realizing the ideals of national universal healthcare scheme in Indonesia
About BPJS Kesehatan

Snapshot for year 2018

IDR 94 Trillion
(USD 6.3bn) Total Claims paid

IDR 11.7 Trillion
(USD 780mn) P&L deficit

640 Thousands customers Per day who consume healthcare under BPJS scheme

IDR 34.7 Trillion
(USD 2.3 bn) cumulative (Since 2014) total deficit of the scheme including additional grant/subsidy from government

Source: 2018 Audited Account from www.bpjs-kesehatan.go.id
There are 5 membership categories with total a of 221 million members as at 31 Aug 2019

Membership is compulsory

The largest membership category (about 6 in 10 BPJS members Or 132 mn people) is from non-paying member.

Source: https://bpjs-kesehatan.go.id
# Component of BPJS – Member

<table>
<thead>
<tr>
<th>Membership Categories</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Eligible) Non Paying Members</td>
<td>This membership is designated by national and local government based on eligibility &amp; socioeconomic profile. Membership is not automatic. Indonesian has to apply &amp; check with local government for eligibility</td>
</tr>
<tr>
<td>Salaried worker &amp; Core Family* (Government Staff)</td>
<td>E.g. Police, military, member of parliament etc</td>
</tr>
<tr>
<td>Salaried worker &amp; Core Family* (Private Companies)</td>
<td>E.g. staff at private companies</td>
</tr>
<tr>
<td>Non Salaried worker &amp; Core Family*</td>
<td>Entrepreneur &amp; foreigner who works in Indonesia for at least 6 months</td>
</tr>
<tr>
<td>Not Working</td>
<td>Investor, employer, pensioners, merdeka generation &amp; their family</td>
</tr>
</tbody>
</table>

*Core family means spouse & up to 3 kids. Coverage can be extended to include 4th kids & other extended family (e.g. in laws, grandparents etc) at additional fee
Component of BPJS – Benefits

Primary Care
- Preventative Care (e.g. Vaccine)
- GP consultation
- Non specific medical treatment
- Medication
- Optic

Inpatient / Outpatient

Inpatient
- Room & Board
- ICU treatment
- Consultation (attending doctor and specialist)

Outpatient
- Consultation, treatment
- Specialist medical procedure
- Implant
- Forensic
- Rehabilitation
- Dialysis / Blood services
- Cancer treatment

Cashless Benefit
First layer of treatment is Primary Care
Referral letter will be required before entering into Inpatient / Outpatient care
There is no deductible / co-insurance / benefit limits
Component of BPJS – Funding

Paying Member*

Contribution

BPJS
(National Universal Health Insurance Scheme)

Contribution

(Eligible) Non Paying Member

Government

Capital

Reimbursement Model

BPJS’ network providers

General Practitioner (GP)

Polyclinic

Public Hospital

Private Hospital

*Paying member include: Salaried worker (Government Or Private), Non Salaried Worker and Not Working
Component of BPJS – Funding

- Paying member contribute regular premium to BPJS scheme
  - Salaried worker will have 5% of its monthly salary automatically deducted from employer
  - Non salaried worker would need to make monthly regular premium contribution
  - Non working would have its premium paid by pension providers
- Eligible Non Paying member will have its premium being paid by (national/local) government
- Government will act as final guarantor and will make additional contribution when scheme is in deficit. This funding will form part of government’s budget.

*Paying member include: Salaried worker (Government Or Private), Non Salaried Worker and Not Working*
## Component of BPJS – Funding

<table>
<thead>
<tr>
<th>Membership Category</th>
<th>Monthly Contribution (As at 31 Aug 2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible Non Paying Member</td>
<td>IDR 0</td>
</tr>
<tr>
<td>Paying Member</td>
<td></td>
</tr>
</tbody>
</table>
| 1) Salaried worker (+additional family member outside core family*) | 5% of Salary  
(+1% for each additional family member)  
Salary cap: IDR 8mn |
| 2) Non Salaried worker | Class I: IDR 80,000 (USD 5.3)  
Class II: IDR 51,000 (USD 3.4)  
Class III: IDR 25,000 (USD 1.6)  
Exchange rate used: IDR 15,000 / 1 USD |

*Outside core family means family member other than spouse & up to 3 kids

**HOW**

Is this low contribution premium made possible?
# Component of BPJS – Funding

Government has been paying the bills via subsidy

<table>
<thead>
<tr>
<th>Membership Category</th>
<th>Monthly Contribution (As at 31 Aug 2019)</th>
<th>Actuarial Calculation</th>
<th>Government’s Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible Non Paying Member</td>
<td>IDR 0</td>
<td>IDR 36,000</td>
<td>IDR 23,000 (the remaining cost is funded by cross subsidy from Paying Member)</td>
</tr>
<tr>
<td>Paying Member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Salaried worker (+additional family member outside core family*)</td>
<td>5% of Salary (+1% for each additional family member)</td>
<td>6%</td>
<td>1%</td>
</tr>
<tr>
<td>2) Non Salaried worker</td>
<td>Class I: IDR 80,000 (USD 5.3) Class II: IDR 51,000 (USD 3.4) Class III: IDR 25,000 (USD 1.6)</td>
<td>Class I: IDR 80,000 (USD 5.3) Class II: IDR 63,000 (USD 4.2) Class III: IDR 53,000 (USD 3.5)</td>
<td>Class I: IDR 0 Class II: IDR 12,000 (USD 0.8) Class III: IDR 27,500 (USD 1.8)</td>
</tr>
</tbody>
</table>

Exchange rate used: IDR 15,000 / 1 USD

Source: https://bpjs-kesehatan.go.id/bpjs/dmdocuments/b39df9ae7a30a5c7d4bd0f54d763b447.pdf
Component of BPJS – Funding

- BPJS will reimburse the cost incurred by service provider in delivering service to BPJS’ members
- Cost reimbursed has been pre-agreed upfront
  - **GP**: fixed monthly fee per member per month
  - **Specialist / Inpatient**: Paid according to fee schedule
  - **Services**: bundled according to International Refined Diagnosis - Related Group
Component of BPJS – Collaboration with Private Insurance

- Done via Coordination of Benefit (COB) mechanism
- Benefits offered by Private Insurance
  - Higher class ward
  - Admission into providers who may not be part of BPJS’ network of provider
- Premium
  - Members who opt for COB pay total premium to BPJS; Or
  - Private insurers collect premium on behalf of member who opt for COB
- Benefit payment
  - BPJS will cover payment on benefits provided by BPJS’ network of providers
  - Private insurers will cover payment on benefits provided by non BPJS’ network

BPSJ Kesehatan has been successful in widening its coverage towards goal of including all Indonesians
But….
Key challenges remain:
1. Ensuring sustainability of the scheme
2. Providing best service to members
Across calendar years, total membership has been growing from 121mn (year 2014) to 221 mn (31 Aug 2019)

BPJS Kesehatan & government, has been effective in executing its mission to widen the reach of Indonesia national health care scheme towards target of 100% total population of 260 mn lives via:

- Implementation of ID infrastructure
- Enforcement of mandatory membership
- Improving premium payment facility etc

What does it mean to Sustainability & Quality of Service?
Challenges - Sustainability

**ECONOMY**

**Indonesia struggles to pay for huge universal health care program**

Government annoys public with planned hike in premiums to reduce deficit

SHOTARO TANI and ISMI DAMAYANTI, Nikkei staff writers

AUGUST 14, 2019 14:27 JST

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*Indonesia’s widening health insurance deficit (in trillions of rupiah)*

*Third party estimate*  
Source: BPJS Kesehatan

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https://asia.nikkei.com/Economy/Indonesia-struggles-to-pay-for-huge-universal-health-care-program
Challenges - Sustainability

- Utilization is higher than expected due to
  - Increase in demand as number of members increased quickly
  - Overconsumption (Primary care vs Inpatient/Outpatient)
  - Adverse Selection (e.g. skip paying premium until sick) and Fraud (e.g. hospital continuously using particular coding to submit claim reimbursement)
  - Control of Benefit e.g. medically necessary

- Benefits offered is higher relative to actuarially calculated premium. This means, the scheme will naturally run into deficit.
  - As at Sep 2019, Indonesian finance ministry is prepared to pump IDR 13 trillion (USD 867 mn) to clear BPJS deficit

- At the end, funding vs sustainability decision depends largely on relevant political climate
  - When is the right time to increase premium or remove subsidy? & what’s its impact?
Challenges - Service quality (Anecdotal)

- Long queue time (as long as 3 months) particularly for elective surgery
- Limited BPJS approved ward under private hospitals
  - Lack of incentive for providers to join
  - Some are concerned about liquidity of BPJS
- Lack of access to specialist doctor particularly those who practice under private hospitals / GP
- BUT…. this may be view of some but not all members

This challenge likely apply to affluent segment of society
Majority of member surveyed feels satisfied with service & health facility provided by BPJS

- 8 in 10 surveyed feels satisfied with service provided by BPJS Kesehatan
- 7.5 in 10 surveyed feels satisfied with medical facility provided

Source: BPJS 2018 annual report
Summary

• BPJS (effective 2014) is Indonesia national universal healthcare scheme
• It is run and managed by BPJS Kesehatan (state owned) who ensure smooth operation and financial sustainability of the scheme
• Premium for member from low socio segment will be fully subsidized by government.
• Challenges remain
  – Ensuring sustainability of the scheme
  – Providing best service to members
Thank you
Building Health Care Infrastructure: Lessons from Indonesia

Allan Hsiao
MIT

October 10, 2019
Expanding access to health care
Expanding access to health care
Research questions

• How efficient was the expansion? *(60%)*
  • Scarce resources should be distributed by need, not favoritism
  • “Medicare for all” and UHC require infrastructure first

• Did democratization help? *(Yes)*
  • In 1999, first free elections since 1955
Benefits

- Estimate welfare benefits of new facilities
  - **Data:** facility locations and usage over time

\[
\text{utility}_{vtf} = \beta^d_f \text{distance}_{vtf} + \beta^c_f \text{congestion}_{vtf} + \beta^p \text{price}_{vtf} + \xi_{tf} + \delta_v + \delta_t + \epsilon_{vtf}
\]
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\]
Misallocation

- Compare actual and maximum possible welfare gains given budget
Misallocation

• Compare **actual** and **maximum** possible welfare gains **given budget**

5
(actual)
Misallocation

- Compare **actual** and **maximum** possible welfare gains **given budget**

![Diagram showing actual and maximum welfare gains](image)
Misallocation

• Compare actual and maximum possible welfare gains given budget

5 (actual)  3  6
Misallocation

- Compare actual and maximum possible welfare gains given budget

5 (actual)

3

6

10 (maximum)
Misallocation in Jakarta (optimal vs. actual gains)

- $29k to $200k
- $6k to $29k
- $1.5k to $6k
- $0k to $1.5k
- No change
- −$1.5k to $0k
- −$5k to −$1.5k
- −$61k to −$5k
- −$400k to −$61k
- No facilities
Misallocation over time
Determinants of misallocation

1 **Model:** facility placement problem over time
2 **Estimation:** government’s choices reveal its preferences

\[ \sum_t \beta^{t-1} \left[ \sum_{v \in V} S_{vt}(a^t; \omega) + \sum_{v \in V} D_v \left( \tau^C C_{vt} + \tau^F F_{vt} + \xi_{vt} \right) n_v(a^t) \right] \]
Determinants of misallocation

1. **Model**: facility placement problem over time

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\[
\sum_{t} \beta^{t-1} \left[ \sum_{v \in V} S_v(t; \omega) + \sum_{v \in V} D_v \left( \tau^C C_v t + \tau^F F_v t + \xi_v \right) n_v(a^t) \right]
\]

- consumer surplus
- costs
- favoritism
- unobs

need
favor
## Estimates

<table>
<thead>
<tr>
<th></th>
<th>Pre-reform</th>
<th>Post-reform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs ($\tau^C$)</td>
<td>0.56</td>
<td>0.45</td>
</tr>
<tr>
<td>Patronage ($\tau^F$)</td>
<td>3.17</td>
<td>0.79</td>
</tr>
<tr>
<td><em>Golkar</em> ($\tau^F$)</td>
<td>2.83</td>
<td>1.12</td>
</tr>
<tr>
<td>Ethnicity ($\tau^F$)</td>
<td>0.03</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Estimated $E_{\nu|\xi,\nu}$

Supporting evidence
Takeaways

1. Expanding access to health care starts with infrastructure
   - How well do governments allocate scarce resources?

2. I find about 40% misallocation, but democratization helped
   - Elections limit bias from favoritism
Thank you!

- **Email**: ajhsiao@mit.edu
- **Website**: sites.google.com/view/allanhsiao

- **Paper**: “Misallocation and Infrastructure Investment: Evidence from Healthcare in Indonesia”
Appendix
With big drops in facility distance

<table>
<thead>
<tr>
<th>Year</th>
<th>1990</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public hospitals</td>
<td>664</td>
<td>1,840</td>
</tr>
<tr>
<td>Private hospitals</td>
<td>231</td>
<td>654</td>
</tr>
<tr>
<td>Clinics</td>
<td>5,202</td>
<td>10,788</td>
</tr>
<tr>
<td>Subclinics</td>
<td>12,412</td>
<td>27,744</td>
</tr>
<tr>
<td>Distance, public hospital</td>
<td>30.58</td>
<td>18.32</td>
</tr>
<tr>
<td>Distance, private hospital</td>
<td>66.22</td>
<td>50.83</td>
</tr>
<tr>
<td>Distance, clinic</td>
<td>6.95</td>
<td>4.07</td>
</tr>
<tr>
<td>Distance, subclinic</td>
<td>4.21</td>
<td>1.81</td>
</tr>
<tr>
<td>Observations</td>
<td>62,194</td>
<td>62,194</td>
</tr>
</tbody>
</table>
## Usage by facility distance/congestion

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance, public hospital</td>
<td>-2.295***</td>
<td>(0.0561)</td>
</tr>
<tr>
<td>Distance, private hospital</td>
<td>-1.127***</td>
<td>(0.0323)</td>
</tr>
<tr>
<td>Distance, clinic</td>
<td>-2.456***</td>
<td>(0.233)</td>
</tr>
<tr>
<td>Distance, subclinic</td>
<td>-2.404***</td>
<td>(0.442)</td>
</tr>
<tr>
<td>Congestion, public hospital</td>
<td>-0.0247***</td>
<td>(0.00298)</td>
</tr>
<tr>
<td>Congestion, private hospital</td>
<td>-0.0172***</td>
<td>(0.00127)</td>
</tr>
<tr>
<td>Congestion, clinic</td>
<td>-0.381***</td>
<td>(0.0389)</td>
</tr>
<tr>
<td>Congestion, subclinic</td>
<td>-0.589***</td>
<td>(0.0246)</td>
</tr>
<tr>
<td>Price</td>
<td>-0.537***</td>
<td>(0.152)</td>
</tr>
<tr>
<td>Village FE</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Facility type-year FE</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>202,668</td>
<td></td>
</tr>
</tbody>
</table>
Misallocation by facility type

Public hospitals

Clinics

Subclinics
Best vs. actual gains by facility type

Public hospitals

Clinics

Subclinics

Consumer surplus generated ($1M) vs. Year

Estimated $E_v[\zeta_{vt}]$
Supporting evidence on elections