

The World of Home Therapies from Down Under

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Geelong, Victoria, Australia**

The primary emphasis of my talk will be on

Home Haemodialysis

and

Why ANZ has been
– and remains –
different

A few key historical slides

Home haemodialysis 'down under'

The first seed

- One of the first patients ever trained for home HD was Peter Morris ... a 39 y/o Australian businessman
- Peter presented with ESRD in Seattle while there on business in 1967
- Scribner saw him, trained him, and returned him to Melbourne three months later with a Drake Willock machine in his luggage
- A Scribner-trained Australian Nephrologist (John Dawborn) was seconded to manage him 'back home'
- ANZ home HD had begun!

This dynamic man then set about ...

1. Educating a small, close-knit nephrology community about home HD
2. Establishing an Australasian agency for Drake Willock
3. Persuading the Australian Lions Club movement to fund equipment and supplies for home-based patients throughout ANZ
4. Organising the Australian Kidney Foundation to 'advocate' for home HD
5. Lobbying for government funding and support

Home haemodialysis 'down under'

Fertile ground

- A strong ANZ trend towards home HD thus emerged 1968-1972

Then, the master-stroke ...

- The incoming Federal Labor Government made an election promise - one it later kept and signed into law:
 - i. That dialysis would be provided, free of cost, to all/any who needed it*
 - ii. That all dialysis costs would – in perpetuity – be fully funded.*

- Meanwhile, Peter Morris continued to ...
 - Successfully dialyse for many years at home
 - Lead an active business life
 - Provide a highly visible, vocal and active '*national home HD role model*' – the significance of which reached into every corner of the Australasian nephrology community

Home haemodialysis 'down under'

A flourishing crop

- Hospitals throughout Australasia soon set up home HD training facilities
- Concurrently, in-centre facilities became increasingly expensive and were slow to grow
- Home facilities were, relatively, inexpensive and flourished
- Staff became comfortable with and excelled in home training and support

The divergence

In the US

dialysis rapidly equated to 'facility care'
(and most other countries followed)

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In ANZ

dialysis remained comfortably 'at home'

Money, not quality of outcome
provided the primary driver

In Australia
we have a slightly different view
of the world

WORLD MAP

LEGEND

- Capital
- City, town

Traditional World Maps are drawn from the perspective of the first European explorers and cartographers - with the Northern Hemisphere at the top. We think it time to break with tradition and show the world from the perspective of all those people living in the Southern Hemisphere. After all, there is no one geographical frame saying "This way up".

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ABBREVIATIONS:

- B-HZ - BOSNIA AND HERZEGOVINA
- LB - LUXEMBOURG
- LUX - LUXEMBOURG
- MAC - MACAU
- MDA - MOLDOVA
- RUS - RUSSIAN FEDERATION

LEGEND

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After all, there is no ancient geographical frontier saying

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Abbreviations:

B. HERZ.	BOSNIA AND HERZEGOVINA
LI.	LICHTENSTEIN
LUX.	LUXEMBOURG
MAC.	MACEDONIA
MON.	MONTENEGRO
RUS. FED.	RUSSIAN FEDERATION

and

We have taken a rather different direction
in the application of dialysis

We are often told
that

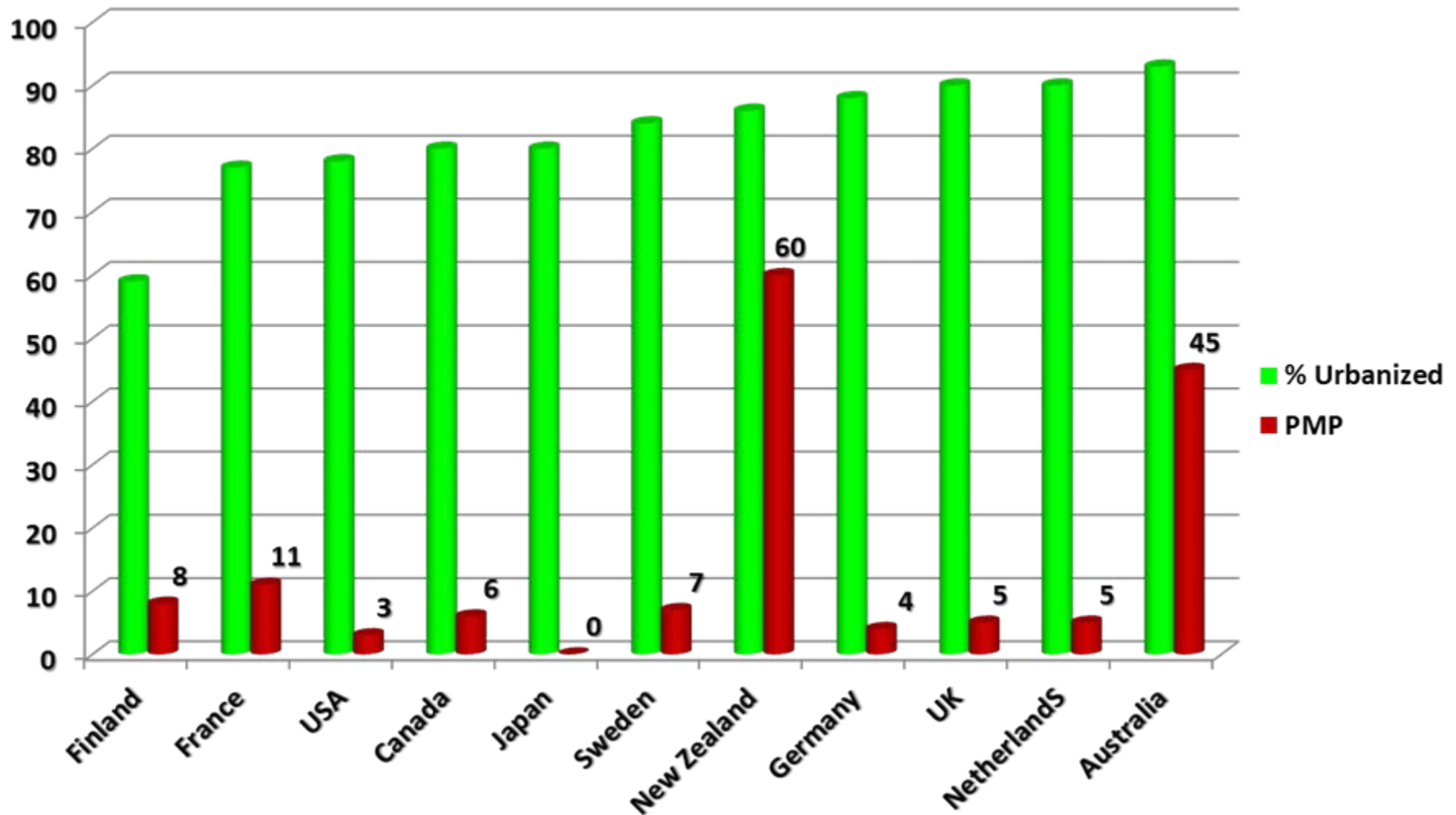
our 'fetish' for home care
is a function of our geography

A 'Rest-of-the-World' view of Australian living



Not so !

Urbanisation vs. Home HD uptake



An Australian's view of Australian living



Melbourne
(population = 4.5 million)

The cultural heart of Australia

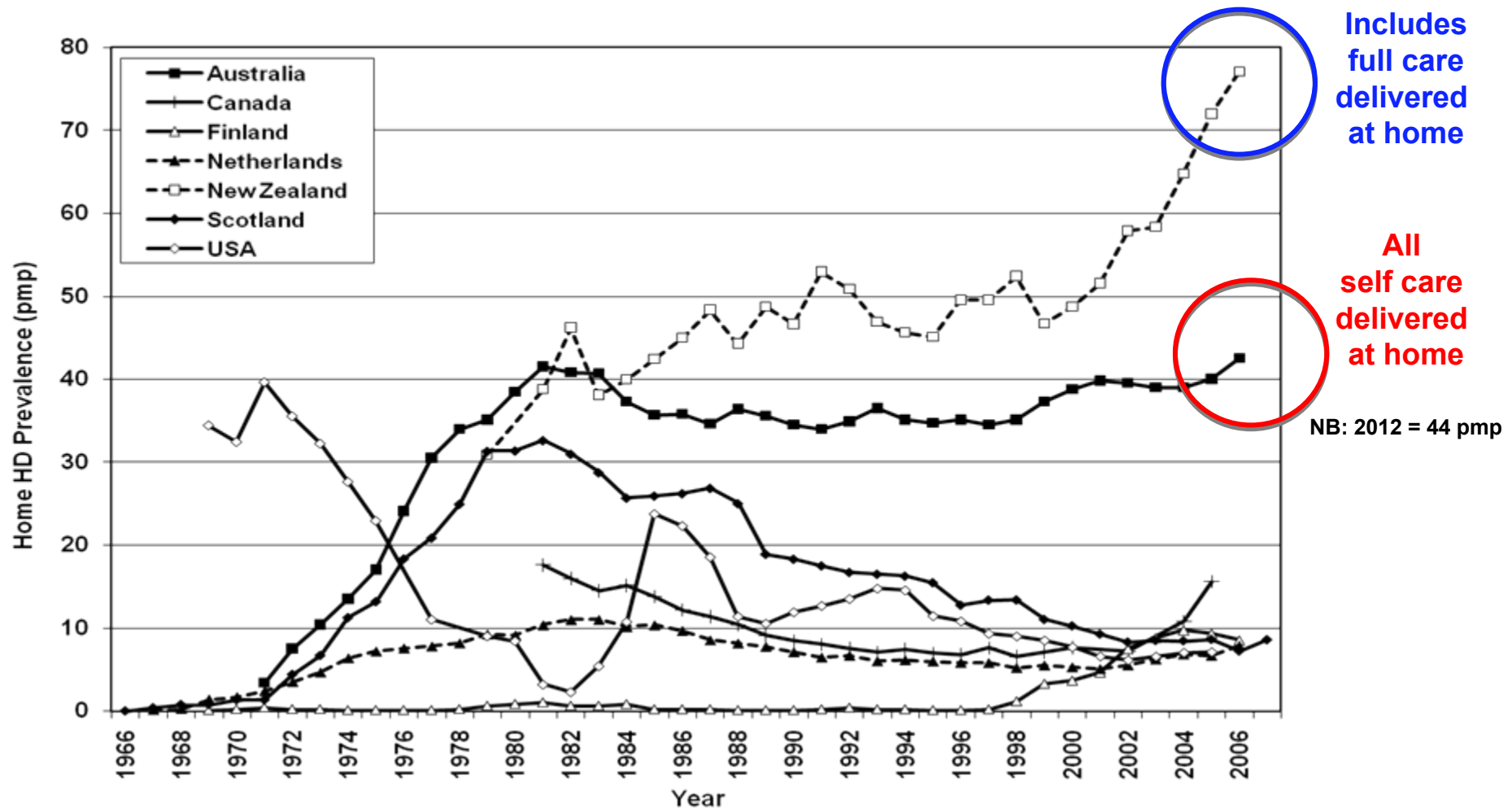
Sydney
(population 4.5 million)

Its' Opera house: designed by a Dane



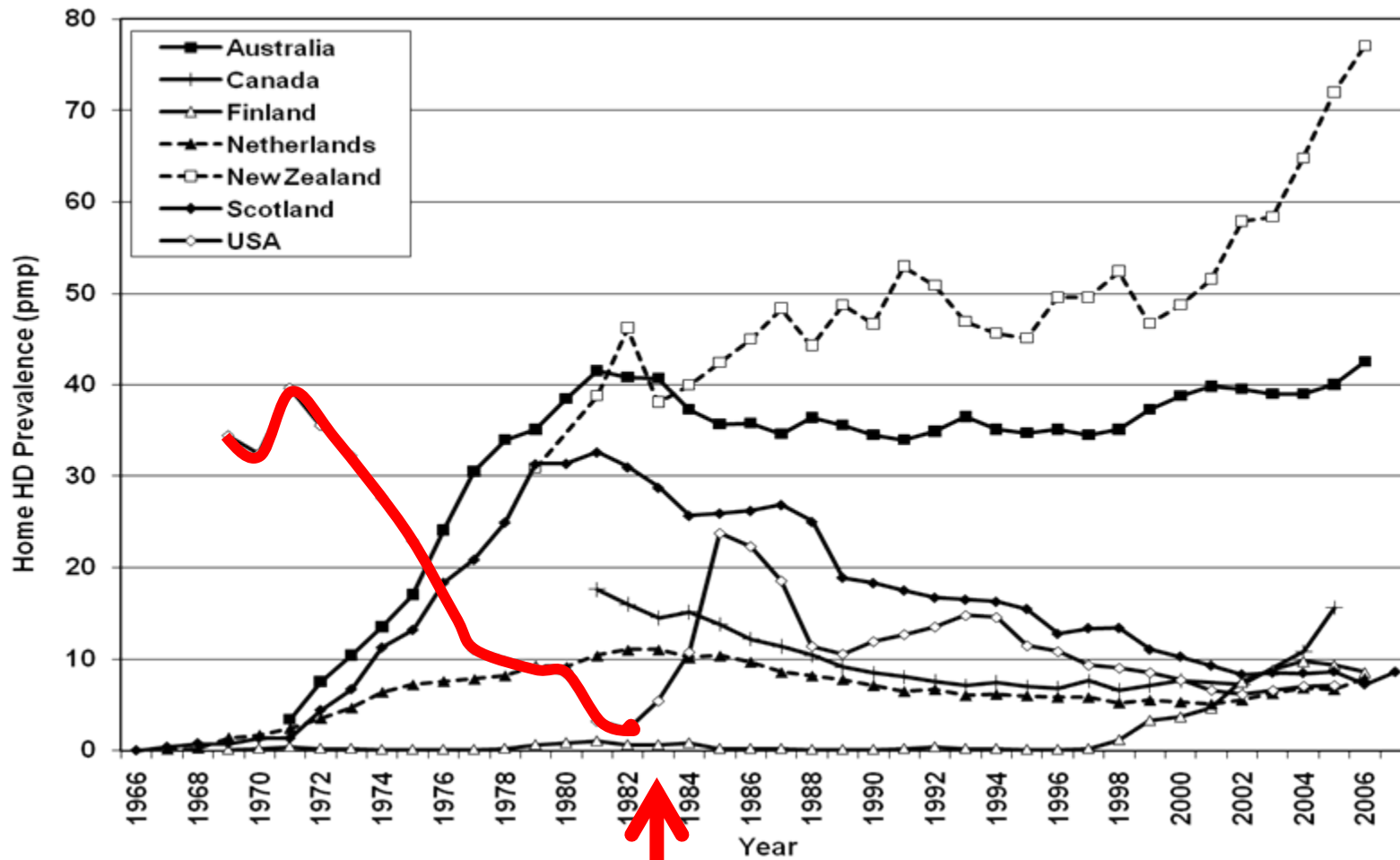
So ... how do we sit
within the rest of the world

Prevalence: Home HD (pmp) 1966 – 2006



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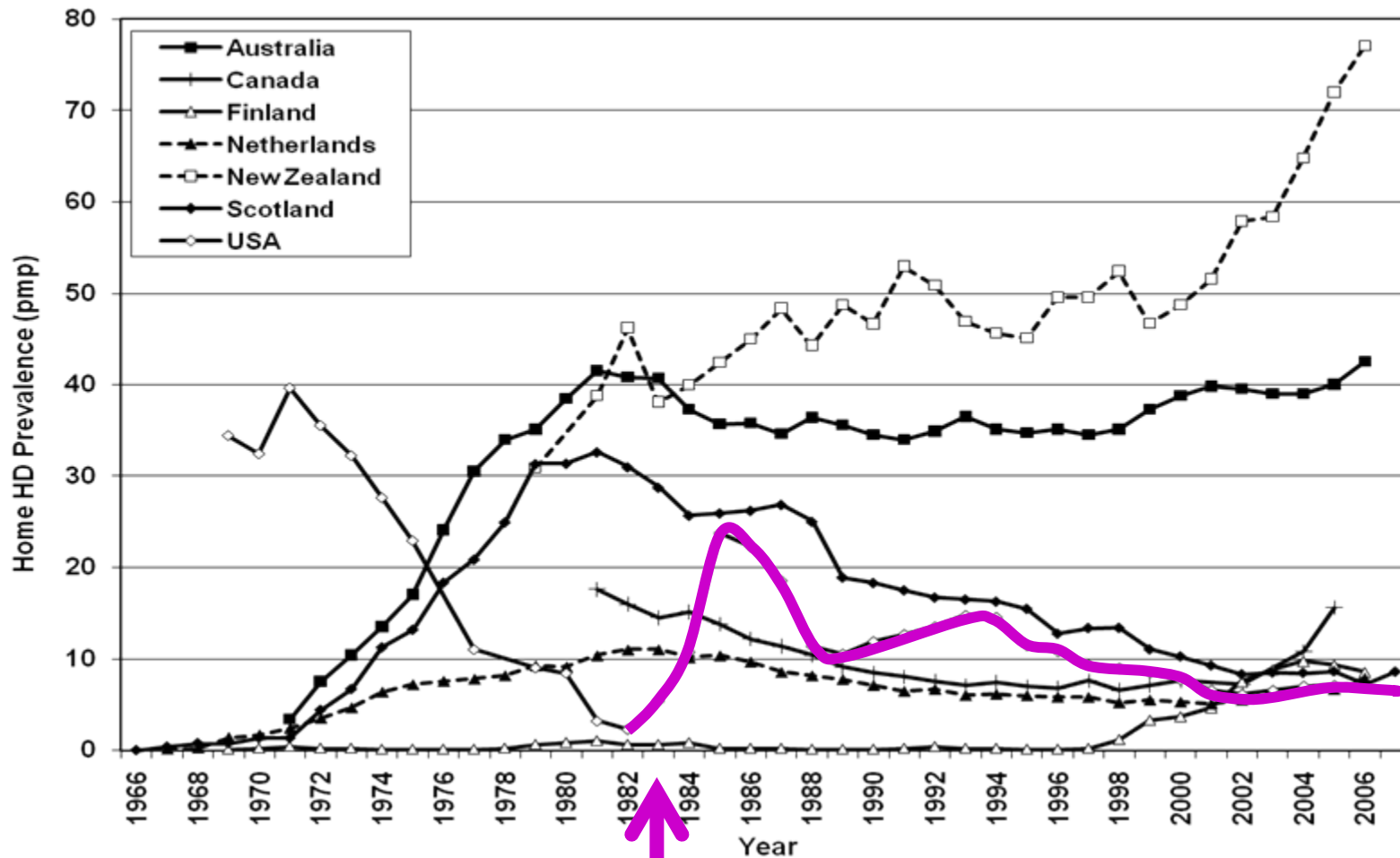
USA – Home HD alone



Before 1982 - USRDS recorded
home dialysis only as Home HD

Prevalence: Home HD (pmp) 1966 – 2006

USA – Home HD + Home PD (summated)

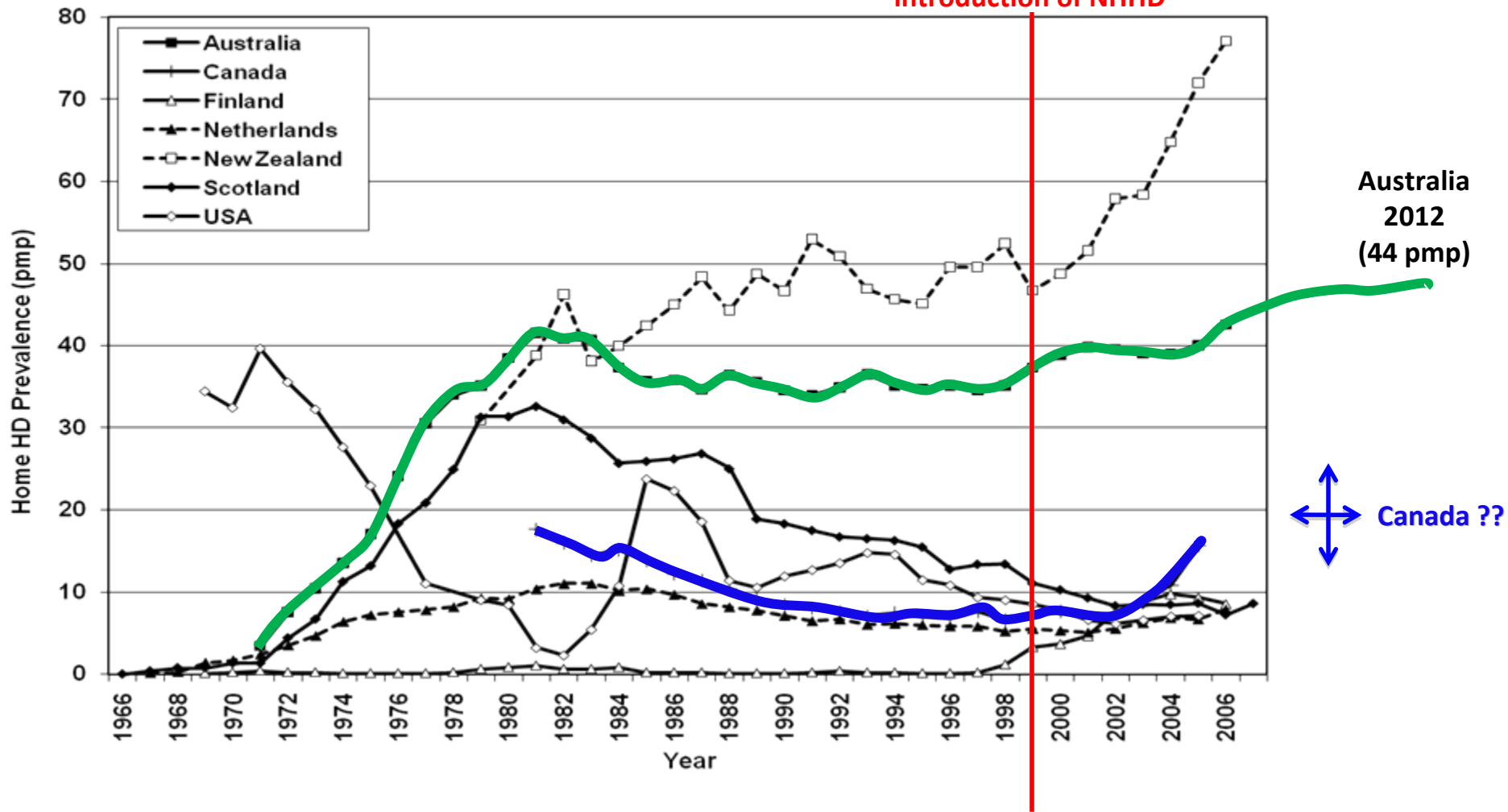


After 1982 - USRDS recorded HOME
as Home HD and PD summated

Prevalence: Home HD (pmp) 1966 – 2006

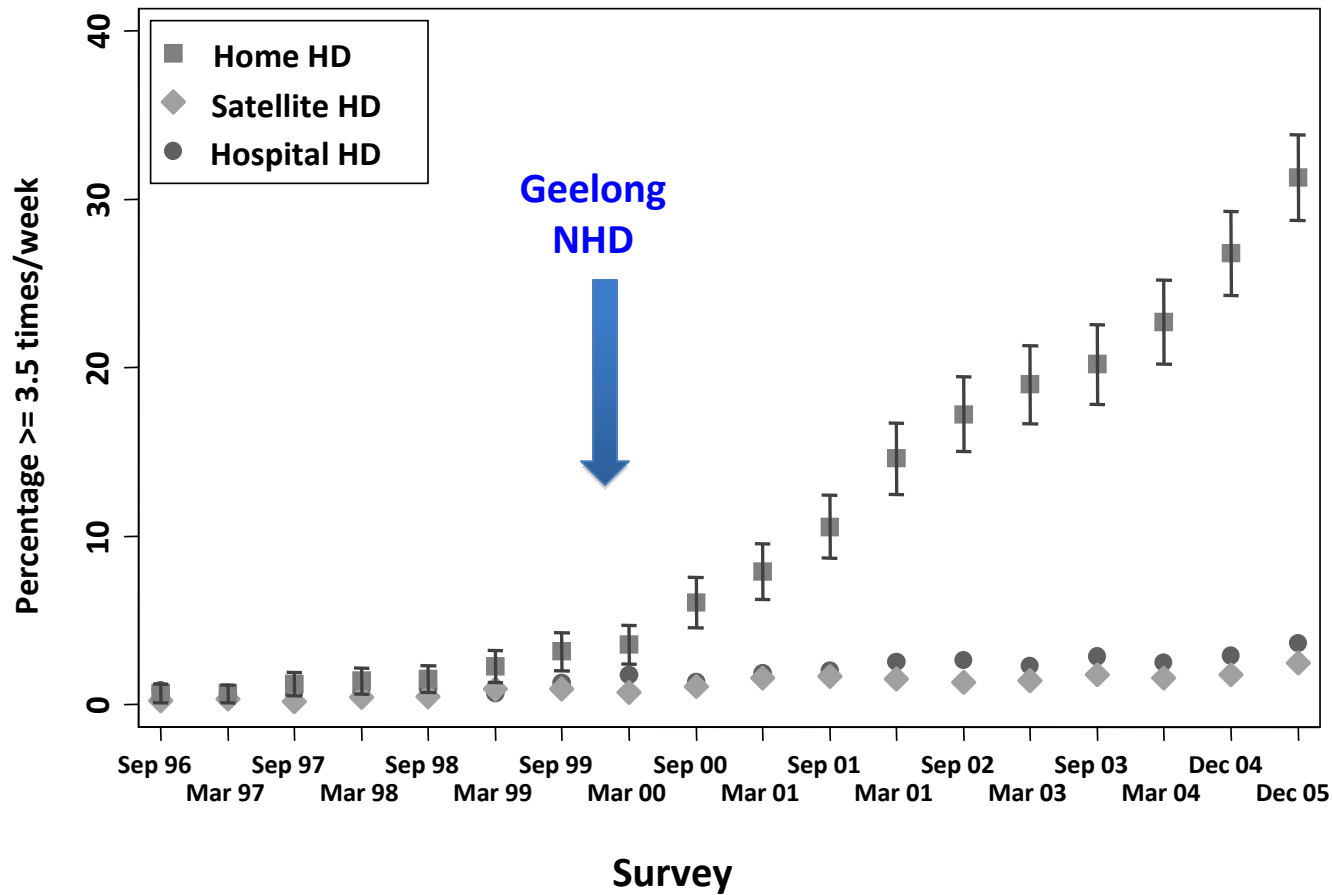
Australia vs. Canada

The 'beyond Toronto'
introduction of NHHD



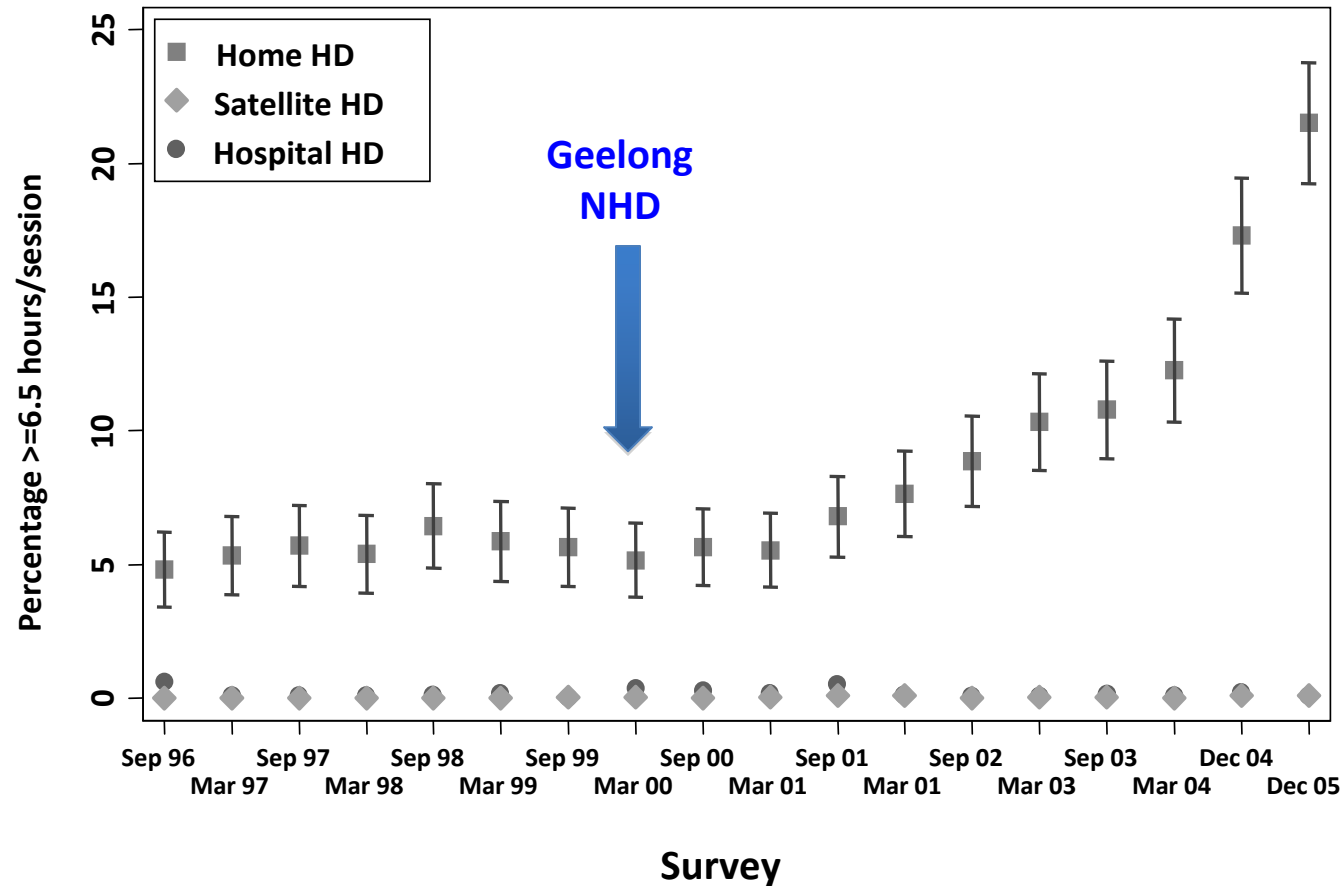
Australia: 1996 – 2005

Dialysis Frequency (≥ 3.5 sessions/week) by HD Location



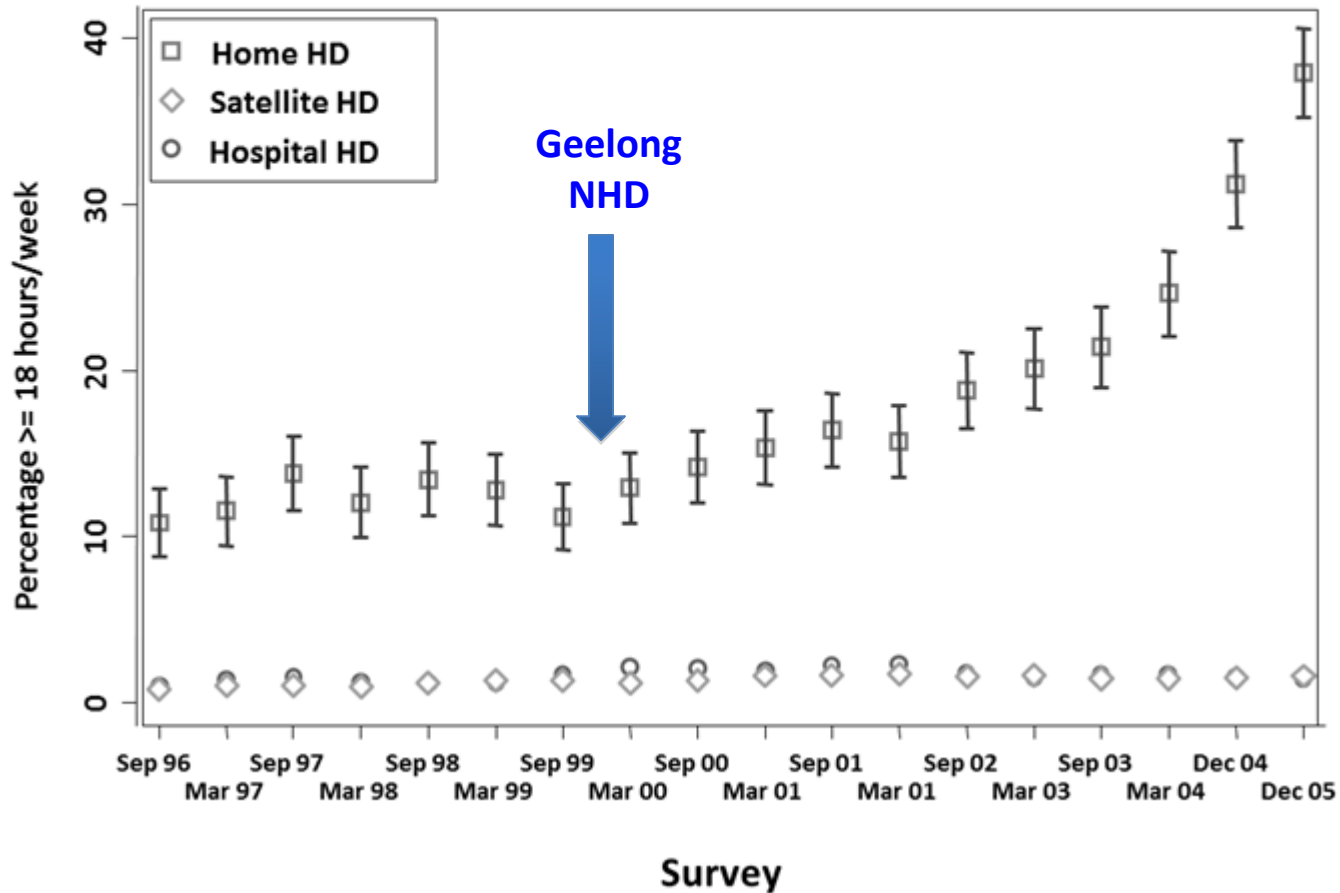
Australia: 1996 – 2005

Dialysis Session Length (≥ 6.5 hours/session) by HD Location



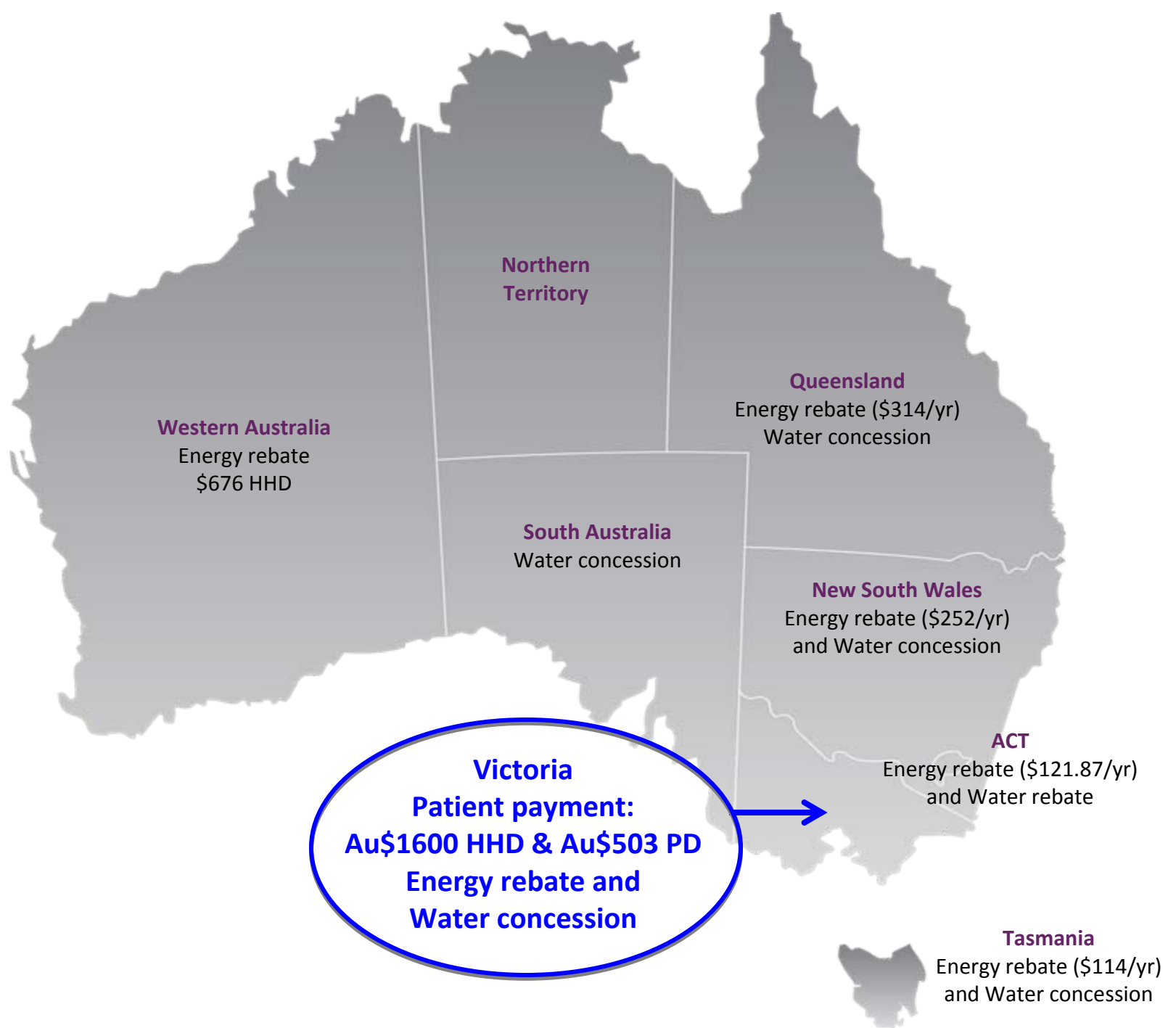
Australia: 1996 – 2005

Dialysis Duration (≥ 18 hours/week) by HD Location



Facilitating Home Dialysis

The Australian Funding Model



Overview

**To see why Australian Home HD
has been so successful**

**It is crucial to first understand
the funding environment
in which it thrives**

What follows ...

1. How the Australian Healthcare System works

2. Our home HD funding models

- Our preferential home HD funding
- Our 'incentivization' programs
 - To providers
 - To patients

3. The data for home HD (ANZDATA)

The Australian Healthcare System

Despite Australian healthcare is ...

- Generally equitable
- Broadly affordable
- Universally accessible

But ... like most healthcare systems, Australia faces:

- Rising demands
- Spiralling costs

And ...

1. Our 'care-for-all' public hospital system struggles to meet need/demand
2. There are chronic health work-force shortages ... *especially in nephrology*

A simplified snapshot of Australian Healthcare

A simplified snapshot of Australian Healthcare

‘Social’ but not ‘Socialized’

“Basal” universal insurance

+

“Bolus” optional insurance

(if/as desired)

Responsibilities of government for health

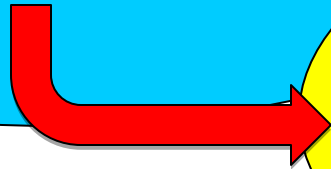
The Federal government funds:

- General Practice
- Residential Aged Care
- All drug costs through the Pharmaceutical Benefit Scheme
- Grants to the States and Territories to fund public hospitals.

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States and Territories fund:

- Administration and operating costs of the national public hospital system

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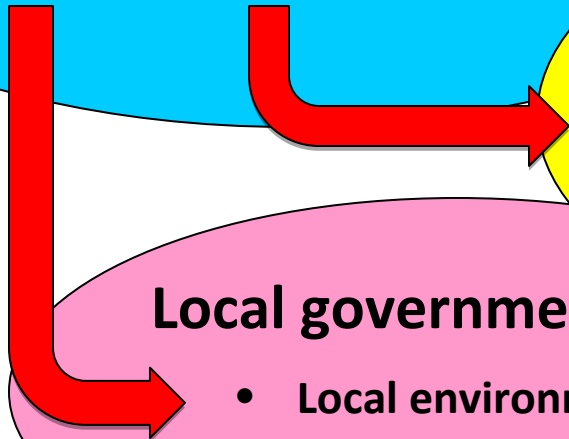
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States and Territories fund:

- Administration and operating costs of the national public hospital system

Local government funds:

- Local environment
- Community health



Australian Health Status ... a 'Report-Card'

Broadly, we do very well ...

Our general population ...

- Australian life expectancy is 2nd only to Japan in the world
 - Australian life expectancy is ...
 - 83 years (men)
 - 86 years (women)
- Australia leads the world in child vaccination
- It also leads in vaccination of older people against influenza

But ... where we are not 'so smart'

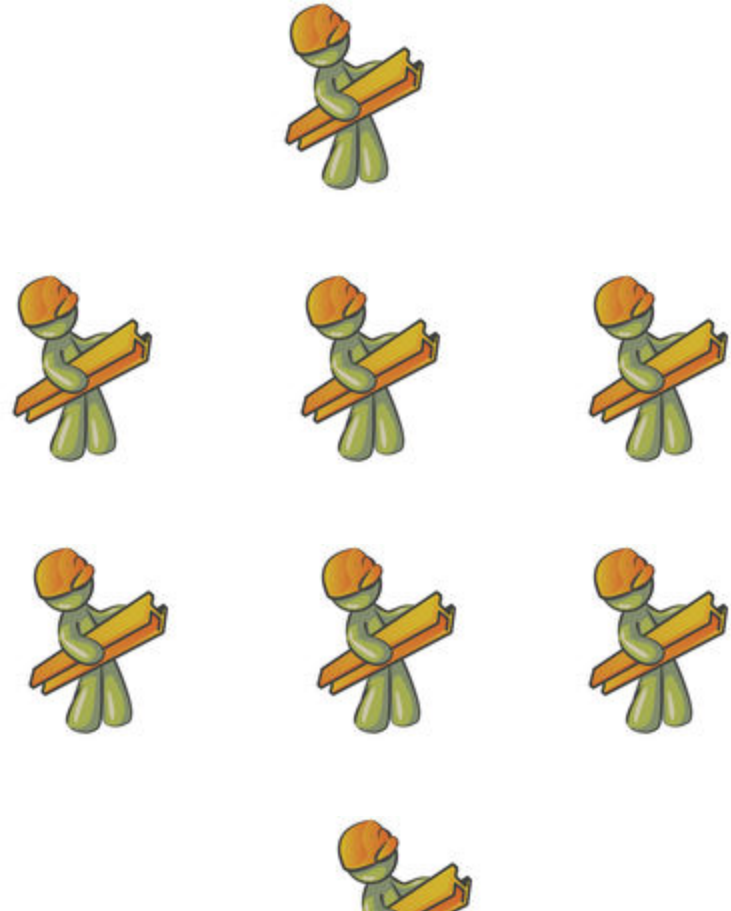
But, we also do very poorly ...

Our indigenous population has ...

- A life expectancy (Australian Bureau of Statistics) of
 - 59.4 years (indigenous men)
 - 64.8 years (indigenous women)
- **more than 17 years less life expectancy than all Australians**
- Despite this, we are making progress ...
 - indigenous childhood growth patterns are improving

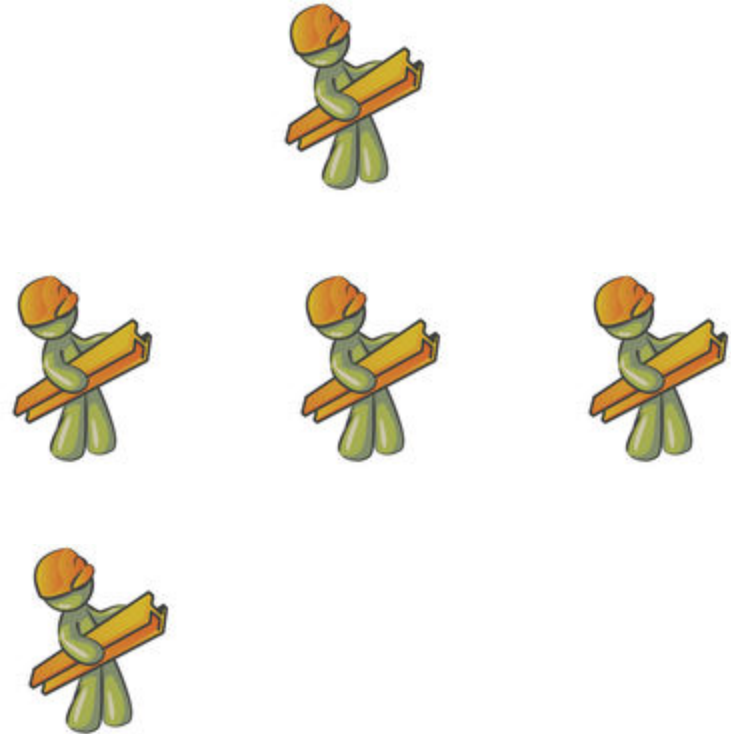
Our problem: Ratio of workers to 'retirees'

1970 = 7.5



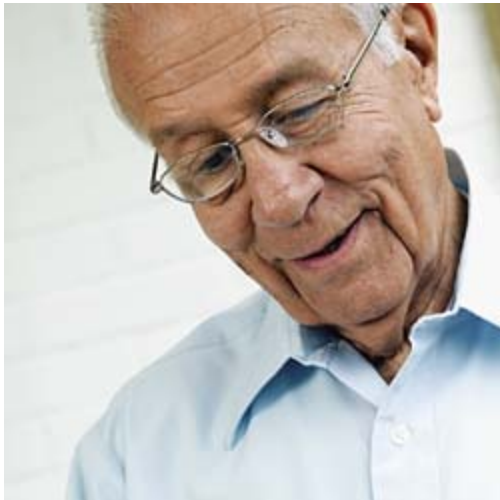
Our problem: Ratio of workers to 'retirees'

2010 = 5.0

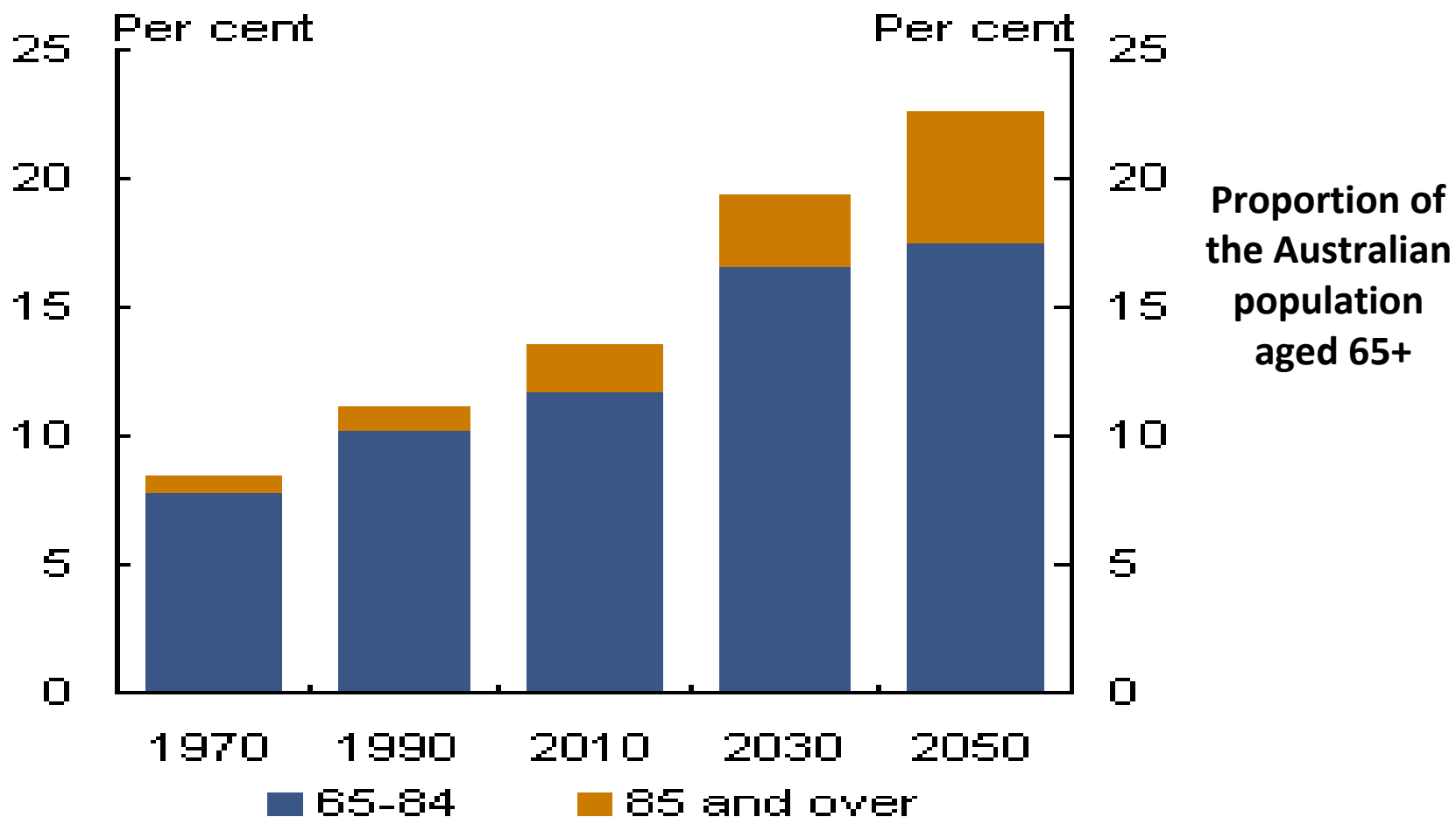


Our problem: Ratio of workers to 'retirees'

2050 = 2.7

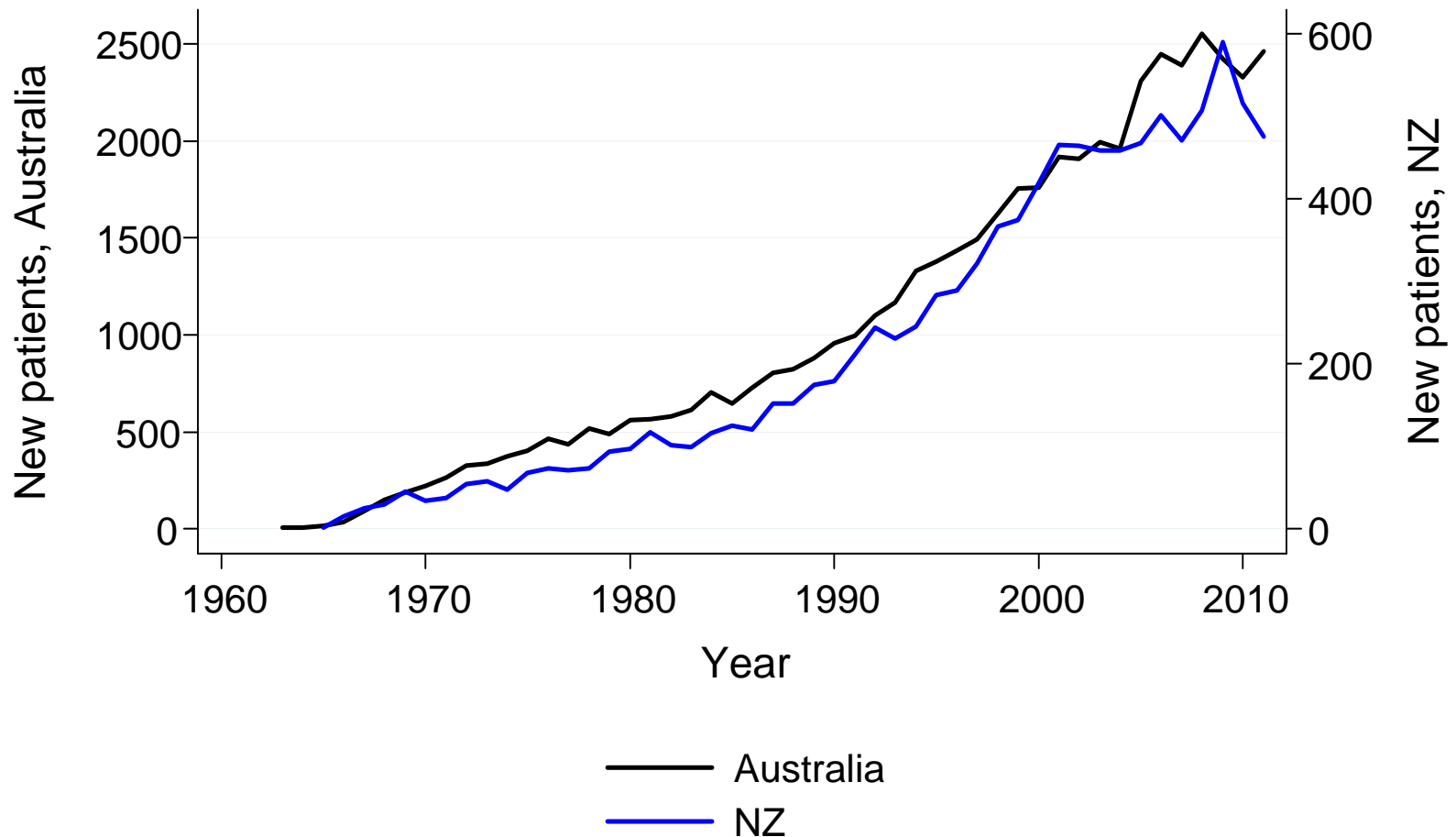


An ageing and growing population



Our graphs look like yours!

New Patients Australia and New Zealand



But ... there are some potential solutions

But ... there are some potential solutions

The development of ...

- Smarter healthcare systems
- More cost effective systems
- Stronger home-based service delivery models

The solutions in dialysis ... my view

The development of ...

- Smarter healthcare systems
- More cost effective systems
- Stronger home-based service delivery models

We need to encourage self-management

1. Renal professionals recognizing ... *that our patients 'can' ...*
2. Plus ... the acquisition of simpler, more user-friendly HHD equipment
3. And ... stronger, more flexible, responsive home support programs

I believe this is achievable because ...

- Our basic healthcare model is
 - Structurally sound
 - Responsive
 - Approachable

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The following slides describe in overview

(1) The Australian healthcare model

(2) How dialysis funding fits within it

Medicare

Australia has a dual Public/Private health-care system

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1. It offers Universal Health Insurance ... for all
 - Paid for by a 1.5% gross taxation levy on all Australians
 - Provides care for all at no charge in public hospitals
 - Plus, any out-of-hospital medical services are bulk-billed

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 - Plus, any out-of-hospital medical services are bulk-billed
2. It provides Discretionary Private Insurance ... if desired
 - This permits elective surgery ahead of public waiting-list queues
but ...
 - Medical admissions remain primarily 'acute' and mostly 'public'

A 'Montage'

Australian Healthcare System

Federal Gov^t
Dep^t Health

```
graph TD; A["Federal Govt  
Dept Health"] -- "1.5%  
on gross  
income tax" --> B["All medical expenses  
  
Funded by a 1.5%  
levy on all income tax  
  
All drugs beyond an  
annual $600 patient  
contribution"]; A -- "1.5%  
on gross  
income tax" --> C["All mental  
health  
and aged-  
care  
programs"];
```

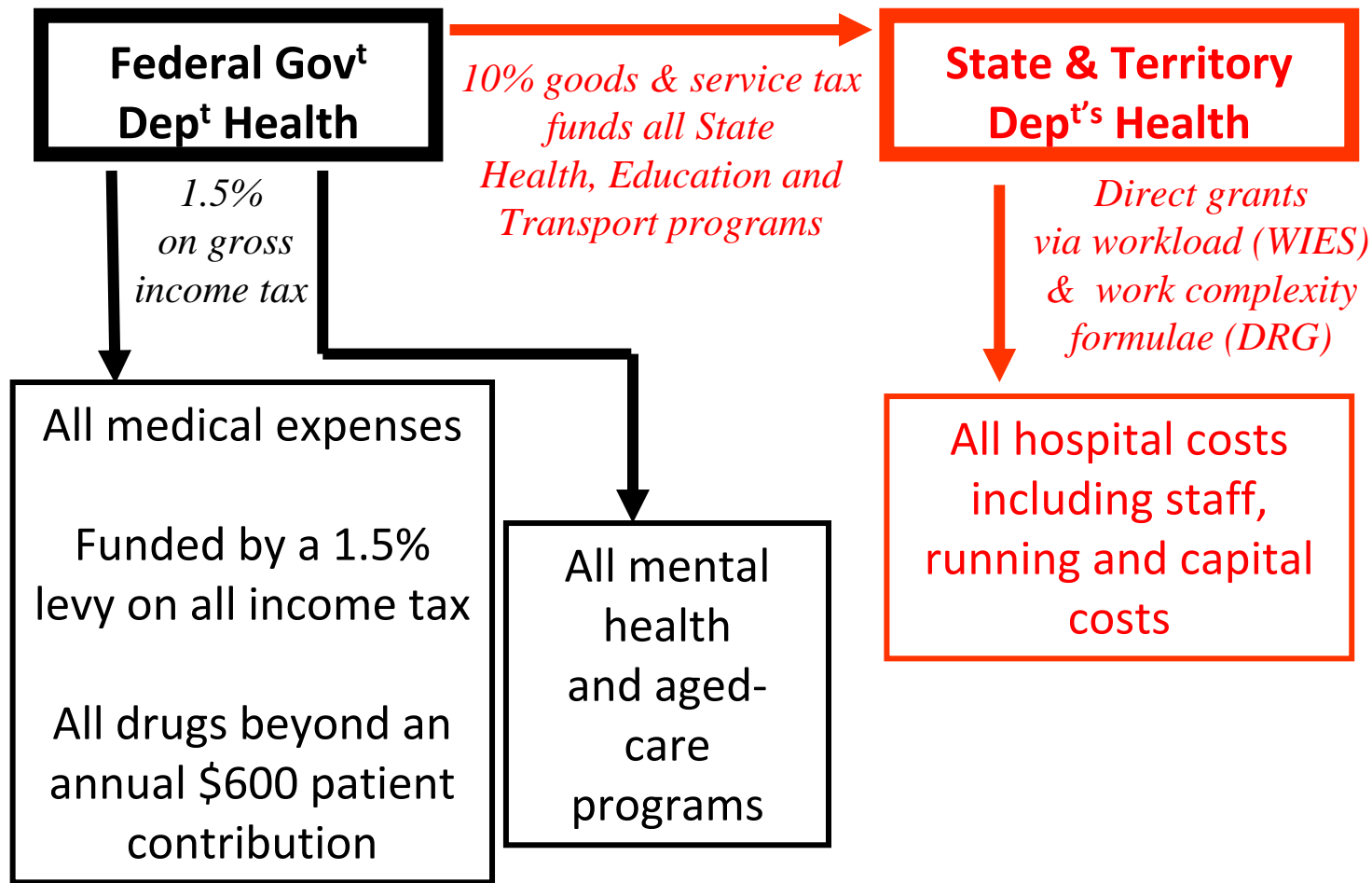
1.5%
on gross
income tax

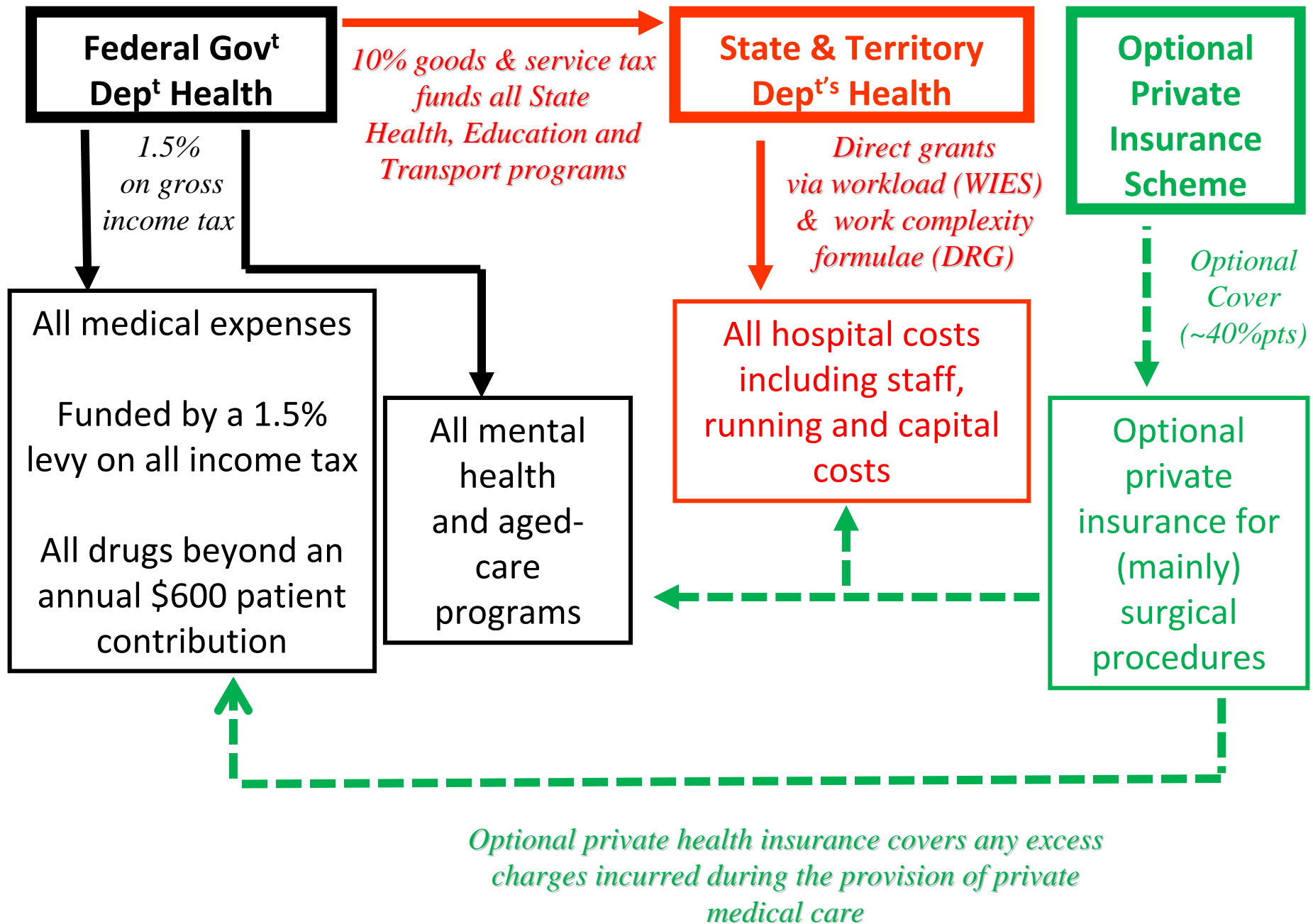
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**Dialysis funding
within the same
'montage'**

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Dep^t Health**

*1.5%
on gross
income tax*

All medical care for
outpatient dialysis

Funded by a 1.5%
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All drugs (incl. ESA's
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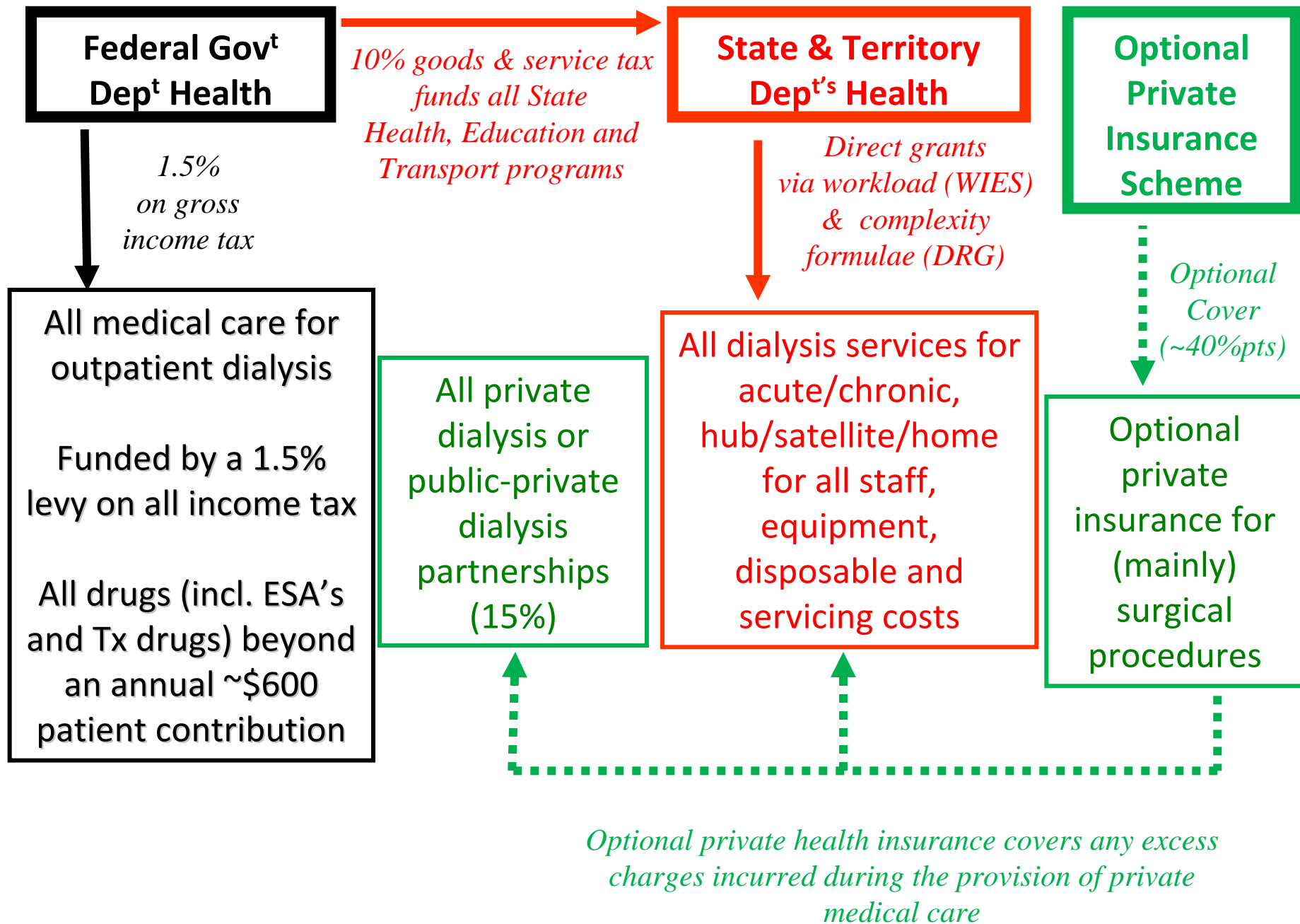
All drugs (incl. ESA's
and Tx drugs) beyond
an annual ~\$600
patient contribution

*10% goods & service tax
funds all State
Health, Education and
Transport programs*

**State & Territory
Dep^ts Health**

*Direct grants
via workload (WIES)
& complexity
formulae (DRG)*

All dialysis services for
acute/chronic,
hub/satellite/home
for all staff,
equipment,
disposable and
servicing costs



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(15%)

**But
private cover
is not very
useful for
dialysis
patients**

**Because
most
Australian
dialysis is
provided by
public care
where all
dialysis-
related costs,
including
home
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**Public funding negotiations with
Health Departments have been the
key to unlocking home dialysis**

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Public funding negotiations with
Health Departments have been the
key to unlocking home dialysis

**As home dialysis is cost effective,
governments have been
quick to understand its value**

**But
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useful for
dialysis
patients**

**Because
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Australian Health System Summary

**Federal Gov^t
Dep^t Health**

*1.5%
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*10% goods & service tax
funds all State
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**State & Territory
Dep^ts Health**

*Direct grants
via workload (WIES)
& complexity
formula (DPC)*

**Optional
Private
Insurance
Scheme**

**Feds
deliver
gross \$\$'s**

**an annual ~\$600
patient contribution**

**States
decide \$\$
distribution**

**Insurance
offers
"extras"**

*Optional private health insurance covers any excess
charges incurred during the provision of private
medical care*

**Within this funding envelope
Australian Home Dialysis
has remained alive and well**


But ... the last steps are still missing

You have taken them – we have not

The missing steps

While state money flows, equitably and pro-rata, depending on:

- Number of patients within each service at month's end
- Modality mix at month's end

1. Individual units lack autonomy over their budgets
2. We look – jealously – at BC's protected budget
3. The renal  is still 'raided' for a variable % of its' in-flowing \$'s to support institutional non-income-earning functions ... **institutional “raid-range” = 25-33%**
4. And ... we need a **PROMIS**
4. Lack of the flexibility that these give BC nephrology inhibits our service growth and imagination

In an effort to address this

**Federal and state governments
have introduced funding incentives**

Recognizing the cost efficiency of home-based therapies

**Three home incentive payments
have been added by governments**

Recognizing the cost efficiency of home-based therapies

Three home incentive payments
have been added by governments

One federal incentive

Two additional - but variable - state incentives

1



Federal >> Physician

A monthly incentive payment that recognises the special 'management' needs of patients on home dialysis
(**\$128/mth** per home HD or PD pt)

1



Federal >> Physician

A monthly incentive payment that recognises the special 'management' needs of patients on home dialysis
(**\$128/mth** per home HD or PD pt)

2



State >> Renal Unit

An annual incentive (Victoria only) paid for any patient on home HD
(**\$10,000**) and home PD (**\$2,500**)

1



Federal >> Physician

A monthly incentive payment that recognises the special 'management' needs of patients on home dialysis (**\$128/mth** per home HD or PD pt)

2



State >> Renal Unit

An annual incentive (Victoria only) paid for any patient on home HD (**\$10,000**) and home PD (**\$2,500**)

3



State >> Renal Unit >> Patient

An annualized pro-rata incentive (Victoria only) paid to each home patient for 'out-of-pocket' expenses (home HD **\$1,600** and home PD **\$500**)

**From a funding perspective,
it is difficult to ignore
modality cost comparisons**

Several key costing analyses
have been undertaken in Australia in the last 6 years

Although each includes (or excludes) several key inputs
... thus making direct comparisons difficult ...

all have arrived at one conclusion

The costs of home dialysis are

always significantly less

than those of any facility-based care modality

The George Institute Analysis: 2008/09

The lowest cost dialysis modalities

Home HD
CAPD

\$ 52,000 per year *
\$ 64,000 per year

The highest cost dialysis modality

Hospital HD

\$ 94,000 per year *

Australian governments are now setting home-based dialysis targets of up to 50% of all dialysis patients

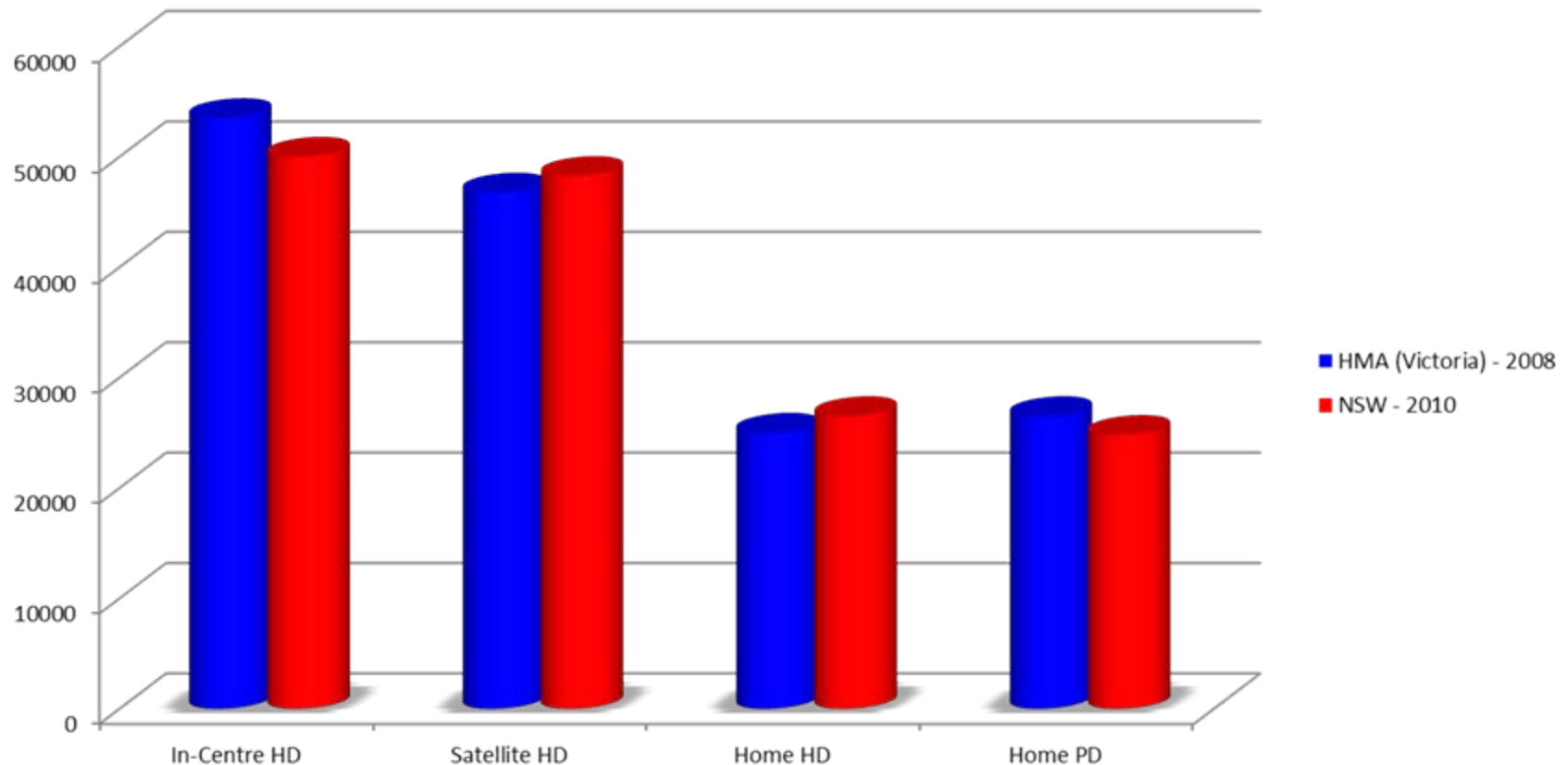
NB: Costs have been adjusted to 2008 A\$'s using the Australian Institute of Health and Welfare (AIHW) health price index

**Two other studies
performed within the last 3 years
all show cost advantages to home therapies**

of between 20 - 45%

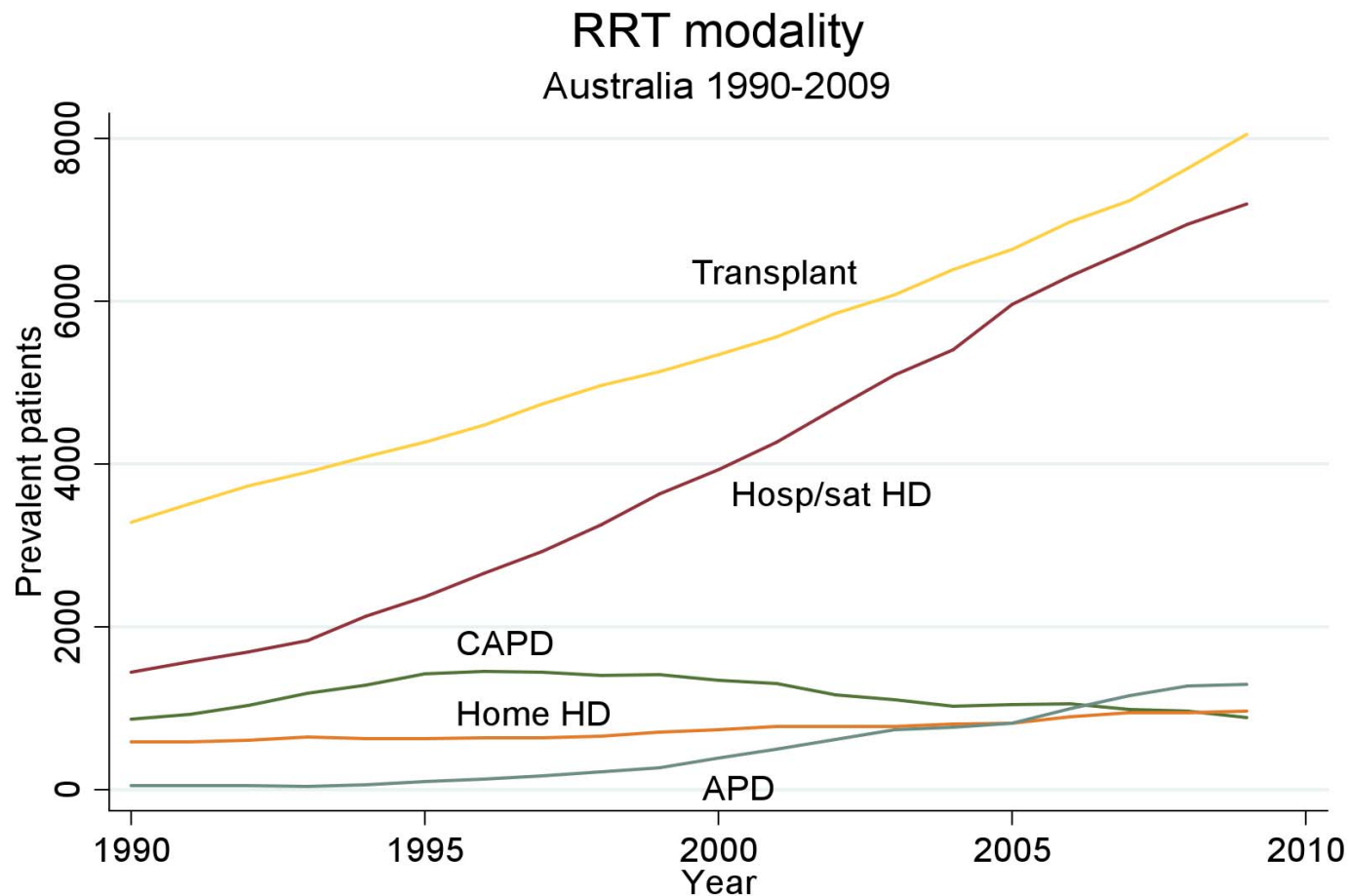
Lower dialysis-only costs

2 Recent Australian Costing Studies
NSW Study (2010) vs. Victorian HMA Study (2008)



NB: Actual dialysis-delivery costs only
No pathology, drugs, clinic visits or hospitalizations

Australia – Renal Replacement By Modality ... 1990-2010



Home-based HD

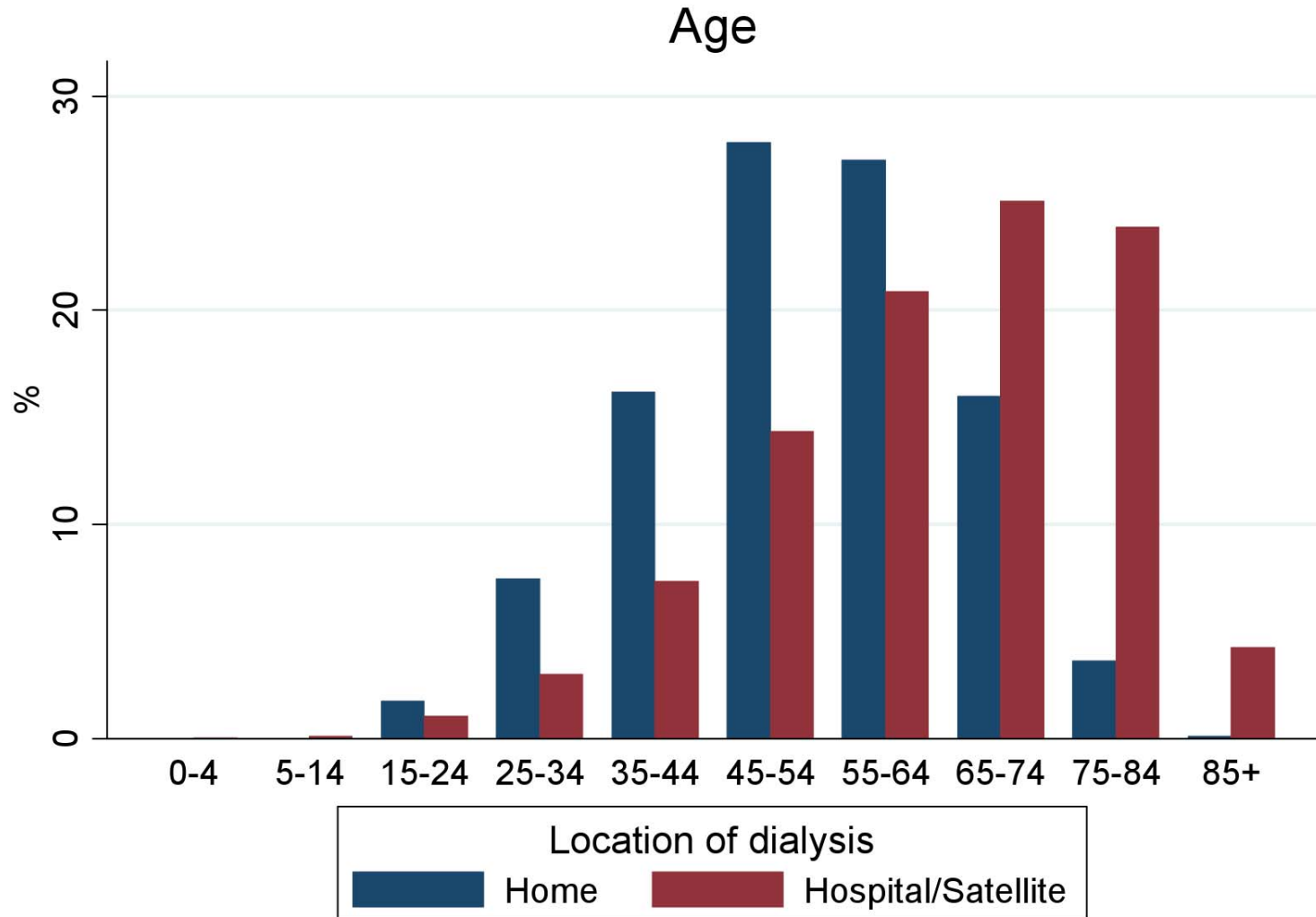
vs

Facility-based HD

Australia 2011

Australia – Hemodialysis 2011

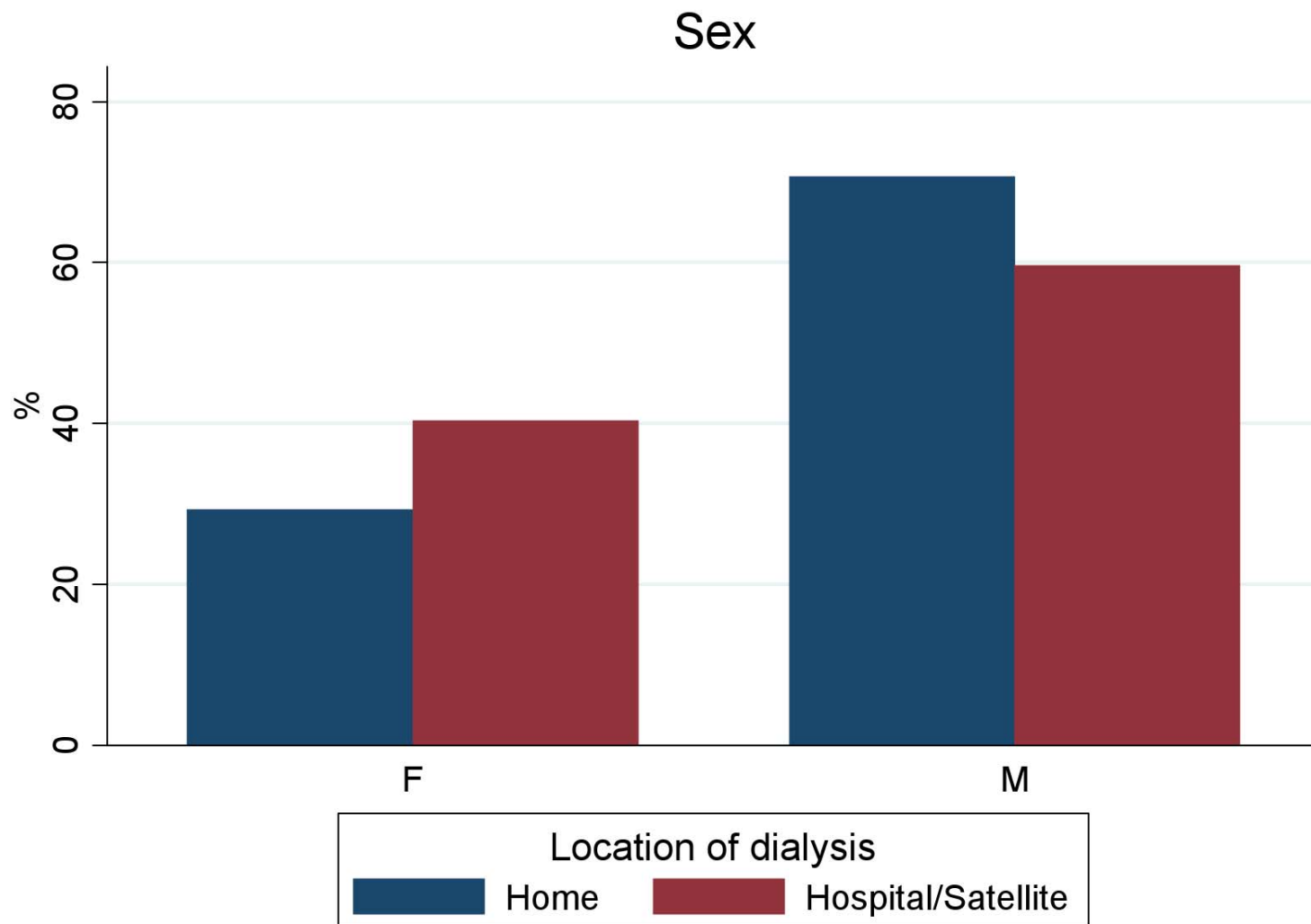
Age and Location



Courtesy ANZDATA

Australia – Hemodialysis 2011

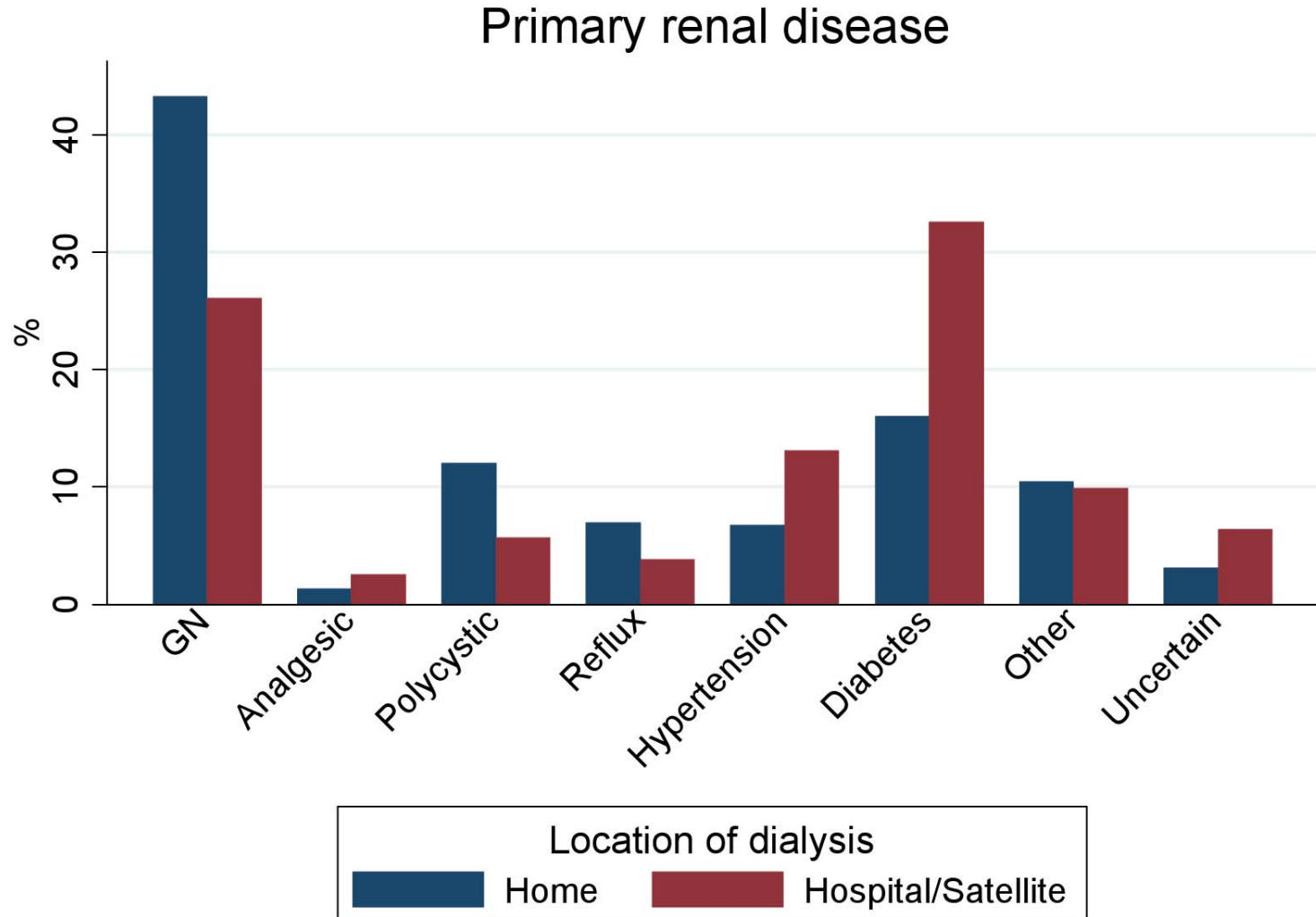
Sex and Location



Courtesy ANZDATA

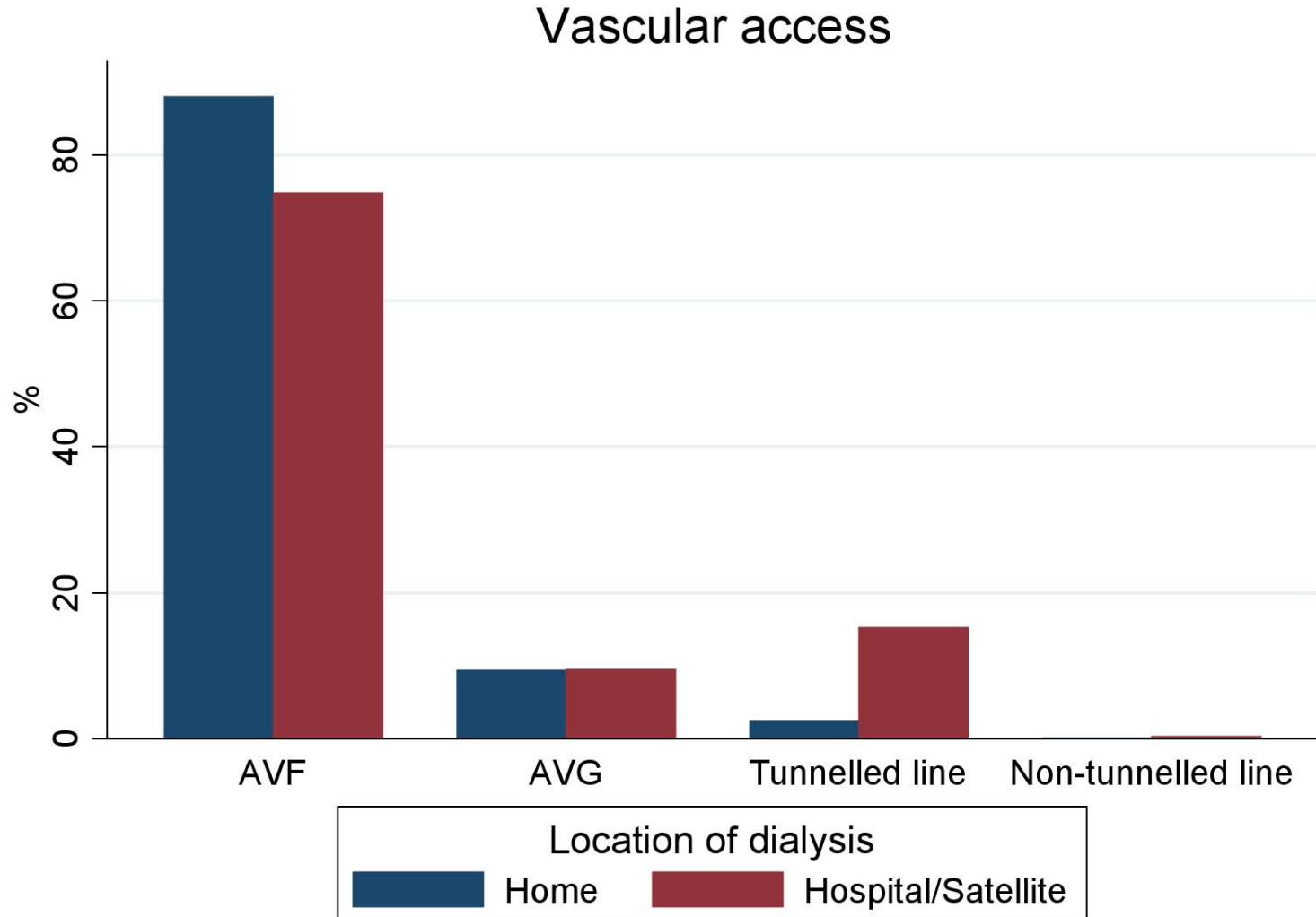
Australia – Hemodialysis 2011

1° Disease and Location



Australia – Hemodialysis 2011

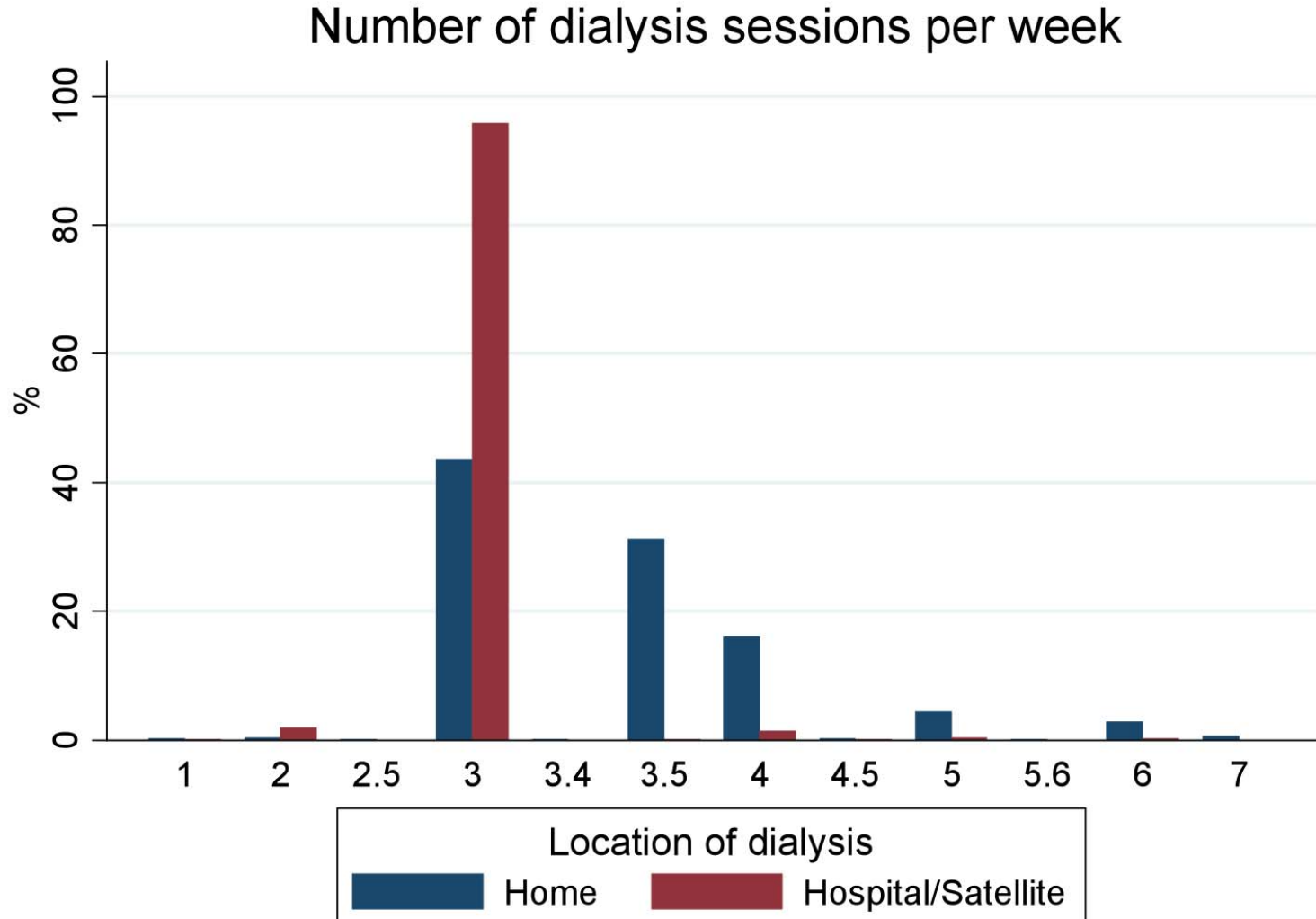
Vascular Access and Location



Courtesy ANZDATA

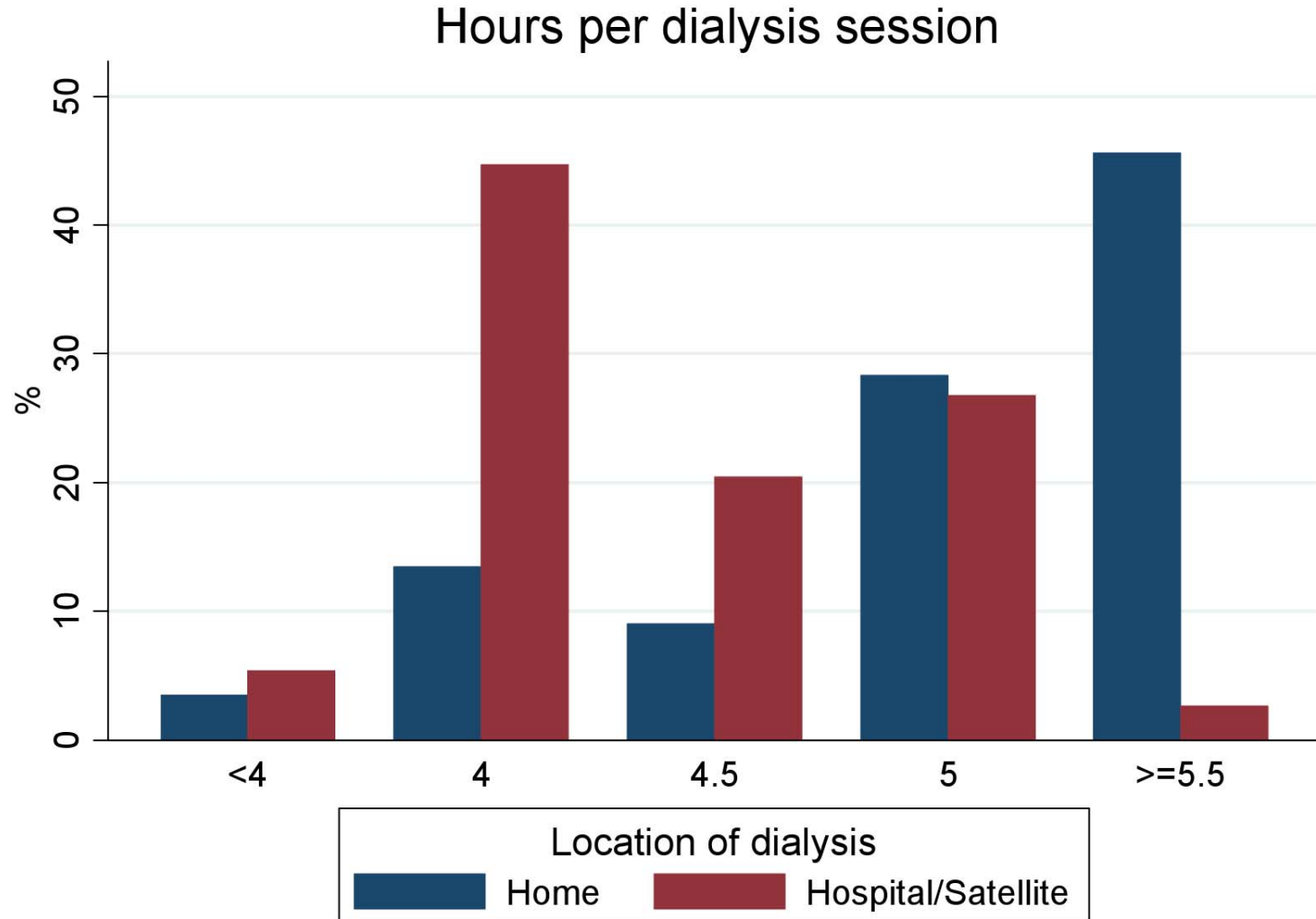
Australia – Hemodialysis 2011

Sessions/Week and Location



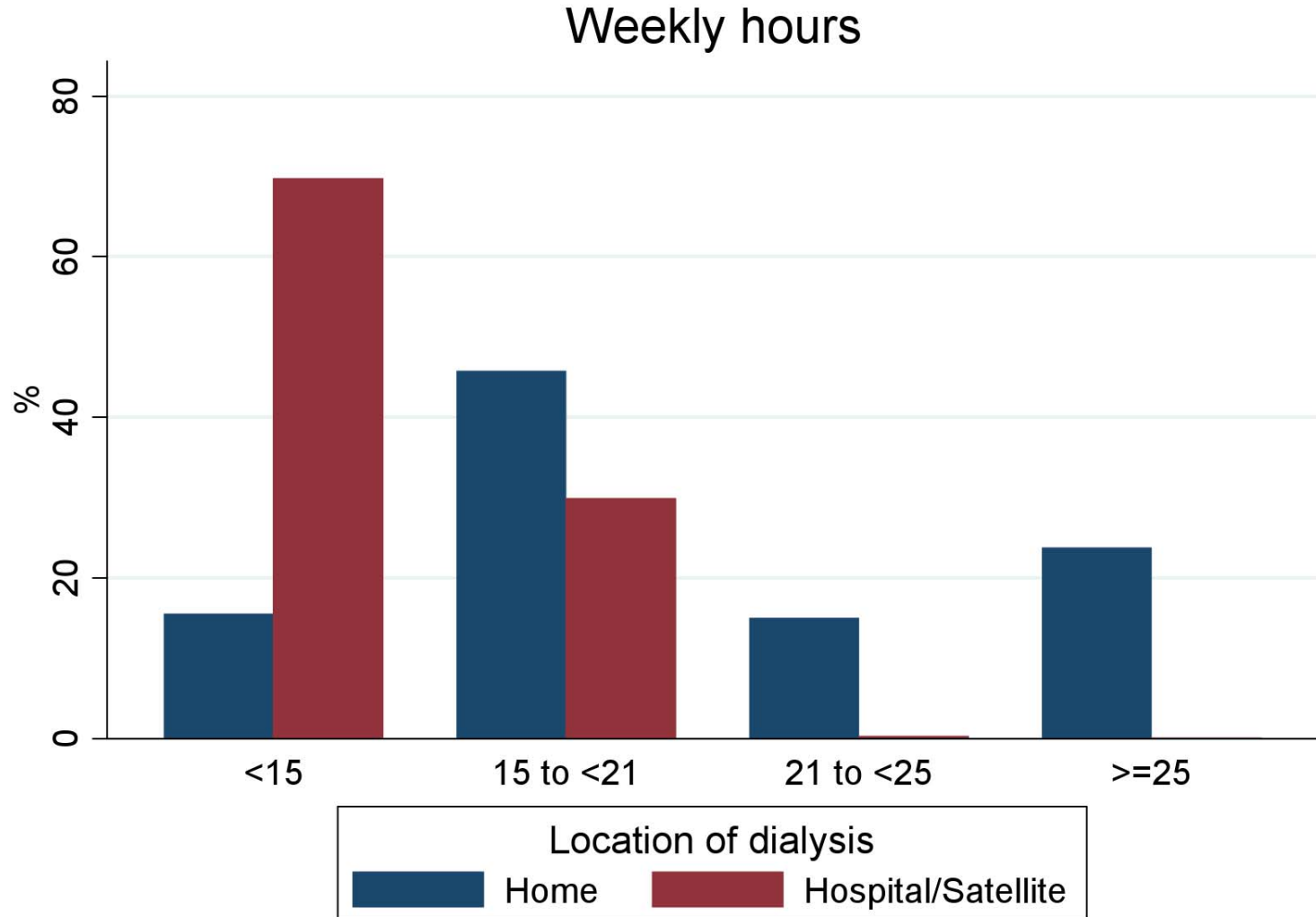
Australia – Hemodialysis 2011

Hours/Session and Location



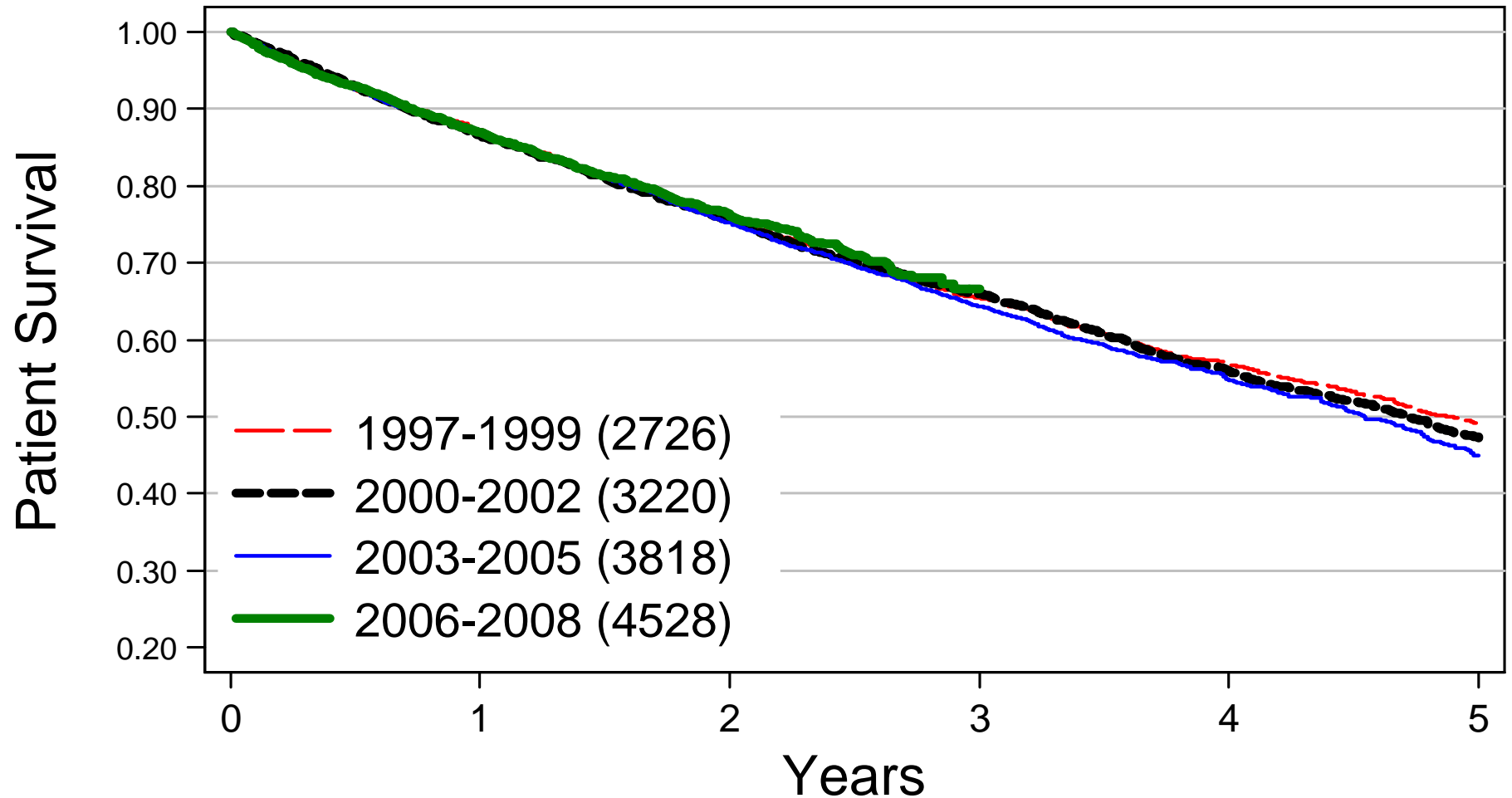
Australia – Hemodialysis 2011

Total Weekly Hours and Location



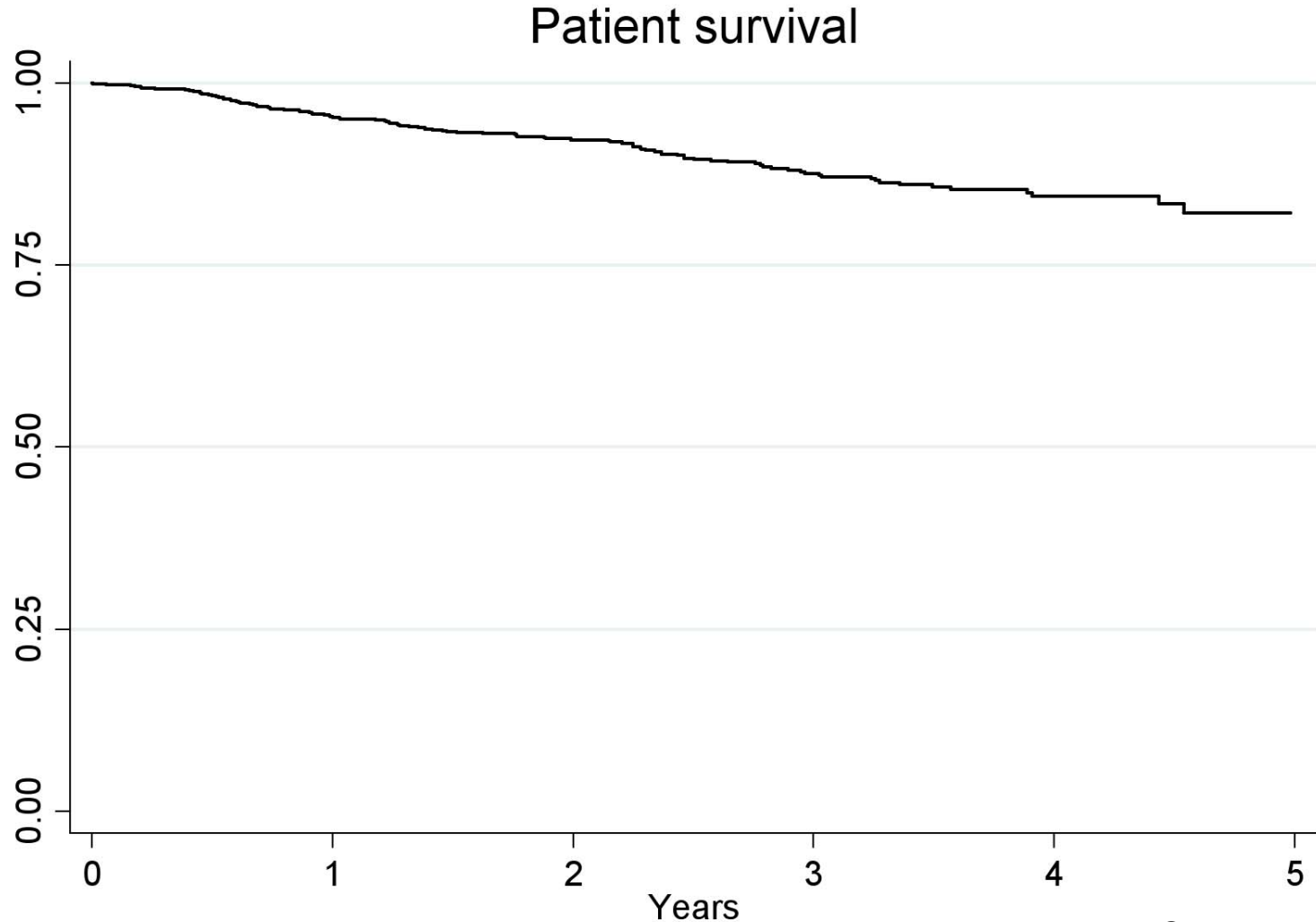
Australia – all HD – 2011

5yr patient survival (censored for transplant)



Australia – all home HD – 2011

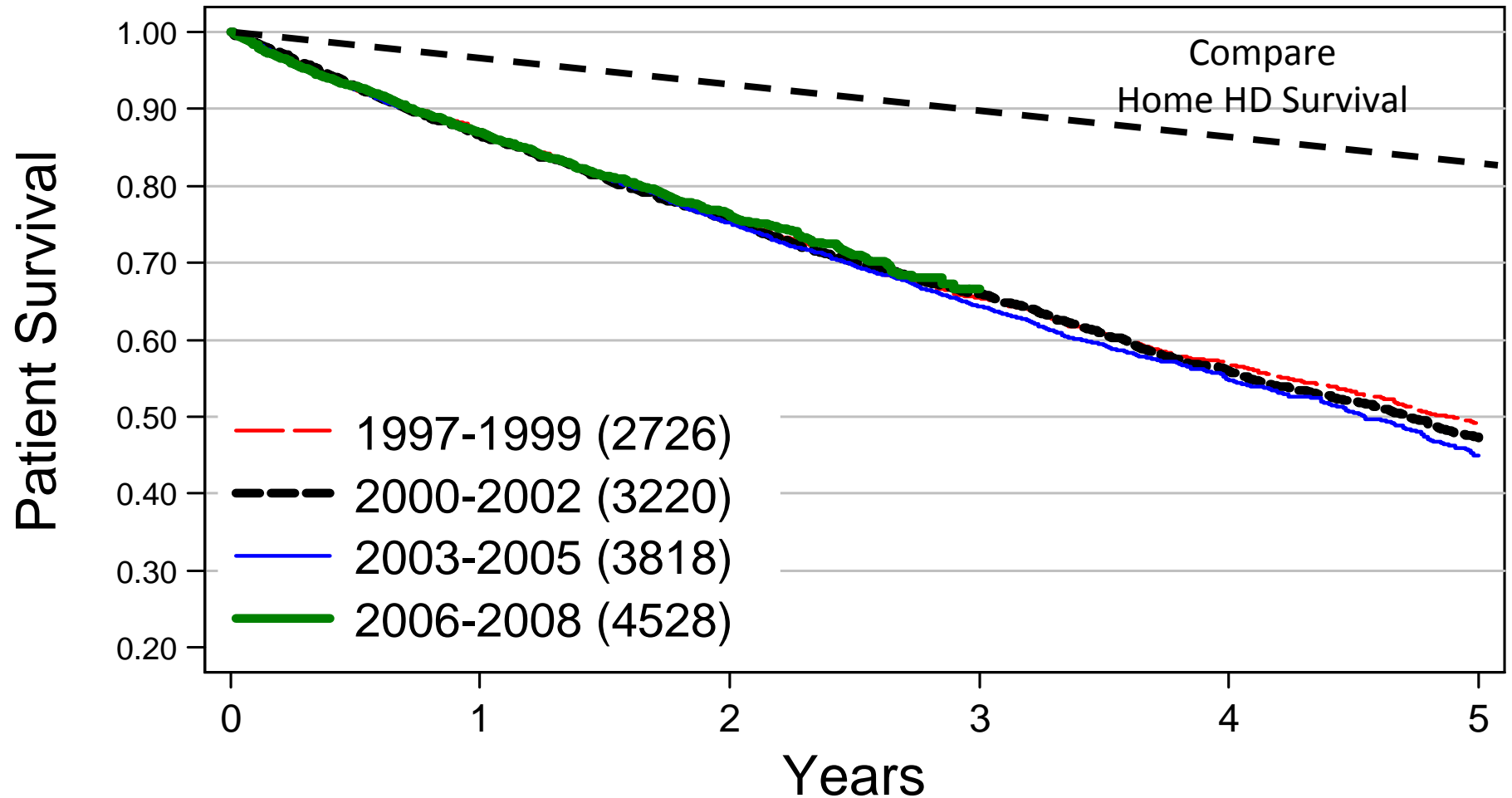
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Courtesy ANZDATA

Australia – all HD – 2011

5yr patient survival (censored for transplant)



Home Hemodialysis

Australia

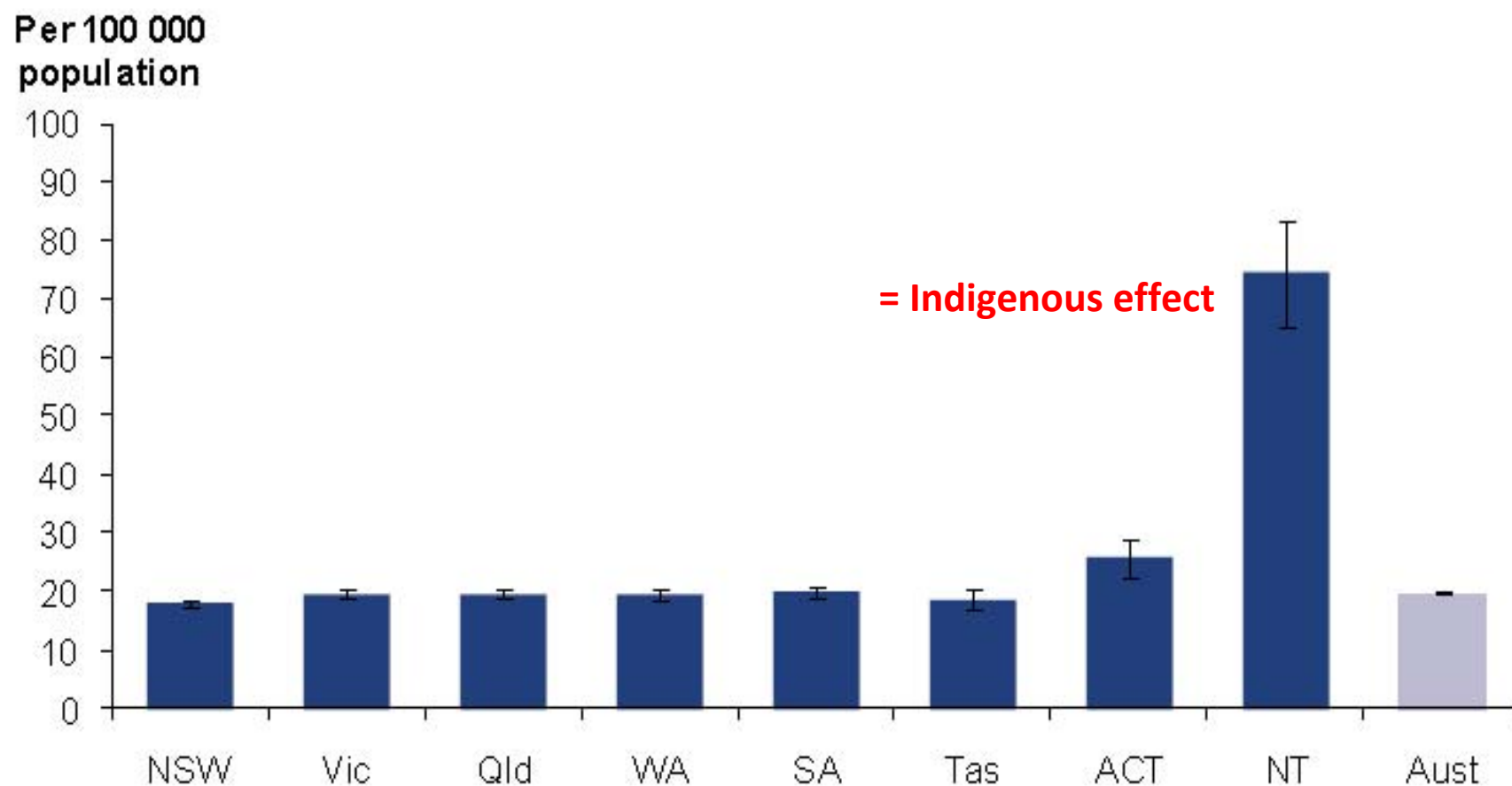
Variability in programs - by State and Unit

- Assumptions
 - Australia is ~homogenous by age, ethnicity, social status
= far from true!
 - Spend on health equitable
= debatable
 - CKD 5 evenly distributed (COAG)
= largely true
 - Access to dialysis and transplantation equitable
 - Free choice of modes of dialysis
 - Home dialysis therapy is advantageous
- Facts
 - Variation in access/choice of dialysis
= significant
 - Variation in access to transplantation
= none identified

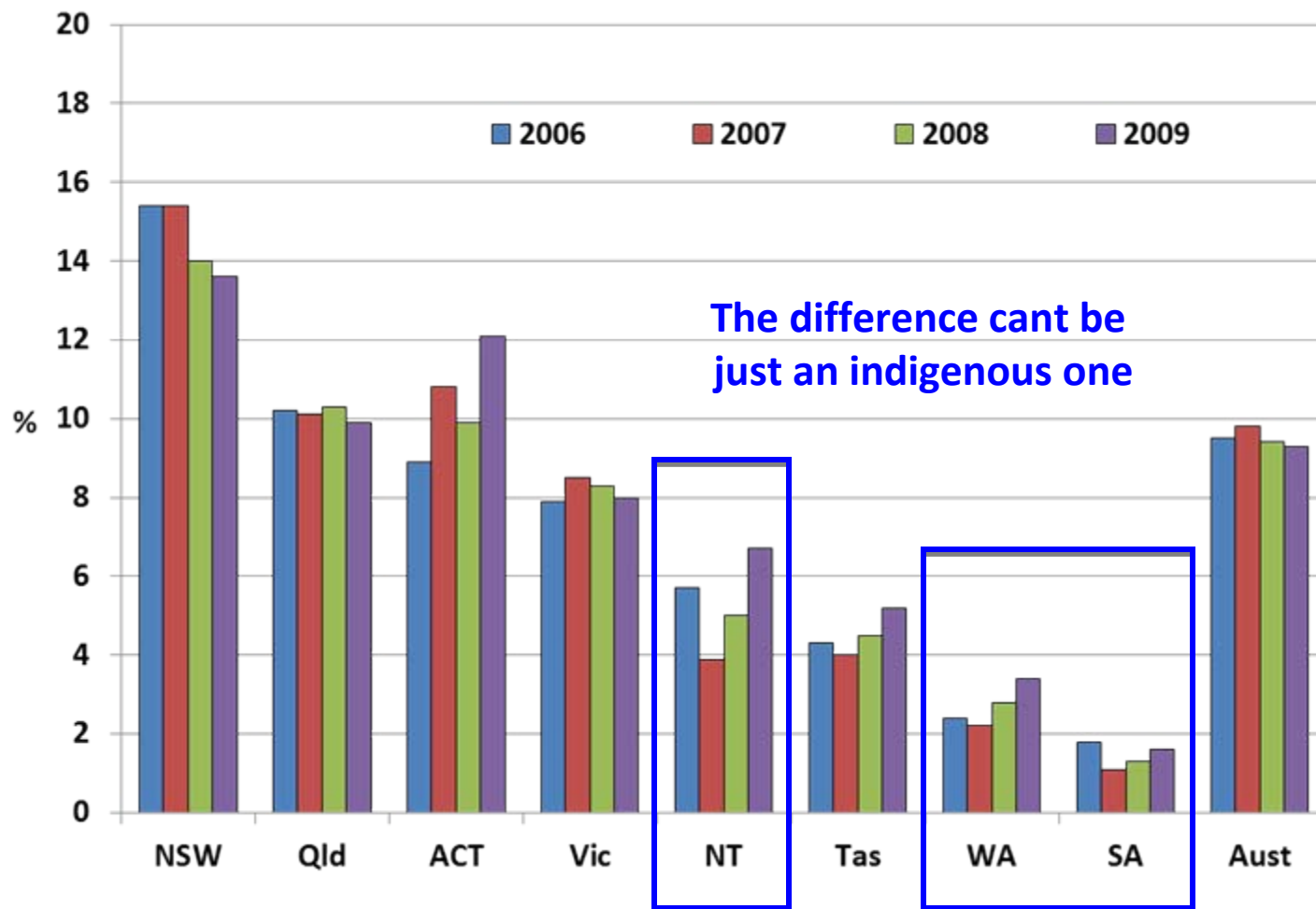
} = true



Figure 4.11 Incidence rate of end-stage kidney disease, by State and Territory, 2003-2006

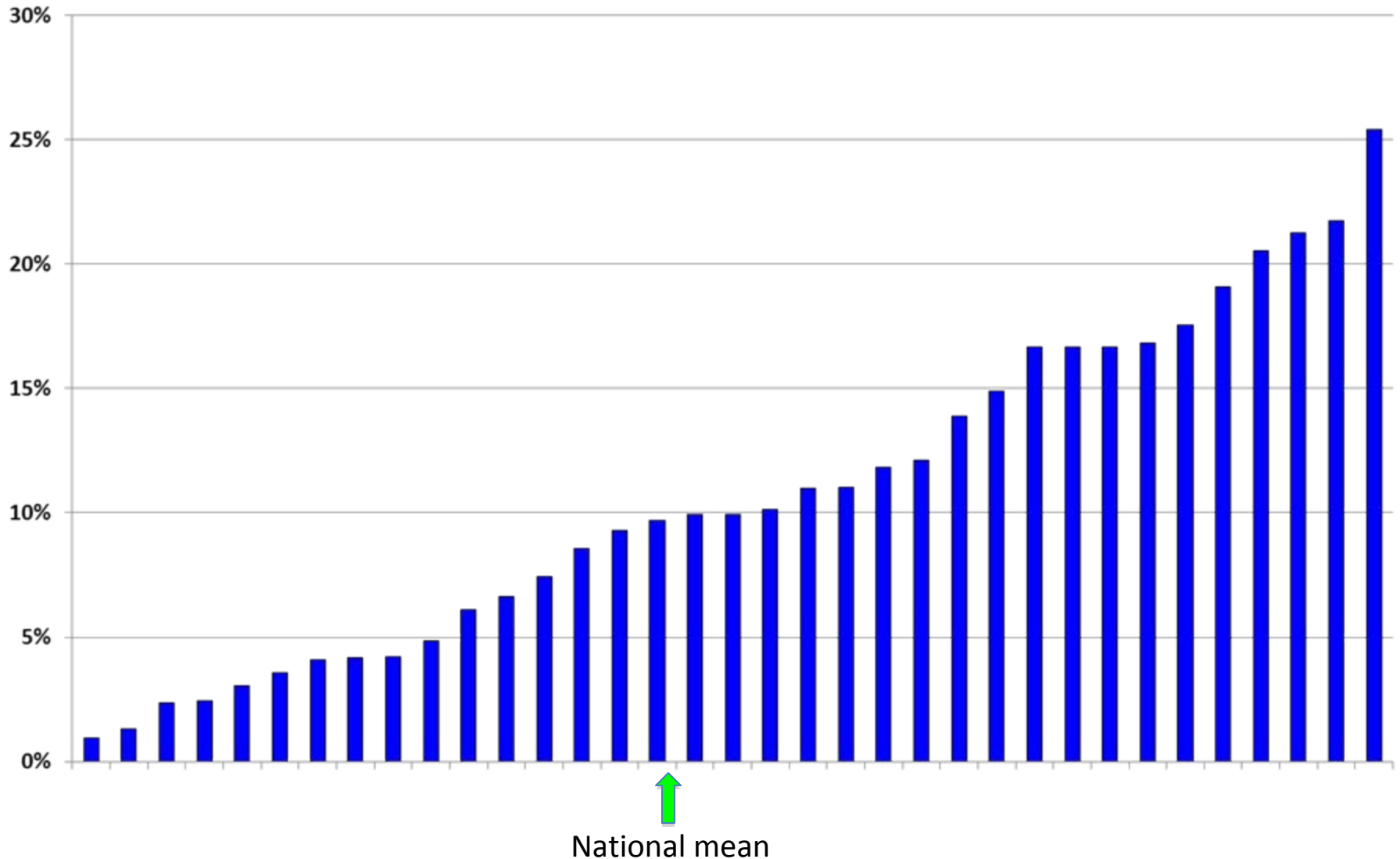


% on home HD c/w all dialysis (= HD + PD) 2006-2009 – by state



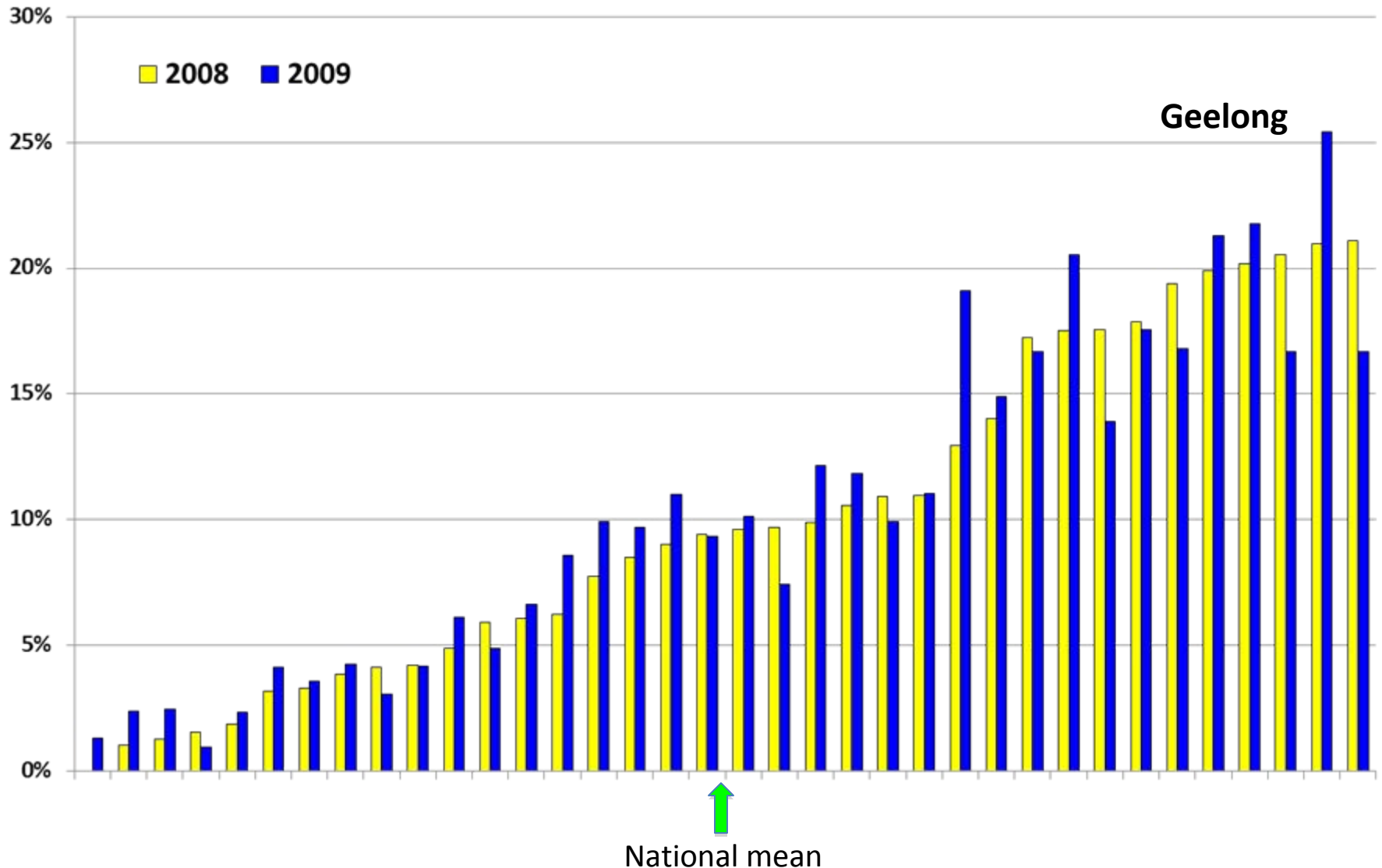
% on home HD c/w all dialysis (= PD + HD)

Australia 2010 – (units >90 patients)



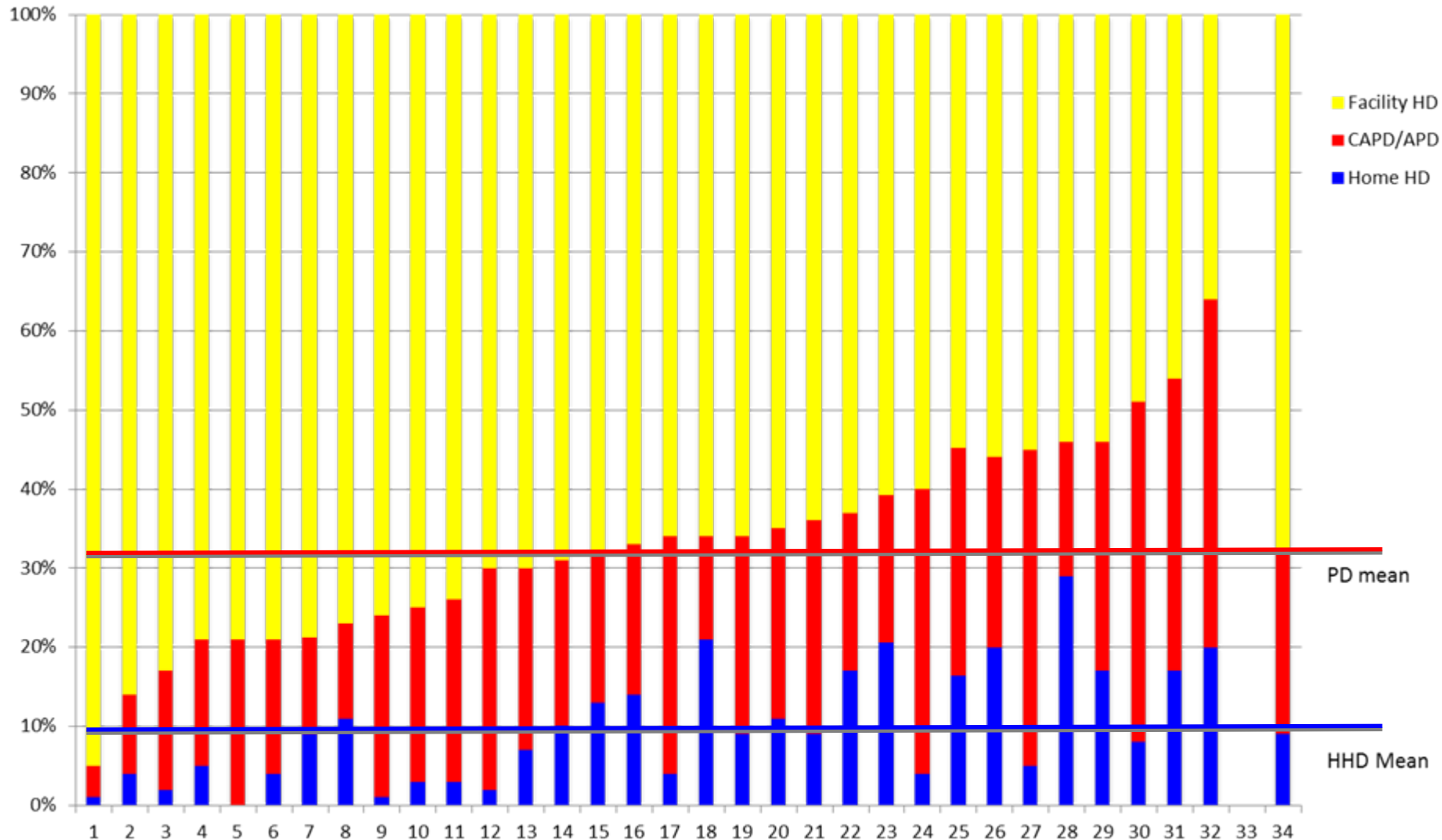
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Australia 2008 & 2009 - (units >90 patients)



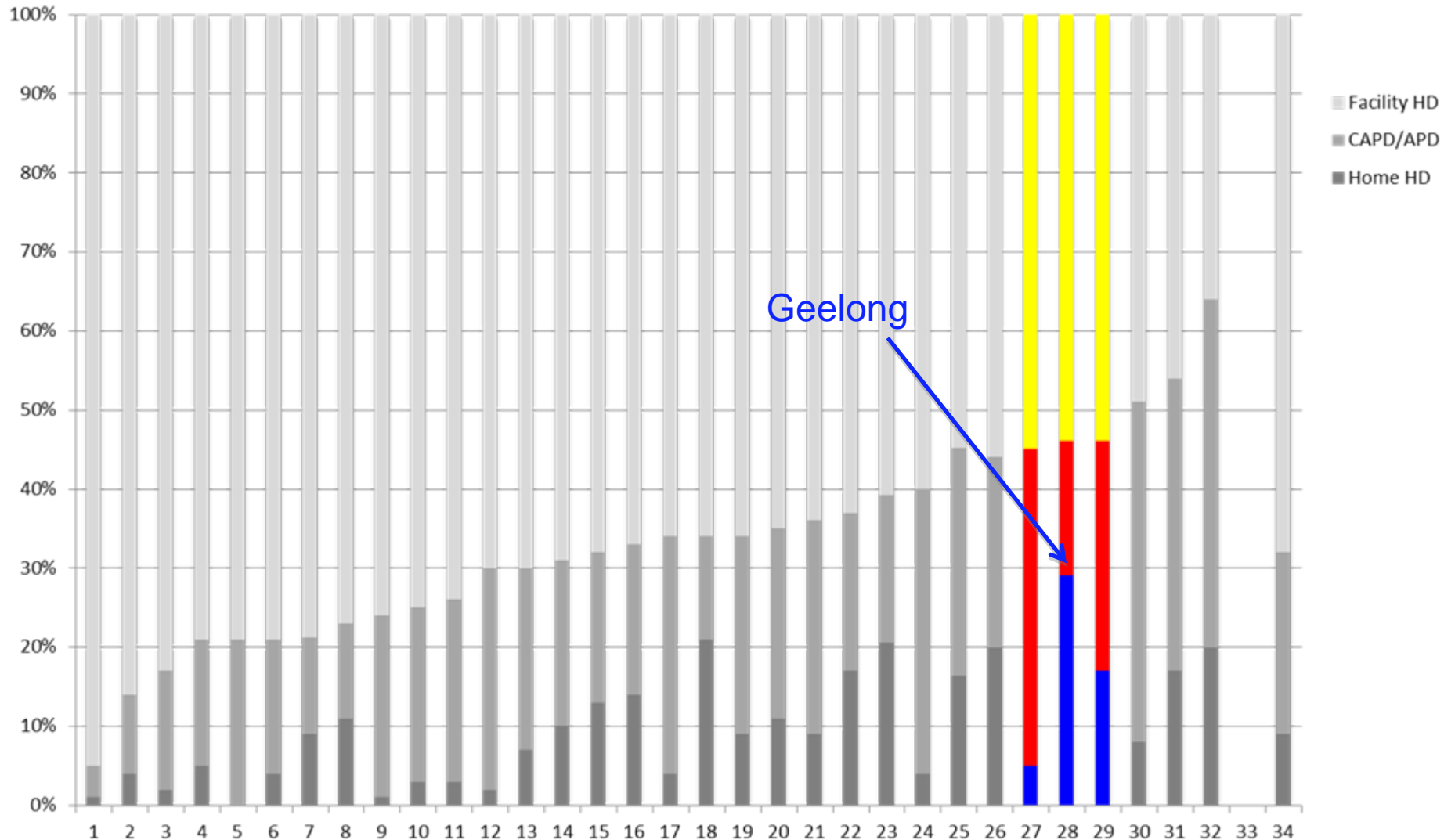
Australia – all home therapies vs. facility HD

For Individual Units Treating >100 pts: 2010

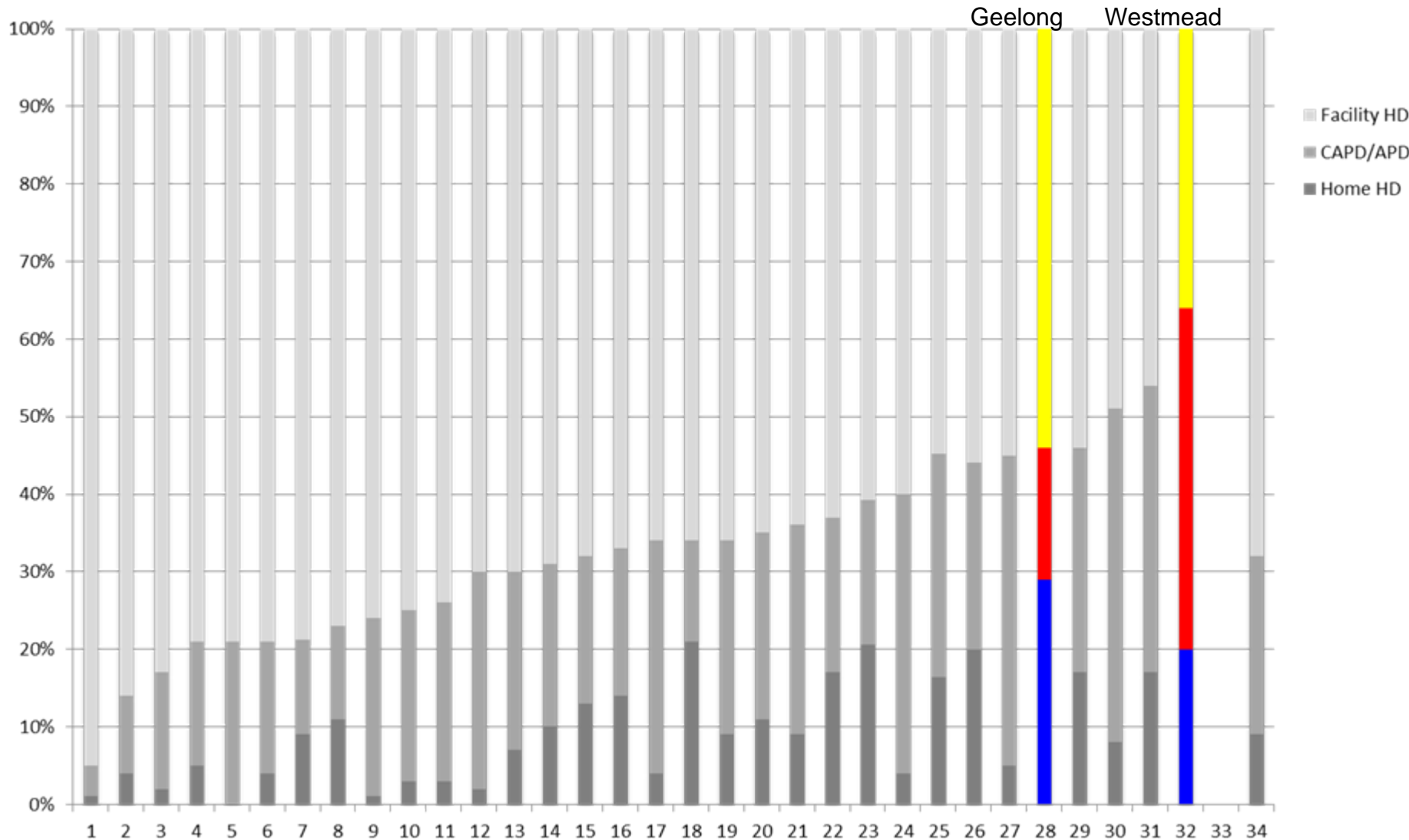


Contrasting modality mixes

Geelong (centre) vs. the two units either side



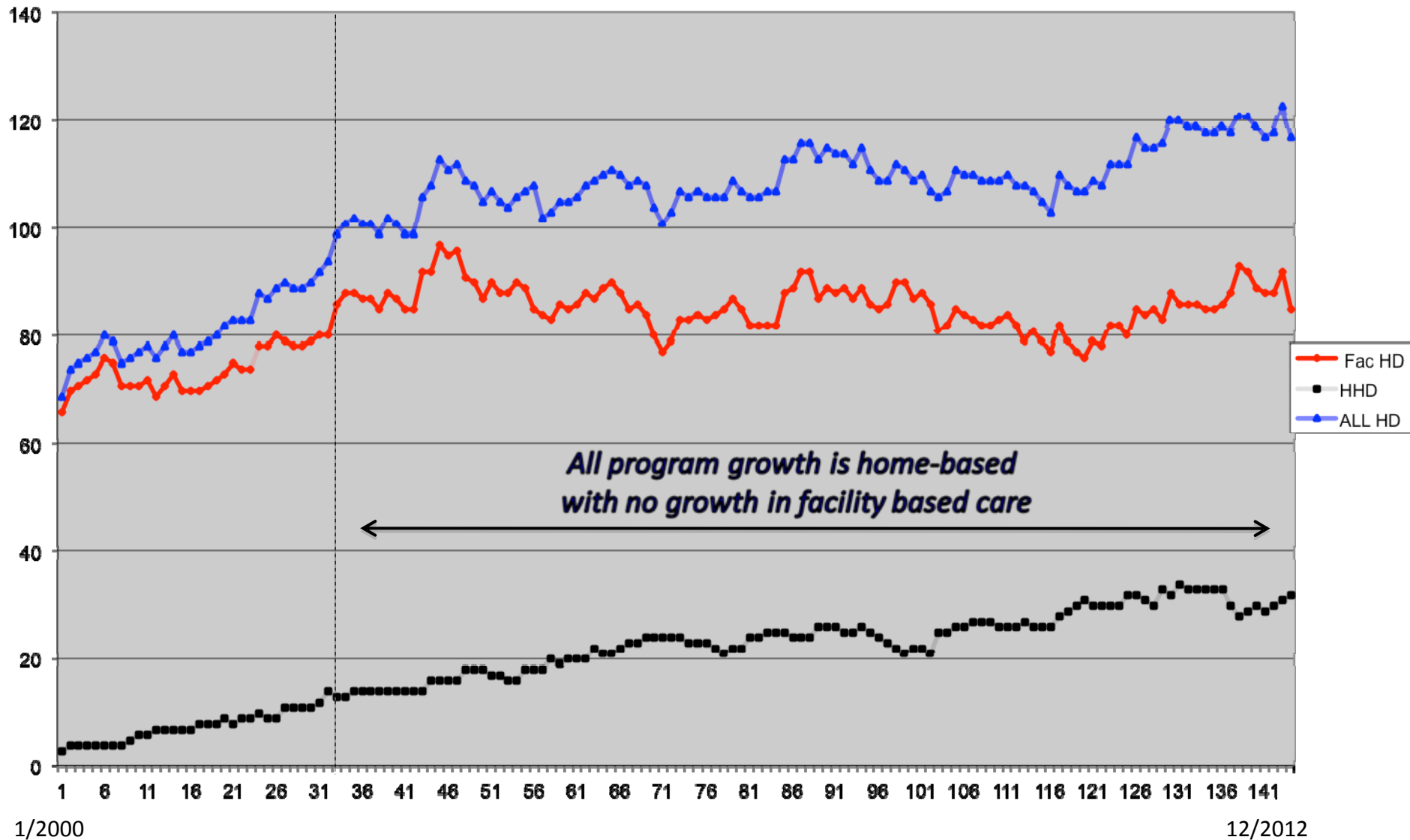
And ... our unit does not lead the pack!



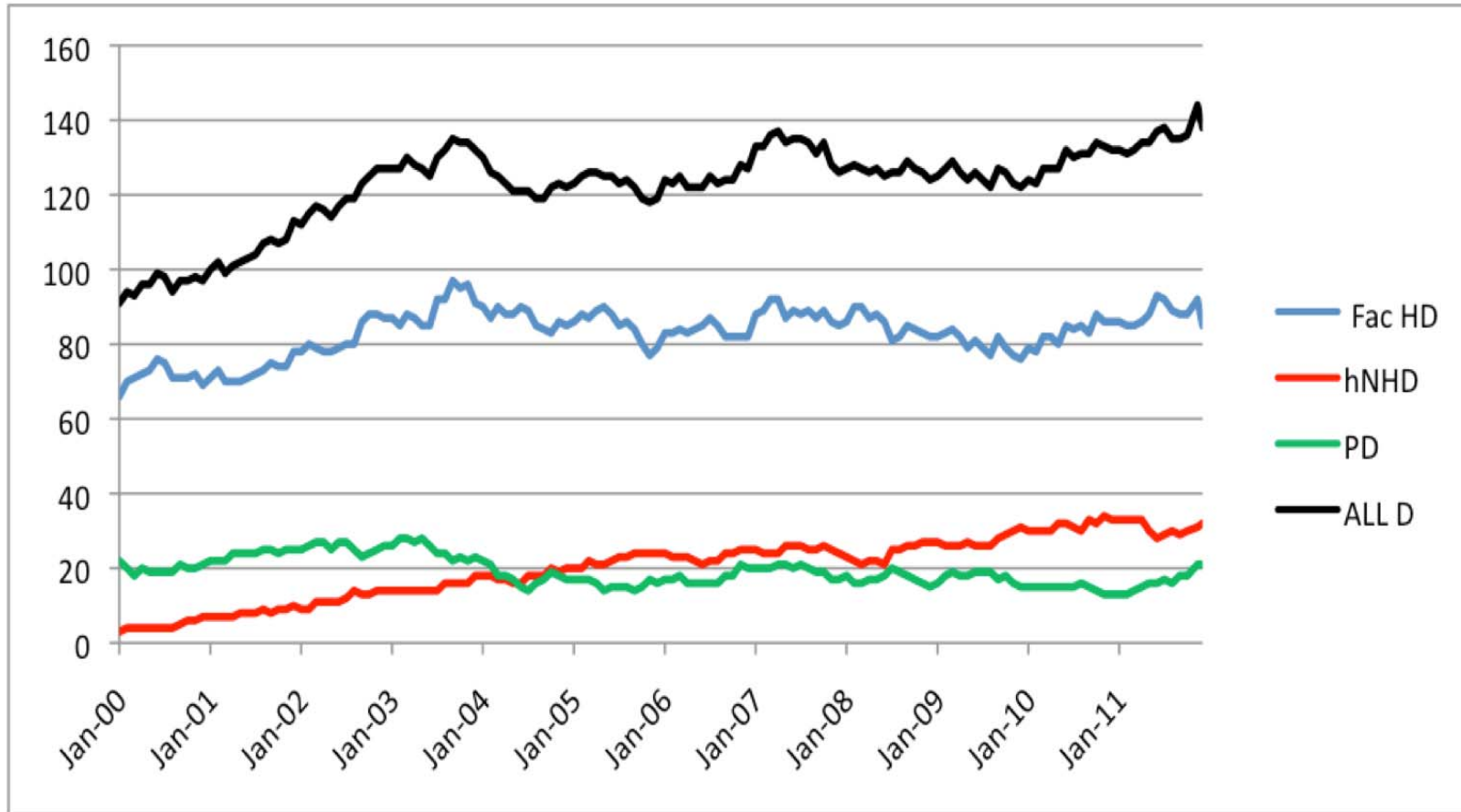
And in Geelong?

Home HD vs. facility HD vs. all haemodialysis

Geelong - 1/2000 to 12/2012



The impact of home HD on PD growth



BANANA ACTIVITY

$$\Delta N = -\lambda N \Delta t$$

$$\Rightarrow \text{NUMBER OF DECAYS PER SECOND} \approx \frac{|\Delta N|}{\Delta t} = \lambda N$$

$$\lambda = \frac{\ln 2}{(39.4 \times 10^{15}) [s]} \approx 1.76 \times 10^{-17} [s]^{-1}$$

↑
HALF LIFE OF ⁴⁰K, ROUGHLY 1.25 BILLION YEARS

N = NUMBER OF ⁴⁰K ATOMS IN AN AVERAGE BANANA

USDA NUTRIENT DATABASE
↓
MASS OF POTASSIUM IN AN AVERAGE BANANA $\approx 422 [mg]$

AVERAGE MASS OF POTASSIUM ATOM $\approx 39.1 u$

FRACTION OF NATURALLY OCCURRING ⁴⁰K ≈ 0.000117

$$\Rightarrow N \approx \frac{(422) \times 10^{-3} [g]}{(39.1) (1.66 \times 10^{-24}) [g]} \times 0.000117$$

$$= 7.6 \times 10^{17} \text{ ATOMS}$$

$$\therefore \lambda N \approx 1.76 \times 10^{-17} [s]^{-1} \times 7.6 \times 10^{17}$$

$$\approx \underline{\underline{13}} \text{ DECAYS PER SECOND}$$

Now for a
“back-of-an-envelope”
calculation

Notional savings: using Geelong data

Geelong monthly home HD mean over 12 years

= 21.29 home HD pts

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Assume Australia's national home HD vs. facility HD cost differential

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... and this, from a small regional dialysis service

Protocols and Equipment

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 - Alternate day (minimum) ... the Kjellstrand ‘killer break’ at home is gone

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 - Most have settled into alternate nights/week x 7 hours/Rx regimens
 - Debate re buttonhole vs. ladder access = unresolved
 - Debate re increased vs. similar infection rates = unresolved
 - Debate re system superiority: single pass vs. low flow dialysate = not occurring

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 - Interesting developments in home models = watch this space

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One of three
Auckland Community Dialysis Houses

Home Dialysis – Maori Style

kidney society
news



No. 159
February/March 2010



Camp Morley 2010: a holiday with lots of fun, sun and good food made dialysis a breeze for 22 haemo patients

kidney society
supporting people with kidney failure and their families
in auckland, northland and waikato

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Remote Care Program “The Travelling Dialysis Bus”

Northern Territory
and
South Australia



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7. 'Holiday Rental Van' Model ... holiday care, on wheels, for rent



Rent, Drive and Park
Holiday Dialysis Program

Equipment

- Uniform use of single-pass systems (SPS) with individualised RO
- NxStage 'experiment' has not met wide approval/acceptance
- Dialyser re-use was abandoned nationally in 1993
- Real-time monitoring (modem or Internet) is not practiced

And I couldn't fly all this way
without going just a little bit

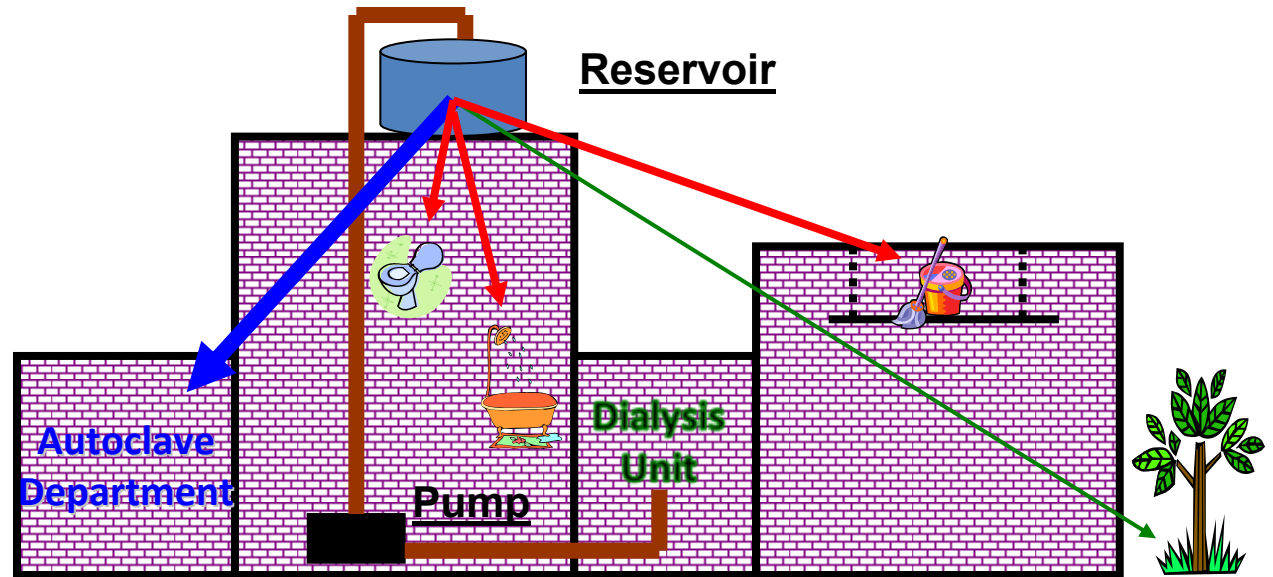


green

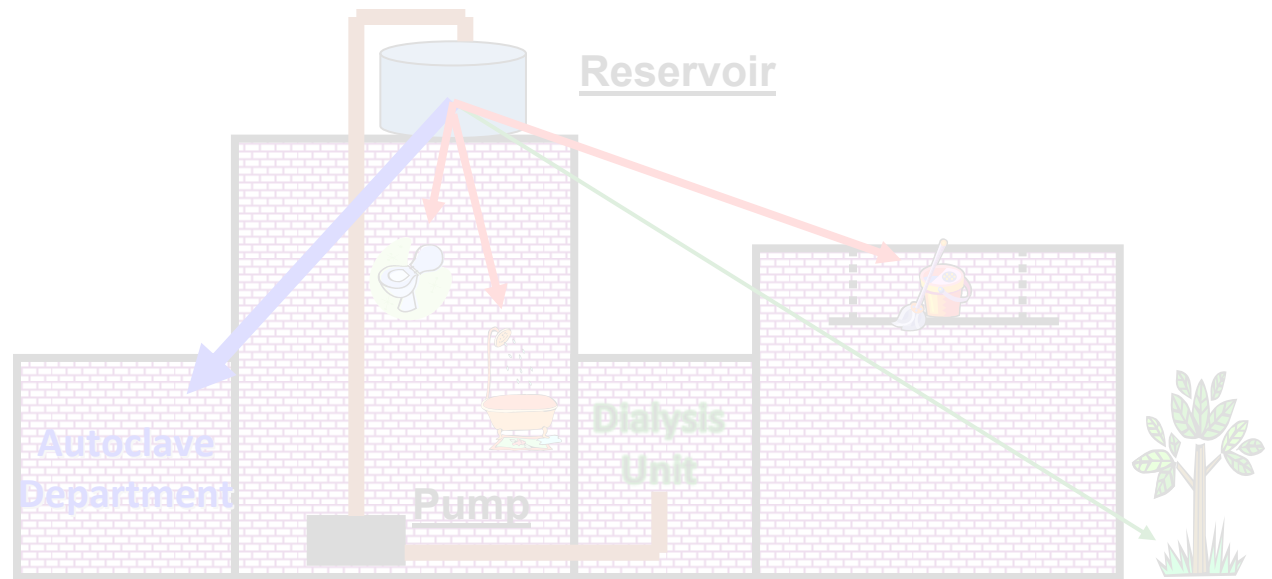
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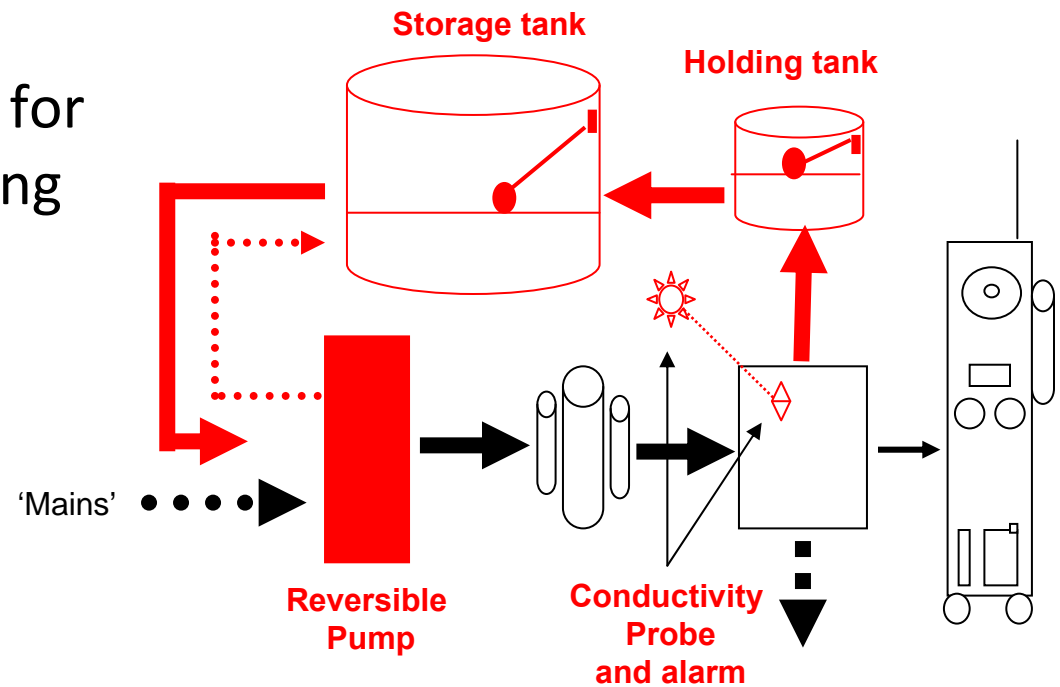
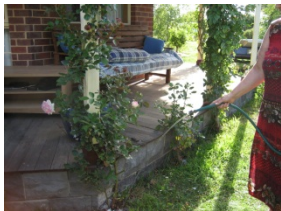
Hospital
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Home options for water recycling



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Home Training Unit
Geelong

Solar-assisted Dialysis



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- We await with interest the Fresenius and Baxter home options

To conclude

Australian Healthcare and Home Dialysis

- **Our dual public/private Australian healthcare system offers universal public care for all ... and, in addition, discretionary private care**

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- **Home therapies (both HD and PD) remain strong in Australian dialysis – and are strongly supported**

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- As a consequence, home therapies (particularly home HD) are now increasingly encouraged, supported and incentivised by Australian governments
- **Expectations of this approach include both improved clinical outcome profiles and a more cost effective use of a finite national health budget**

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- Unit culture, belief and the 'raiding' of earned unit budgets by local health services are major blocks
- **We ... like you ... do well by 'comparison' ... but have yet much to do to secure home HD it's place in the sun**

**Thank you
for the privilege
of presenting today**

and ...

Marvelous Melbourne come and visit



for...

Biennial Australian and New Zealand Home Dialysis Conference

www.dinamics.co.nz/home-therapies

*My Kidneys
My Home
My Choice*

5-7 MARCH 2014
Melbourne, Australia

Abstract submission closes 29th Nov, 2013

